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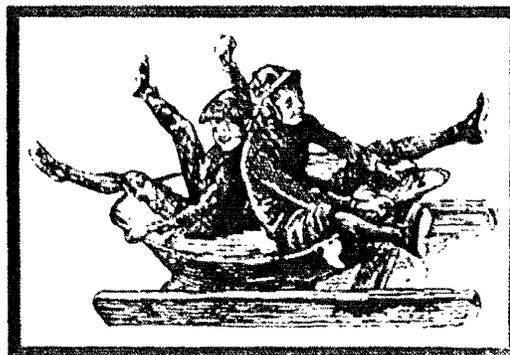
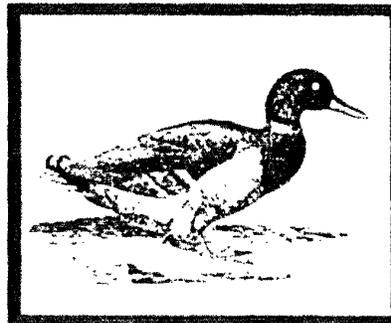
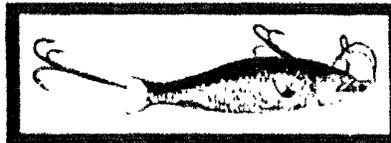
Northeastern Forest  
Experiment Station

General Technical  
Report NE-198



# Proceedings of the 1994 Northeastern Recreation Research Symposium

April 10-12, 1994  
Saratoga Springs, New York



## 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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*The Steering Committee wishes to thank Mary Kate McCloud for all her behind-the-scenes work, especially during management transition at the New York State Parks Management and Research Institute.*

*NOTE: These proceedings have been prepared using electronic and hard copy supplied by the authors. While some editing has been done, authors are responsible for the content and accuracy of their papers.*

# **PROCEEDINGS of the 1994 NORTHEASTERN RECREATION RESEARCH SYMPOSIUM**

**April 10-12, 1994  
State Parks Management and Research Institute  
Saratoga Springs, New York**



**Compiled and Edited by:**

Gail A. Vander Stoep, Michigan State University

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## MISSING PAPERS

*NOTE: If you are interested in getting additional information about any of the papers that were presented but were not submitted for publication, please contact the authors directly. A list of those papers is included here to assist you in identifying authors.*

### POSTER SESSION

Fees, Expectations and Behavior in Developed Campgrounds. Tom More, USDA Forest Service.

Spatial Inquiry, Analysis and Display of Site-specific Perceived Impacts to the Recreational Boating Experiences: A Comparison of GIS Software Packages and Procedures. John Confer, Jr., Alan Graefe, Pennsylvania State University; John Titre, U.S. Army Corps of Engineers.

### OUTDOOR RECREATION MANAGEMENT

Visitor Impact Monitoring: Evaluating the Effectiveness of Management Actions. Jeff Marion, Virginia Tech, National Biological Survey.

Undergraduate Tourism Education in New Hampshire and Hungary: A Comparative Study of the Curriculum Development Process. Margit Mundruczo, Robert Robertson, University of New Hampshire.

The Gericke Farm Project. John Wood, Clay Pit Ponds State Park Preserve.

### INTERPRETATION, EDUCATION AND OUTREACH

Evaluating the Effectiveness of Alternative Media Messages. James Petruzzi, Cinnamon Baldwin Foster, Jerry Vaske, Maureen Donnelly, Colorado State University.

Public Outreach: Implications for Natural Resource Recreation Management. William DeNegro, David Loomis, University of Massachusetts.

### DEMOGRAPHICS

Demographics and Angler Diversity: Cohort-specific Analysis of Massachusetts Anglers. Al Ortiz, David Loomis, University of Massachusetts.

### RECENT CHANGES IN FEDERAL AGENCY RECREATION RESEARCH AND TRAINING PROGRAMS

Recreation, Social Science and Human Dimensions--Fitting Together. Alan Watson, USDA Forest Service, Aldo Leopold Institute.

Future of Social Science in NPS and NBS. James Carroll, National Biological Survey, Washington, D.C.

### OUTDOOR RECREATION: SATISFACTION AND CONFLICTS

The Hidden Public: Subculture Differences in Attitudes and Satisfaction. Rodney Zwick, Lyndon State College; David Tucker, Northeast Kingdom Community Action; Susan Bulmer, Vermont Department of Forests, Parks and Recreation.

### ENVIRONMENTAL PERCEPTIONS AND ETHICS

State Park Stewardship Survey--1993 State of the Parks Report. Allison McLean, Wilbur LaPage, New Hampshire Division of Parks and Recreation; Rob Robertson, University of New Hampshire.

## PLANNING AND G.I.S.

Boating Opportunities: A Geographical Analysis of Travel Patterns and Motivations. John Confer, Jr., Alan Graefe, Pennsylvania State University; John Titre, U.S. Army Corps of Engineers, WES.

The Moosalamoo Partnership: Using GIS and GPS for Composite Trail Maps. David Capen, Daniel Coker, University of Vermont; Mary-Jeanne Packer, Green Mountain National Forest.

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*POSTER SESSIONS*



## TRAVEL AND TOURISM TRENDS

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Demographic trends which impact leisure time activities are highlighted, with particular emphasis given to the impacts of the growth of minority populations. Data was collected from recreationists to National Forests and from residents of an urban community. The data indicate a shift in outdoor recreation activities.

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### Introduction

Demographic trends evidenced today can give us insight into what might be expected in the years to come. These trends are important in and of themselves and also because of their affect on other issues, such as their impact on leisure activities. Trends briefly examined in this paper and linked to leisure patterns include the graying of America, MOBYs (Mothers Older when Baby is Young), the sandwich generation (those who care for their parents when also caring for their own children), and the middle-age economy (characterized by cautious consumer spending and more saving). Most emphasis is given to the potential impacts of the growth of the minority population for outdoor leisure activities, particularly the growing Hispanic population.

Leisure activities linked to the growth of the minority population focus on outdoor pursuits and emphasize adventure travel (hang gliding, bungee jumping, and heli-skiing), conservation travel ("green" vacationing and volunteer hosting), traditional natural resource activity participation (horseback touring, off-road vehicle riding, and natural history hiking), and non-traditional natural resource activity participation (camera safaris and mountain bike riding).

It is expected that changes in demographic patterns will influence leisure pursuits. It is not known how the combination of the demographic shifts will impact leisure pursuits.

### Socio-demographic Trends

Current trends may afford insight into what can be expected in years to come. Each trend will be briefly introduced as well as linked to their potential impact to leisure activities--particularly outdoor recreation activities.

The graying of America, as the name suggests, indicates that people are living longer. Indeed, this is one of the fastest growing age cohorts. The graying of America may influence participation in leisure activities in several ways. First, this group generally has good financial assets and leisure businesses could benefit from this affluence. Second, senior citizens have been thought to be somewhat more sedentary than their younger counterparts which might suggest that leisure givers need to provide more activities geared to sedentary populations--such as walking tours with educational emphases. Recreation providers might also concentrate on highly developed recreation sites for this age group.

MOBYs is a relatively new term which suggests that many women are waiting later in life to start families. These mothers may have better financial standing than do younger mothers, thus allowing older moms to provide for more recreational activities for their offspring. This may include more purchases of recreational equipment for the home and for outdoor activities. Because many of these MOBYs are employed outside the home, they may be looking for more leisure activities nearby or activities which require little planning.

The sandwich generation is another trend on the rise. In some cases the combining of families provides more expendable income, while in other cases it means greater caretaking placed on the "sandwich" members. In all cases it suggests a need to focus on leisure activities that would appeal to the entire age span and may suggest a need for developed sites for recreational activities.

The middle-age economy is characterized by cautious spending and increased saving. This suggests that baby boomers are changing their spending patterns which will influence recreational patterns. It could mean that boomers may concentrate their money into one area and not others. One area experiencing growth is the recreational vehicle business. This represents one large expenditure for a family, but one that has utility for a long time. Outdoor recreation sites, like campgrounds, may want to increase spaces for these large vehicles. Those recreation providers wanting to attract middle-age economy members may want to emphasize their low-cost or free activities.

The growth of the minority population is another demographic trend worthy of note. It is expected that during the 1990s we will shift from a society dominated by Anglos and rooted in Western culture to a world society characterized by three large racial and ethnic minorities--African American, Latino or Hispanic American (hereafter called Hispanic), and Asian Americans. Trends focusing on Hispanic groups suggest younger, larger families, an expanding middle class, and increasing educational attainment levels. Recreational or leisure facilities may need to accommodate larger groups, focus on family activities, focus on the entire age span, and offer a range of recreational costs.

The remainder of the paper examines outdoor recreation activities for actual participation levels as well as desired participation levels. Then the paper focuses specifically on comparing Anglo patterns of participation (real and desired) to Hispanic patterns of participation (real and desired).

### Methods

Data were collected from 200 visitors to National Forests in 1992 will be used to highlight points made by the paper. Other data, collected from 130 urban city residents in 1992 will also be used to illustrate points made in the paper. Both sets of data show current and desired patterns of participation. On-site data were collected using self-administered questionnaires while the urban city data was collected via telephone surveys. Both survey types were available in English and Spanish. Just over half the sample were people of Hispanic descent (54 percent) and the remainder were Anglo (45 percent) respondents.

Respondents were asked if they had heard of, engaged in, and/or desired to engage in several outdoor recreation activities. These activities included hang gliding, bungee jumping, heli-skiing, "green" vacationing, volunteer hosting, horseback touring, off-road vehicle riding, natural history hiking, camera safaris and mountain bike riding.

### Results

In general, most respondents had not tried any of the activities listed--indeed, few had heard of many of the activities--yet most respondents reported a desire to try these activities in the future. For example, few had heard of or tried wildlife viewing or camera safaris though most (75 percent) expressed an interest in trying it in the future. Other examples were ecotourism and volunteer hosting, where few had heard of them before though most reported they would like to try them. The exceptions were heli-skiing and bungee jumping where few people had heard of these, tried or desired to try these activities in the future.

### Ethnic and Racial Group Analysis

For this paper, the comparison will be of people of Hispanic origin to Anglos.

While Anglos were more likely to have tried natural history hikes and Hispanics expressed a greater interest in horseback tours,

there were no other statistically significant differences between Anglo and Hispanic groups. However, some interesting patterns did emerge.

Matrix One, below, shows actual levels of participation in the outdoor recreation activities. If more than 30 percent of the sample had engaged in the activity then it was considered to be a "traditional" activity for that group. For example, more than 30 percent of the Anglos in the sample engaged in natural history hikes, horseback tours, and mountain biking so those activities were considered traditional for that group. For the Hispanics, more than 30 percent had engaged in mountain biking and natural history hikes. Thus, Anglos have three traditional activities from the list provided while Hispanics have two traditional activities.

Matrix One. Actual participation by racial/ethnic groups.

|                       | <u>Anglo</u>   | <u>Hispanic</u>   |
|-----------------------|--|---|
| Traditional<br>(30%+) | Natural history hikes<br>Horseback tours<br>Mountain biking  | Mountain biking<br>Natural history hikes  |
| Non-traditional       | Ecotourism<br>Camera safaris<br>Hang gliding<br>Volunteer hosting<br>Heli-skiing<br>Bungee jumping | Horseback tours<br>Ecotourism<br>Volunteer hosting<br>Camera safaris<br>Hang gliding<br>Heli-skiing<br>Bungee jumping |

Matrix Two shows desired levels of participation in the outdoor recreation activities. If more than 30 percent of the sample desired to engage in the activity then it was considered to be potentially a "traditional" activity for that group. For example, more than 30 percent of the Anglos in the sample desired to engage in natural history hikes, horseback tours, mountain biking, and hang gliding--so those activities have the potential to become traditional for that group. For the Hispanics, more than 30 percent desired to engage in mountain biking, natural history hikes, horseback tours, camera safaris, and volunteer hosting--so those activities have the potential to become traditional for that group. Thus, Anglos might have four traditional activities from the list provided while Hispanics might have five traditional activities.

Matrix Two. Desired participation by racial/ethnic group.

|                       | <u>Anglo</u>   | <u>Hispanic</u>  |
|-----------------------|--|--|
| Traditional<br>(30%+) | Natural history hikes<br>Horseback tours<br>Mountain biking<br>Hang gliding        | Horseback tours<br>Natural history hikes<br>Mountain biking<br>Camera safaris<br>Volunteer hosting |
| Non-traditional       | Camera safaris<br>Ecotourism<br>Bungee jumping<br>Volunteer hosting<br>Heli-skiing | Ecotourism<br>Hang gliding<br>Heli-skiing<br>Bungee jumping  |

For the most part, there is a consistency between activities in which Anglos participate and those they wish to try. However, for each activity listed there is at least a 20 percent gap for Hispanics between having tried an activity and desire to try it. This suggests a potential market demand that is not currently being served.

## Conclusions

Demographic trends can give us insight into what might be expected in the years to come. While several trends were listed, only growth of the minority population was addressed. This one demographic shift suggests changes in what might consider "traditional" activities. From the matrices above we can see the shift in desired activities of Hispanics in terms of more activities (both traditional and non-traditional) as well as adding a conservation travel aspect. While other societal factors may preclude Hispanics from participating to their desired level, it is important to see what might be desired from this user group. The examination of combinations of demographic trends will give us greater insight into potential impacts on leisure pursuits.

**A CASE STUDY OF THE IMPACTS OF "ALL INCLUSIVE PRICING" ON RESORT RECREATION PARTICIPATION**

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This is an investigation of the impacts on recreation participation observed at a large upstate New York resort as it converted to "all inclusive pricing." Findings indicate that both recreation participation and recreation revenue increased significantly after the implementation of the new pricing policy.

**Introduction**

This is an investigation of the impacts on recreation participation observed at a large upstate New York resort as it moved from traditional "a la carte" pricing for recreation services to "all inclusive pricing" that included recreation activities as well as meals and other services in the basic room rates of the resort.

Traditional resort pricing structures are based on the "European Plan" that uses individual pricing for each portion of a resort visit such as rooms, food and beverage, and recreation services or the "American Plan" that includes meals only in the daily room rate. In either case, recreation activities are not included in the resort room rates. Recently, this trend began changing. The primary reason for this was pressure put on the resort industry by the growing cruise line industry. Current economic conditions force many travelers to focus on the "bottom line" of their vacation destination as a way to improve the value they receive for their vacation dollar. As a result, resorts have seen many guests choose cruise vacations as well as request greater packaging and "cruise line pricing" at destinations they visit.

For years, cruise ships included all their fees, with the exception of alcohol, in their basic rate. This allowed the potential cruise guest to evaluate the total cost of the cruise vacation before they made their travel decision. This was not easy for potential resort guests with traditional resort pricing policies because of the a la carte nature of the purchasing decisions.

In response to this growing trend, a large New York resort implemented "all inclusive pricing" in March 1993. Rather than just "give away" the facilities and activities at the regular room rate, the resort increased room rates and set aside a portion of the

increased room revenue for resort recreation usage. Since the resort continually collects data on occupancy and recreation usage, the opportunity existed to compare user data from both before and after the implementation of "all inclusive pricing" to compare its effectiveness.

**Method**

Data analyzed in this study represents recreation usage and occupancy information collected from early April until early November during the years 1992 and 1993. The recreation department's daily reports provided raw user data for youth programs, tennis court usage and boat usage. The Hotel Operations Director at the resort provided daily occupancy counts.

The resort collects data using 13 four week periods rather than using 12 months of unequal days. Each weekly period starts on Monday and ends on the following Sunday. This allows the resort to compare usage by weekly period and day of the week. To compare user data in a similar manner an adjustment was made. Rather than comparing April 1, 1992, to April 1, 1993, (the days of the week would be different) each day of the season was entered as "day 1, day 2, all the way to day 217" with the 1992 data beginning on Wednesday, April 1 and the comparable 1993 data began on the closest Wednesday which is March 31. Thus weekends compare to weekends and weekdays compare to weekdays. This is important because the analysis required repeated measures testing.

The resort also grouped data into the following seasons:

- Spring - April 1 through the Friday prior to Memorial Day Weekend. (52 days)
- Early Summer - Memorial Weekend through the Friday prior to the July 4th weekend. (41 days)
- Summer - July 4th Weekend through Labor Day. (67 days)
- Fall - Tuesday after Labor Day through the close of the season. (57 days)

Additionally, the 1993 user data was collected in the form of actual user counts while the 1992 data was collected in the form of daily income reported. To convert the 1992 data to user counts, the income amount was divided by the appropriate fee amount (Youth Programs - \$6.33, Boats - \$3.74, and Tennis courts - \$10.00). The prices charged in 1992 were used to allocate revenue in 1993. Thus, increases in recreation participation caused proportional increases in recreation revenue.

**Results**

Initially, a series of paired t-tests was run comparing 1992 and 1993 recreation usage. The tests indicated that in every activity the 1993 usage was significantly greater than the 1992 usage (Table 1).

Youth activities increased 47.7 %, while tennis grew 73.8%, and boating changed 58.7%. Overall, the average daily participation between 1992 and 1993 grew 58.5%.

Table 1: A comparison of recreation participation rates between 1992 and 1993.

| Average daily participation | 1992         | 1993          | '93/'92 Change | Paired t value | Probability |
|-----------------------------|--------------|---------------|----------------|----------------|-------------|
| Youth Programs              | 14.46        | 21.65         | 147.7%         | 4.63           | .001        |
| Tennis                      | 7.69         | 13.37         | 173.8%         | 6.64           | .001        |
| Boating                     | 47.51        | 75.38         | 158.7%         | 5.61           | .001        |
| <b>Totals:</b>              | <b>69.66</b> | <b>110.40</b> | <b>158.5%</b>  | <b>6.53</b>    | <b>.001</b> |

An additional paired t-test compared occupancy figures to test if a change in occupancy might have influenced usage.

There was a 3.8% increase in occupancy between 1992 and 1993 (Table 2). Though good for business, it is considered statistically non-significant. This lends support to the hypothesis that increases in recreation participation would be due to the change in pricing.

Table 2: A comparison of 1992 and 1993 occupancy rates.

|                         | 1992   | 1993   | % change | Paired t value | Probability |
|-------------------------|--------|--------|----------|----------------|-------------|
| Average Daily Occupancy | 298.95 | 310.46 | 3.8%     | 1.09           | .2765       |

To test if change in recreation usage varied more strongly as the seasons varied, a series of ANOVA tests was run comparing the daily percentage change for 1992 to 1993 for each activity and the total of all the activities.

Though recreation usage increased in every activity during every season, there were no significant differences in the rate of increase seen by each activity by season (Table 3).

Table 3: Occupancy and recreation usage comparisons by season.

|                | # Days | Occupancy |      | Youth Programs |      | Tennis |      | Boating |       | Total Use |       |
|----------------|--------|-----------|------|----------------|------|--------|------|---------|-------|-----------|-------|
|                |        | 1992      | 1993 | 1992           | 1993 | 1992   | 1993 | 1992    | 1993  | 1992      | 1993  |
| Spring         | 52     | 173       | 162  | 6.9            | 9.5  | 1.0    | 3.2  | 23.9    | 26.8  | 31.8      | 39.5  |
| Change '93/'93 |        |           | 94%  |                | 138% |        | 320% |         | 112%  |           | 124%  |
| Early Summer   | 41     | 289       | 297  | 12.2           | 14.5 | 7.0    | 13.0 | 50.7    | 88.5  | 69.9      | 116.0 |
| Change '93/'93 |        |           | 103% |                | 119% |        | 186% |         | 175%  |           | 166%  |
| Summer         | 67     | 401       | 444  | 28.5           | 47.9 | 14.8   | 26.0 | 74.8    | 124.9 | 118.1     | 198.8 |
| Change '93/'93 |        |           | 111% |                | 168% |        | 176% |         | 167%  |           | 168%  |
| Fall           | 57     | 308       | 304  | 6.9            | 7.8  | 6.1    | 8.3  | 35.9    | 53.2  | 48.9      | 69.3  |
| Change '93/'93 |        |           | 99%  |                | 113% |        | 136% |         | 148%  |           | 142%  |

### Conclusions

Indications are that resort activity usage nearly doubled in youth activities, tennis and boating when the new pricing policy went into effect. The results of this case study indicate that "all inclusive pricing" may permit resort operations to increase recreation usage of resort facilities while increasing guest perception of value.

The increases in usage took place regardless of season. Apparently the "all inclusive pricing" policy is perceived to be a value regardless of season.

It should be noted that the revenue allocated to the recreation operation in 1993 was based on the same prices charged in 1992, thus increases in usage proportionally increased recreation revenue. "All inclusive pricing" may provide a mechanism that increases recreation usage and recreation revenue while at the same time increasing efficiency by requiring fewer cash control points with their attendant costs.

From the research standpoint, this case study illustrates the impact that pricing has on the effectiveness and efficiency of recreation operations. "All inclusive pricing" provides the opportunity to optimize recreation usage without increasing investments in facility development, program expansion or advertising. Additional studies are warranted to test whether "all inclusive pricing" is beneficial at other operations.

## STEPS IN THE OPEN SPACE PLANNING PROCESS

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This paper presents the steps involved in developing an open space plan. The steps are generic in that the methods may be applied to various size communities. The intent is to provide a framework to develop an open space plan that meets Massachusetts requirements for funding of open space acquisition.

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### Introduction

Open space is being depleted across the state of Massachusetts at an alarming rate. Although Massachusetts is only recently showing signs of economic recovery after several years of recession, many communities have seen major increases in the areas of residential, and commercial and industrial development. In many communities the number of new subdivisions has dramatically escalated over the past decade. For example, Pembroke, a small community midway between Boston and Cape Cod, showed an increase of ten percent in the total housing stock over the past seven years.

Along with housing projects, many communities have also seen a dramatic rise in commercial and industrial development. Due to the economic conditions, many communities have supported incentives for industrial development in order to improve the tax base of fiscally constrained budgets. In Northampton, a mid-size city in western Massachusetts, an industrial park was proposed ten years ago to entice light and heavy industrial development in a specified district of the city. In Worcester, a large city in central Massachusetts, a "medical city" is planned. Projects will include major hospital and ancillary medical facilities, as well as biotech plants and supporting services. Communities continue to offer financial and political support to commercial and industrial developers, particularly for clustered, specialty development.

Farmland has also been depleted in areas of central and western Massachusetts. Over one hundred and sixty thousand acres of Massachusetts farmland are tended by dairy farmers. Out of eight hundred dairy farms in the state, over fifty percent have been lost in the past ten years. The main reason for this is that Massachusetts dairy farmers are receiving the same price for their milk that they did in 1978.

Farmers have recently been voicing their concerns that they can no longer afford to farm at 1978 income levels and pay for costs that have risen steadily for the past thirteen years. For these reasons, many farmers have been forced to apply for dairy and livestock buy-out programs, initially introduced by President Bush in the early 1990s. As more and more farmers decide to sell, communities should be aware that they are losing revenue, as well as aesthetic value, when each farm is sold. In fact the dairy industry contributes nearly three hundred million dollars to the Massachusetts economy annually.

In the urban areas of the state the main problem of loss of open space occurs in recreational areas. Funding has been cut back for organized sports, as well as passive recreational areas. The Metropolitan District Commission (MDC) in Boston closed down the public pools in the city in 1991 due to severe budget

problems. As inner city problems intensify, the need to preserve open space for recreational use becomes more acute.

The point is open space will continue to be depleted for housing, and commercial and industrial projects. In order to manage the growth, and still provide for recreation and open space preservation, an open space plan should be developed. The open space plan should be written as a guide for the community to follow. The plan should clearly state the parcels that should be preserved, and the parcels that should be developed for recreational use. An open space plan provides land use techniques to balance growth and conservation in a community.

Before the planning process begins, planners should determine the available allocations of funding for the various land use programs at the federal and state levels. Criteria and standards for the open space programs should be matched to the characteristics of the particular community. For example, if a community has farmers interested in applying for reduced tax abatement under a farmland program, the planner should determine the amount of funding available for farmland preservation in the state. In Massachusetts, the governor recently approved an increase in the Agricultural Preservation Restriction Program (APR) funding. Land trusts and land banking programs have also become widespread across the state. For these reasons it is appropriate to conduct a farmland inventory to determine the farms that should be recommended for the APR program. The farms should be prioritized in terms of which ones are most susceptible to development pressures.

Other land use grants that could potentially provide funding for open space planning are Community Development Block Grants (CDBG) and Urban Development Action Grants (UDAG). The availability of funding for these grants should especially be investigated if recreational activities can be linked to community development programs.

The following open space planning process steps include methodological techniques that can be applied in the specified community. The steps should be considered sequentially. However, not all the steps need necessarily be applied in each community. For example, a mid to large urban community may not need a farmland inventory. Conversely, a rural community with a small population base may not need additional recreational facilities.

The planning steps should be applied individually for each community. In this way, the planning model can be tailored to meet the needs of each community. It is also important that open space plans be revised every few years in order to take into account any changes that have occurred in the community or the region. Demographic changes showing an influx of retirees, such as Cape Cod is now experiencing, would indicate a change in services for the area. In another case, if a regional sports complex is proposed for a community, the surrounding communities should consider the impacts of the complex on their recreational needs. An illustration of this regional planning problem is occurring now in Worcester, Massachusetts. The state is considering building a major sports complex in Worcester. If the sports arena is constructed, surrounding communities will have to rethink their recreational needs. In some cases it is cost-effective to pay user fees to the nearby town, rather than building a similar complex and duplicating facilities.

### STEP I: Prepare a Community Profile

The profile of the community should include a physical geographic description, including an inventory of the topographic features, and watershed and aquifer areas. The profile should also include a socio-economic study of demographic statistics. The current demographic statistics should be classified into age and gender groupings in order to determine existing and potential needs for the town or city. Income levels and amount of affordable housing should also be collected. From these data projections can be made to determine capital facility needs for the community.

A regional perspective of the surrounding area should be included in the profile. This helps to create a complete picture of the community in terms of duplicating and sharing facilities. A capital facilities study should also be included. This study should list existing and future facilities including schools, libraries, and cultural centers. Monies allocated for future projects should be discussed.

### **STEP II: Generate A Land Use Inventory**

A land use inventory of conservation and recreation parcels should be compiled. An existent land use inventory map should be generated. The land use data should include; ownership, current use, condition, recreation potential, public access, zoning, and degree of protection for each parcel. Any public or private grants that have been awarded to the community should be listed. The most effective way to present this information is by map and matrix with accompanying narrative. These narratives should include "degrees of protection" for each parcel, deed restrictions, updated listings of lands under chapter 61, 61A & 61B and watershed protection parcels.

The required maps for the open space planning process for Massachusetts include privately and publicly mapped parcels. Privately mapped parcels include agricultural lands(61A), forest lands less-than-fee-interest, private recreation lands(61B), estates, farms not under 61A, major institutional holdings and land for available reuse.

The public and non-profit parcels that must be mapped include public conservation and recreational resources, semi-public lands, other public lands and state or federal institutions.

### **STEP III: Environmental Analysis**

The purpose of this section is to provide a description of the environmental and cultural makeup of the region. It is at this stage that preliminary goals and objectives about environmental impacts should be formulated. This is necessary to make different boards aware of any adverse effects development would have on the environmental attributes of the community. By mapping the environmentally sensitive and fragile areas of the community, it will be easier to identify them when making land use decisions.

The environmental analysis section should be divided into the following categories; geology, soils, topography, landscape character, water resources, vegetation, fisheries and wildlife, scenic resources, unique environments and environmental problems. A brief description of the geographical and environmental attributes in each category should be provided. These descriptions are necessary in order to identify any adverse negative environmental impacts that may occur with the development of expanded recreational facilities.

### **STEP IV: Community Goals**

The write up of community goals portrays an outline of what the citizens of the community value. These opinions should be used to guide and direct the articulation of the community's overall plan. These factors should also take into account the previous examination of trends and resources. This process can be completed by using surveys, questionnaires or public meetings to allow the community to voice its opinion.

When stating the goals it should be done in very general terms. It could be described as: "What the community should be and what the community should look like." The community's "ideal open space system" should also be included. This ideal model meets the variety of needs that were expressed in the community's surveys, inferred from facility use, or implied by local policies and any other existing resources protection plan.

### **STEP V: Prepare an Analysis of Need**

At this stage all of the previously acquired material should now be reviewed and analyzed to present any impacts that might result from the proposed development. This section should be a systematic explanation of what is needed to achieve the community's stated goals. The data is collected and synthesized in order to

identify potential problems. The findings of this study will indicate the possible solutions to the problems. Any solution that the community has proposed should also be included in the findings.

The analysis of needs section should also include a summary of resource protection needs. The statement must be backed up with data from environmental inventory of public and private lands of conservation and recreation interests. Gaps in existing trails, greenways and linkages to major resources in adjacent communities should be noted. Data on recreation and conservation needs from the Community Setting section should also be noted.

### **STEP VI: Develop Goals and Objectives**

This step involves expanding on the Analysis of Need section and the Statement of Community Goals to create a comprehensive set of goals and objectives. In this stage describe the present goals and objectives and include any previously stated ideas.

It is important to distinguish between what are considered general concepts and ideas, with actions for accomplishing intended goals. Throughout this part of the planning process, the planner must be aware that goals and objectives may be altered several times due to changing needs.

### **STEP VII: Draft a Five-Year Action Plan**

A yearly timetable for specific actions to accomplish the objectives listed previously should be established. This process clearly identifies the priorities of the plan, and provides background to support the plan. This is important for public hearings and town meetings when citizens question the feasibility and effectiveness of the plan.

The five year action plan should avoid long lists of actions presented in a random order. If the goals are presented in a specific order, it helps assure that those with top priority will be addressed. There should be flexibility provided within the time table of when the actions occur. This is important because, for example, a property may be put on the market earlier than anticipated.

Each year the Open Space Plan Advisory Committee should evaluate implementation of the previous year's actions and revise the Action Plan accordingly. This will make the formal five-year update a more workable task.

### **STEP VIII: Solicit Public Comments**

A letter of approval is required only from the Division of Conservation Services. The Open Space Plan itself must be distributed to several different boards and officials. This includes chief elected officials, boards of planning, health, appeals, recreation, and conservation commission. A dated distribution list and any comments received from the plan must also be submitted.

### **Required Maps**

The following five maps are required in order to meet the Massachusetts requirements for funding. Each map should include the indicated attributes if applicable to your locality.

- The Special Landscape Features map should display scenic, cultural, historical and architectural resources, geological features, chapter 61, 61A and 61B parcels and soils.
- The Open Space Map should present public conservation, recreational resources, semi-public and APR lands.
- The contents of the Water Resource map should include the location of any aquifers, surface water, watershed or water supply areas and wetlands.
- The Zoning map should indicate zoning of all the parcels in the town.
- The Five-Year action map should illustrate the effects that the successful completion of any projected development or conservation restriction would have on the town.

## References

All reference documents and experts consulted in preparing the community's Open Space and Recreation Plan should be cited. There are many planning agencies; such as regional planning agencies, local planning boards and commissions, that are helpful in gathering information for the Open Space Plan. Interviews with planning boards, select boards, planning commissions and citizens should be conducted. The Open Space Planner's Workbook lists resources to contact. These include local land trusts, Offices of Environmental Affairs, Department of Environmental Protection, Historical Commissions and different sources for technical and planning assistance.

Other data sources include tiger files, census data and SPSS (Statistical Package for Social Sciences) on computer software. Town reports, previous open space plans and master plans should also be reviewed. Assessor's maps, land use maps, soil conservation service maps, and G.I.S. maps for the community should be reviewed. Surveys and questionnaires concerning the community should be updated and analyzed.

## Conclusions

In conclusion, the need for open space plans is becoming more critical. As the third most dense state, Massachusetts is continuously facing the depletion of open space. The open space plan is effective in protecting remaining open space. It is also a useful tool in long range planning to maintain and improve the character and aesthetics of the community. Since open space parcels include conservation, recreation, agricultural, park, buffer and conservation areas, the process sets future land use patterns and trends. The open space plan sets a framework for overall sound planning for the community.

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# NATURAL RESOURCE MANAGERS: THEIR ROLE IN INTERNATIONAL TOURISM AND RURAL DEVELOPMENT

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Though our wildlands are important destinations for international visitors, little is known about their activities or influence on local economies. This paper encourages resource managers to assume leadership for developing an international tourism strategy for our wildlands by packaging lesser known wildland attractions as regional complexes to attract tourists.

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## Introduction

The United States had a merchandise trade deficit (imports of televisions, cars, etc.) of \$101 billion in 1990 (Eckhouse 1991). This is not surprising, because the deficit has persisted since 1975. Nevertheless, a surplus in service trade exports has persisted since 1969, tripled since 1986, and amounted to \$31.7 billion in 1990 (Eckhouse 1991). Furthermore, this amount is considered conservative by 50 percent, because many services, such as fees for technical advice or computer software, are difficult to track.

A service export has been defined as the transfer of foreign funds to the United States for a service rendered (Eckhouse 1991). Thus, a foreign tourist purchasing a ticket on a U.S. airline, or a foreign ship paying a docking fee at a U.S. port are examples of service exports. The ticket price or the docking fee represents foreign currency coming into the United States. Trade imports are just the opposite--a transfer of U.S. dollars to other countries for their products and services. When trade imports exceed exports, a trade deficit occurs, but a trade surplus accrues when exports exceed imports.

What do service trade exports have to do with the management of natural resources? Tourism is the largest category of U.S. service exports. Foreign tourism and travel on U.S. carriers accounted for nearly \$53 billion in 1990, and the surplus attributed to tourism amounted to nearly \$2 billion--the first tourism surplus ever (Eckhouse 1991). The service export surplus contributed to a reduction in the total trade deficit.

Over 50 percent of the 40 million foreign arrivals in the United States in 1990 were on vacation, and another 30 percent combined vacation with business (O'Leary 1991). Many foreign visitors are attracted by the likes of the Golden Gate Bridge, Disneyland, Las Vegas, and Washington D.C. (Eckhouse 1991), and much of their expenditures result from such visits. In addition, National Parks, National Forests, and other wildlands are important destinations for international visitors (Uysal and others 1990). Very little is known, however, about foreign use of wildlands and their importance has been generally overlooked (Andereck and others 1988; O'Leary 1989; Uysal and others 1990).

Visitor logs and field observations suggest that use of wildland recreation areas by foreign visitors is substantial (Simcox and Pfister 1990; Machlis and Wenderoth 1984). Therefore, it is reasonable to expect National Parks, National Forests, and similar areas to contribute to the service export surplus associated with tourism, and to the reduction of our overall trade deficit. The contributions could be greater if resource agencies were to encourage international visitation to our wildland areas.

This paper describes how wildland areas can be packaged for international tourists as a benefit to local communities and our national economy, and it offers an example from a wildland area in California. In addition, it directs resource managers to take the initiative for bolstering community endeavors to increase international tourism.

## Increase International Tourism

The USDA Forest Service and, possibly, other resource agencies have a policy for "working with rural people and communities on developing natural resource-based opportunities and enterprises that contribute to the economic and social vitality of rural communities" (USDA Forest Service 1990, p. 5). Increasing tourism, especially international tourism, in rural America fits the policy. Because all tourists spend money for lodging, food, transportation, guided tours, entry fees, and souvenirs, tourism contributes to local economies and may surpass traditional industries in its contribution. For example, agriculture is the leading industry in Riverside County, California, but tourism is the fastest growing industry -- contributing three times as much money as agriculture in the Coachella Valley (Sally 1991). If tourism can bolster the economy of this agricultural community that is surrounded by desert, think what it could do for rural communities adjacent to attractive natural resource areas--particularly communities with a slow rate of growth and high unemployment.

The Canadian Park Service, Tourism Canada, and Statistics Canada have worked to obtain information about international travel, but U.S. natural resource agencies have made little if any effort to explore foreign markets (O'Leary 1991). Our "marketing" is aimed at domestic tourist dollars. While attracting U.S. tourists brings new money to rural communities, it fails to bring new money to the country or to help fight the trade deficit.

Resource agencies should join forces with organizations concerned with tourism and market lesser known areas (O'Leary 1989). Obviously, National Parks, such as Grand Canyon and Yellowstone; Lake Tahoe, on the border of California and Nevada; and ski areas like those at Aspen, Colorado, are well known to international visitors. Many other high quality, but "lesser known" areas, however, are capable of attracting foreign tourists, provided they are marketed effectively. From a Forest Service or Bureau of Land Management perspective, lesser known areas may mean nearly all of the lands they manage.

A majority of international visitors regard our National Parks and National Forests as the "key advantage" the United States has in the tourism market (O'Leary 1989). Therefore, why have not natural resource managers developed an international perspective about recreation and tourism? Resource agencies are not known for their innovation, have little visitor management, and have employees who would "like to see visitors stay home" (O'Leary 1991). These conditions reflect known attitudes and behavior of resource professionals that should be changed (Magill 1988), particularly if marketing of foreign visitors is to succeed.

## Clustering Resources for Foreign Tourists

Taken individually, many natural resources and related cultural and historical attractions have relatively common appeal, that is, they may attract local people, possibly a regional clientele, and even some visitors from across the nation. The numbers of visitors can be expected to decline, however, with increasing distance from the attraction; and the number of international visitors is likely to be small to nonexistent. As a specific example, the Ancient Bristlecone Pine Forest, located in the White Mountains on the Inyo National Forest at the eastern edge of California, is accessible by motor vehicle over a route designated as a National Forest Scenic Byway. The forest contains specimens of the earth's oldest living trees growing above 10,000 feet of elevation. The area has spectacular views of the eastern escarpment of the Sierra Nevada and the Owens River Valley 6,000 feet below -- a photographer's dream! It also holds wonders for those interested in ecology, geology, and wildlife. Nevertheless, it is remote, and visitation is low. In fact, foreign

visits to the Inyo National Forest are nearly nonexistent (0.2 pct) with the majority of tourists coming from California (Lee and Brown 1991). The frequency of foreign visits may be a little larger, because people staying at motels and resorts were not counted.

The ability of the Ancient Bristlecone Pine Forest to draw from a greater pool of tourists, including international tourists, may be

enhanced by grouping or "clustering" it with other local attractions on the Inyo and Toiyabe National Forests and surrounding areas (Figure 1). Such a regional complex would offer a comprehensive vacation experience competitive with other tourist attractions (Murphy and Keller 1990, Wall 1989). The "Inyo Complex" may be attractive to international tourists through effective marketing.

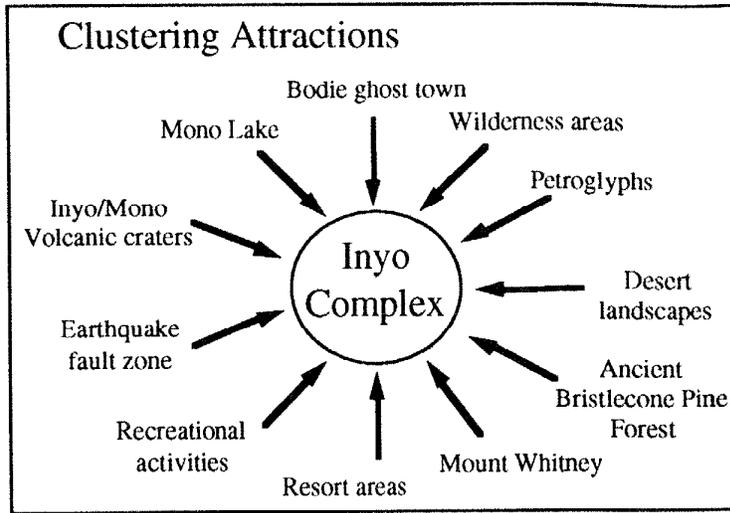


Figure 1. The Inyo Complex. Individually, many wildland attractions have relatively common appeal, but their attractiveness can be significantly enhanced by clustering them to offer a comprehensive vacation experience.

A tour of the Inyo Complex might start from airports at Reno or Las Vegas, in Nevada, or Ontario, Fresno, or South Lake Tahoe, in California (Figure 2). Buses could carry tourists north from Ontario or Las Vegas with options to visit Death Valley National Monument, the Inyo Complex, and Yosemite National Park, Lake Tahoe, or Reno, and naturally the order could be reversed. Regardless of the arrival or departure points of the tours, several days could be spent at the heart of the Inyo Complex -- in the

towns of Bishop or Mammoth Lakes -- from whence satellite tours could originate. One might think that tourists would be unwilling to ride a bus to Mammoth Lakes from Ontario or Las Vegas. Yet, according to a bus tour director, her group had traveled from Palm Springs through Mammoth Lakes to the Mono Lake Visitor and was departing for Yosemite. Palm Springs is more distant than Las Vegas by about 30 miles.

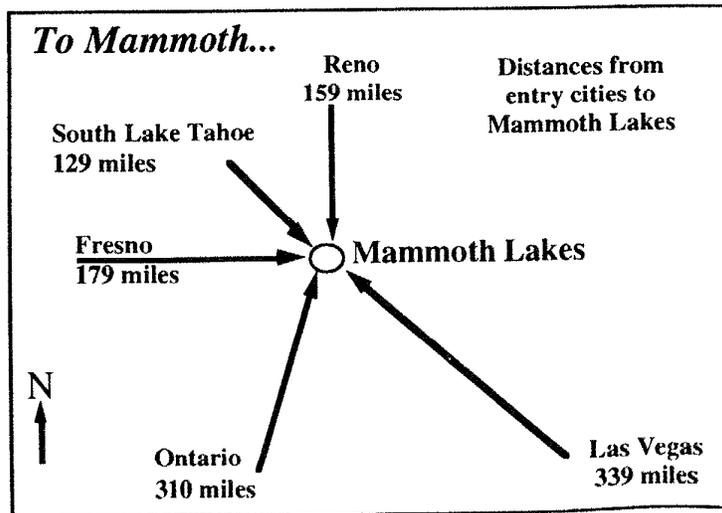


Figure 2. Mileage from entry/departure airports to Mammoth Lakes, California.

## Marketing Our Wildlands

On the surface, increasing international tourism by marketing clustered natural resources may seem implausible. The skiing industry, however, found international visitors to be "inquisitive and curious once they get to the United States" (O'Connell 1992). They like the "Have-a-nice-day" attitude of businesses, the quality of our "average" hotel room, and the perception that "everything works." Now, the skiing industry is promoting tourism by marketing "the history, culture and the uniqueness of each part of the United States" to international visitors, and is suggesting that international tourism can be increased only if its members join forces. This approach seems plausible for other tourism-based businesses and communities. In this light, "The Inyo Complex" may be a feasible tour package, but it may not be easy to establish.

Recently, an informal group called CURES, the Coalition for Unified Recreation in the Eastern Sierra, was formed by representatives of local businesses; special interest groups; chambers of commerce; Federal, State, and local government agencies; and a visitor bureau. Its purpose is to improve tourism and recreation services in the eastern Sierra region of California. Even though CURHS provides the kind of organization needed to make an Inyo Complex feasible, its marketing and other information is being focused only at domestic tourism. Considerably more effort will be necessary if the program is to entice international visitors.

## Some Marketing Concerns

Marketing is a process aimed at identifying what people want and providing it for a fee. In essence, the skiing industry has shown that foreign tourists do aspire to vacations in the United States, especially after an initial visit (O'Connell 1992). Previously unrecognized interests of foreign visitors include forests, beaches, natural wonders, ruins, and cultural diversity, along with opportunities for gambling and shopping (Edgell 1990).

Some will question the marketing of our outdoor recreation resources. Yet, fragile and scarce resources may be protected through sound marketing that leads tourists away from easily damaged locations and offers experiences more attuned to their expectations for resource visitation and support service (Knopf 1990). Providing tourists with opportunities and services in keeping with their social orientations and dependence on facilities, may make tourism more acceptable to environmental groups that seek protection of fragile resources. In addition, marketing scarce resources for tourism has the benefit of promoting wise use by informing visitors of the need to "protect the integrity of our most threatened and vulnerable environments," and giving them some opportunity to experience something new (Knopf 1990, p. 61). In this manner, tourism may serve as an interpretive tool to foster international environmental conservation.

Local people may object to the increased crowding, traffic, and competition for resource use. Thus, for tourism to be successful, support of local residents is essential (Keogh 1990). On the other hand, locals see the obvious benefits of tourism (jobs and income), and also may regard improvements in infrastructure and services as benefits to themselves as well as to tourists (Keogh 1990). Establishing and marketing tourism complexes may not only increase service exports and help reduce the nation's trade deficit, but offer hope to "bolster sagging rural economies" (Knopf 1990). Clearly, local people must be involved in planning and development for tourism.

## Attitudes and Resistance to Tourism

People with a variety of interests--businesses, chambers of commerce, environmental groups, local citizens, and governmental agencies including natural resource managers--must interact and establish commonalities for a tourism complex to be established, marketed, and serviced. Therein may lie the most difficult problem--communication, especially between natural resource managers, the professionals in tourism with whom they must work, and the publics both serve. Furthermore,

the communication problem may not rest entirely with resource professionals; people in tourism businesses may contribute as much to barriers to effective interaction as do resource managers.

Travel agents, brochures, and pamphlets are important sources of information for international travelers (O'Leary 1989), yet travel agents tend not to contact resource managers to obtain or verify information (Pfister 1992). Consequently, tourists may appear without warning, and managers may not be prepared to provide services expected by the tourists. This situation suggests that travel agents, who one would expect to have a strong social orientation, may be as reluctant as resource managers to initiate interactions necessary to verify itineraries. Of course, travel agents simply may not know where to obtain some of the information they need.

## Whose Job is It?

"Managing for recreation is complicated" (O'Leary 1989, p. 13). Managing for tourism, however, may be more "complicated" as a consequence of the complex interactions needed to plan, market, and service tourists. The complexity associated with the interactions of many different people and groups may present abstract problems with no correct formulation, no evidence to indicate when solutions are found, and no test for objectivity--problems termed "wicked" by Allen and Gould (1986). Also, considering that resource managers do not deal well with abstract problems, are predisposed to autonomous action, and are disinclined to initiate social interaction (Magill 1991), the outlook for developing international tourism on our public lands seems bleak.

"Wicked problems" may grow as interactions become more frequent among people who provide travel services. Any of them may feel a reluctance to interact with others even though working with people is an integral part of their business. Resource managers, on the other hand, are more inclined to perceive their job as managing and protecting resources (Magill 1988), thus they are less likely to start the interactions necessary to increase tourism on the lands they manage. Obviously, somebody must assume leadership if efforts to increase resource-based tourism are to commence, let alone succeed.

Assuming leadership of the diverse assemblage of people needed to increase international visits to wildlands seems an unlikely role for resource managers who are known for their affinity to deal with "things" rather than people. Nevertheless, it is because of their unique knowledge of natural resources and familiarity with specific areas, that they may be ideal champions for the effort. Thus, to gain the "edge" needed to assume leadership of a resource-based tourism program, resource professionals are advised to develop greater sensitivity to public opinion, obtain more training in the social sciences, avoid using technical jargon in public speaking and writing, use language appropriate for the public, and seek improved career guidance for prospective students (Gallagher 1988; Gallagher and Patrick-Riley 1989; Magill 1991). In addition, they should obtain knowledge of the cultures of prospective international visitors and offer them some familiar situations thereby avoiding unfavorable interactions and making themselves better hosts.

Over the past decade, a change has occurred among the professional disciplines of some natural resource agencies. The ranks of the biological and engineering professionals have been infiltrated by persons from socially oriented disciplines--sociology, archaeology, anthropology, social psychology, and political science. These people are contributing new viewpoints to the traditional scientific perspectives of natural resource professionals. These "new ways of thinking" may contribute substantially to the awakening of resource professionals to abstract approaches for solving problems, and for serving people--be they U.S. citizens or foreign tourists.

## Conclusions

Responsibility for establishing the relationships needed for effective communication among people in the tourism industry and natural resource management may rest with natural resource managers. They already have a specific responsibility to support government programs that encourage the economic and social development of rural communities. Though less obvious to managers, they also should contribute to efforts to reduce the nation's trade deficit. Both goals may be served through increased visits by international tourists to our public lands.

The tourism industry is unlikely to feel any responsibility to foster either rural areas development or trade deficit reduction without external encouragement. They are, after all, in business to earn a profit. Therefore, natural resource managers may need to set aside their reluctance to public interactions and take leadership in garnering support for a tourism strategy for our wildlands.

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## ENVIRONMENTAL FACTORS IN GOLF

### COURSE DEVELOPMENT: A CASE STUDY

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Environmental constraints become apparent when one considers the maintenance and operation of a golf course. The high demand for water, proximity to surface or ground water supplies and the potential threats by the perpetuation of the grounds. This investigation of a new golf course construction site will identify the threats to the environment.

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#### Introduction

Every year, another 350 or so new golf courses are created in the United States to help meet the growing demands of the nation's 27 million golfers. The country's more than 14,000 golf courses currently cover 13.2 million acres (Kuznik 1993). These sites are often selected for their natural characteristics. According to the last Massachusetts State Comprehensive Outdoor Recreation Plan (Smith et al. 1988), nearly 7% of the residents indicated that they participated often in golfing. Golfers typically participate 24 times a year and travel an average 15 minutes to the course. Most golfing occurs on the weekends (SCORP 1998). Despite the nearly 400 courses in Massachusetts, the high relative demand for golf courses has caused the SCORP to identify golfing as second in the State Need Rank, following tennis court construction. Warnick (1991) has studied golfers in New England and found the market share to be different from the national trends. For example, although popular, nationwide trends indicate a propensity to utilize country clubs over the public ones. Regionally, golfers utilize the private and public facilities more equally.

In Southwick, Massachusetts, there are currently two golf courses (the Edgewood Golf Course, Inc. and the Southwick Country Club) and one driving range (the Longhi's Driving Range). In the near future Southwick will also have a new golf course, to be created on an existing dairy farm. The impacts of this new golf course and the already existing courses bring up issues of clear cutting, erosion, siltation, effects on nearby streams, aquifer protection, the flood plain, and wetlands.

Early golf course architecture traditionally tried to work with the shaped of the land. Then in the 1960's, builders began moving a lot of dirt around, trying to create unique looks. At many courses, native understory and woodlots were replaced by huge growths of grass and beds of ornamental and exotic plants. Vast amounts of water were required to maintain those large expanses of open turf. The average golf course uses more pesticides, herbicides, fungicides, and fertilizer per square foot than any farm in America. This may create an over burden to the land's filtering ability to chemicals before drainage reaches the water supply, for example, Southwick's aquifer. The National Golf Foundation says that between 500,000 and 800,00 gallons of water per day per course is needed for the upkeep of these layouts (Kuznik 1993). Such a drain on the natural water supply system in any community is a matter for investigation.

Traditionally, golf course construction averages \$3 to \$6 million, with higher quality and environmentally sound courses averaging \$10 million. According to Laurence Hirshman, President of the

Society of Golf Appraisers, these initial construction costs take an average of twenty-five years to pay for themselves (Hirshman 1993). Therefore there is no great monetary incentive to build the more expensive version. There is no question that public golf courses can make money, they are also good neighbors and can be politically desirable additions to a community. After all, courses are labor intensive and can require a minimum of 145 employees for operation and upkeep. The tax revenue would be a boost to community funding deficiencies, but environmental factors, if ignored from the onset, could cost communities in the long run.

#### Background on Environmental Factors

From the standpoint of investigation, a proposed construction site of any kind, and in this instance, a golf course construction site, the surface of the Earth is comprised of a complex interface where there are four principle components of the environment to be considered. The solid, inorganic portion of the earth's sub-structure is the lithosphere, comprised of the rocks of the Earth's crust as well as the broken and unconsolidated particles of mineral matter, the soils, that overlie the unfragmented bedrock. The vast gaseous envelope of air that surrounds the Earth is the atmosphere. The atmosphere encompasses the climatic factors of wind, precipitation, temperature, and seasonal attributes. The waters of the Earth, consisting of oceans, lakes, rivers, and glaciers, compose the hydrosphere. The hydrosphere is entwined with the other spheres to supply life giving moisture. Finally, all living things, plant and animal, collectively comprise the biosphere. These four spheres, when under study, are not discrete but are considerably intermingled. Consider the composition of a lake. This body of water from the hydrosphere also contains organic life forms that are a part of the biosphere. Soil, for example, is composed of largely bits of mineral matter (the lithosphere), but also contains life forms (biosphere), soil moisture, (hydrosphere), and air (atmosphere) in pore spaces. Thus, lithosphere, atmosphere, hydrosphere, and biosphere are not separate systems within a site analysis, but are more properly considered as components of the total environment.

Because of these environmental factors, the U.S. Environmental Protection Agency has developed policies to analyze a projects' responsible land stewardship needed on golf course development and maintenance. For example, the United States Golf Association (USGA) has granted the Professional Golf Association of America \$400,000 for the analysis of the impacts on a golf course located in South Carolina (Kuznik 1993). Studies of this kind are being conducted all over the country. The environmental impacts of maintenance are secondary considerations. The construction of the course must be analyzed first. After surveying of the site has been completed from the air and field work, the site planning begins. Natural land formations, wetlands, waterways, vistas, historic points of interest, and so forth are developed into the plan. Today, sites are pre-selected to capitalize on unique topographic features. This eliminates the need for extensive landscaping techniques. Natural features and attractions of a site become the allure of a course.

#### Lithosphere

Soil analysis has now become very important when considering placement of the manmade features of a golf course. Clear cutting, erosion factors, drainage patterns, and siltation all need to be considered. Because the lithosphere is linked to all other spheres to be considered any impact must be cross-checked to predict consequences to other spheres. For example, excessive erosion from clear cutting may irreversibly harm nearby streams and groundwater. Habitat lost during clear cutting may also impact native species that are part of the course's future uniqueness. Disturbance of drainage patterns may have reverberations to other spheres as well. Analysis of a site has to be checked against every sphere for the interconnectedness of every step into every realm for the consequences of each step.

#### Biosphere

The distribution of plants and animals reflects evolutionary adaptation, migration competition, and reproductive changes over

time. Extermination and extinction are hidden threats to any landscape. Wildlife habitats are usually very sensitive to construction processes and must be protected during the site plan development, before the construction of a course has damaged them beyond repair. Jim Snow, as an USGA official currently funds \$2 million a year in environmental research (Kuznik 1993) to study these impacts and how to mitigate them. More than 600 golf courses have enrolled in the Audubon Cooperative Sanctuary Program, an environmental advisory service operated by the New York Audubon Society to help preserve special areas at the onset of a project. The American Society of Golf Course Architects recently pledge to design future courses following Audubon guide lines. "The involvement of all of these institutions shows that people are starting to see that they can have good quality playing areas and also create little pockets of habitat," says New York Audubon President Ron Dodson (Kuznik 1993, 36). These organizations are all beginning to work together instead of being adversaries who do battle over the environment. Golf courses offer each party incentives worth working toward while the creation of the site plans opens these areas to public use.

### **Hydrosphere**

The PGA hopes to foster similar changes in attitudes. PGA spokesman Ron Kendall believes, "As long as they obey the laws, people have a right to develop private property. If we are going to continue to build and maintain golf courses in this country, then we must protect the environment at every step of the process (Kuznik 1993:37)." The hydrology of a site is critical to life in the biological sphere of the course to be developed as it is to the humans who share these resources in the area. Water is the factor which links the four subsystems of the Earth. Its importance to life on the surface cannot be over emphasized. Wetlands serve a purpose to the life that it supports, but can be utilized for the further benefit of a golf course in the form of a water source if planning is carefully calculated. Groundwater is perhaps the most mysterious of all storage areas for water because we cannot see it during our daily lives. The proximity to surface or ground water is imperative to turf management and these supplies have to be protected as do other water bodies in an area. Groundwater can be depleted beyond its ability to replenish itself and precision is of the utmost significance when placing septic systems and when designing chemical storage and usage. If the local water supply becomes contaminated during the construction and further upkeep of a golf course through poor planning, of what worth will the course hold down the road. Contaminated water will not make the course easy to maintain to say nothing of the detraction to future users. Wildlife, both animal and vegetation, will not be able to withstand changes to its' water supply, so consideration of all impacts to the hydrologic sphere must be of great importance to the site development.

### **Atmosphere**

Finally, every one of the other spheres have developed under the influence of the atmosphere. It is this sphere that is responsible for certain characteristics of the soil composition, the vegetation, the animal populations, and the water conditions of a site. When taken into the calculations for a golf course, the atmosphere envelopes existing conditions and future conditions. The position of the sun will influence the growth of the vegetation and also the maintenance of the grounds. The climate of an area will influence the amount of natural sun and water that will be contributed, as well as how many playing days can be expected. These climatic changes in the seasons will layout the pattern of its average temperature, rainfall, and influence maintenance practices. The wind created by the direction and intensity of the pressure fields of the atmosphere extend into play when it comes to helping to shorten the drying time after rain storms, influence the daily weather, and will influence the use of airborne chemicals for the subsistence of the course. Another condition created by the climate is humidity and it can greatly effect the degree of comfort experienced by the users of the course and may change a sunny day of golf into a day to stay at home.

### **Massachusetts Golf Trends**

#### **Southwick's Newest Golf Course**

Golf legend, Sam Snead and California architect, Robert Muir Graves have teamed up to design a proposed \$7 million "championship caliber" 18-hole golf course on the 330-acre Sunnyside Ranch dairy farm owned by the Hall family (Graves 1993). There are plans to convert present structures (two residential homes and barns) into the golf pro shop, locker rooms and a restaurant. The bulk of the land will not be radically altered according to David Hall, the developer. Both Snead and Graves are famous for being naturalists and like to work with the topography of the land instead of creating artificial hills and obstacles. The crossroads that the Halls have come to is one dairy farmers throughout the region and New England increasingly must face. Sunnyside is one of the five remaining farms in Southwick, a town once renowned for its remarkably rich soil, a town that in the early 1800's counted farming as its top industry (DiLorenzo 1994). For many farm families today it has become nearly impossible to preserve the lifestyle that has sustained them for generations.

Snead, Graves, and Ed Bignon, former vice-president and chief operator of the Arnold Palmer Golf Management Company, will attempt to design a playable championship course in its natural setting of meadows and forests. With minimal landscaping, this property offers extensive views of the East Berkshire mountains and has eastern exposure for sun light drying of the course throughout the year. The main goal of the group is to offer a profitable recreational facility to the public without changing any more of the land than is necessary to build the course.

**Lithosphere.** The soil is comprised of Wethersfield-Mekesville types. These soils consist of characteristics that are shallow to bedrock, well drained to moderately well drained soils with hardpan under 15% slopes. This will work well with management techniques for the course maintenance, but it also brings into consideration Southwick's Great Brook aquifer. Septic systems, herbicide and pesticide usage, and the creation of wetlands for habitat might run into problems with this type of soil. Well drained soils will necessitate the development of septic systems which can operate efficiently and filter out wastes before they contaminate the aquifer. Herbicide and pesticide usage will need to be used as supplements to organic methods of turf management in order to reduce possible contamination during these practices. Wetlands construction will need to be located in soil areas less prone to natural drainage, otherwise they will be dry most of the time. This would eliminate any thought of using water from these areas for irrigation.

**Biosphere.** There are many biological issues to be directly dealt with on this 330-acre site. This project site provides habitat for wildlife of a wide range of species. This wildlife includes migrating Canadian Geese, native wild turkeys, redtail hawks, and over sixty other bird varieties including songbirds, owls, other game birds, such as pheasants. The Massachusetts Audubon Society has been advising the plan designers as to the creation of alternative habitats and protection of existing habitats here. The Hall family has also discussed the donation of 50 acres to the Society to help with the advancement of species in this sphere, such as trying to make feeding grounds more enticing to the migrating geese than the course grasses. This will be quite an endeavor for geese flock to good feeding grounds and over crowd them until the bounty is gone. The reintroduction of endangered or threatened species of birds, such as the Bald Eagle, the American or peregrine falcons, may also become part of the project.

This habitat created will provide undisturbed homes to the whitetail deer, red and grey foxes, assorted moles, mice, squirrels, rabbits, and others such as, opossum, woodchucks, and raccoon, as well as other species natural to the area. The vegetation consists of second growth forest and pasture with wetlands created in areas convenient to the traditional farming practice on the property. Maple, pine, oak, and birch trees are found abundantly throughout the property along with various berry

bushes, laurel, dogwood and fern plants are also in abundance (Cortell 1980).

The Southwick Conservation Commission will be an active participant in the planning (O'Brien 1992), for these and issues of wetland protection, soil erosion, waterway protection, aquifer recharge, and other issues. The designers have tried to anticipate problems by involving organizations in the area and addressing their concerns before they begin. By taking this approach they hope to plan better for the course development and to handle problems in the early stages instead of being blocked by an environmentally concerned group at some future stage of development. This will surely help with the public relations and support of the project because any problem unforeseen by design will not become hindrances by concerned groups in the advance stages. After issues of the biosphere are identified and endangered or threatened species, if any, are recognized, issues of the lithosphere, atmosphere, and hydrosphere must be considered.

**Hydrosphere.** Organic methods of turf management would decrease any impact to the aquifer, especially in the borderline areas in question. Located within the borders of this property are streams which connect with other tributaries in the large water system of the area which eventually impact upon the water supply of the area which is already taxed by Southwick's water usage and by the towns of West Springfield and Westfield (Water Resource Commission 1968). There would also be a minimal effect on surface waters, both existing and those to be created, if organic methods were practiced. The hydrologic sphere will be impacted, in the construction plans, which calls for the relocation of the current wetlands and the creation of some 20 acres of wetlands. This will be allowed under the Wetland Protection Act because the wetlands were created by the farming practices of a great many years ago and are considered manmade not natural wetlands. The Wetland Protection Act (WPA) allows for these areas to be adjusted to land use due to the fact that their creation was to promote farming practices of a time before the WPA went into effect. Above ground storage of fuels and chemicals in a protective manner would also be recommended.

**Atmosphere.** The atmospheric aspects of the environment are ideal for the proposed golf course as they were for the former farming practices. The climate will allow approximately 165 days of playing season. The eastern exposure to sunlight will allow for quick drying of the course after rain storms and prevailing winds will also quicken the drying time of the greens. The winds, however, will preclude airborne spraying techniques in some areas of the course due to neighboring residential development. As the winters in this climate tend to be cold and with a medium degree of snowfall, other options can be explored to utilize the course in off season time periods. Cross-country skiing or another low impact use could be open to the public and therefore make for a more constant revenue producing site. Rainfall will be plentiful in the Spring of most years, but constant watering is a good possibility in the hot, humid summer which could otherwise damage the greens by overdrying them.

### Conclusions

There are beneficial economic objectives to be obtained from the proper construction of another golf course in the community of Southwick, such as, tax revenue, employment opportunities, and a hopeful ripple effect to other businesses in the Town. Recreation planning is a process that relates the leisure time of the people to space. This process results in plans, studies, and information that condition public policy and private initiatives used to provide leisure opportunities. In the broadest sense, recreation planning of this type is concerned with human development and the stewardship of the land. It helps the people relate to their environment and to each other. In a narrow sense, recreation planning is most concerned with the variables of leisure behavior and open space.

Concerns about the natural preservation of this area as open space, is also of importance to the public because it helps to reduce residential development in this area of town and helps to maintain the rural character of the community. The historic significance of the four generational farm will be maintained by the barn which reads "Sunnyside Farm" and the location of a historic inn site with a scenic view in two directions.

Emerging in many communities is an emphasis on citizen participation in the planning and design process, environmental and social impact assessment, the necessity for cost-effective investments, and the requirements of special populations. This emerging emphasis blends environmental design, social science, and public administration to provide leisure opportunities. Serious consideration of performance criteria, precedence and practice need to be incorporated into a long range, comprehensive, and policy oriented plans. Elements of this plan should identify problems, present relevant information on the implications of a project, and include problem solving alternatives listing expected results. These alternatives need to be listed in terms of economic, social, environmental, and political feasibility.

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# ATTITUDES TOWARD SUSTAINABILITY AND REGULATION OF STRIPED BASS BY CHATHAM FISHERMEN

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Striped Bass are a varying source of income for 131 Striped Bass commercial fishermen from Chatham, Massachusetts. For some it is the main source of income until the harvest limit of 238,000 lbs. is reached, then alternative fisheries must be sought. The purpose of this descriptive study was to investigate licensed Chatham Striped Bass fishermen beliefs about the sustainability of Striped Bass fish stock and attitudes toward regulations of the fisheries. No significant statistical differences in beliefs about sustainability or attitudes toward regulations could be discerned between those commercial fishermen who rely on Striped Bass as their primary source of income and those who don't. Chatham commercial Striped Bass fishermen are generally positive in their beliefs about the sustainability of the bass and attitudes toward regulations, but believe that harvest allotments could be increased and that greater coordination is needed with other states.

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## Introduction

The harvesting of the Striped Bass (*Morone saxatilis*) gained early prominence as a commercial fish and more recently as a sporting fish. The largest population of this species migrates yearly along the Atlantic coast from the Chesapeake Bay to Massachusetts. Over the years the sporting qualities and demand for this fish as a seafood delicacy resulted in over harvesting; fisheries management was subsequently introduced which imposed regulations governing size (minimum of 36") and season (determined by total weight harvested). Other regulations have focused on the licensing of harvesters. All Striped Bass fisherman, sport or commercial, who wish to sell their catch are licensed. Families may also obtain a permit to catch and keep one fish per week for personal consumption. Because of the demand for the Striped Bass by both sportsman and those who depend on it for their livelihood, conflicts have developed. Commercial fishermen believe they should have prominence over sportsmen and be able to increase their total catch. The harvest allotment is currently limited to 238,000 lbs. per year. Little is known, however, about the attitudes of these commercial harvesters regarding the sustainability of this fishery or their views toward the regulations that have been implemented.

The purpose of this research is to examine the differences in attitudes toward the sustainability of the Striped Bass and management regulations between those who are licensed full-time commercial fisherman and those who are licensed but considered to be part-time because they do not depend on the fisheries as their primary source of income. Two research questions drive the study: 1) what are the attitudes of licensed fisherman toward the sustainability of the resource stock and their attitudes toward the current regulations; 2) are there differences in attitudes between commercial full-time and those labeled as part-time anglers toward the sustainability of striped bass.

## Methods

A mail questionnaire was sent to a census sample of the 1993 Striped Bass license holders of the town of Chatham, Massachusetts. This list of license holders was obtained from the Massachusetts Division of Marine Fisheries. The list consisted of 131 names and addresses. A single mailing to license holders was used due to the limited budget of the researcher. Included in this one time mailing was a cover letter, the survey questionnaire, and a self-addressed stamped envelope to return the survey. The fishermen were questioned about their opinions and attitudes toward the sustainability of Striped Bass, attitudes toward regulations, and their support for increases in minimum size and harvest allotment. To distinguish between full-time commercial fishermen and part-time fishermen, who may sell their catch commercially, a question was asked about whether the respondent's harvest of Striped Bass was the main source of their income during the bass season. Responses were analyzed using StatView statistical package.

## Results

Of the 131 surveys mailed to Chatham license holders, three of the surveys were undeliverable due to an invalid address. Eighty one of the deliverable surveys were filled out and returned, representing a 62 percent return rate.

Approximately twelve percent of the respondents indicated that the harvesting of bass was the main source of their income during the Striped Bass season. 87.7% responded that it was not the main source of their income, even though they were licensed to sell their catch commercially. Twenty five percent of the respondents had been Striped Bass fishing 10 years or less, 21% have fished between 11 and 20 years, 28% have fished 21 to 30 years, and 27% indicated they had been fishing 31 to 60 years.

## Decline of Striped Bass

Approximately 46 percent of the respondents believed Striped Bass were declining, almost 40 percent disagreed (Figure 1). This indicates a generalized split in opinion among the commercially licensed Striped Bass fishermen

## Current Rate of Harvest and Species Sustainability

Figure 2 indicated that about two thirds (64.2%) of the respondents believe that if the current rate of harvesting is sustained, future populations of Striped Bass will be assured. About a quarter of the respondents disagreed. Comments from respondents indicated that many believed increased harvests could be supported.

## Current Regulations

Three out of five (59.6%) of the respondents believed that with the current regulations enforced, the future of the fish will be assured (Figure 3). Almost one quarter (23.5%) take a neutral position to ward this question This indicates that commercial fishermen appear satisfied with the current regulations but believe enforcement is needed.

## Sufficient Striped Bass for Commercial and Sport Fishermen

Slightly less than three quarters (71%) of the respondents believe that there are enough Striped Bass for both the sport fisherman and the commercial fisherman. Approximately 13.5 percent feel that there are not enough for both, and 16.1 percent are neutral to this statement. (See Figure 4.) Chatham license holders appear to maintain a consistent belief that there are sufficient striped bass for harvesters.

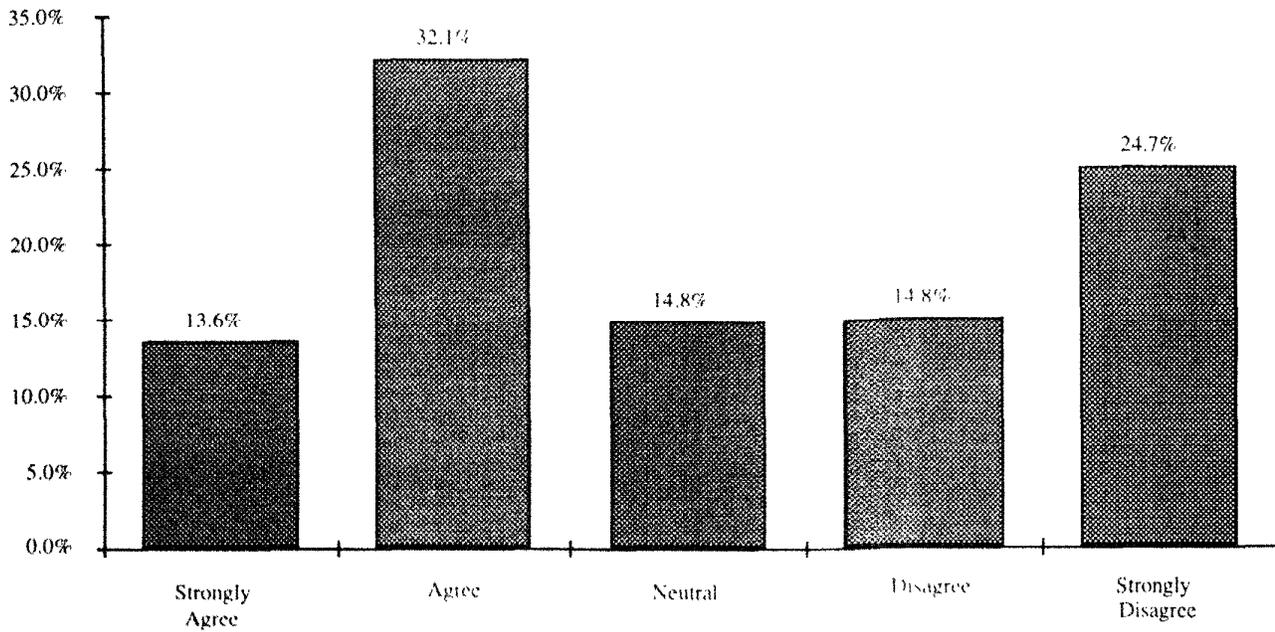


Figure 1. Number of Striped Bass have declined since respondent began fishing.

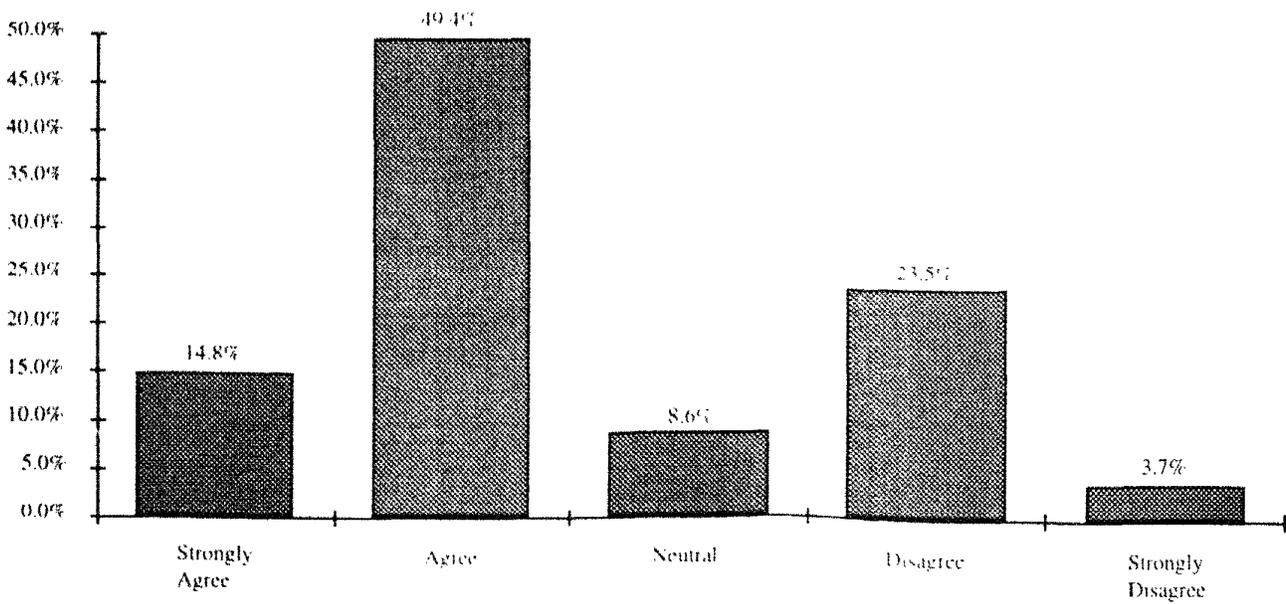


Figure 2. Respondents agreement that the current rate of harvest will assure sufficient populations of Striped Bass.

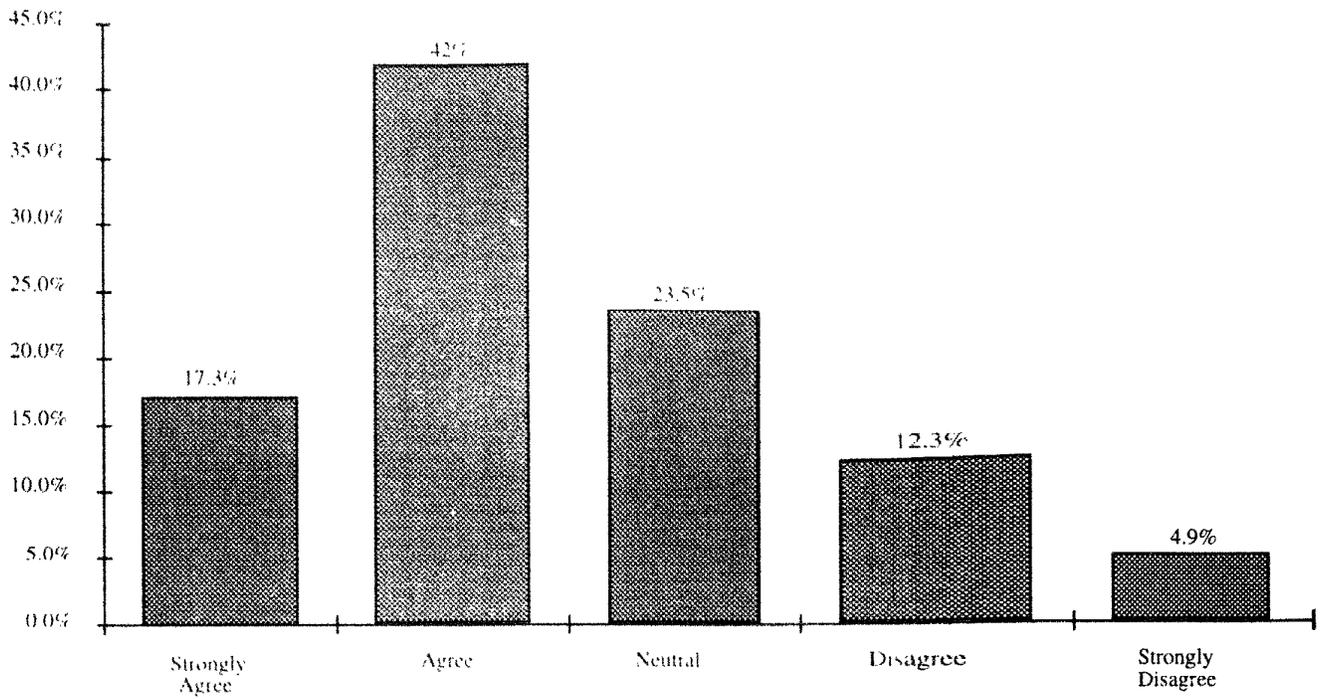


Figure 3 Enforcement of the current regulations will assure the sustainability of Striped Bass.

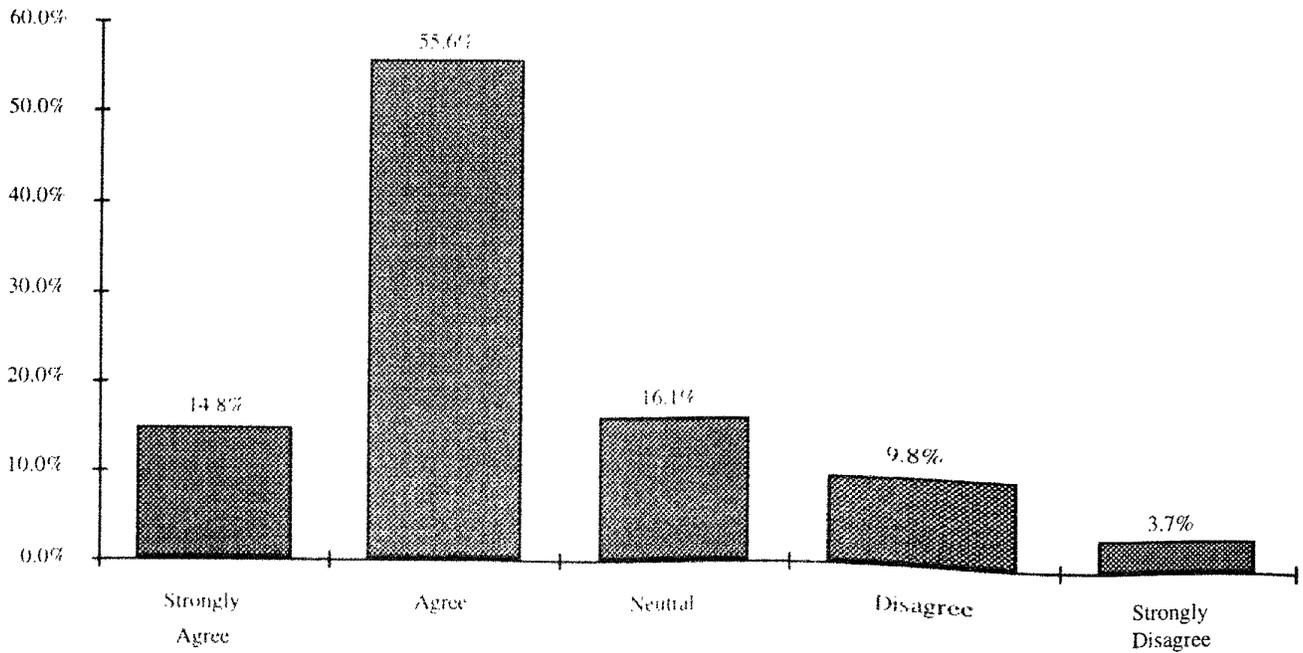


Figure 4. Sufficient Striped Bass for both sport and commercial fishermen.

The results of chi-square analysis indicated no significant relationship between the type of fishermen and attitudes toward the sustainability of Striped Bass. Similarly, there was no relationship between type of fishermen and attitudes toward enforcement of regulations governing their harvesting (see Table 1). Those who harvest Striped Bass as a primary source of income during the season had a greater percentage of respondents who agreed that the number of Striped Bass had declined and that

current levels of bass were sufficient. Not unexpectedly, a greater percentage of those who harvest Striped Bass as a primary source of income also believed that over-harvesting by sport fishermen was the main reason for poor commercial fishing. A larger percentage of part-time harvesters (i.e., not the primary source of income) believed that the current rate of harvesting would assure future populations of the species.

Table 1. Attitude differences between full and part time commercial fishermen toward sustainability and regulation of Striped Bass.

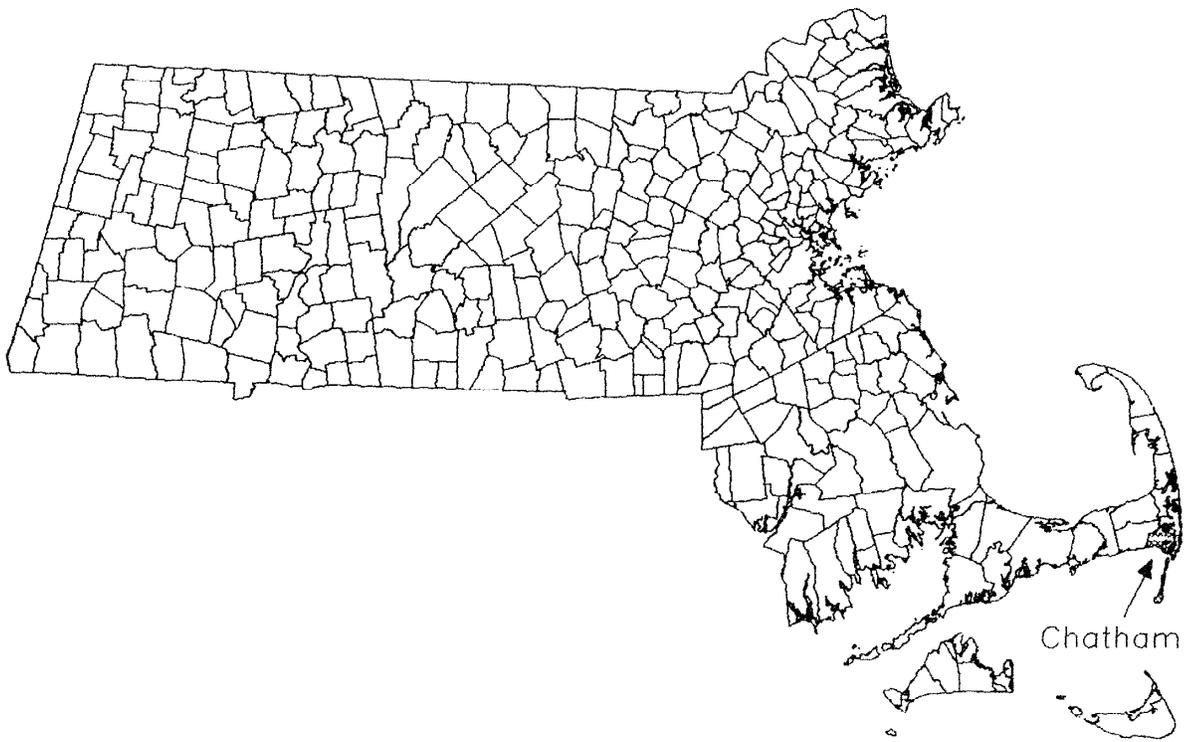
| Issues  | Agree                    |                    | Disagree                 |                    | Neutral                  |                    | Chi-Square |
|---|--------------------------|--------------------|--------------------------|--------------------|--------------------------|--------------------|------------|
|   | Primary Source of Income | Not Primary Source | Primary Source of Income | Not Primary Source | Primary Source of Income | Not Primary Source |            |
|   | (Percent)                | (Percent)          | (Percent)                | (Percent)          | (Percent)                | (Percent)          |            |
| Number of Striped Bass have declined  | 60.0                     | 43.7               | 40.0                     | 39.4               | 0.0                      | 16.9               | 3.246*     |
| There are sufficient Striped Bass for commercial and sport fisherman                  | 80.0                     | 69.0               | 10.0                     | 14.1               | 10.0                     | 16.9               | 0.930*     |
| Over-harvesting by commercial fisherman is main reason for poor commercial fishing    | 20.0                     | 26.8               | 70.0                     | 60.6               | 10.0                     | 12.7               | 2.405*     |
| Over-fishing by sport fishermen is main reason for poor commercial fishing            | 40.0                     | 26.8               | 50.0                     | 49.3               | 10.0                     | 23.9               | 1.376*     |
| Current rate of harvesting Striped Bass will assure sufficient future populations     | 50.0                     | 66.2               | 40.0                     | 25.4               | 10.0                     | 8.5                | 2.853*     |
| Through enforcement of current regulations the future of Striped Bass will be assured | 60.0                     | 59.2               | 10.0                     | 18.3               | 30.0                     | 22.5               | 1.348*     |

### Discussion and Implications

Those who harvest Striped Bass as a primary source of income (i.e., full-time fishermen) and those who are part-time harvesters of Striped Bass have similar positive beliefs about the sustainability of Striped Bass fisheries and hold similar attitudes toward enforcement of regulations on harvesting. Both groups, however, would like to see an increase in the total harvest allotment beyond the current 238,000 lbs., but over eighty percent of the fishermen believe the size limit should remain at 36 inches. This suggests that if the issuance of licenses remain at the same level, marine fisheries managers would have support in increasing the harvest allotment, enabling the Striped Bass season to be maintained for an extended period of time and enhancing the economic return for commercial fishermen in the Chatham area.

While Chatham, Massachusetts fishermen support the 36" limit on the minimum size of Striped Bass to be taken, many of the respondents commented that greater coordination is needed with other states along the migratory path of the bass. Striped Bass migrate along the eastern seaboard, spawning in Chesapeake Bay and Hudson River then migrate north along the coast in the late spring. Currently two other states allow harvesting of Striped Bass at 28 inches, depleting the stocks of smaller fish and spawners. As a result, Massachusetts fishermen are more stringently regulated and their potential economic return is limited. This may explain why relatively small numbers of the Chatham commercial harvesters rely on Striped Bass as their primary source of income. Massachusetts Marine Fisheries managers may have succeeded in educating the commercial harvesters about the necessity of regulations for maintaining the sustainability of the fish stock, but they should address the issue of coordination with other states to quell the growth of the seeds of discontent expressed by these commercial fishermen.

# Town of Chatham



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