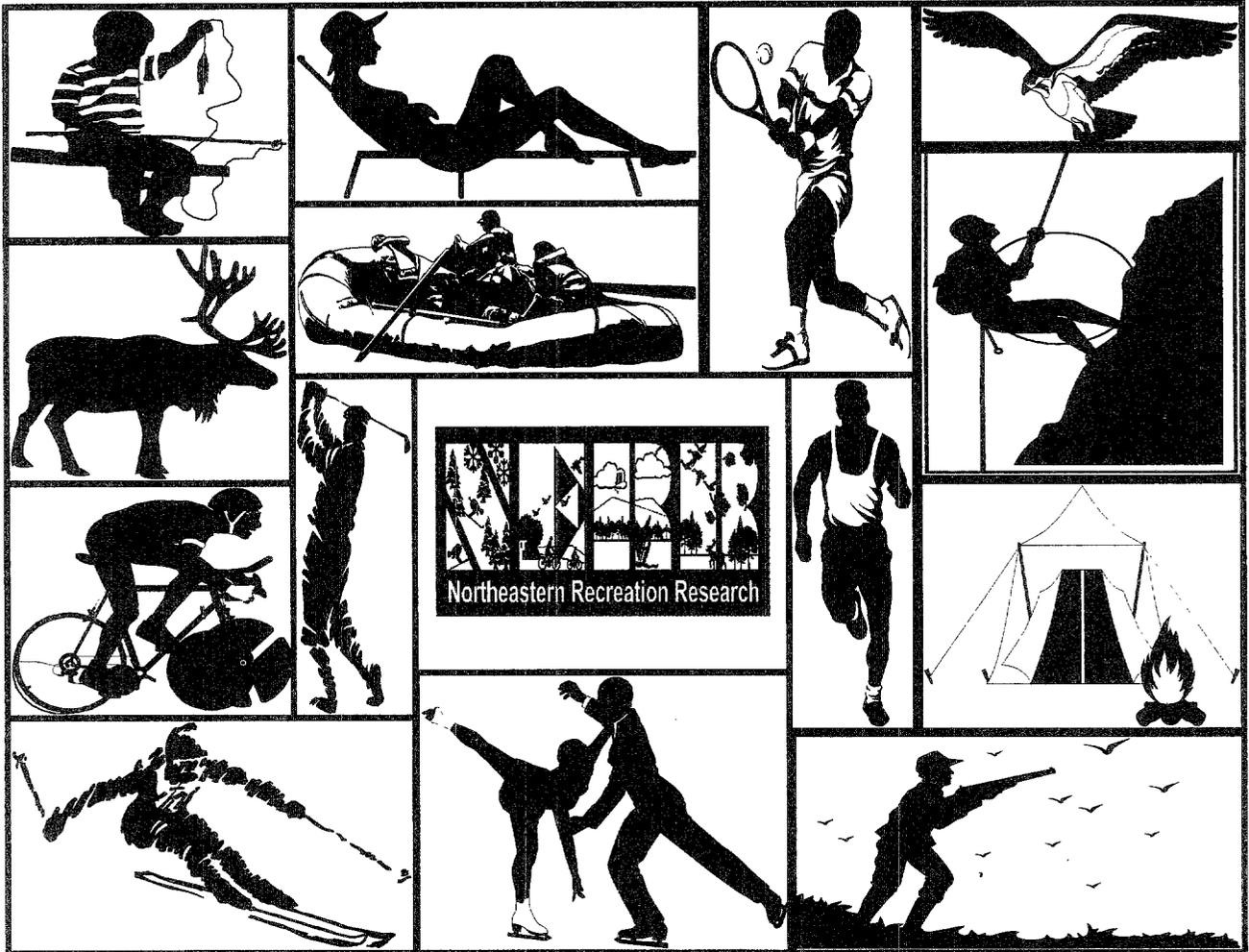




# Proceedings of the 1999 Northeastern Recreation Research Symposium

April 11-14, 1999  
Bolton Landing, New York



## Northeastern Recreation Research Symposium Policy Statement

The Northeastern Recreation Research Symposium seeks to foster quality information exchange between recreation, tourism, and resource managers and researchers throughout the Northeast. The forum provides opportunities for recreation and tourism research managers from different agencies, state, and government levels, as well as those in the private sector to discuss current issues, problems, and research applications in the field. Students and all those interested in continuing education in recreation and tourism management are particularly welcome.

### NERR 1999 STEERING COMMITTEE:

Walter Kuentzel, University of Vermont, 1999 Committee Chair

Robert Bristow, Westfield State College

Chad Dawson, SUNY College of Environmental Science and Forestry

Alan Graefe, The Pennsylvania State University

Bruce Lord, The Pennsylvania State University

Tom More, USDA Forest Service, Northeastern Research Station

Katherine Pawelko, Western Illinois University

Rob Robertson, University of New Hampshire

Steve Selin, West Virginia University

David Solan, Mansfield University

Gail Vander Stoep, Michigan State University

Hans Vogelsong, The Pennsylvania State University

Rodney Warnick, University of Massachusetts, Amherst

The use of trade, firm, or corporation names in this publication is for the information and convenience of the reader. Such use does not constitute an official endorsement or approval by the U.S. Department of Agriculture or the Forest Service of any product or service to the exclusion of others that may be suitable.

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

# Proceedings of the 1999 Northeastern Recreation Research Symposium

April 11-14, 1999



*On Lake George in Bolton Landing, New York*

## **Compiled and Edited by:**

Gerard Kyle

The Pennsylvania State University

## **Sponsors:**

Mansfield University

Michigan State University

The Pennsylvania State University

SUNY College of Environmental Science and Forestry

University of Massachusetts

University of New Hampshire

University of Vermont

USDA Forest Service, Northeastern Research Station

Western Illinois University

Westfield State College

West Virginia University

## Table of Contents

### Tourism

The Perceived Impacts of Tourism: Economic, Environmental, and Sociocultural Influences of Tourism on the Host Community. <i>James Murdy, Andrew Yiannakis, and Josh Stuart</i> .....	3
A Regional Analysis of the Consequences of Tourism Development From a Community Perspective. <i>Yooshik Yoon and Joseph S. Chen</i> .....	11
An Evaluation of State Tourism Web Sites. <i>A. Leslie Burns and Robert A. Robertson</i> .....	17
Sustainability Indicators Regarding Tourism Development and Coral Reef Conservation: A Case Study of Akumal, in the Mexican Caribbean. <i>Wendy J. Garpow</i> .....	23
Developing a Culturally and Ecologically Sensitive Ecotourism in a Resource Extraction, Consumptive Recreation-Oriented Area. <i>Deborah Che</i> .....	30
Virtual Tourism on the Internet. <i>Robert S. Bristow</i> .....	35

### Environmental Attitudes and Values

Environmentalism: A Study of Undergraduate Students. <i>Brijesh Thapa</i> .....	41
Attitudes of Outdoor Recreationists Toward Environmental Issues. <i>Gene L. Theodori and A. E. Luloff</i> .....	51
An Exploration of the Influence of Gender and Locality on Environmental Attitudes Using the New Ecological Paradigm (NEP) Scale. <i>Vinod Sasidharan and Brijesh Thapa</i> .....	57
Recreational Use of Wetlands in Juneau, Alaska. <i>James F. Palmer</i> .....	62
Environmental Education Needs Assessment: An Overview. <i>Anneliese Mueller, Robert A. Robertson, Eleanor Abrams, Scott Fletcher, Christine L. Schadler, and Dave L. Howell</i> .....	67

### Water Resource Issues in Recreation

Improving Recreational Customer Satisfaction: Focusing on Communication and Changes in Quality of Experience at US Army Corps of Engineers Reservoirs. <i>James D. Absher, Robert C. Burns, and Alan R. Graefe</i> .....	73
Public Perception of the Connecticut River's Quality and Suitability as a Recreational Resource. <i>Jo Beth Mullens and Melissa McNally</i> .....	78
A Holistic Approach to Maintaining Quality in Environmental Management and Visitor Experience. <i>Elery Hamilton-Smith</i> .....	82
River of Promise: Community Based Conservation for the Cheat River Watershed in West Virginia. <i>Dave Bassage, Rick Buckley, Jeanne Kraje, Randy Robinson, and Steve Selin</i> .....	86

## Gender, Ethnicity, and Special Populations

Ethnicity and Recreation: Problems With Concepts and a Need For New Approaches. <i>Edwin Gomez</i> .....	93
Similarities and Differences in the Outdoor Recreation Participation of Racial/Ethnic Groups: An Example from Illinois. <i>John F. Dwyer</i> .....	98
Disabled Wildlife-Associated Recreation Participants. <i>Allan Marsinko</i> .....	106

## Visitor Experiences and Satisfaction

More on Conceptualizing and Measuring Leisure Involvement. <i>Gerard Kyle, Deborah Kerstetter, and Frank Guadagnolo</i> .....	115
User Satisfactions and Perceptions of Crowding in Four Adirondack Wilderness Areas. <i>Chad Dawson, Peter Newman, and Cathy Fuller</i> .....	120

## Demographic Trends

Demographic Change in the 21 <sup>st</sup> Century: The Impact on Recreation Participation. <i>Amy L. Sheaffer, Ken Cordell, and Joseph T. O'Leary</i> .....	129
The New England Travel Market: An Update of Changing Demographics and Geographic Markets, 1980 to 1996. <i>Rod Warnick</i> .....	134
Promoting In-State Tourism Using Travel Consumer Profiles. <i>Sotiris H. Avgoustis</i> .....	141
The Relationship Between the Experiences of Organized Sports League and Leisure Attitude. <i>Seok-Pyo Hong</i> .....	150

## Recreation Planning and Management

Park Partnerships: A Case Study of Yosemite Institute and Yosemite National Park. <i>Siri Doble, Chad Dawson, and Robin Hoffman</i> .....	157
The Importance of Environmental History in Natural Resources Management and Planning. <i>Karl Roenke</i> .....	162
The Effect of Fees on Recreation Site Choice: Management/Agency Implications. <i>Allan Marsinko</i> .....	164
Boosting Confidence In Importance-Performance Analysis: An Explanation and Application of An I/P Modification. <i>Erin K. Smith and Michael A. Tarrant</i> .....	172
The Destruction of Wildlife Habitat by Suburban Sprawl and the Mitigating Effects of Land Use Planning. <i>Richard B. Nichols</i> .....	177
Visitor Perceptions of Personal Security and Crime at Outdoor Recreation Areas: Contemporary Issues at US Army Corps of Engineers Lakes and Along the Appalachian Trail. <i>Robert C. Burns, Robert D. Lee Jr., and Alan R. Graefe</i> .....	186
Weather Related Liability in Outdoor Recreation. <i>Bruce Hronek</i> .....	190
Mountain Bicyclists' Behavior in Social Trail Etiquette Situations. <i>William W. Hendricks, Roy H. Ramthun, and Deborah J. Chavez</i> .....	194

Distinctions Between Permitted and Non-permitted Registered Snowmobilers. <i>Joel A. Lynch and Charles M. Nelson</i> .....	199
<b>Historic Preservation in Recreation</b>	
Museums and Cultural Institutions in Michigan: Can They Be Viable Tourism Attractions and Tourism Industry Partners? <i>Gail A. Vander Stoep</i> .....	205
<b>Forest Resource Issues in Recreation</b>	
Aspects of Nonindustrial Forest Ownership That Influence Attaining Recreation and Other Nontimber Objectives. <i>Donald F. Dennis, Thomas H. Stevens, David B. Kittredge, and Mark G. Rickenbach</i> .....	215
Recreationists' Attitudes Toward the Forest and Forest Management Policies. <i>Gene L. Theodori, A. E. Luloff, and Timothy A. Slack</i> .....	219
<b>Human Dimensions of Fisheries</b>	
Development and Verification of a Specialization Index for Angler Segmentation. <i>Ronald J. Salz and David K. Loomis</i> .....	227
Testing Recreation Specialization: Application of a Specialization Index. <i>Kelly L. Finn and David K. Loomis</i> .....	232
Assessment of Tourists' Attitudes Toward Marine Aquaculture - A Preliminary Investigation of UNH's Sea Grant Discovery Passengers <i>Torene Tango-Lowy and Robert A. Robertson</i> .....	242
<b>Economics of Outdoor Recreation and Tourism</b>	
Economic Impact of Elk Viewing in Rural Pennsylvania. <i>Bruce E. Lord, Charles H. Strauss, and Walter M. Tzilkowski</i> .....	251
Fiscal Trends in America's State Parks: A Eight-Year Analysis. <i>Daniel D. McLean, Deborah Chavez, and Julie Knapp</i> .....	257
Economic Impacts Of A Heritage Tourism System. <i>Charles H. Strauss and Bruce E. Lord</i> .....	264
Spending Priorities for Outdoor Recreation Planning in New Hampshire: Implications for Managers. <i>Al Williams, Sam Lankford, and Robert A. Robertson</i> .....	272
Determining Economic Impact Through Secondary Data. <i>Hans Vogel song and Alan Graefe</i> .....	275
<b>Contemporary Issues in Recreation and the Environment</b>	
Information Search by Backpackers: A Qualitative Analysis of Planning Behaviors. <i>Roy Ramthun</i> .....	285
Using Geographic Information Systems with Travel Cost Models: A Case Study. <i>William Zawacki and Allan Marsinko</i> .....	287

## Visitor Experiences and Participation

Five Good Reasons to Have Reservations About Benefits-Based Management. <i>Thomas A. More and Walter F. Kuentzel</i> .....	295
Intensity and Extensity of Recreation Participation in Light of the Mean Scores on the Leisure Resourcefulness Scale. <i>Jerry L. Ricciardo</i> .....	304
The Relationship Between Quiltmakers' Level of Development and Participation in Other Leisure Activities. <i>Sharon L. Todd</i> .....	309
Self-Efficacy Perceptions Among Mid-Level Recreation Program Managers. <i>Julie S. Knapp and Daniel D. McLean</i> .....	317

## Place Attachment

Differences in Place Attachment Among Allegheny National Forest Users. <i>John J. Confer Jr., Alan Graefe, Jim Absher, and Brijesh Thapa</i> .....	323
The Relationship Between Place Attachment and First Night Participants Views of Crowding, Overall Satisfaction and Future Attendance. <i>Thomas D. Wickham and Deborah L. Kerstetter</i> .....	332
Relationships Between Place Attachment, Activity Involvement, Desired Experiences, and Frequency of Urban Park Use. <i>Andrew J. Mowen and Alan R. Graefe</i> .....	336
Exploring Visitor Meanings of Place and Enriching Interpreter Knowledge of Audience in the National Capitol Parks. <i>Wei-Li Jasmine Chen, Theresa L. Wang, and David L. Larsen</i> .....	340

## Round Tables

A Roundtable: Discussion of Three Case Studies Involving Tourism and Wilderness Areas. <i>Stephen C. Bentley, Katharine C. Bloom, and Mark Gleason</i> .....	347
Alternative Tourism: Gay and Lesbian Travelers - A Viable Hidden Market. <i>Kimberly Monk and Lisa Dingman</i> .....	352

## Poster Session

Use of Qualitative Data Analysis Tool to Understand the Relationship Between Recreational Fishing and Open Ocean Aquaculture Development. <i>Angela Wright and Robert A. Robertson</i> .....	361
Estimating Tourism Impacts of Deer Hunting in New York State: A Case Study of 1997 Deer Take Data. <i>Russell W. Patterson, Aaron Alsheimer, James F. Booker, and Diana S. Sinton</i> .....	366
Recreational Use of Industrial Forest Lands in New York State. <i>Sergio Capozzi, Rene Germain, and Chad Dawson</i> .....	373
Competition for Common Property Space: New Hampshire's Recreational Fishers and Open Ocean Aquaculture Development. <i>Jody Grimes</i> .....	378
Use of Qualitative Data Analysis to Demonstrate Three Approaches Taken by New Hampshire Recreational Fishers Toward Open Ocean Aquaculture Development <i>Nena F. Stracuzzi</i> .....	384

The Use of GIS in Recreation Planning: An Application of Spatial Analysis to Find Suitable Locations for Recreational Trails. <i>Matthew Starr, Miklos Gratzer, and Allen Lewis</i> .....	391
Storm Chasing: Risk Recreation for the Nineties. <i>Heather Cantillon, Jeremy Merriam, and Christopher Naughton</i> .....	397
Who Owns the Ocean? A Qualitative Study Of Saltwater Recreational Fishers and Open Ocean Aquaculture in New Hampshire <i>Jody Grimes, Nena F. Stracuzzi, Robert Robertson, and Cynthia Duncan</i> .....	400
<b>Management Sessions</b>	
Maintaining the Quality of Park Resources and Visitor Experiences: An Overview of a New Handbook for Managers. <i>Theresa L. Wang, Dorothy H. Anderson, and David W. Lime</i> .....	409
<b>Founder's Forum</b>	
Reconceiving Recreation in an Era of Growing Social Inequality. <i>Thomas A. More</i> .....	415
<b>Keynote Address</b>	
Parks Have a Future - But it has More Problems than the Present. <i>Elery Hamilton-Smith</i> .....	423
<b>Index of Authors</b> .....	426

# TOURISM



**THE PERCEIVED IMPACTS OF TOURISM:  
ECONOMIC, ENVIRONMENTAL AND  
SOCIOCULTURAL INFLUENCES OF TOURISM ON  
THE HOST COMMUNITY**

James Murdy

Associate Director, Laboratory for Leisure, Tourism & Sport and Ph.D. candidate, University of Connecticut, Box U-1110, Storrs, CT, 06269

Andrew Yiannakis

Professor and Director of the Laboratory for Leisure, Tourism & Sport, University of Connecticut, Box U-1110, Storrs, CT, 06269

Josh Shuart

Ph.D. candidate, Department of Sport, Leisure & Exercise Sciences, University of Connecticut, Box U-1110, Storrs, CT, 06269

---

**Abstract:** Tourism has many impacts on the host (or destination) community. Economically, tourism has several impacts, ranging from taxes to employment (Goodall and Ashworth, 1990). To this point, much of the literature has focused solely on the economy when evaluating the impact that tourism can have on a community. There is a need, however to explore sociocultural impacts, which may help tourism decision makers to weigh the advantages and disadvantages (e.g. crime and pollution) of developing tourism in a certain area. Given the small amount of literature in the area and the lack of an inclusive measure of the perceived social and cultural impacts of tourism, it is vital to classify these impacts as they have been identified in the literature and develop a more coherent understanding of the impacts of tourism on a community. Expert review reduced the perceived impact section to 92 items. All of the socio-demographic items were included.

---

**Introduction**

For several years, scholars have debated the impacts of tourism. Forster (1964) discussed the possible impacts of tourism based on newspaper and government reports and interviews with government officials. The areas of impact identified included economic impacts, changes in the standard of living, commercialization (the commodification of local resources to make them salable to tourists and other visitors), changes in traditions and rituals, prostitution, resident (host)-tourist conflict, changes in political power, and the immigration/emigration of persons to the host community. Many of these changes often lead to modernization of the community, meaning the community loses some of its environmental and social characteristics in order to provide the infrastructure (roads, airport, mass transportation, hotels, electricity, telephones, etc.), services,

and cultural displays tourists expect. Butler (1974) stated the prior research on tourism impacts focused on two primary areas: economic and environment changes. Arguing that the social impacts went largely unstudied and therefore left a gap in the existing literature, he proposed three major areas of tourism's social impact. These were access to and use of resources, economic well being, and the lifestyles (the characteristics of the residents' daily lives) of the residents related to the economic and environmental impacts of tourism. Butler suggested ways in which tourism affected these areas of the local population's lives, such as crowding, increased traffic, crime, illegal drug use/distribution, prostitution, sexual permissiveness, and tourists viewing the community as a "living museum" (105). Some of the positive effects of tourism identified by Butler were preservation of local customs, better medical care, improved transportation and public services, and an increase in recreational facilities. However, it should be noted that many of these improvements might be made for the sole use of the tourists.

More recently, researchers have studied the economic impacts of tourism. The impact of tourism on rural development (e.g. Gibson, 1993, Tzouvelekas and Mattas, 1995) and sustainable development (Munasinghe and McNeely, 1994) have been addressed. Development of tourism in island states and least developed countries has also been discussed (Butler, 1993, Carter, 1988, Modeste, 1995). The effects of tourism on income, employment, inflation, economic growth, foreign exchange, transfer of technology and skills, cost-benefit analysis of natural and other resources, and local government expenditures are some of the points discussed in these studies.

The impacts of tourism on a community are diverse. Because of the diversity and dispersion of findings, an instrument that measures all of the perceived impacts of tourism on a community is needed. The purpose of this study was to develop a survey that parsimoniously measures these impacts.

**Conceptual Domains**

In a study that focused on the impacts of tourism on the family, Kousis (1989) found several changes in family dynamics that the residents of a Cretan community attributed to tourism. After interviewing residents of the community, one of the impacts was that the residents were having smaller families. The economic change from an agricultural economy to a service sector economy with low paying jobs was thought to be the primary limiting factor of family size. With the advent of tourism, more women worked for pay and subsequently wanted more input in family decision making. Children too began to work for wages, changing their role in family decisions. Children also moved out of their parents' homes earlier to seek employment and autonomy. Because of the increase in family members working for wages and moving from the home, the amount of time spent together as a family sharply decreased.

### *Perceived Impacts on the Economy*

The economy may shift from one sector to another with the development of tourism, as seen from Kousis's (1989) study, in which the economy of the Cretan community changed from primarily agricultural to service sector (tourism). A study of Scottish Highlanders (Duffield and Long, 1981) found new jobs generated as a result of tourism. However, the low paying jobs were usually given to the local residents, while the higher level jobs were given to persons from outside the community or a relatively small group of wealthy community members. Finally, inflation was a concern for the residents of Massachusetts who were considering the development of casinos (Pizam and Pokela, 1985).

Residents of several communities indicated negative effects of tourism on the environment. Belisle and Hoy (1980) found a conflict in residents' attitudes regarding the development of sections of a national park for tourism. Pizam (1978) and Allen et. al. (1988) found residents concerned about litter, air, noise, and water pollution, which the residents associated with tourists. Other researchers (e.g. Loukissas, 1982) discovered that as tourism development progressed, the landscapes and scenery that originally attracted tourists to the area were destroyed to build more hotels, shops, recreational facilities, and other tourist attractions. For the purpose of this study, environmental impacts referred to the various types of pollution mentioned above as well as changes in land use and development.

Husbands (1986) examined conflicts between tourists and residents (hosts). He linked the distance from the tourist region of the residents' homes to the amount of perceived stress. As distance from the tourist region increased, contact with tourists decreased and so did the stress and number of tourist-host conflicts. Pi-Sunyer (1981) studied tourist conflict from the perspective of hosts' stereotyping of tourists. If tourists remained aloof, the residents stereotyped them as unfriendly persons who were tolerated for their support of the local economy. This attitude created tension between the two groups and sometimes resulted in verbal or physical conflicts. Farrell (1979) also found stereotyping to be relevant; however, the tourists as well as the residents stereotyped each other in the tourist areas in the Pacific. He argued that conflict between hosts and tourists was a function of boundaries, or who was accepted by the tourist or host as friendly or helpful. Cohen (1971) identified conflicts generated by the local teenage males' pursuit of tourist girls. The conflict usually came from the police, who didn't want the local boys interacting with the tourist girls because the interaction could result in girls' parents not returning for future vacations.

The cultural impacts of tourism are varied. Sheldon and Var (1984) found that residents of North Wales appreciated the cultural value of tourists even though the tourists were generally perceived as unaware of the residents' way of life. The residents did not like, however, the commercialization of local attractions such as old churches

and castles for tourists. Residents of Santa Marta, Colombia, perceived tourists as non-disruptive of local traditions and culture. Gamper (1981) found a great deal of cultural changes occurred in two Austrian communities. The locals adopted non-traditional clothing that was typical of what tourists expected to see. The residents also changed the appearance of their homes and business buildings to meet tourist expectations. The language of one of the two towns became German to better facilitate communication between hosts and tourists at the expense of their local language. MacNaught (1982) addressed the concerns of Pacific Island residents regarding the maintenance of their values, which were being replaced by Western values as tourism became more popular in the area. In some cases, the political views of the locals changed with their values. Despite the wealth of research in which tourism is portrayed as a corrupter of traditional cultural practices, Boissevian (1979) claimed that tourism played an integral role in the rediscovery of traditional cultural practices by many Maltese.

In the modernization domain, the focus is on the adoption of current Western attitudes and behaviors as well as technologies. In what is one of the few studies to address modernization as a result of tourism, MacNaught (1982) has identified several key areas that are likely to be "modernized" to contemporary Western standards. These included community identity and integration, language, values, and economic changes. The other major area of modernization focuses around the concept of demonstration effect. Demonstration effect, as it relates to tourism, refers to the residents' desire for possessions, attitudes, and behaviors resembling the tourists. This effect often applies to new styles of dress, new technologies such as cameras and other gadgets, and mannerisms. Finally, Cohen (1984) claimed that tourism development influenced migration patterns by retaining residents who might otherwise migrate out of the community and by attracting non-tourist persons to the area, particularly from agricultural regions around the tourism region. Because there exists a great deal of overlap between the cultural and modernization and urbanization domains, the two domains were combined for analytical purposes.

Crimes of varying types have often been associated with tourism. Crime in general has been identified by several authors (Belisle and Hoy, 1980; Butler, 1974; Haralamboupoulos and Pizam, 1996; Pizam, 1982; Rothman, 1978) as a topic of concern for tourist areas. Nicholls (1976) reported vandalism, burglary, auto theft, and arson as concerns for law enforcement officials in the mountains of North Carolina. Belisle and Hoy indicated concern on behalf of residents about increased prostitution, robberies, and drug use and trafficking. Pizam and Pokela (1985) also stated that residents of Massachusetts were concerned about potential increases in violent crimes if the towns pursued tourism development. In the study of Cape Cod residents' perceptions of tourism (Pizam, 1978), alcoholism was also found to be a problem

Changes in the level or quality of public services provided by the town, such as garbage removal and sanitation, have

been attributed to tourism and tourism development. Jafari (1974) and Pizam (1978) found that perceptions of garbage removal and sanitation services decreased with tourism. Medical services may also be perceived as a public service affected by tourism (Husband, 1989). Belisle and Hoy (1980) reported a perceived improvement in the roads, railroads, airport, and electric service in Santa Marta and the surrounding areas due to tourism. With respect to access to recreational facilities, both improvements and declines have been indicated (Lankford and Howard, 1994; Pizam, 1978; Rothman, 1978).

While many, if not all, of the potential impact domains mentioned above may affect residents' perceived quality of life, the issue of tourism's impacts on the quality of life has been addressed only tangentially (e.g. Jafari, 1974 and Pizam, 1979). Therefore, specific items regarding the perceived quality of life for residents dwelling in tourist areas were included in this study. A direct measure ("tourism contributes to the quality of my life") was used, as well as less direct measures such as the number and quality of shops in the area, perceived stress, and resident health. Pizam (1978) and Rothman (1978) both noted perceived improvements in shopping opportunities due to tourism.

### Scale Construction

The procedures for constructing this scale followed and will continue to follow a four-step procedure, similar to those used by Lankford and Howard (1994). They used a four-step procedure to develop their impact scale. The first step used in both Lankford and Howard's study and the current study was the generation of items after an extensive review of the literature. An expert panel of tourism researchers then reviewed the initial set of 129 items to evaluate the content validity and clarity of the items. During this process, the number of items was reduced to 109 because of redundancies in the questions. Changes regarding the wording of questions were also made and, in many cases, accepted. In order to avoid a set response bias, the wording of the items in the scale, after the content analysis stage, was reversed for approximately half of the items, and the items were randomized (Lankford and Howard, 1994).

The second step of scale development used in both studies was the pretest of the scale. The scale was distributed to a convenience sample of Eastern Connecticut residents. The intention was to select persons who lived in communities that have a high tourist rate, such as Storrs, Mystic, and Uncasville. The benefit of using a convenience sample includes reducing the error terms of statistical tests (Lynch, 1982). Unfortunately, of the current 198 respondents, 29.1% of the respondents identified themselves as residents of other states. This could indicate a need to specify in the directions that the respondent is to complete the survey based on the town in which they currently live. It should be noted that the first 19 items of the scale used a "N/A" (not applicable) to indicate that questions regarding a partner (spouse, boy- or girlfriend) and children did not apply. Furthermore, a convenience sample was selected

because of the limited resources of the researchers. Additional information concerning the reliability of the scale is reported in the results section.

The third step used by Lankford and Howard and adopted for this study was scale purification or reduction. In this step, the number of items in the scale was reduced, eliminating items unrelated to the overall measure of the domains mentioned above. In order to reduce the number of items used in the scale, the factor loadings of an oblique factor analysis were examined. The analysis was conducted for each sub-scale, providing more domain-specific information regarding the most appropriate items for each domain. An oblique rotation was used due to the possible intercorrelations among the factors (see Norusis, 1994). Items with factor loadings under 0.60 were eliminated.

### Results

A five-point Likert scale was used in this study. The first 92 items of the scale (section one) were designed to measure residents' level of agreement (or disagreement) regarding tourism, tourism development, and tourists. The remaining 17 items (section 2) were designed to be predictor values of residents' overall perception of tourism in their communities. To date, 198 surveys have been returned. The sample consisted of a large percentage of students (55%) and was predominantly female (men  $N = 89$ , women  $N = 109$ ). Over half of the sample (51.2%) has lived in Connecticut for over 17 years, and the mean age of the respondents was 28 years. The bulk of the sample did not work in the tourism industry ( $N = 185$ ) and were not involved in tourism decision making ( $N = 188$ ). The majority of the sample indicated that they lived within 20 miles of a tourism center (70.5%) and 78% of the sample were Caucasian ( $N = 154$ ).

The reliability of section one, using Cronbach's alpha, was high (.93). An alpha this high, however, could be a function of the number of items on the scale. To further test the reliability of the scale, each of the sub-scales was tested. The perceived impacts of tourism on the family, culture and modernization, and crime all proved to be reliable (alpha's over .80). The sub-scales measuring the economic and services and infrastructure impact domains were less reliable, having alphas of .72 and .77 respectively. The lower reliability of these two domains is not surprising, however, given that many of the questions measuring them were intended for less developed areas and countries. The remaining two sub-scales, quality and tourist-host/host-host conflict, each had very low reliabilities (.48 and .47 respectively), indicating the sub-scales are not reliable for future use.

The initial factor analyses for each of the sub-scales resulted in a total of 21 items being dropped. The sub-scale measuring the perceived impacts on the family originally contained 14 items. Two items, one measuring the likelihood of family members moving from the home and one measuring the social status of women, were dropped. The sub-scale measuring the perceived impacts of tourism

on the economic structure of a community lost three items because of low factor loadings. The resulting scale contains 10 items with factor loadings of .63 or higher. The environmental sub-scale had six of seven items load at .63 or higher. The only item dropped from this domain was "tourists litter."

The conflict sub-scale was reduced by two items to seven items. One of the items, "there are too many tourists in my area," nearly made the scale with a factor loading of .597. There certainly exists some anxiety on the part of subjects concerning the perceived overcrowding of their areas of residence. The factor analysis of the combined domains of perceived cultural and modernization impacts produced interesting results. Of the twenty-three items measuring these sub-scales, factor loadings for nine of the items fell below .60. Not surprisingly, items concerning gender specific population shifts, the availability of new technologies, and work productivity were in this category. Items concerning the increased acceptance of foreign political views and the perception of tourists as holding similar values and beliefs also missed the .60 factor loading cutoff.

The crime sub-scale focused on a variety of criminal activity. Items addressed issues such as increased prostitution, burglaries, muggings and assaults, alcohol and drug use, crime committed by residents, and crime in general. Clearly, the residents polled felt there was a need to address the crime issues often associated with tourism. Interestingly, even an increase in crime committed by other locals was noted as a problem by residents, although against whom the crimes were committed was not asked. The services and infrastructure domain originally had nine items. Once the factor analysis of this domain was completed, two items were dropped. Both of these items, "tourism increased the number of homes with electricity" and "tourism contributed to improved medical services in my area," reflect the areas from which the subject pools were drawn. That is, the residents of the towns in Connecticut surveyed for this study come from cities and towns with good service infrastructures. The final domain analyzed was the quality of life domain. Only the items concerning tourists making residents want things they don't have and concerns about tourists spreading diseases were eliminated, leaving seven items on the sub-scale.

## Discussion

As a result of the factor analyses, the number of items in section one of the scale were reduced by twenty-one from ninety-two to seventy-one. In terms of the number of items, the culture and modernization domain remained the largest sub-scale, now with fourteen items. The next largest domain remained the family, with twelve items. The economy sub-scale retained ten items. The three scales measuring the perceived impacts of tourism on host-tourist/host-host conflict, services and infrastructure and crime retained seven items each. The environmental impacts domain will now be measured by six items, and the remaining domain, quality of life, will be measured by five items. The reduced scale should now parsimoniously

measure, by domain, the perceived impacts of tourism in an industrialized, developed region or country.

The results of the factor analyses indicate the dynamic nature of the perceived impacts of tourism. The multiple factors for each of the domains produced by the analyses, with the exception of crime, best represent this dynamism. Unlike the previous studies (e.g., Belisle and Hoy, 1980 and Lankford and Howard, 1994) that explored data for relationships without the benefit of previous research, the current study used the previous works about the impacts of tourism to develop predetermined conceptual domains that could be analyzed independently of each other. By factor analyzing each conceptual domain independently of the other domains, a deeper understanding of each domain was obtained.

The family domain yielded results that were in agreement with the previous findings in the literature. The role of the significant other and children in family decision making became more common, as did sexual activity among residents and tourists, the amount of time children worked for pay, and the financial independence of children and partners. All of these changes to the family are consistent with the findings of Kousis (1989). However, some of the changes not found in this study that could be expected in a tourist area included the amount of time the family spent together. Usually, time spent as a family decreased with the onset of tourism. This aberration from past results may be explained by the industrialized and economically developed nature of the area in which the study was conducted. The strengths of family relationships increased as perceived by the residents in this study, which is also an unexpected result. Despite these differences in the findings concerning families, residents still perceive tourists as a negative influence on their families.

The perceived economic impacts of tourism in the current study were somewhat consistent with the previous research. The increased job opportunities for the respondents and their partners that were found by this study were consistent with Duffield and Long's (1981) findings. However, the results of the current study conflicted with the previously supported notion that the jobs that paid well and generally better positions went to non-residents. Other contradictory findings include the belief that the seasonal labor associated with tourism is harmful. The residents surveyed in the current study felt such seasonal labor was beneficial to their communities. One possible explanation for these differences is that the economic conditions in the Scottish Highlands is different from those found in Connecticut, where seasonal labor may mean jobs for young adults during school vacations. Also, the availability of quality, trained labor may be different in the two areas, resulting in higher pay and better jobs for those in Connecticut where labor is in demand.

The impacts of tourism on the environment as perceived by the residents of Connecticut mirrored the perceptions of residents in other studies. Residents believe that tourists contribute to the pollution of the environment (Allen et al., 1988; Belisle and Hoy, 1980; Pizam, 1978). Residents

surveyed in the current study supported the findings of these studies, identifying noise, water, and air pollution as problems. Interestingly, residents did not associate littering with tourists. This could be due to the residents' own behavior or to the possibility that tourists actually do not litter when they visit Connecticut communities and attractions. The perception that tourism changed the way land is used and its negative impact on the natural environment (Loukissas, 1982) is also supported by the survey of Connecticut residents. These residents also felt tourism development enhanced local attractions. The division of the perceived environmental impacts of tourism into two constructs (pollution and land use) presents an obvious distinction between the types of changes tourism may bring to a community. The greatest concern held by residents (as measured by the 33% of the variance explained by the factor) is with the pollution of their environment by tourists. Tourism professionals and developers should address this concern if tourism is to become an accepted and welcome part of the local landscape and residents.

Using Doxey's (1975) four stage model of tourist-host interactions to explain the factor analysis of the conflict domain, the residents of the Connecticut communities may be seen as being in the annoyance stage. This conclusion is supported by the reporting of tourists contributing to tension in local communities, the perception of tourists as acting irresponsibly when on vacation, and tourists exploiting the community. Each of these viewpoints indicates a negative reaction toward tourism and tourists but no outwardly expressed hostility toward tourists. Another measure, tourism results in conflicts between residents and tourists, could indicate an antagonistic relationship developing between the two factions, similar to the relationship found by Pi-Sunyer (1981). An item that mitigates the potential antagonism between residents and tourists is "tourism contributes to the building of friendships among tourists and locals," which the persons surveyed found to be relevant. In terms of host-host conflict (see Cohen, 1971), tourism did increase residents' mistrust of each other and contributed to tension in the local community. Despite these findings, residents viewed tourism as contributing to a sense of community. As with the family domain, there exists an interesting dichotomy in the resident's view of tourism. One perspective finds them causing disharmony in the community, while another results in a stronger communal bond. One may speculate that there exist two sides to the host-host conflict: the "front stage" (MacCannell, 1972), where residents put on a unified front to the tourists and the "back stage," where the divisions among the residents become apparent. The division of the conflict sub-scale into factors measuring the negative and positive effects of tourists' behavior on the community also supports the notion that there are two levels of host-tourist and host-host interaction.

The results pertaining to the cultural and modernization impacts of tourism as perceived by the residents surveyed are supported by previous literature. According to those surveyed in this study, tourism was found to contaminate local languages, commercialize historical sites, and draw

agricultural workers away from rural areas to work in the tourism industry (Gamper, 1981; Sheldon and Var, 1984; Kousis, 1989). Similarly, MacNaught's (1982) findings were also supported by the perceptions that tourism increased the residents' desire to try new and different things and introduces new ideas, fashions and foods to the local area. The perceived cultural and modernization impacts also indicated that tourism was perceived to modernize traditional societies. The modernization of traditional societies through tourism is often at the expense of local traditions (MacCannell, 1972). However, our results show that tourism development encouraged the maintenance of local traditions, which is similar to the results of some previous research (Boissevain, 1979). The fact that these domains produced six factors indicates that there is still much to be learned regarding the perceived impacts of tourism on the local culture.

The criminal activity previously reported in the literature as problematic and associated with tourism (Butler, 1974; Haralambopoulos and Pizam, 1996; Rothman, 1978) was evident in the current study. The residents perceived an increase in mugging/assaults, burglaries, prostitution, and drug and alcohol use as an impact of tourism. To further complicate the crime issue, an increase in criminal activity perpetrated by the local population was also perceived as a problem. Similarly, the residents perceived crime in general as escalating as a result of tourism. While some of these perceptions may be completely unfounded and unrelated to tourism, tourism industry managers and developers must clearly address the concern that the host population has about the safety of their communities. Furthermore, the current study investigated residents' perceptions regarding only a limited number of crimes.

The perceived impacts of tourism on the provision and quality of public services and the local infrastructure were generally positive. Residents felt that they had not lost some of their leisure activities, unlike the residents surveyed by Lankford and Howard (1994). The quality of the mass transportation system, the airport, and roads also were perceived to have improved as a result of tourism. Those surveyed for this study also felt there was no decrease in the sewage service provided by their local communities. The sole negative perception concerned garbage collection services. However, this result did not mean that the garbage collection service is not sufficient. It might have indicated that with the increase in the number of persons producing trash, the current service was strained. The residents surveyed for our study felt tourism made purified water more available to residents. This result is very interesting as the provision of similarly basic services, such as homes with electricity, was not found to be an important impact of tourism by the residents.

Quality of life is an elusive domain to measure. Arguably, all of the previously discussed domains are related to the quality of the residents' lives. However, to aid both researchers and managers of tourism, an attempt was made to measure some of the aspects that could be directly related to the quality of life and also were not previously included in the other domains. The results of the factor

analysis of this domain indicated a positive relationship between the perceived impacts of tourism and the residents' quality of life. The direction of the impact of tourism on the perceived quality of life needs further investigation. The inclusion of Pizam's (1978) and Rothman's (1978) shopping issue in this domain suggests that specific items that could improve or worsen the quality of residents' lives warrants additional studies into this domain in order to determine the items to be included in it.

### Conclusion

As we learn more about tourism's impacts, new approaches to the analysis of these impacts are necessary. This paper adopted a new strategy by using a domain specific factor analysis for the perceived impacts of tourism as identified by residents of tourism destinations. This new strategy allowed for a deeper insight into the underlying constructs of the impacts of tourism. The only domain that did not produce clearly identifiable and new constructs was the crime domain. The remaining domains produced a number of new constructs to be investigated by future researchers. In particular, the overlaps that resulted in the combining of the perceived cultural and modernization impacts clearly need further study to more clearly identify the constructs that underlie these domains. Furthermore, the inclusion of items that might not usually be included in a study of an industrialized and economically developed tourism region provided new insights. Areas that may be considered fully "modern" are still affected by tourism in ways similar to less "modern" areas.

Despite the addition to the existing knowledge base about the perceived impacts of tourism, this study does have several limitations and delimitations. The sample was not randomly drawn, greatly limiting the generalizability of the study. Furthermore, it is not possible to determine if the respondents addressed only the impact of tourism on their communities. Because there appears to be no identifiable tourism center (as indicated by the greatly varying distances from the tourism center of the respondents' homes), the gravity model failed, only adding to the conflicting results that currently exist in the literature. Finally, the instrument used in this study needs to be retested to determine the reliability of the revised instrument and to determine if the factors identified in this initial study remain.

The factors identified by domain also need further exploration. The variance explained by each domain leaves much room for identifying the perceived impacts of tourism as explained by these domain specific items. In particular, the economic, environmental, host-tourist/host-host, culture and modernization, and service and infrastructure domains need to include more or different items that might increase the variance explained by the factor models. In particular, items that address the specific concerns and needs of the destination area, in addition to global measures, should be included in subsequent studies.

### References

- Allen, L., P. Long, R. Perdue, and S. Kieselbach  
1988 The impact of tourism development on residents' perceptions of community life. Journal of Travel Research, 27 (1), 16-21.
- Belisle, F. and D. Hoy  
1980 The perceived impacts of tourism by residents: A case study in Santa Marta, Columbia. Annals of Tourism Research, 7, 83-101.
- Boisveian, J.  
1979 The impact of tourism on a dependent island: Gozo, Malta. Annals of Tourism Research, 6, 76-90.
- Butler, R.  
1974 The social implications of tourist developments. Annals of Tourism Research, 2, 100-112.  
1993 Tourism development in small islands: Past influences and future directions. In The Development Process in Small Island States, D. Lockhart, D. Drakakis-Smith, and J. Schembri, eds., pp. 71-91. New York, NY: Routledge.
- Carter, E.  
1988 The development of tourism in the least developed countries. In Goodall, B. and G. Ashworth, eds., Marketing in the Tourism Industry: The Promotion of Destination Regions, pp. 39-132. New York, NY: Croom Helm.
- Cohen, E.  
1971 Arab boys and tourist girls in a mixed Jewish-Arab community. International Journal of Comparative Sociology, 12, 217-233.  
1984 The sociology of tourism: Approaches, issues, and findings. Annual Review of Sociology, 10, 373-392.
- Doxey, G. V.  
1975 A causation theory of visitor-resident irritants: Methodology and research inferences. Proceedings of the 6th Annual Conference of The Travel Research Association, pp. 195-198. San Diego, CA: Travel and Tourism Research Association.
- Duffield, B. S. and J. Long  
1980 Tourism in the Highlands and Islands of Scotland: Rewards and conflicts. Annals of Tourism Research, 8, 403-431.

- Farrell, B. H.  
1979 Tourism's Human Conflicts: Cases from the Pacific. Annals of Tourism Research, 6, 122-136.
- Forster, J.  
1964 The sociological consequences of tourism. International Journal of Comparative Sociology, 5, 217-227.
- Gamper, J.  
1980 Tourism in Austria: A case study of the influence of tourism on ethnic relations. Annals of Tourism Research, 8, 432-446.
- Gibson, L. J.  
1993 The potential for tourism development in nonmetropolitan areas. In David Barkley, ed., Economic Adaptation: Alternatives for Nonmetropolitan Areas, pp. 149-164. Boulder, CO: Westview Press.
- Haralambopoulos, N. and A. Pizam  
1996 Perceived impacts of tourism: The case of Samos. Annals of Tourism Research, 23 (3), 503-526.
- Husbands, W.  
1985 Periphery resort tourism and tourist-resident stress: An example from Barbados. Leisure Studies, 5, 175-188.  
1989 Social status and perception of tourism in Zambia. Annals of Tourism Research, 16, 237-253.
- Jafari, J.  
1974 The socio-economic costs of tourism to developing countries. Annals of Tourism Research, 1, 227-262.
- Kousis, M.  
1990 Tourism and the family in a rural Cretan community. Annals of Tourism Research, 16, 318-332.
- Lankford, S. and D. Howard  
1994 Developing a tourism impact attitude scale. Annals of Tourism Research, 21, 121-139.
- Leiper, N.  
1979 The framework of tourism: Towards a definition of tourism, tourist, and the tourist industry. Annals of Tourism Research, 6, 390-407.
- Loukissas, P.  
1981 Tourism's regional development impacts: A Comparative Analysis of the Greek Islands. Annals of Tourism Research, 9, 523-541.
- MacCannell, D.  
1972 Staged authenticity: Arrangements of social space in tourist settings. American Journal of Sociology, 79, 589-603.
- MacNaught, T. J.  
1982 Mass tourism and the dilemmas of modernization in pacific island communities. Annals of Tourism Research, 9, 359-381.
- Modeste, N. C.  
1995 The impact of growth in the tourism sector on economic development: The experience of selected Caribbean countries. Economia Internazionale, 4, 3, 375-385.
- Moore, K., G. Cushman, and D. Simmons  
1994 Behavioral conceptualization of tourism and leisure. Annals of Tourism Research, 22 (1), 67-85.
- Munasinghe, M. and J. McNeely  
1995 Protected area economics and policy: Linking conservation and sustainable development. Washington, D.C.: The World Bank.
- Nicholls, L. L.  
1976 Tourism and Crime: A conference. Annals of Tourism Research, 3, 176-182.
- Norusis, M.J.  
1994 SPSS Professional Statistics 6.1. Chicago: SPSS, Inc.
- Parasuraman, A., V. A. Zeithaml, and L. L. Berry  
1988 SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. Journal of Retailing, 64 (1), 12-40.
- Pearce, J. A.  
1980 Host community acceptance of foreign tourists: Strategic considerations. Annals of Tourism Research, 7, 224-233.
- Peterson, R. A., G. Albaum, and R. F. Beltramini  
1985 A meta-analysis of effect sizes in consumer behavior experiments. Journal of Consumer Behavior, 12 (June), 97-103.
- Pi-Sunyer  
1981 Changing perceptions of tourism and tourists in a Catalan resort town. Annals of Tourism Research, 8, 271-284.
- Pizam, A.  
1978 Tourism's Impacts: The social costs to the destination community as perceived by its residents. Journal of Travel Research, 16 (4), 8-12.  
1982 Tourism and Crime: Is there a relationship? Journal of Travel Research, 20 (3), 7-10.

- Pizam, A. and J. Pokela  
1985 The perceived impacts of casino gambling on a community. Annals of Tourism Research, 12, 147-165.
- Rothman, R.  
1978 Residents and transients: Community reaction to seasonal visitors. Journal of Travel Research, 16 (3), 8-13.
- Sheldon, P. and T. Var  
1984 Resident attitudes to tourism in North Wales. Tourism Management, 5, 40-47.
- Tzouvelekas, V. and K. Mattas  
1995 Stimulating a rural economy's growth by the league of agro-food and tourism. An input-output perspective. The Regional Dimensions in Agricultural Economics and Policies, 40th EAAE Seminar, 669-680.
- Wahlers, , R.G. and Etzel, M. J.  
1983 Vacation preference as a manifestation of optimal stimulation and lifestyle experiences, Journal of Leisure Research, 17, 4, 283-29

## A REGIONAL ANALYSIS OF THE CONSEQUENCES OF TOURISM DEVELOPMENT FROM A COMMUNITY PERSPECTIVE

Yooshik Yoon

Ph.D. Candidate in Department of Hospitality and Tourism  
Management, Virginia Polytechnic Institute and State  
University, Blacksburg, VA 24061

Joseph S. Chen

Assistant Professor in Department of Hospitality and  
Tourism Management, Virginia Polytechnic Institute and  
State University, Blacksburg, VA 24061

---

**Abstract:** This study attempted to investigate underlying dimensions explaining community's perceived tourism impacts and to identify relationships between determinants and community's perceived tourism impacts. Factor analysis, multiple regression analysis, and multivariate analysis of variance (MANOVA) were performed. Residents perceived the impacts of tourism as four different dimensions embodying economic benefits, social costs, cultural enrichment, and environmental deterioration. Their perceptions were affected by seven out of ten determinants. It is believed that this study would help tourism planners and developers formulate and implement better tourism development strategies.

---

### Introduction

The existing research in the field of tourism has exhibited a clearer understanding of how community residents perceive the dynamic and complex phenomena of tourism. Since the goals of tourism planning and development are to seek maximization of benefits and minimization of the costs of tourism, it is apparent that the effective evaluation of tourism impacts will be valuable information in successful strategies for tourism product development and operation. With these perspectives, this study attempted to investigate underlying dimensions explaining community's perceived tourism impacts and to identify relationships between determinants and community's perceived tourism impacts.

### Literature Review

#### *Dimensions of perceived tourism impacts*

From a community perspective, most of the past tourism literature have recognized several types of consequences when tourism is being evaluated. These are economic, social/cultural, and physical/environmental impacts (Akis, Peristianis, & Warner, 1996; Haralambopoulos & Pizam, 1996; Johnson, Snepenger, & Akis, 1994; Jurowski, Uysal, & Williams, 1997). Both benefits and costs of tourism development from those dimensions were identified. One of the common benefits and costs of tourism development is the economic consequences. Job creation or reduced unemployment was discussed as the most prominent

benefit. The changing of investment and spending (Akis, et al., 1996), economic gain (Getz, 1994), increasing standard of living (Milman & Pizam, 1988), income distributions for hosts and government (Perdue, Long, & Allen, 1987), prices of goods and services (Johnson et al., 1994); costs of land and housing (Perdue, Long, & Allen 1987), costs of living, development and maintenance of infrastructure, and resources are explained as other examples of the economic impacts of tourism development.

As with the economic impacts of tourism, the social/cultural impacts of tourism have been discussed. The reason is why social and cultural structures have changed considerably under the influence of tourism (King, Pizam, & Milman, 1993). These are about the effects on the communication or interaction by the host population with their direct and indirect associations in connection with the tourism industry. Johnson et al. (1994) viewed tourism as providing cultural exchange opportunities, more recreational facilities, and disrupting various quality of life factors. Residents perceived tourism as creating congestion, traffic jams, and noise (Gunn, 1988) and increasing crime (Milman & Pizam, 1988). Researchers also found that tourism improved local public services (Keogh, 1990), cultural activity (McCool & Martin 1994), changing traditional culture (Akis et al., 1996) and preservation or identity of local culture (Liu & Var. 1986).

In addition, the existing tourism literature has proposed that the major concerns of physical/ environmental impacts of tourism are associated with various entities, which may affect the life of the host population and community. The costs of tourism in the host community, for example, destruction of natural resources, pollution, deterioration of cultural or historical resources, and changes in community appearance have commonly been mentioned and surveyed. (Davis, Allen, & Cosenza, 1988). On the contrary, some studies suggested that tourism provides compensation factors or benefits which are preserved historic sites and resources, recreation facilities, and higher quality of roads and facilities (Lankford & Howard, 1994).

These tourism studies implied that residents might have viewed tourism as having both benefits and costs in their community in terms of economic, social/culture, physical/ environmental tourism impacts.

#### *Determinants of Residents' Perception on Tourism*

Most of studies have hypothesized that the perceptions of residents on the impacts of tourism may vary among differences of local residents. This may be due to different research sites and times, or different levels of tourism development.

(1) Birth place - Um & Crompton (1987) investigated if the birthplace of residents influences their attitudes toward tourism impacts. (2) Length of residence - Sheldon & Var (1986) found that lifelong residents were more sensitive to the social/cultural impacts of tourism than were short-term residents. Pizam (1978) and Um et al. (1987) suggested that the longer residents live in an area, the less positively residents perceive the impacts of tourism development in

their community. However, Lankford et al. (1994) argued that even if long term residents had less favorable attitudes, the discrepancy was not profound. (3) Community attachment - Um and Crompton (1987) concluded that the greater the level of attachment was, the less positively residents perceive the impacts of tourism on their community. (4) Tourism Related Jobs - Many studies found out that respondents (or their relatives, friends, and neighbors) who depend upon a tourism-related job had, a statistically significant positive relationship with the positive tourism factors (Lankford, 1994). (5) Recreation Activities - Perdue, Long, and Allen (1987) found out that there are no differences between recreational participants and non-participants. (6) Tourists Contacts - The level of contact with tourists by residents might affect residents' attitudes (Brougham & Butler, 1981; Murphy, 1985). (7) Tourism Policy Participation - Tourism policy participation is associated with the involvement of residents in tourism oriented communities in making and implementing any tourism related policy (Murphy, 1985). (8) Level of Tourism Development - Several studies suggested that the degree of tourism development influences residents' attitudes (Long et al., 1990). (9) Growth of Community - Lankford and Howard (1994) insisted that perception of the rate of community growth on the two factors which are of concern for the local tourism development factor, and the personnel and community factor, has a significant influence on residents' attitudes toward tourism. (10) Travel Experience - This study added one more variable as a determinant such as residents' travel experience for the analysis. Previous research has not included this variable in spite of its being a critical variable related to tourism research. People who have more travel experiences may have different attitudes and perceptions.

## Methods

### *Research sites*

Norfolk/Virginia Beach/Newport News area were selected as the research site for this study, because these areas offer fine multi-faceted tourism attractions such as historic and cultural sites, theme parks, recreation facilities, leisure, and beach sites. These tourism attractions are well developed and could also have influenced on host residents' life and local community in terms of economic, social/cultural, and physical/environmental impacts.

### *Sampling*

The study population was household members in Norfolk/Virginia Beach/Newport News MSA (metropolitan statistical area). The population was residents who are over 18 year of age in the communities of Gloucester, York, Hampton, Newport News, Norfolk, Poquoson, Virginia Beach and Williamsburg Cities in Virginia. The data for this study were collected by stratified random sampling method based on population size. The questionnaires were sent to 2,400 residents selected from the telephone directories (U.S. Telephone Search Directory (V.3.0, 1997).

### *Survey Instrument and Scaling*

The survey instrument for this study was developed by slightly modifying representative items and instruments

used by previous scholars in tourism impact studies (Liu & Var, 1996; Johnson et al., 1994; Akis et al., 1996). Questions have been substantially revised in wording and scaling to adapt to the research objectives as well as the particular survey site for this study. These survey statements contained a distinctive variety of items to assess tourism impacts on economic, social/culture, and physical/environmental dimensions. With the above tourism impact statements, the respondents were asked to determine the degree of agreement with each statement. A five point Likert-type scale was used as the response format. The assigned values of the scale were: 1=Strongly Disagree, and 5=Strongly Agree.

In terms of the measurement of scale for determinants, there are three dichotomous variables, including birthplace, tourism-related job, and policy participation. Community attachment, level of tourism, and growth of community was measured by using five Likert type scale. A ratio scale measured other determinants: length of residency, recreational activity, tourist contacts, and travel experience. Of some demographic variables, respondents were asked questions to provide the information regarding their characteristics. The survey instrument was revised based on the feedback received from the pre-tested sources such as tourism expert review and a series of on-site interviews by a group of convenience samples consisting of residents (N=30) in Virginia. Thus, content validity and reliability of the perceived tourism impact measurement was strengthened and established through an extensive review

## Results

A total of 321 respondents were returned. In general, respondents are 51.3 percent of female. The age group showed fairly normal distribution that centered on the 41 - 50 years old group (25.7 %). The majority of respondents were married (79%) and showed somewhat higher education attainment and higher income level.

From the results of determinants, they have a fairly strong community attachment, while having a long time of residency ( $\bar{M} = 20.8$  years) in the research area. They spent multiple times in recreational activities and in taking a trip. They also perceived a somewhat rapid community growth ( $\bar{M} = 3.77$ ) and high level of tourism development ( $\bar{M} = 3.51$ ). On the other hand, most of them were not born (78.2%) in the research area and did not have any experiences in making tourism policy (97.3%).

In order to examine underlying dimensions explaining the perceived tourism impacts, a factor analysis with a varimax rotation was performed. First of all, for determining the appropriateness of factor analysis, the Kaiser-Meyer-Olkin (KMO)' measure of sampling adequacy and Bartlett's Test of Sphericity were employed and revealed a significance at a level of .001 ( $\chi^2 = 2472.44$ ,  $df = 171$ ,  $KMO = .857$ ). Thus the variables must be related to each other for the factor analysis to be appropriate.

As the underlying dimensions for perceived tourism impacts, four factors were emerged with eigenvalues of 1.0

or higher. These four dimensions, used in subsequent analysis, explained 67.6% of the variance in the assessment items. The four underlying dimensions of the residents' perceived tourism impacts were labeled as follows: 1. Economic benefits; 2. Social costs; 3. Cultural enrichment; and 4. Environmental deterioration. In addition, four reliability was performed on each of the four factors, based on the assessment items retained in each dimension (.86, .80, .83, and .86, respectively).

As a result, factor analysis revealed that there were four dimensions of tourism impacts that were perceived by current residents in the research areas such as the Williamsburg and Virginia Beach areas. Thus, it can be stated that the impacts of tourism development could affect residents who are living in a tourism destination area with economic, social, cultural, and environmental impacts.

**Table 1**  
**Factor Analysis of Tourism Impact Attributes**

Impact Attributes	Factor Loading	Eigen-Value	Var. Expd.
<b>Factor 1: Economic benefits</b> (Reliability = .86)		5.23	27.55
Tourism has lead to more spending in your community.	.876		
Tourism has created more jobs for your community.	.832		
Tourism has attracted more investment to your community.	.824		
Tourism has given economic benefits to local people and small businesses.	.713		
Our standard of living has increased considerably because of tourism.	.629		
<b>Factor 2: Social costs</b> (Reliability = .80)		3.66	19.13
Tourism has changed our precious traditional culture.	.803		
High spending tourists have negatively affected our way of life.	.798		
Local residents have suffered from living in a tourism destination area.	.765		
Improving public tourist facilities is a waste of tax-payer money.	.628		
Tourism has led the more vandalism in your community.	.557		
<b>Factor 3: Cultural enrichment</b> (Reliability = .83)		1.70	8.95
Tourism has encouraged a variety of cultural activities by the local residents	.821		
Tourism has resulted in cultural exchange between tourists and residents.	.816		
Meeting tourists from other regions is a valuable experience to better understand their culture and society.	.766		
Tourism has resulted in positive impacts on the cultural identity of our community.	.691		
<b>Factor 4: Environmental deterioration</b> (Reliability = .86)		1.17	6.15
Tourism has resulted in traffic congestion, noise, and pollution.	.876		
Tourism has resulted in unpleasantly overcrowded beaches, hiking trails, parks and outdoor places in your community.	.844		
Construction of hotels and tourist facilities have destroyed the natural environment.	.731		
Total variance explained		67.6	

Note: Principle component analysis Varimax with Kaiser Normalization Likert-type scale was used to measure each item:

1 = Strongly disagree 2 = Disagree 3 = Moderate 4 = Agree 5 = Strongly agree.

KMO (Kaiser-Meyer-Olkin Measure of Sampling Adequacy) = .857

Bartlett's Test of Sphericity:  $p = .001$  ( $\chi^2 = 2472.44$ ,  $df = 171$ ) Var. Expd. = Variance explained

For achieving the objective of this study, the relationship between determinants and the underlying dimensions generated from the perceived tourism impacts was examined. The serious of multiple regression analyses were conducted. Here, the determinants were considered as independent variables and the four tourism impact

dimensions were considered as dependent variables. To perform multiple regression, the data collected from the survey were analyzed by using the "enter" method and "listwise" command for the treatment of cases with missing values.

**Table 2**  
**Relationship of Determinants and Perceived Tourism Impacts**

Determinants (Independent variables)	Perceived Tourism Impacts (Dependent variables)			
	Economic Benefits	Social Costs	Cultural Enrichment	Environmental Deterioration
Level of tourism <sup>d</sup>	$\beta, p^{**}$		$\beta, p^*$	
Community attachment <sup>b</sup>	$-\beta, p^{**}$	$-\beta, p^*$		
Length of residency <sup>c</sup>	$-\beta, p^*$			$-\beta, p^*$
Birthplace		$-\beta, p^*$		
Growth of community <sup>c</sup>	$\beta, p^*$			
Travel experience <sup>e</sup>		$-\beta, p^*$		
Policy participation <sup>a</sup>		$\beta, p^*$		
Recreation activity <sup>e</sup>				
Interact with Tourists				
Related Job <sup>a</sup>				
$\bar{R}$	.577	.404	.220	.354
$\bar{R}^2$	.333	.163	.048	.125
Significance	$p^{**}$	$p^{**}$		$p^{**}$

Note:  $\beta$  = Standardized Coefficients. \*  $p < .05$ . \*\*  $p < .001$ . Blank = No Significant (ns).

- Dummy Coded: 0 = Yes, 1 = No.
- 1 = Very Sorry (high community attachment) 5 = Very Pleased (low community attachment)
- 1 = Very Slowly (Very Limited), 5 = Very Rapidly (Very Extensive)
- 1 = Very Limited, 5 = Very Extensive
- Ratio Data

The results of the multiple regression analysis concerning the relationship between determinants and perceived tourism impacts were presented in Table 2. In terms of a relationship of determinants and perceived tourism impacts, the coefficient of determination ( $\bar{R}^2$ ) indicated that economic benefits (33.3 %), social costs (16 %), and environmental deterioration (13 %) of the variation in residents' perceived tourism impacts demonstrated a statistical correlation with the determinants (independent variables). This model revealed a significance at .001 of the p-value ( $F=10, 12.56$ ,  $\bar{F}=10, 4.91$ , and  $\bar{F}=10, 3.61$  respectively).

The beta coefficient ( $\beta$ ) indicated that four determinant variables have significant effects on the perceived economic tourism impacts. These were "level of tourism" ( $\beta = .399, p < .001$ ), "community attachment" ( $\beta = -.234, p < .001$ ), "length of residency" ( $\beta = -.146, p < .05$ ), and "growth of community" ( $\beta = .129, p < .05$ ). Of the social costs, "birth place" ( $\beta = -.197, p < .05$ ), "community attachment" ( $\beta = -.181, p < .05$ ), "travel experience" ( $\beta = -.128, p < .05$ ), and "policy participation" ( $\beta = .120, p < .05$ ) had significant effects on perceived social tourism impacts. In addition, Two determinant variables have significant effects on perceived environmental deterioration of tourism. These were "level of tourism" ( $\beta = .204, p < .05$ ) and "length of residency" ( $\beta = -.178, p < .05$ ).

These results implied that the more extensive level of tourism development and rapid growth of community, the more economic impacts influenced residents' perception of tourism development. On the other side, residents who had a stronger community attachment and had been living in the area for a shorter time were influenced by the more economic impacts of tourism development. In terms of social impacts, it can be concluded that residents who were born in the research area, who had stronger community attachment, and who have less travel experience, could have more concerns about the social impacts of tourism. In addition residents who had not been involved in making any tourism-related policies could be more influenced by the social impacts of tourism. Finally, residents who had not been living there long and who had the more extensive level of tourism residents perceive, the more concerns they had on environmental deterioration such as traffic congestion, noise, pollution, and overcrowd.

However, the results of multiple regression on investigating relationship between determinants and perceived cultural enrichments of tourism showed that there were no statistical significant relationship between determinants and perceived cultural impacts of tourism. As a result, no determinants were likely to influence residents' perceived cultural enrichments of tourism.

For the additional information, multivariate analysis of variance (MANOVA) and analysis of variance (ANOVA) were used to determine whether there are differences of

residents' perceived tourism impacts among their demographic variables such as household income and ethnic group. The results of MANOVA revealed that respondents' mean scores for the dimensions of perceived tourism impacts were differed by household income (Wilks' Lambda  $F = 25, 1.94, p < .01$ ) and Caucasian group (Wilks' Lambda  $F = 5, 2.74, p < .05$ ). The results of ANOVA shown that the household income groups differed only on social costs of tourism impacts ( $F = 5, 3.21, p < 0.01$ ). The groups who had more than \$60,000 provided the lowest mean score, indicating concerns of social costs. In

addition, the differences of means scores between Caucasian group and Non-Caucasian group was found on both cultural enrichment ( $F = 1, 6.03, p < .05$ ) and environmental deterioration ( $F = 1, 5.44, p < .05$ ). Caucasian group indicated higher mean scores than Non-Caucasian group on environmental deterioration, and Non-Caucasian indicated higher than Caucasian group on cultural enrichment. From these findings, it can be stated that Non-Caucasian group more agreed tourism provides cultural enrichment and Caucasian group had more concerns on environmental deterioration

**Table 3**  
Summary of MANOVA and ANOVA on Perceived Tourism Impacts

<u>Household Income (N=299)</u>	Economic Benefits	Social Costs	Cultural Enrich.	Environmental Deterioration
Under \$20,000 ( $n=17$ )	3.21	2.37	3.40	2.80
\$20,001- \$30,000 ( $n=29$ )	3.52	2.48	3.28	3.56
\$30,001- \$40,000 ( $n=52$ )	3.53	2.51	3.00	3.43
\$40,001- \$50,000 ( $n=34$ )	3.84	2.57	3.35	3.44
\$50,001- \$60,000 ( $n=42$ )	3.61	2.54	3.27	3.55
\$60,001 or more ( $n=125$ )	3.74	2.18	3.10	3.29
Total	3.65	2.37	3.16	3.37
Univariate $F$ ( $df = 5$ )	2.13	3.21	1.96	1.75
$p$	.062	.008**	.084	.124
Multivariate $F$ (25. 1.94) (Wilks' Lambda)	$p = .004**$			

---

<u>Ethnic Group (N=311)</u>	Economic Benefits	Social Costs	Cultural Enrich.	Environmental Deterioration
Caucasian ( $n=273$ )	3.66	2.39	3.11	3.41
Non-Caucasian ( $n= 38$ )	3.41	2.26	3.43	3.00
Total	3.63	2.37	3.25	3.36
Univariate $F$ ( $df = 1$ )	3.05	1.02	6.03	5.44
$p$	.082	.313	.015*	.020*
Multivariate $F$ (5. 2.74) (Wilks' Lambda)	$p = .019*$			

Note: Value are mean scores.

\*  $p < .05$  \*\*  $p < .01$

## Conclusion

From the findings of this study, residents perceived the impacts of tourism as four different dimensions embodying economic benefits, social costs, cultural enrichment, and environmental deterioration. Their perceptions were affected by seven out of ten determinants. Generally, a higher level of tourism development and growth of community affects residents' perceptions of tourism impacts. Residents who were natives, who have higher community attachment, and who had been living in the research area for a shorter time period, had more concerns about perceived impacts of tourism. In addition, perceived tourism impacts were significantly differed across household income and ethnic. For future study, it is suggested that a further investigation of determinants affecting residents' perceptions is needed for better

understanding and explanation for the impacts of tourism. It is believed that this study would help tourism planners and developers formulate and implement better strategies.

## References

- Akis, S., Peristianis, N. Warner, J. (1996). Residents' attitudes to tourism development: the case of Cyprus. *Tourism Management, 17*(7), 481-494.
- Belisle, F. J. & Hoy, D. R. (1980). The perceived impact of tourism by residents. *Annals of Tourism Research, 7*, 83-101.
- Brougham, J., and Butler, R. (1981). A segmentation analysis of resident attitudes to social impacts of tourism. *Annals of Tourism Research, 7*(4), 569-90.

- Davis, D., Allen, J. & Consenza, R. M. (1988). Segmenting local residents by their attitudes, interested and opinions toward tourism. *Journal of Travel Research*, 27(2), 2-8.
- Getz, D. (1994). Residents' attitudes toward tourism: a longitudinal study in Spey Valley, Scotland. *Tourism Management*, 15(4), 247-258.
- Hernandez, S. A., Cohen, J & Garcia, H. J. (1996). Residents attitudes towards an instant resort enclave. *Annals of Tourism Research*, 23(4), 754-779.
- Hralambopoulos, N. & Pizam, A. (1996). Perceived impacts of tourism. *Annals of Tourism Research*, 23(3), 503-526.
- Johnson, J. D., Snepenger, D. J. & Akis, S. (1994). Residents' perception of tourism development. *Annals of Tourism Research*, 12(3), 629-642.
- Jurowski, C., Uysal, M. and Williams D. R. (1997). A theoretical analysis of host community resident reactions to tourism. *Journal of Travel Research*, 36(2), 3-11
- King, B., Pizam, A. & Milman, A. (1993). Social impacts of tourism: host perceptions. *Annals of Tourism Research*, 20, 650-655.
- Lankford, S. V. & Howard, D. (1994). Revising TIAS. *Annals of Tourism Research*, 21, 829-831.
- Liu, J. C., Sheldon, P. & Var, T. (1987). Resident perceptions of the environmental impact of tourism. *Annals of Tourism Research*, 14, 17-37.
- Long, P. T., Perdue, R. R., Allen, L. (1990). Rural resident tourism perceptions and attitudes by community level of tourism. *Journal of Travel Research*, 28(3), 3-9.
- Mardrigal, R (1993). A tale of tourism in two cities. *Annals of Tourism Research*, 20, 336-353.
- McCool, S. F. & Martin, S. T. (1994). Community attachment and attitudes toward tourism development. *Journal of Travel Research*, 32(3), 29-34.
- Milman, A., and A. Pizam (1988). Social impact of tourism on Central Florida. *Annals of Tourism Research*. 15(2), 191-204.
- Murphy, P. E. (1985). *Tourism: A Community Approach*. New York: Routledge.
- Perdue, R. R., Long, P. T. & Allen, L. (1990). Resident support for tourism development. *Annals of Tourism Research*, 17, 586-599.
- Pizam, A. (1978). Tourism's impacts: the social costs to the destination community as perceived by its residents. *Journal of Travel Research*, 16(4), 8-12.
- Pizam, A. & Milman A. (1984). The social impacts of tourism. *UNEP industry and Environment*. 7(1), 11-14.
- Sheldon, P. J. & Var, T. (1984). Resident attitudes to tourism in North Wales. *Tourism Management*, 5, 40-47.
- Um, S. & Crompton, J. L. (1987). Measuring residents' attachment levels in a host community. *Journal of Travel Research*, 25(3), 27-29.

## AN EVALUATION OF STATE TOURISM WEB SITES

A. Leslie Burns

Undergraduate Student, Tourism Planning and Development  
University of New Hampshire, 310 James Hall, Durham,  
NH 03824-3589  
alb@spi.mv.com

Robert A. Robertson

Associate Professor, Tourism Planning and Development  
University of New Hampshire, 310 James Hall, Durham,  
NH 03824-3589  
robertr@cisunix.unh.edu

---

**Abstract:** States are now promoting tourism using an additional marketing tool, the Internet. Consumers are becoming more web conscious and Internet sites need to be attractive, informative and user friendly. However, little research exists evaluating the effectiveness of Internet web sites. In response to this lack of information, a study was developed to examine each of the fifty state's tourism promotional web sites. The study was designed to evaluate the effectiveness of web sites based on, complexity, usability and content information. A survey was conducted of each state's promotional tourism web site. This research provides state tourism planners with guidance in analyzing the quality of their sites.

---

### Introduction

Government commits substantial resources to marketing tourism in their state. They use promotional brochures, television commercials and magazine ads. One modern approach to marketing, is the use of the Internet. The Travel Industry Association, realizing the potential of this media, has asked questions about Internet use in its ongoing monthly telephone surveys (National Travel Survey) which studies attitudes on domestic travel and tourism (Cook 1997). Consumers are becoming more Internet conscious and web sites need to be attractive, informative and user friendly. To be effective the site must motivate potential visitors, who request additional information and visit state attractions.

Although, there is some research evaluating both the relative and comparative effectiveness of promotional brochures, there is little research on the effectiveness of web sites (Berthon et al 1996). Because of this lack of information, criteria and a method were developed to analyze all fifty state's promotional web sites.

### Profile of State Web Sites

An effective web site includes a homepage that contains titles or subjects, which are linked to other pages where additional information is found. The homepage is the most important component of the site because it attracts Internet visitors and encourages them to browse further. The ultimate objective is to get the browser to request additional information, which may turn the virtual visitor into an actual tourist.

State tourism web sites, evaluated in this study, varied in style and content. Some were very user friendly while others discourage the user. Some sites contained enhanced technology such as updated highway maps and traffic conditions, interactive travel planners, language preferences and video cameras (web cams) at a highlighted state attraction. However some sites contained too many enhanced features making it difficult for Internet users to retrieve information. In order to see all the information offered, many sites required the user to download Adobe<sup>TM</sup> and/or QuickTime<sup>®</sup>. While the site developers were able to display their creative abilities, the results sometimes turned away potential serious information seekers. Many of these time consuming features could be considered no more than unproductive frills.

Most of the tourism web sites are controlled and maintained by the individual state's Travel and Tourism Department. Some states contract the site design and maintenance to professional web developers. A few states provided only a minor presence on the web by hyperlinking from their homepage to other organizations, which promote the state, and its attractions. Some agencies or businesses were authorized to be referred to as the "official" state tourism web site. Some states do not have Travel and Tourism Departments or are part of other agencies such as the Department of Economic Development, Commerce and Housing, and Parks and Recreation.

### Methods

#### *Development of Criteria*

To conduct the study, a method of identifying criteria important to an effective state promotional web site was developed. Criteria were established partly based on information from the book *In-line/On-line, Fundamentals of the Internet and the World Wide Web* written by Professor Raymond Greenlaw and Ellen Hepp. Additional information came from Jakob Nielsen's tips and alerts on the Internet ([www.useit.com](http://www.useit.com)). Five major themes were identified. The first (1) identified the time to load to the desired web site. The second (2) identified the number of links to get to the desired web site. The third (3) identified the complexity and usability of the web site. The fourth (4) identified content on the homepage. The fifth (5) identified content on other web pages. The purpose of the study was to evaluate each web site by tallying the points, assigning a grade and ranking each state.

### Survey Process

The survey of each state web site was unobtrusive. This was accomplished by establishing a set of 100 questions focusing on usability, complexity, and content information on the homepage and other pages of the site. While reviewing each web site, a questionnaire was filled out identifying key criteria. Each item was assigned a point range. The points were tallied in five categories: (1) time; (2) number of links; (3) complexity and usability; (4) content of home page; (5) content of other linked web pages. The points were then totaled for an overall score and a grade was given to each state's web site. The site with more points was considered more effective. Finally each state web site was ranked and a national average computed.

### Standards and Limitations

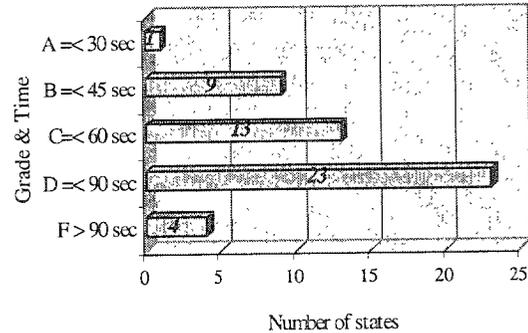
Following are the standards and limitations used in the study:

- Each web site was verified as the official state tourism page
- Survey of sites were performed between January 31 and March 18, 1999
- All time and link evaluations were measured during one day
- Data collection was limited to the first four links
- Research was limited to the state web site, not outside links
- A URL address was considered short if it consisted of less than 15 letters
- The first attempt to get to the web site was by way of **smart browser**, typing in state or state + tourism
- If **smart browser** failed, **AltaVista™** was used to get to the site
- Frames used effectively scored one point, poorly incorporated frames scored zero points and sites using no frames received 2 points (Jakob Nielsen, Dec. 1996).
- Animation used effectively or not used at all scored one point and ineffective or time consuming animation scored zero points

### Results

#### Time to Load

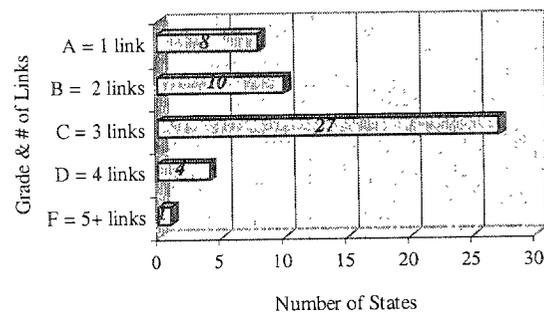
The time it takes to get to a desired web site is critical because the Internet user is impatient. *Figure 1* shows that only one state web site (Delaware) could be loaded within 30 seconds or less and received an "A" worth 4 points. Nine sites were loaded between 30 and 45 seconds and received a "B" worth 3 points. Thirteen sites required between 45 and 60 seconds and received a "C" worth 2 points. Twenty-three sites took between 60 and 90 seconds and received a "D" worth 1 point. Massachusetts, Texas, Vermont and Wisconsin all took 90 seconds or more and received a "F" worth 0 points.



*Figure 1.* Time required loading each state's tourism web site.

#### Number of Links

*Figure 2* displays the number of links it took to get to the desired web site. Eight state web sites were reached in one link and received an "A" worth 4 points. Ten sites required two links to get to the homepage, receiving a "B" worth 3 points. Twenty-seven sites took three links, receiving a "C" worth 2 points. Four sites required four links, receiving a "D" worth 1 point and Alaska required five links to reach its tourism web site, receiving a "F" worth 0 points.



*Figure 2.* Number of links required to arrive at state tourism web site.

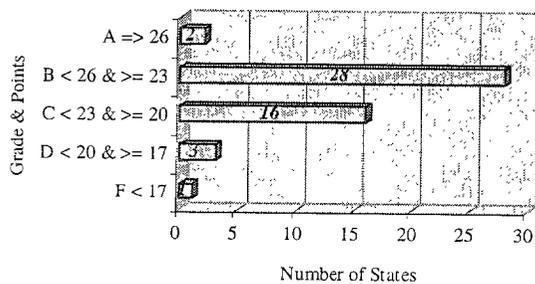
#### Complexity and Usability of Web Site

Complexity and usability refers to how information was presented. The standards included any application that produced a more user friendly web site. Criteria used for evaluating the complexity and usability of a web site included:

- **URL** (Uniform Resource Locator) short and memorable (Nielsen, May 1996)
- **smart browser** ability to link to site
- effective use of frames (Greenlaw 1999)
- effective use of tables (Greenlaw 1999)
- pages within users peripheral vision (Nielsen, May 1996)
- concise information, highlighted keywords, one idea per paragraph, and objective language (Nielsen, Oct 1997)
- quality graphics, good writing and lack of marketese (Nielsen, Oct. 1997)
- image maps used as navigation tool (Greenlaw 1999)

- site maps
- quality images
- effective animation (pictures and graphics that appear to move) (Greenlaw 1999)
- text information connected to the picture
- effective forms
- a search command (Nielsen, July 1997)
- a **mailto** command
- hyperlinks to outside sources of information
- standardized format (Nielsen, May 1999)
- no dead links
- relevant hyperlinks
- use of unnecessary technology (Nielsen, May 1999)

*Figure 3* shows the results of tallying complexity and usability data. Only New Mexico and West Virginia received an "A" with 26 out of a possible 28 points. Twenty-eight sites received a "B" which required between 23 and 25 points. Sixteen web sites got a "C" which needed between 20 and 22 points, three states got a "D" which required between 17 and 20 points and Hawaii got an "F" receiving less than 17 points.



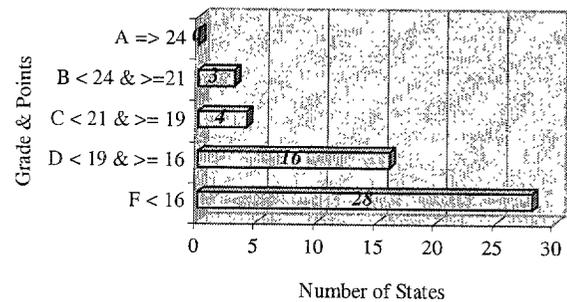
*Figure 3.* Complexity and usability of web site.

#### *Content Information on Homepage*

The survey of content information provided an excellent means of identifying social artifacts and studying communications (Babbie 1995). The homepage was most important because it connects related web pages and encourages the Internet user to stay and visit other pages. Important information included:

- attractions within the state
- accommodations within the state
- events within the state
- convention facts and hyperlinks
- contact information to the state tourism department to order brochures and maps
- personal interactive travel planners that collect specific information the visitor requests
- highlighted attractions that focus on a season, event, etc.
- weather
- transportation
- the word "official" displayed prominently within the homepage to identify this is the state's authorized site
- symbols and slogans to identify the state
- date the site was updated.

*Figure 4* shows the results of content information on the homepage. No state got an "A" which required 24 points or more out of a possible 26 points. Arkansas, New Mexico and New York received a "B" which needed between 21 and 23 points. Four states received a "C" which were 19 or 20 points. Sixteen states received a "D" which required 16 to 18 points, and twenty-eight states received less than 16 points and failed.



*Figure 4.* Content information on homepage of web site.

#### *Content Information on Other Pages*

Content information on the rest of the web pages provided enhanced data expanded from the homepage.

- Attractions should have covered: sports; scenery; art, theater, and museums; historical and culture; shopping; parks; special events; and gambling (van Harsseel 1994).
- Lodging information should have included: accommodations by region or city; promotion of private businesses; rental property; relocation information; camping and RV parks.
- Calendar of events should have noted: sports; scenic and wildlife; cultural and historic; art, theater and museums; shopping; religious and holiday activities.
- Convention facility information should have: hyperlinks to convention centers; address and phone number of convention centers; facility information; and Chamber of Commerce facts.
- Contact information should have included: means of obtaining a guidebook, group travel information and visitor bureau or tourism office contacts.
- Travel planner information should have covered: maps, traffic updates, and interactive planner.
- Transportation should have included: air, rail, bus, ferry/boat, car rental and highway information.
- Other information should have included a welcome message from the governor or director of the tourism office and information and location of visitor centers.

Figure 5 shows the results of content information on other Web pages within the site. California's web site received an "A" with 41 points out of possible 45 points. Three states web sites received a "B" which required between 37 to 40 points. Fifteen states received a "C" which needed between 32 to 36 points. Nineteen states received a "D" which required between 28 to 31 points, and twelve web sites failed receiving less that 28 points.

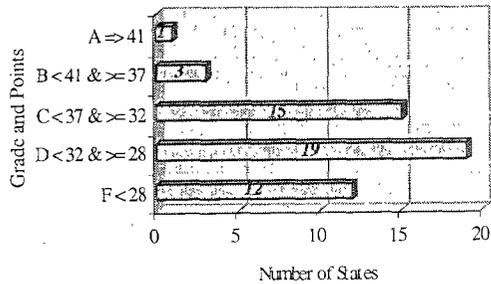


Figure 5. Content information on other web pages.

**Summary Results**

The results of all this data showed that most state tourism web sites were marginal as seen in Figure 6. No web site received an "A" grade, which was 97 or more points out of a possible 107. No site received a "B" which was 86 to 96 points. Eighteen states received a "C", which required between 75 to 85 points. Twenty-seven states received a "D" receiving 65 to 75 points. Indiana, Mississippi, Maryland, Tennessee and Hawaii failed, receiving scores below 65 points.

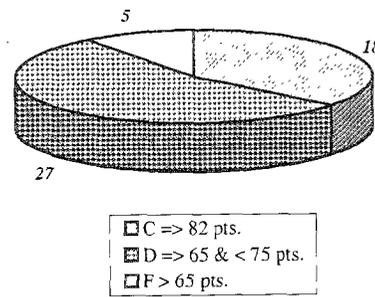


Figure 6. Total overall evaluation of state tourism web sites.

**State Ranking and National Average**

In Table 1 the overall score ranked each state tourism web site. Kentucky ranked #1, followed by Colorado and New Mexico at #2; and New Hampshire at #3. Tennessee ranked 20th and Hawaii ranked last. The national average of all state tourism web sites was ranked at #11.

**Implications and Conclusion**

In summary, twenty-seven state web sites received only marginal scores based on the established criteria of a good web site. No site received an excellent or superior score. Eighteen states received a satisfactory score and five web sites were deficient. The majority of web sites were considered to be user friendly. However, most of the web sites lacked the necessary content information that tourists need to make their vacation plans. The implications from these results are that state tourism planners may be missing some potential tourists who use the Internet as a primary source of travel planning. States may be losing tourism revenue to other states that have more effective state promotional web sites when Internet users cannot get desired content information to make all their travel arrangements.

In conclusion, this study should be retested to see whether these findings are repeatable. Follow-up studies measuring the effectiveness of web sites in converting Internet visitors into actual tourists could provide a more detailed evaluation of the effectiveness of each state's tourism web site (Berthon et al 1996).

Evaluation of State Promotional Web Pages							
Rank	State	Overall Web Site	User Friendly	Time	Links	Homepage	Other Pages
1	KY	82	22	3	4	18	35
2	CO	81	23	1	4	18	35
2	NM	81	26	2	3	21	29
3	NH	80	25	1	1	16	37
4	NY	79	24	1	3	21	30
5	VT	78	22	0	4	20	32
6	AL	77	22	1	2	19	33
6	AR	77	22	2	2	22	29
6	CA	77	20	1	1	14	41
6	NV	77	22	3	2	14	36
6	OK	77	22	2	2	12	39
7	AZ	76	23	1	2	17	33
7	GA	76	25	1	3	12	35
7	NJ	76	25	1	2	13	35
7	UT	76	25	1	4	12	34
8	NE	75	25	1	2	18	29
8	RI	75	24	2	2	14	33
8	VA	75	25	1	2	16	31
9	MO	74	23	3	4	16	28
10	MN	73	23	2	2	19	27
10	ND	73	24	1	2	16	30
10	SC	73	22	2	2	17	30
10	WV	73	26	3	3	16	25
11	AK	72	23	2	0	18	29
11	CT	72	25	1	2	15	29
11	ME	72	20	1	2	16	33
11	TX	72	25	0	2	18	27
11	WA	72	18	3	3	13	35
11	WY	72	25	3	4	14	26
<i>National Average 72</i>							
12	FL	71	24	1	2	19	25
12	ID	71	23	1	3	18	26
12	MI	71	25	1	2	12	31
12	PA	71	25	3	2	15	26
12	IA	71	24	2	2	14	29
13	IL	70	17	2	2	11	38
13	MT	70	24	1	2	15	28
14	DE	69	19	4	3	11	32
14	MA	69	21	0	1	16	31
14	NC	69	23	2	3	8	33
14	SD	69	24	1	2	11	31
14	WI	69	22	0	1	14	32
15	OR	68	23	1	3	12	29
16	OH	67	22	3	4	8	30
17	KS	65	23	2	2	9	29
17	LA	65	22	2	2	11	28
18	IN	63	22	3	4	9	25
18	MS	63	21	2	2	13	25
19	MD	62	22	1	3	12	24
20	TN	60	25	1	2	7	25
21	HI	56	15	1	2	12	26
<i>Possible total score:</i>		107	28	4	4	26	45

Table 1. Ranking and evaluation of state promotional web sites.

**References Cited**

Babbie, Earl. (1995). The Practice of Social Research. Belmont, CA: Wadsworth Publishing Company.

Berthon, P., Pitt, L. & Watson, R. (1996, Jan/Feb). "The World Wide Web as an Advertising Medium." The Journal of Advertising Research, pp. 43-54.

Cook, Suzanne D. (Ed). (1997). Outlook on Domestic Tourism. Cleveland, Ohio: Travel Industry Association of America.

Greenlaw, Raymond. (1999). In-line/On-line: Fundamentals of the Internet and the World Wide Web. Boston: McGraw-Hill.

Nielsen, Jakob. "Why Frames Suck." Jakob Nielsen's Alertbox for December 1996. <http://www.useit.com/alertbox/9612.html>

Nielsen, Jakob. "Do Users Read On the Web." Jakob Nielsen's Alertbox for October 1, 1997. <http://www.useit.com/alertbox/9710a.html>

Nielsen, Jakob. "Top Ten Mistakes in Web Design." Jakob Nielsen's Alertbox for May 1996. <http://www.useit.com/alertbox/9605.html>

Van Harsseel, Jan. (1994). Tourism An Exploration. Englewood Cliffs, NJ: Prentice Hall.

ST	URL Address	ST	URL Address
AK	<a href="http://www.commerce.state.ak.us/tourism">http://www.commerce.state.ak.us/tourism</a>	MT	<a href="http://www.travel.mt.gov">http://www.travel.mt.gov</a>
AL	<a href="http://www.touralabama.org">http://www.touralabama.org</a>	NC	<a href="http://www.visitnc.com">http://www.visitnc.com</a>
AR	<a href="http://www.arkansas.com">http://www.arkansas.com</a>	ND	<a href="http://www.ndtourism.com">http://www.ndtourism.com</a>
AZ	<a href="http://www.arizonaguide.com">http://www.arizonaguide.com</a>	NE	<a href="http://www.visitnebraska.org">http://www.visitnebraska.org</a>
CA	<a href="http://www.gocalif.ca.gov">http://www.gocalif.ca.gov</a>	NJ	<a href="http://www.state.nj.us/travel">http://www.state.nj.us/travel</a>
CO	<a href="http://www.colorado.com">http://www.colorado.com</a>	NH	<a href="http://www.visitnh.gov">http://www.visitnh.gov</a>
CT	<a href="http://www.state.ct.us/tourism">http://www.state.ct.us/tourism</a>	NM	<a href="http://www.newmexico.org">http://www.newmexico.org</a>
DE	<a href="http://www.state.de.us/tourism">http://www.state.de.us/tourism</a>	NV	<a href="http://www.travelnevada.com">http://www.travelnevada.com</a>
FL	<a href="http://www.flausa.com">http://www.flausa.com</a>	NY	<a href="http://iloveny.state.ny.us">http://iloveny.state.ny.us</a>
GA	<a href="http://www.georgia.org/itt/tourism">http://www.georgia.org/itt/tourism</a>	OH	<a href="http://www.ohiotourism.com">http://www.ohiotourism.com</a>
HI	<a href="http://www.hawaii.gov/tourism">http://www.hawaii.gov/tourism</a>	OK	<a href="http://www.otrd.state.ok.us">http://www.otrd.state.ok.us</a>
IA	<a href="http://www.ia.us/tourism">http://www.ia.us/tourism</a>	OR	<a href="http://www.traveloregon.com">http://www.traveloregon.com</a>
ID	<a href="http://www.visitid.org">http://www.visitid.org</a>	PA	<a href="http://www.visit.state.pa.us">http://www.visit.state.pa.us</a>
IL	<a href="http://www.enjoyillinois.com">http://www.enjoyillinois.com</a>	RI	<a href="http://www.visitrhodeisland.com">http://www.visitrhodeisland.com</a>
IN	<a href="http://www.ai.org/tourism">http://www.ai.org/tourism</a>	SC	<a href="http://www.travelsc.com">http://www.travelsc.com</a>
KS	<a href="http://www.kansascommerce.com">http://www.kansascommerce.com</a>	SD	<a href="http://www.state.sd.us/tourism">http://www.state.sd.us/tourism</a>
KY	<a href="http://www.kentuckytourism.com">http://www.kentuckytourism.com</a>	TN	<a href="http://www.tourism.state.tn.us">http://www.tourism.state.tn.us</a>
LA	<a href="http://www.louisannatravel.com">http://www.louisannatravel.com</a>	TX	<a href="http://www.traveltexas.com">http://www.traveltexas.com</a>
MA	<a href="http://www.mass-vacation.com">http://www.mass-vacation.com</a>	UT	<a href="http://www.utah.com">http://www.utah.com</a>
MD	<a href="http://www.mdifun.org">http://www.mdifun.org</a>	VA	<a href="http://www.virginia.org">http://www.virginia.org</a>
ME	<a href="http://www.visitmaine.com">http://www.visitmaine.com</a>	VT	<a href="http://www.vermont-tourism.com">http://www.vermont-tourism.com</a>
MI	<a href="http://www.michigan.org">http://www.michigan.org</a>	WA	<a href="http://www.tourism.wa.gov">http://www.tourism.wa.gov</a>
MN	<a href="http://www.exploreminnesota.com">http://www.exploreminnesota.com</a>	WI	<a href="http://tourism.state.wi.us">http://tourism.state.wi.us</a>
MO	<a href="http://www.missouritourism.org">http://www.missouritourism.org</a>	WV	<a href="http://www.state.wv.us/tourism">http://www.state.wv.us/tourism</a>
MS	<a href="http://www.decd.state.ms.us/TOURISM.HTML">http://www.decd.state.ms.us/TOURISM.HTML</a>	WY	<a href="http://www.wyomingtourism.org">http://www.wyomingtourism.org</a>

**SUSTAINABILITY INDICATORS REGARDING  
TOURISM DEVELOPMENT AND CORAL REEF  
CONSERVATION: A CASE STUDY OF AKUMAL,  
IN THE MEXICAN CARIBBEAN**

Wendy Garpow

M.S., University of New Hampshire. Master's of Regional Planning Candidate, University of North Carolina at Chapel Hill. 50 Maxwell Road, Chapel Hill, North Carolina 27514. E-mail: [garpow@email.unc.edu](mailto:garpow@email.unc.edu)

---

**Abstract:** As with many coastal communities in the Caribbean, the tourism industry of Akumal Mexico depends upon a healthy marine environment. Today's tourists are more environmentally conscious than ever, and are likely to choose a different destination if the beaches are littered, the seawater is polluted, or the corals are ruined. Recently, the condition of Akumal's coral reef appears to have degraded -- coral coverage seems to have decreased while algae growth and disease appear to have increased. Since this coincides with Akumal's recent growth of tourism development, researchers speculate that the reef's degradation may be correlated with the tourism industry. Therefore, it is critically important to monitor Akumal's social, economic, cultural, and political components as they relate to the condition of the coral reef offshore. Armed with that information, the Akumal community will have a better chance of finding an acceptable balance between the two.

The purpose of this research was to conceptualize sustainability indicators that explain the linkages between Akumal's tourism development and the health of the coral reef offshore. Following the Pressure-State-Response model, 22 sustainability indicators were identified by a group of 24 community stakeholders. These indicators were conceptualized during a Stakeholder meeting and were refined through a modified Delphi process (electronic mail and personal interviews). Based on literature review and suggestions from the Stakeholders, I developed monitoring protocols and collected primary and/or secondary data for each indicator. Throughout the research process, the list of indicators was continually refined so that the variables were feasible, efficient and effective.

Also included in the full document is a historiography of previous research regarding Akumal's reef, plus an extensive literature review of anthropogenic impacts on coral reefs, Caribbean tourism development, and sustainability indicators. The research concludes with 7 "lessons learned" that might be useful for other researchers who are investigating sustainability indicators. Future plans include the creation of a comprehensive monitoring manual that can be utilized by Akumal's school children. Suggested applications of this research include the development of a "tropical marine environment protocol" for the GLOBE program (Global Learning and Observations to Benefit the Environment), so that children

around the world can become involved in coral reef conservation.

This article is an executive summary of my master's thesis (by the same title) at the University of New Hampshire, Department of Resource Economics and Development.

---

**Introduction**

Akumal occupies a 3.4 kilometer stretch of white sandy beach along the Caribbean coast of Mexico's Yucatan Peninsula. It was the first resort in the region which has become known as the "Mayan Riviera", a 140 kilometer (approximately 90 mile) span along the Caribbean Sea between the well-known tourist destinations of Cancun and Tulum. The environment is a central component of Akumal's beauty and attraction to tourists. Furthermore, the environmental characteristics of Akumal make it very sensitive to changes influenced by humans. Akumal's coastline is comprised of alternating rocky headlands and sandy beaches, two shallow bays, and a lagoon. The vegetation primarily consists of dense jungle, mangrove, and seagrasses. Like the majority of the Yucatan peninsula, Akumal's geology is that of karst terrain. Due to the porous limestone substrate of the Yucatan, there are no major rivers found on the peninsula's surface, rather all water flows through an extensive system of underground rivers and sinkholes called cenotes. Offshore lie extensive coral reef and seagrass communities that are teeming with marine life, including the sea turtles from which the ancient Mayans derived Akumal's name.

It has been said that when Don Pablo Bush first discovered Akumal (less than 50 years ago), the underwater environment was a vision of ecological splendor. (Orozco, *pers. com*) Each year, the tourism industry slowly grew as more and more visitors would come to witness the beauty of Akumal's reef and other natural resources. As with any human activity which is dependent upon a natural resource, the continuity and prosperity of the tourism-based economy in the Caribbean ultimately depends upon the conservation of the environment. This describes the challenge facing Akumal's coral reef today. In Akumal (as in the majority of communities along the Mayan Riviera, the economy, culture, and way of life depend directly and indirectly on the coral reefs. (R.E. Rodriguez, 1997)

Akumal's coral reef has been relatively spared from the development of mechanical industry, large scale fishing and shipping, or agriculture, which are significant stressors to corals in other parts of the world. However, coral reefs are also susceptible to tourism development, which is the primary source of economic wealth along the Mayan Riviera. (Lang, 1997) Particularly over the course of the last decade, the rate of Akumal's growth has been magnified. As of June 1998, Akumal has the capacity to accommodate 1034 tourists per night, and additional rooms are built continually and more are planned. As a result, there has been a large influx of Yucatecan locals who have relocated to Akumal in order to take advantage of the booming economy. Almost all local inhabitants work in the tourism sector, which is associated with the coral reef offshore, either directly (such as boat captains and dive

instructors) or indirectly (such as hotel and restaurant workers, or taxi drivers).

It appears that the waters offshore of Akumal are increasingly becoming contaminated with excessive nutrients from septic tanks and subsurface sewage wells utilized by many tourist accommodations. The organic nutrients presumably leech through the porous limestone substrate found under the thin layer of white sand, and quickly make their way into coastal waters. These nutrients stimulate unnatural growth of phytoplankton and microalgae, which in turn cloud the water. This prevents essential sunlight (which the corals need to survive) from reaching the seafloor where the corals live. These excess nutrient levels also result in the rapid acceleration of macroalgae growth which can literally smother the corals.

Akumal's development impacts the coral reef in many ways other than by people simply flushing toilets. Development along the coastline is eliminating the reef's "partner ecosystem", the mangroves. These critical habitats are rapidly being converted into parking lots and hotels to accommodate the increasing number of tourists visiting Akumal. This shoreline construction also stirs up sedimentation, which is perpetuated by increased boat traffic that is also associated with more tourists. Not surprisingly, the majority of these tourists wish to view the splendor of Akumal's reef during their visit, by either snorkeling in the shallow bays or by engaging in SCUBA diving. As a result, often times the coral colonies must endure physical contact (either intentional or non-intentional), which may cause outright damage or leave the corals more susceptible to other stressors -- either nature or human induced.

A "healthy" reef is characterized by three main indicators: a large percentage of live coral coverage (without signs of disease), a relatively small coverage of fleshy and macroalgae, and the presence of large herbivorous fish who consume the excessive algae growth. (Lang, 1997) As Akumal's tourism industry has prospered, many would agree that the coral reef offshore *appears* to be showing less of these characteristics. Anecdotal evidence from the memories of reef enthusiasts *suggest* (but certainly do not scientifically prove) a decline in the health of Akumal's reef over the past years. Furthermore, literature review of anthropogenic threats upon coral reefs indicate that the nearby human activity may indeed pose a threat to Akumal's reef.

Akumal is by no means the worst example of environmental degradation in this region – higher levels of deterioration is apparent in many other coastal communities of the Mexican Caribbean. However, some fear that Akumal may one day face an unfortunate fate similar to their Caribbean neighbor, Jamaica, whose tourism revenues dropped as a result of the decline in the health of their coral offshore. (Robinhawk, *pers. com*) Despite the fact that the Mexican Caribbean's tourism-based economy depends (directly and indirectly) upon the coral reef ecosystem offshore, the reefs are being threatened (directly and

indirectly) by the multi-faceted problem of unsustainable tourism development.

### Problem Statement

Due to governmental corruption and unenforced of environmental policy in Mexico, the conservation of Akumal's natural resources essentially relies upon the developer's voluntary compliance with best management practices for the coastal zone. Since increased profit margins create strong incentives, perhaps developers need to be convinced that it is in their economic best interest to conserve the coral reef offshore. To be convinced that current development trends are environmentally (and economically) unsustainable, they need to be shown evidence that their development is damaging the coral reef offshore, which could have a *direct impact* on future tourism revenue. This can only be done if strong and direct correlations can be drawn between Akumal's tourism development and the health of the coral. To date, these correlations have not been drawn because researchers do not have adequate information to make such analyses.

In 1994, coral reef ecologists began a yearly coral reef monitoring program to collect annual bio-physical data and to attempt to establish a "biological baseline" for comparisons of possible future decline. I was fortunate enough to participate in this program during the summer of 1997, which was my first visit to the study site. During the program, it became evident to me that this bio-physical data could provide an insight as to *what* was happening to Akumal's reef, but not *why* this was happening. Researchers could only speculate *why* Akumal's reef appeared to be degrading, since they did not have complete information about what was happening on land over time. I also learned that data such as the percentage of live coral coverage is not enough to convince developers that their actions are harming the health of the reef. Therefore there is a need to document what was taking place the land adjacent to Akumal's reef. This realization was the catalyst for this research project.

### Study Hypothesis

Any comprehensive monitoring effort regarding coral reefs should include the monitoring of human activity. (Pollnac, 1996) Therefore, it is critically important to monitor Akumal's social, economic, cultural, and political factors which relate to the health of the coral reef offshore. With the collection of this socio-economic data pertaining to Akumal's human activities, correlations can be calculated with the underwater bio-physical data that is being collected by coral reef ecologists. Only then will it be possible to truly understand the relationship between tourism development and coral reef vitality. Armed with that information, Akumal's decision makers will have a better chance of finding an acceptable and sustainable balance between the two, and the coastal developers may be convinced that it is in their economic best interest to *comply*.

## Research Questions

While keeping in mind the above hypothesis and the notion that any comprehensive monitoring effort regarding coral reefs should include the monitoring of human activity, (Pollnac, 1996) five main questions guided this research project. First, I wanted to identify the specific anthropogenic *pressures* on Akumal's coral reef. (In other words, what human-induced stressors relating to unsustainable tourism development exacerbate the natural stressors on the reef?) Second, what indicators (variables) can measure the *state* of the environment as a result of these pressures? Third, what mitigation actions is the Akumal community implementing in *response* to these pressures? Fourth, what indicators (variables) can be used to measure the *responses* to these pressures? Finally, I wanted to know *how* the data could be collected for these selected indicators. These questions were addressed via three main research objectives that are detailed below.

## Research Objectives

The purpose of this thesis project was to conduct a preliminary inventory of the relationship between tourism development and coral reef conservation in Akumal, Mexico. It is hoped that the socio-economic data collected will complement the underwater bio-physical data that is being collected by coral reef ecologists in Akumal. This study addresses the following specific research objectives:

### • *Objective One: Conceptual Base Development*

Develop a more complete conceptual base for identifying and measuring the relationship between coastal tourism development and coral reef conservation.

### • *Objective Two: Identify Indicators*

Identify sustainability indicators (comprised of both bio-physical and socio-economic variables) pertaining to the impacts of tourism development within the context of Akumal. These indicators are conceptually consistent with the Pressure-State-Response model and underlying theories of sustainable tourism development and planning.

### • *Objective Three: Verify the Indicators*

Operationalize a system for monitoring the identified indicators within the context of Akumal, and determine whether or not they are feasible, practical, measurable, efficient, and effective.

The full document explains in detail the implementation of these objectives and the lessons learned during the research process. In hindsight, I found that three objectives (to develop a conceptual base of the research topics, to identify sustainability indicators, and to verify the indicators by field testing the data collection) were not separate and distinct, but rather completely integrated. Throughout the entire research process, as I was *continually* refining the indicators and monitoring protocols based on my review of pertinent literature and communications with the Stakeholders. While this document may make it seem that the indicator development, identification, and verification process was straightforward and almost linear, I would like

to point out that many times it was in a multi-dimensional state of disorder and continual transformation.

## Indicator Development

My framework for dive-based tourism sustainability indicators is based on the "Pressure-State-Response" (PSR) model that has been adopted by the Organization for Economic Cooperation and Development (OECD). The PSR approach recognizes that environmental problems should be evaluated by both physical phenomena as well as the response of society. OECD summarizes the PSR model as an approach that "offers conceptual guidance on how to describe relationships between pressures of human activities (in areas of energy, transport, industry, and agriculture), the state of the environment (air, water, land, and natural resources) and responses by economic and environmental agents (administrations, households, enterprises, and the international community)" (O'Connor, 1995, p.92).

To identify the possible indicators which describe the linkages between Akumal's tourism development and coral reef conservation, I utilized a modified Delphi Technique with a select group of 25 Stakeholders from Akumal and Riviera Maya. The purpose of using the Delphi Technique was to generate a consensus on the part of the Stakeholder group which spanned a wide range of disciplines. For the purposes of this research, I made several modifications of the basic Delphi Technique, as detailed below.

- Step 1.* Stakeholders collectively identified linkages between tourism development and coral reef conservation.
- Step 2.* Stakeholders collectively identified "sustainability indicators" which allow these linkages to be monitored.
- Step 3.* Stakeholders collectively identified optimum sources of data for these indicators.
- Step 4.* Group results were summarized and sent to Stakeholders by e-mail.
- Step 5.* Stakeholders were asked to suggest changes or additions to the list of indicators.

The most significant modification was that the initial contact and questioning of the respondents was accomplished during a collective group meeting rather than by mail. As another modification, anonymity was never a part of this Delphi process, due to the open discussion forum of the meeting and the use of electronic mail for later communication. Each of the following steps is discussed in further detail in the sections below.

## The Stakeholder Meeting

Steps one through three of the Modified Delphi Technique were implemented during a "Stakeholder Meeting" on June 19, 1998. The 25 participants of the Modified Delphi process were the willing attendees of a conference that was directed by The Ecotourism Society (TES, a U.S. non-governmental organization), and hosted by Centro Ecológico Akumal. According to TES's invitational letter

sent to the Stakeholders, the purpose of this meeting was to "focus on designing guidelines for small scale tourism business activities in coastal areas". During the Stakeholder meeting, TES researchers asked the 25 participants to "identify key tourism-environment-community issues and best management practices used to mitigate negative impacts and promote win-win outcomes".

A total of 64 tourism entrepreneurs, environmental organization representatives, government coastal managers, and tourism policy makers were invited to attend this meeting. Twenty-five invitees from Akumal and the surrounding region actually attended. Those in attendance had a range of expertise in either the local community, coastal tourism development, and/or coral reef conservation. Although the group represented a wide range of disciplines and expertise, there was a general consensus to protect the coral reef while simultaneously protecting their individual economic interests.

Via group discussion, the Stakeholders identified 22 possible indicators (along with monitoring suggestions) to explain the linkages between Akumal's tourism development and the coral reef offshore. Stakeholder discussions centered around five main pressures that are negatively impacting the coral reef: the emission of sewage and nutrients into the ocean; diminishing mangroves, increasing turbidity and sedimentation, and excessive human contact with the coral species. All of these pressures are directly correlated with an increase in human population, which in turn is positively correlated with tourism development.

### Delphi Responses

The Delphi process continued by electronic mail during December 1998. In early December, I sent the Stakeholders a lengthy letter that summarized June's meeting and offered a compiled list of suggested 22 sustainability indicators. The 25 Stakeholders were given several weeks to respond to these sustainability indicators and the discussion summary, and to offer changes or suggestions for improvement. While the intention of the Delphi Technique is to continue summarizing the list and re-sending it to the Stakeholders for *comments until everyone converges on an acceptable list*, this was not entirely possible in practice. For one thing, only eight participants (slightly less than one-third) elected to continue with the Delphi process. Furthermore, the majority of these 8 Stakeholders did not share their opinions until I was actually on site. By this time, I was unable to continue with the summarizing/suggestion steps since I only had a limited amount of time to spend in Mexico to "verify" these indicators. While I was forced to finalize the list of 22 sustainability indicators without the Stakeholders' ultimate approval, I was not uncomfortable in doing so since I had learned much from communicating with several of them over time.

Below is an excerpt from the letter sent to the Stakeholders during the third Delphi iteration, which briefly summarizes their discussion and their subsequent suggestions.

### Stakeholder Discussion Summary

Much of the Yucatan coast's economic well-being is directly and/or indirectly dependent upon a healthy coral reef ecosystem. However, the rapidly increasing rate of tourism development along the Yucatan coastline threatens the condition of the coral reefs directly offshore. While data from the past five years does not show a statistical difference in live coral coverage, researchers have noted that Akumal's reef may be showing warning signs of anthropogenic stress.

Humans have questionable control over "natural" threats to the reef such as weather fluctuations and hurricane damage, although we may exacerbate these conditions by our consumption of greenhouse gases. However, we *can* influence the following five impacts which might be caused by unsustainable tourism development: land-based pollution, increasing sedimentation, overfishing, and to a limited extent, excessive physical contact with the corals -- all of which are enhanced by an increase in population. The 22 indicators are summarized in Table #1 below.

#### *Increasing Population: State Indicator*

There appears to be a positive correlation between the Akumal population (both permanent and visitor), and the increase of all other identified reef pressures. Stakeholders determined that suitable indicators for measuring this increasing population are (1) *the number of permanent local residents* and (2) *the number of visitor nights per year*.

#### *Increasing Population: Response Indicator*

An increase in population also increases the need and the *opportunity* for environmental education for the locals and the tourists. Centro Ecológico Akumal is conducting environmental education programs for both of these populations. To measure CEA's efforts in coral reef education, the chosen indicators are (3) *the school-wide average score on coral competency exams*, (4) *the tourists' average score on coral competency exams*, and (5) *the local worker's average score on coral competency exams*.

#### *Land-based Pollution: State Indicator*

Water quality is considered to be another major threat to Akumal's coral reef. It has been hypothesized that the waters of Akumal are being contaminated with an increasing amount of human effluents that may be fertilizing the fleshy algae on the reef, which could potentially overgrow and smother the corals. Every drop of water from the faucets goes through the ground where it can be contaminated, and eventually makes its way out to the reef. Therefore, it is important to know (6) *the number of liters of fresh-water pumped into Akumal*. Additionally, the Stakeholders suggest a complete (7) *water quality analysis of the seawater that bathes the corals, particularly nitrogen and phosphorous levels*. It is also important to keep track of (8) *how many kilograms of trash are being produced by the Akumal community*, as this trash is disposed of at the nearby unlined dump or on the beach itself -- both of which threaten the health of the coral reef offshore.

*Land-based Pollution: Response Indicator*

It is theorized that water contamination is a result of ineffective sewage treatment via septic tanks and cesspool disposal. To remedy the situation, new sewage disposal systems are being implemented in Akumal: Created Wetlands and Composting Toilets. The Stakeholders determined that it is important to know how many persons are being served by these alternative systems, by the following indicators: (9) *the percentage of Akumal population served by created wetlands and (10) the percentage of Akumal population served by composting toilets.* CEA has also begun to implement a community recycling program to help with the problem of solid waste. To attempt to measure the success of this program, it is important to keep track of the (11) *number of kilograms of trash recycled.*

*Erosion and Sedimentation: State Indicator*

Akumal's critical habitats such as dunes, beaches and mangroves are rapidly being converted into new homes, condominiums and hotels. Therefore, Stakeholders believe it is important to keep track of (12) *the total squared meters of development in Akumal.* Mangroves and seagrasses are a critical companion to the coral reef ecosystem, since they act as a natural filter and buffer between the land and the sea. Their close proximity to the beach front property *also* makes the mangroves a valuable location for new buildings and parking lots. Through discussion, the Stakeholders determined that it is important to know (13) *the squared meters of remaining mangrove biomass,* and (14) *the number of squared meters of seagrass beds.*

*Erosion and Sedimentation: Response Indicator*

There are several federal regulations which could help to protect these coastline habitats, however, there is little if no enforcement. For example, Mexican law requires a 20 meter buffer zone from the high tide mark. Therefore, I have created a (15) *"Development Quality Index"* to measure how environmentally sensitive the development is. Furthermore, there are government regulations to protect the endangered sea turtles which nest on Akumal's remaining beaches. However, with their nesting areas rapidly being depleted by tourism development, the species' survival is in jeopardy. Therefore, the (16) *population of turtle hatchlings* is a strong indicator of the ecological response to tourism development along the Akumal coastline. Some other coastal communities have been

successfully replanting mangroves in an effort to restore the ecological balance of the coastal environment. While Akumal is not currently replanting destroyed mangroves, it is possible that this reconstructive procedure will be implemented in the future. Therefore, it would be useful to keep track of the (17) *number of squared meters of reconstructed mangroves in Akumal.*

*Overfishing: State Indicator*

The reef offshore of the 3.4 kilometers of Akumal is considered an unofficial sanctuary, where the collection of reef species is not accepted. While Akumal is not a commercial fishing community, there are nearby communities that do support fishing industries and cooperatives. If these fishers were to harvest beyond the maximum sustainable yield, a collapse of the of the fish population is possible. Since this would undoubtedly have an impact on the ecological balance of the region's coral reef ecosystem, it is important to monitor the (18) *total number of kilograms of reef fish catch by neighboring fishing communities.*

*Excessive Physical Contact: State Indicator*

Stakeholders recognized that the divers and snorkelers who come to Akumal to admire the beauty of the coral reef can be one of our greatest conservation allies. However, poorly trained divers and snorkelers have the potential to cause damage to the reef by excessive physical contact, particularly in the shallow bays of Akumal. The damage caused by irresponsible contact is scientifically debated and most likely small compared with other anthropogenic impacts. However, the Stakeholders determined that it is important to keep track of (19) *the number of divers and (20) the number of snorkelers.*

*Physical Contact: Response Indicator*

The Akumal Dive Shop has conducted reef education programs for their staff, with the hope that those staff members who understand the delicate reef ecosystem will encourage "ecologically friendly" diving techniques, set a good example of diving etiquette, and teach reef stewardship to other divers. Therefore, we are including an indicator of (21) *the dive shop staff's average scores on a coral reef competency exam.* More specifically, it is important to measure how well the dive staff are able to transfer their knowledge about coral reef conservation to the tourists, thus we will monitor the (22) *estimated number of coral touches per dive.*

*Summary of the 22 Indicators*

These 22 sustainability indicators are concisely presented in the following table, that categorizes them into the Pressure-State-Response Model from which they were conceptualized.

**Table #1. Pressure-State-Response Model Sustainability Indicators Regarding Akumal's Tourism Development and Coral Reef Conservation**

<u>PRESSURE</u>	<u>STATE INDICATOR</u>	<u>RESPONSE INDICATOR</u>
<i>I. Increasing Population</i>	A. # residents B. # visitors	C. School-wide scores on coral competency exams D. Local worker's scores on coral competency exams E. Tourists average scores on coral competency exams
<i>II. Land Based Pollution</i>	A. # liters of "freshwater" pumped into Akumal B. Water Quality of the seawater bathing corals C. # kilos trash produced	D. % population served by created wetlands E. % population served by composting toilets F. # kilos trash recycled
<i>III. Erosion and Sedimentation</i>	A. m <sup>2</sup> total development B. m <sup>2</sup> remaining mangroves C. m <sup>2</sup> seagrass beds	D. Mean of "Development Quality Index" E. # turtle hatchlings F. m <sup>2</sup> of reconstructed mangroves
<i>IV. Overfishing</i>	A. # kilos fish catch from neighboring co-operatives	
<i>V. Human Contact</i>	A. # of divers B. # of snorkelers	C. Dive staff's avg. scores on coral competency exams D. Estimated # of coral contacts per dive

m<sup>2</sup>: Square Meters

**Indicator Verification**

The next step in the research process was to verify the 22 sustainability indicators that were identified by the Stakeholder group. The purpose of "verifying" the indicators was to determine the feasibility of collecting measurable data for each of the proposed variables. As this task progressed, it was necessary to refine and modify some of the indicators so that the data collection was both practical and efficient. In addition to consultation with the Stakeholders, this was accomplished through literature review, on-site reconnaissance work, and general trial and error.

A rather large component of the full document is dedicated to the explanation and justification of each indicator. Within each of the five pressure categories, I first conducted an extensive literature review on each indicator. Then, based on the literature and with the guidance of the Stakeholders, I have developed methods to collect data on the 22 identified indicators. Most of the data collection was accomplished through surveys and interviews with key informants (i.e. residents, business operators, community leaders, tourists, etc.), and through the compilation of secondary data (previously collected biophysical data and community records). For those indicators where no data

was able to be collected (within the time parameters of this study), I included a proposed methodology for future data collection. Through my research, I found that a large proportion of the desired data had already been informally collected -- therefore one of the primary challenges was determining who had the data, how to interpret it for the purposes of this study, and then devising a way to present the data and catalog it for future analysis.

### Next Steps

Once the list of 22 sustainability indicators regarding tourism development and coral reef conservation has been finalized through one last round of Delphi iterations and field testing, *the next task is to collect this data annually so that changes over time can be documented.* After collecting data on these indicators over at least three years, I plan to conduct quantitative analyses with the biophysical data that is being collected by the reef ecologists in Akumal. Only then will it be possible to statistically explore the interrelationships between the tourism development and the vitality of Akumal's reef.

### Final Thoughts Regarding Tourism Development and Coral Reef Conservation

This project is just one step in the continuous struggle to conserve the reef as the fundamental element of Akumal's tourism based economy. As detailed in the full document, many more steps are planned. As they are accomplished, I hope this research will provide Akumal's planners, managers, and policy makers with the information they need to make more effective, efficient, and equitable decisions regarding a balance between coastal tourism development and coral reef conservation. Although potentially a challenge, tourism development can be harmonious with the conservation of natural resources. Rather than eliminating tourism development altogether, a better solution could be reached by *modifying* the industry and making the development more sustainable for the reef ecosystem. We cannot be sure how to do this until we know which of our development practices are causing the most harm to our reefs -- thus this research is both timely and necessary. Tourism development, as long as it is

sustainable, should not be seen as the "enemy", but rather part of the solution to the problem of coral reef degradation.

### Acknowledgements

This research project could not have been possible without the generous financial assistance from the UNH Department of Resource Economics and Development, the UNH College of Life Science and Agriculture, the Martha and Theodore Frizzel Scholarship Fund, the UNH Sustainability Initiative, and especially the UNH Graduate School. I am sincerely thankful for the technical and logistical support that was generously given by my friends at Centro Ecológico Akumal and the Akumal Dive Shop. Additional financial assistance and moral support were generously provided by The Ecotourism Society. I also greatly appreciate the diving equipment kindly donated by SeaQuest Incorporated.

### References

- Lang, Judy. 1997. "Effects of Pollution" in Yal Ku Lagoon and North Akumal: A Report on Recent Studies. Centro Ecológico Akumal Environmental Report #1.
- O'Connor, John. 1995. "Toward Environmentally Sustainable Development". In Sustainable World: Defining and Measuring Sustainable Development. Edited by Thaddeus Trzyna, IUCN Publications.
- Orozco, Arturo. Director of Operations, Akumal Dive Center. Personal Communication, January 1999.
- Pollnac, Richard B. 1997. "Monitoring and Evaluating Coral Reef Management". Intercoast Network, Fall 1997 issue. pp.5-18.
- Robinhawk, Kate. Director of Education and Communications, Centro Ecologico Akumal. Personal Communication; June 1998 and January 1999.
- Rodriguez, Rosa Elisa. 1997. "Ano Internacional del Arrecife 1997". Unpublished paper, Lu'um Kaa Nab, A.C.

## DEVELOPING A CULTURALLY AND ECOLOGICALLY SENSITIVE ECOTOURISM IN A RESOURCE EXTRACTION-, CONSUMPTIVE RECREATION-ORIENTED AREA

Deborah Che

Ph.D. Candidate, Graduate School of Geography,  
Clark University, 950 Main St., Worcester, MA 01610

---

Abstract: Ecotourism has widely been promoted for areas with abundant natural beauty and cultural resources as an economic development tool. While most frequently applied in developing nations, ecotourism may also be an appropriate economic diversification and conservation tool for resource-dependent areas located in advanced industrialized nations such as Northwestern Pennsylvania's Forest County. This paper looks at the formulation of an ecotourism that would be culturally- and ecologically-appropriate for a rural area traditionally engaged in timber and oil extraction, hunting, and fishing. This paper develops working principles as well as activities on "natural" and human-produced "cultural" landscapes for Forest County ecotourism. Such proposed ecotourism activities, while directed to Forest County, are relevant to rural American, emergent ecotourism destinations whose names may not be instantly recognizable, but wish to capitalize on their comparative advantages in scenic resources relative to urban areas.

---

### Introduction

Ecotourism has widely been promoted for developing world areas with comparative advantages in abundant natural, scenic, and cultural resources as an economic development and conservation tool. Ecotourism, however has been an ill-defined concept. Ceballos-Lascurain coined the term in 1983 as "...travelling to a relatively undisturbed or uncontaminated natural area with the specific objective of studying, admiring and enjoying the scenery and its wild plants and animals as well as any existing cultural manifestations" (Ziffer, 1989).

Other definitions of ecotourism fall between extremes of any tourism based on nature (in that case nearly all tourism would be ecotourism) to a non-invasive, non-consumptive, sustainable, educational and low-impact form of tourism that may be difficult to achieve (Orams, 1995).

In the developing world where most ecotourism development has occurred, ecotourism has had a mixed record. On one hand, it has provided local economic and conservation benefits. The often-cited ecotourism success story is Costa Rica, which nationally earned a fifth of its total foreign exchange, or U.S. \$506 million, from nature tourism. On the local level in Costa Rica, ecotourism has spurred business and job creation outside visited national and privately-run

reserves that are more justifiable to local people than government subsidies for conservation which are subject to cancellation (Dworetzky, 1992). However ecotourism in the developing world also has negatively impacted local environments, traditional resource access, and local culture. Ecotourism can have detrimental effects when visitation overwhelms the land's carrying capacity, such as when drivers in search of "glamour" animals such as cheetahs and leopards damage sensitive savannah soils and disrupt animal mating and feeding patterns (Whelan, 1991). Communities may be cut off from traditional, local resource access by ecotourists' pushing up land, food, and service costs beyond what the local population can afford, thus leading to outside and/or foreign control of tourism development (Cater, 1992). Tourism demand for cultural performances may also alter traditional cultures. Together these detrimental effects can erode the local tourism resource and support for tourist development.

Ecotourism, which is the fastest growing segment of the \$3 trillion (est. 1996) world tourism industry, needs to be compatible with local cultures and environments. Canadian researcher/consultant Pamela Wight writes, "There is no question that the potential market for ecotourism experiences is significant and growing, whether or not this is viewed as positive. *The challenge is to respond to this demand with products that meet environmental, cultural and economically sustainable principles.*" (emphasis added) (Wight, 1996).

Developing such an ecotourism product must now occur in emergent ecotourism sites. These sites include rural, resource-dependent areas located in advanced industrialized nations which are looking to diversify their economies. This paper will look at how one such area, Northwestern Pennsylvania's Forest County, which has been historically and presently dependent on resource extraction and consumptive recreation, formulates a culturally and ecologically sensitive ecotourism that can lead to its long-term viability.

### The Forest County, Pennsylvania Setting and Context for Ecotourism Development

Deindustrialized, resource-dependent Northwestern Pennsylvania's Forest County (Figure 1) seeks to develop ecotourism to diversify its economy. Since 1980, the county has lost its main manufacturing employers, which provided hundreds of relatively high paying jobs. The county now has one of Pennsylvania's lowest median household incomes and its highest unemployment rate (Table 1). Given the deindustrialization, traditional forest-based industries (largely based in the Allegheny National Forest (ANF) which covers 42% of the county) such as timber, oil, gas, and post-World War II hunting and fishing camp development and recreation now provide 51% of the county's total payroll and proprietor income.

**Table 1: Comparative State And Forest County Profile**

	Pennsylvania (State Total)	Forest County, PA
<b>Population, 1998 (est.)</b>	12,001,451	5,002
<b>Avg. Unemployment Rate, 1998</b>	4.6%	8.6%
<b>Median Household Income, 1995</b>	\$34,437	\$24,814
<b>Sources of Personal Income</b>		
% Income from Wages & Salaries	62.6%	48.6%
% Income from Transfer Payments	19.0%	34.9%
% Income from Dividends, Interest, Rent	18.4%	16.5%

Source: Center for Rural Pennsylvania

The seasonal camp development geared towards residents of nearby Pittsburgh and Erie, Pennsylvania and Cleveland, Akron, and Youngstown, Ohio (Figure 1) seeking good hunting, open space, and a 'natural escape' from the cares of the city, has however been viewed with ambivalence by some permanent residents. While seasonals provide the margin of profitability for local businesses, the unplanned seasonal home development has resulted in the creation of camp "cities" where the housing densities exceed those in Pittsburgh, but without the urban level of garbage and sewage services. In addition to these environmental problems, the influx of seasonals, which doubles the county's population on holidays, leads to conflict over increased congestion as well as over seasonals allegedly leaving their morals at the county line. Even though tourism revenues totaled \$24,260,000 and employed 280 people in 1996 (Gingrich, 1998), some permanent residents also feel that only local and non-local developers and tourism-oriented businesses have benefited from camp development. Given the debated benefit over seasonal camp development, Forest County ecotourism development needs to address concerns over environmental, cultural and economic impacts.

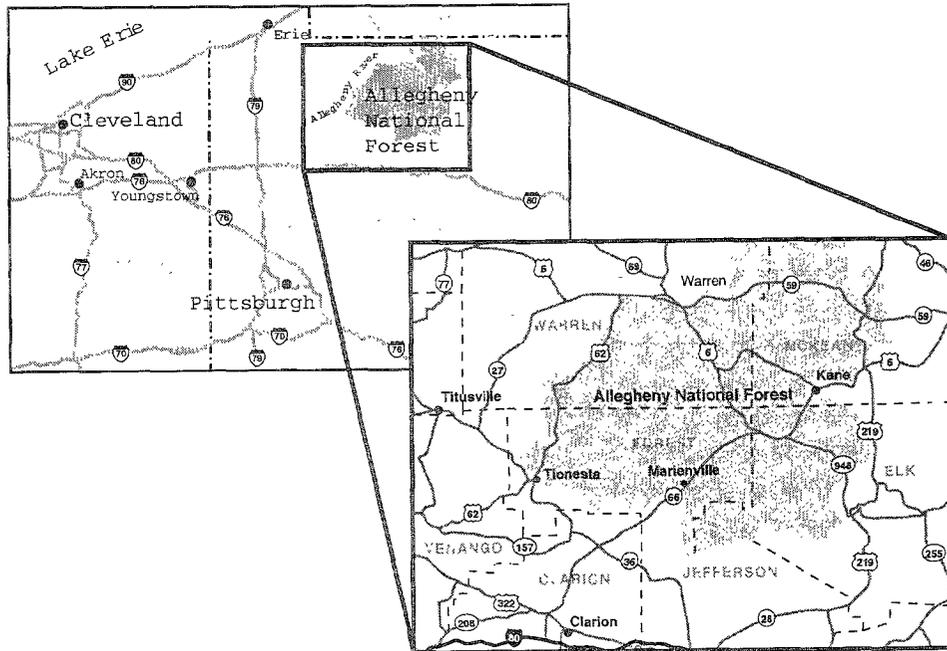
**Objective and Methods**

To investigate the possibility of developing ecotourism in Forest County, the Forest County Action Team, the U.S. Forest Service, and Penn Soil RC&D supported an

ecotourism feasibility study. Part of this ecotourism feasibility study involved operationally defining ecotourism and identifying probable ecotourism activities for Forest County. Ecotourism was being considered as a way to diversify the Forest County economy into alternative areas of resource utilization in part because it resembled the forest-based industry desired by county residents. In a Penn State Cooperative Extension Service Quality of Life Service survey, 70% of county respondents preferred forest-based industry based upon recreation and tourism and 72% supported forest-based industry built upon the small-scale products (home-based and cottage) industry. Ecotourism with its small-scale nature could be one desired forest-based industry.

In conducting research for this part of the study, the author researched both the local and the broader ecotourism markets. Locally, the author interviewed over 60 individuals from tourism businesses, government (federal, state, and county), tourism promotion agencies, and community organizations. The author also conducted a thorough literature review and interviewed providers of ecotourism outside the area to assess how other areas defined and developed ecotourism, and what type of activities they included. From these interviews, a working definition and activities for an ecologically and culturally sensitive ecotourism for Forest County were developed.

**Figure 1: Maps showing the Allegheny National Forest in relation to the regional cities Forest County draws its seasonal visitors from (l) and the Allegheny National Forest region, including Forest County, in greater detail (r)**



**Defining Ecotourism for a Historically Extractive Resource Producing, Consumptive Recreation Area**

To develop a working definition for ecotourism in Forest County, broad parameters guiding ecotourism development in the developing world were adapted for Forest County. These parameters, which include the 1) setting, 2) conservation benefits, 3) activity, and 4) local benefits, are detailed below.

Setting

Ecotourism should be set in human-produced cultural settings as well as natural areas and/or places with special biological and ecological interest traditionally visited by ecotourists. Ecotourism settings need to be broadened from relatively undisturbed natural areas (i.e. tropical rainforests) or areas where local people have been excluded from historically used lands (i.e. the Masai in Kenya) where ecotourism has traditionally taken place to include cultural ecotourism settings which are not so-called "pristine" or "untouched" places. Landscapes that also include human cultural influence like Germany's Rhoen Biosphere Reserve, which is a human-constructed, historical rural landscape crisscrossed by hedgerows of trees and shrubs that have given it ecological stability and diversity, should be considered ecotourism settings (Ayala, 1996).

Forest County and the surrounding area offer much in terms of eco-recreational potential, including old-growth forests, neo-tropical songbirds, the Allegheny hardwood forests, abundant wildlife, and historic small towns. Besides hunting and fishing opportunities, the old-growth thus far has received the most publicity and marketing through Tony Cook's book, *The Cook Forest*. This book, which depicts the Cook family's involvement in the area's logging history and in setting aside a stand of old-growth white pine in Cook Forest State Park, has attracted national and international interest in the area's ecology and history. Cook Forest's old-growth white pine and the ANF's old-growth hemlock-beech stands provide both valuable wildlife habitat for rare species such as the Blackburnian warbler and with the unique ecotourism niche for neo-tropical songbird viewing (Center for Rural Pennsylvania, 1995; Che, 1997).

However in addition to the old-growth, Forest County also offers ecotourists the Allegheny hardwood forest, prehistorical and historical resource extraction settlements ("ghost towns") along Tionesta Creek and the Allegheny River, and historic small towns associated with the heyday of resource extraction. The Allegheny hardwood forest, a unique forest spatially concentrated in northern Pennsylvania's Allegheny Plateau, may provide the county with another ecotourism niche. The Allegheny hardwoods which are dominated by sun-loving species that thrived

following forest clearings (Marquis, 1975) are part of a suggested ecotourism activity centered on the vegetative history of the region. This focus on the products of historic resource extraction rather than the so-called pristine old-growth does not mean abandoning ecotourism's biocentric emphasis of Nature on its own terms (Nelson, 1994). Such ecotourism based upon nature impacted with human cultural influences more closely reflects the reality of most "natural" settings worldwide.

#### Conservation Benefits

Ecotourism should lead to improved management of visited natural areas/ecosystems. For tourists who are not familiar with ecosystems in Forest County, ecotours may lead to greater appreciation of the Allegheny hardwood forest, including how it was produced by past human uses and how its future is continuing to be shaped by human and other animal use. Increased awareness of the Allegheny hardwoods' uniqueness could shape visitors' perceptions on its management. Ecotourists who see the negative impact of deer on forest regeneration and may be more supportive of management techniques such as hunting.

#### Activity

The ecotourism activity should: a) have a strong focus on learning and discovering the local ecology and cultural heritage of a place; b) be guided; and c) provide a first-hand, participatory experience (Wight, 1993) that does not degrade the resource. Skilled, ever-present tour guides should aid in the educational/interpretive process and provide high cognitive (informational) and effective (emotional) dimensions to the experience (Nelson, 1994). Because guided ecotourism needs to be small-scale to be hands-on and effective, it may also mitigate tourists' environmental impact.

#### Local Economic Benefits

Ecotourism should contribute to the economic well-being of a locality or region and diversify local economies by providing alternative employment and entrepreneurial opportunities. Ecotourism's guided, small-scale, small-group nature is well-suited to local provision of services. Ecotourism diversifies local economies, thus halting outmigration and maintaining economically marginal communities. For instance in remote Alston, England, tourism creates a small number of mostly seasonal jobs, which enable the population to maintain its distinctive lifestyle and remain in the community (France and Towner, 1991). In Forest County, ecotourism could support the rural economy and help keep youth in the area by providing opportunities for associated guiding, meals, and accommodations provision. In addition to forest and river-oriented activities, ecotourism may be linked to farm tourism. Farm tourism, which typically includes meals, accommodations, and participation in farm activities like feeding and milking cows, could help support the county's declining number of farms. In Forest County as well as other emergent ecotourism destinations, ecotourism must provide these local economic benefits since local communities have

the ultimate power to destroy the tourism-based natural resources and the attractiveness of the tourism site.

#### **Specific Ecological and Culturally Sensitive Ecotourism Activities**

While numerous activities could fit the above parameters for Forest County ecotourism, this paper will detail two possible ecotourism activities, which would be sensitive to Forest County's social and natural environment and compatible with traditional extractive uses and deer hunting. As these activities are associated with Allegheny hardwood management (i.e. timber harvesting, deer population control), they may help support the sustainability of this ecosystem.

#### Vegetative History of the Region

This guided tour could inform how native American and European settler silvicultural and agricultural use have produced the current hardwood forest. Through visits to different parts of the forest, such a thematic tour could show the changes in the Allegheny forests over time. This tour could visit old-growth pine/hemlock and then 1) areas that were clearcut that are now dominated by valuable Allegheny hardwood species; 2) areas that were selectively cut and now contain a mix of hemlock, beech, pine, black cherry and maple; and 3) circa 1930's Civilian Conservation Corps pine plantations. In addition to touring once-logged areas, this tour could also show how native peoples and settler farmers shaped the forest. One could indicate how the distribution of oak is correlated with prehistoric sites since native Americans used fire to manipulate the landscape for these trees which yielded food for humans as well as for hunted animals like deer. This tour could also visit remnants of old settler farms and note the agricultural tree species. After showing prehistoric and historic cultural impacts, this tour could show areas where high deer populations have eliminated the understory and have negatively affected forest regeneration.

#### Guided Hunting and Fishing

Guided hunting and fishing would be another activity building on traditional resource use in Forest County. While consumptive, guided hunting and fishing could provide conservation and economic benefits. Guided deer hunting would provide conservation benefits by helping to limit Forest County's average deer density, which equaled 33 deer per forested square mile. This density exceeded the 20 deer per forested square mile carrying capacity, above which deer directly decrease the number and abundance of tree, shrub, and wildflower species in the forest community (McGuinness, 1997). Including guided hunting and fishing may actually be a necessity for local operators to achieve profitability in an emergent ecotourism location like Forest County that lacks the instant name recognition of Yellowstone. In Manitoba, which other than the polar bear viewing capital of Churchill is an emergent ecotourism location, small-scale ecotourism operators located in isolated forested areas need to offer a hybrid ecotourism consisting of a wide variety of non-consumptive and consumptive activities. These operators offer a wide variety of activities such as wildlife viewing of

species like black bear, wolf, deer, moose, waterfowl, birds of prey and shore birds, as well as photography, fishing, canoeing, boating, camping, hunting, hiking, and cross-country skiing. In Forest County, ecotourism operators may need to offer guided hunting and fishing for its local economic benefits as well as for its conservation benefits. There may be increasing demand for these services given the increasing age of hunters and the limited time unfamiliar hunters and anglers have to find their catch. In Manitoba thus far, incompatibility between consumptive and non-consumptive services offered has not occurred. Should it arise there or in Forest County with regard to hunting, operators which financially need to accommodate both consumptive and non-consumptive activities may need to adopt strategies of mutual education or spatial and temporal separation (Weaver et al, 1996).

### Conclusion

Ecotourism, in traditional as well as new destinations such as rural, resource-dependent areas of advanced industrial countries, must be defined in a culturally- and ecologically-sensitive manner that can ensure its long-term viability. This paper outlined certain parameters for formulating this type of ecotourism which included the setting, activity, local economic benefits, and conservation benefits. From these parameters, potential ecotourism activities can be developed that are compatible with traditional rural land uses such as farming, resource extraction, and hunting. Ecotourism constructed in sync with rural America's social and natural environment can provide a way for these new destinations to sell their scenic resources and diversify their economies, while adding new ecotourism products that acknowledge human cultural impact on the landscape.

### Literature Cited

- Ayala, H. 1996. Resort Ecotourism: A Paradigm for the 21st Century. *Cornell Hotel and Restaurant Administration Quarterly*. 37(5): 46-53.
- Cater, E. 1992. Profits From Paradise. *Geographical Magazine* 64(3):16-21.
- Center for Rural Pennsylvania. 1995. *Pennsylvania Ecotourism: Untapped Potential*. Harrisburg, PA: Center for Rural Pennsylvania.
- Che, D. 1997. *Forest County Ecotourism Feasibility Study*. Tionesta, PA: Forest County Action Team.
- Dworetzky, Tom. 1992. Touring the Jungle. *Omni* 14(6): 46-52.
- France, L. and J. Towner. 1991. Tourism Without the Trimmings. *Geographical Magazine* 63(5): S1-S5.
- Gingrich, K. Pennsylvania Dept. of Travel and Tourism. Personal communication. March 11, 1998.
- Marquis, D.A. 1975. *The Allegheny Hardwood Forests of Pennsylvania*. U.S. Dept. of Agriculture, Forest Service General Technical Report NE-15. Upper Darby, PA: U.S. Dept. of Agriculture Forest Service Northeastern Forest Experiment Station.
- McGuinness, B. 1997. Deer Carrying Capacity: Too Few, Too Many, and For Whom? *Allegheny Brambles*. Allegheny National Forest Resource Column/Press Release.
- Nelson, J.G. 1994. The Spread of Ecotourism: Some Planning Implications. *Environmental Conservation* 21(3): 248-255.
- Orams, M. B. 1995. Towards a More Desirable Form of Ecotourism. *Tourism Management* 16(1): 3-8.
- Singletary, L. 1993. *Quality of Life Survey: Measuring Citizens' Attitudes Toward Local Economic Development in the Allegheny Plateau Region* (Forest County). University Park, PA: Pennsylvania State University Department of Agricultural Economics and Rural Sociology/Cooperative Extension Service.
- Weaver, D., C. Glenn, and R. Rounds. 1996. Private Ecotourism Operations in Manitoba, Canada. *Journal of Sustainable Tourism* 4(3): 135-146.
- Whelan, T., ed. 1991. *Nature Tourism: Managing For the Environment*. Washington: Island Press.
- Wight, P.A. 1996. North American Ecotourism Markets: Motivations, Preferences, and Destinations. *Journal of Travel Research* 35(1): 3-10.
- Ziffer, K. A. 1989. *Ecotourism: The Uneasy Alliance*. Conservation International/Ernst and Young.

## VIRTUAL TOURISM ON THE INTERNET

Robert S. Bristow

Associate Professor and Chair,  
Department of Geography & Regional Planning  
Westfield State College, Westfield, MA 01086  
r\_bristow@foma.wsc.mass.edu

---

**Abstract:** As tourism operators expand their promotional material, the Internet has proven to be a valuable tool especially for the affluent westerners that are more likely to use the Internet. Virtual tourism permits travelers in the anticipation stage to explore distant places. Will it replace the real experience? Not yet, but stay tuned!

---

### Introduction

Imagine you are hiking along the Appalachian Trail. Sun light streaks through the pine trees. You left early this morning and your pack is beginning to feel heavy. A warm dry breeze flows through the pines yet it is not enough to cool you. Pausing to wipe your brow of sweat, you peer up the ridge and see the climb ahead of you. A heavy sigh prepares you for the long climb. The trail steepens, forcing you to reach for handholds in the rocks. You grab a ledge and suddenly hear the unmistakable sound of a rattlesnake. Peering over the ledge, you find yourself face to face with the rattler, inches away and coiled for the strike!

Maybe this backpacking trip wasn't such a good idea after all!

You simply say "Computer, End Program", and the holographic image disappears and you are safe and sound in *Holodeck Three™*, a fantasy world created by computers. While no surprise to the fans of *Star Trek*, virtual reality is fast becoming a tool for tourism planners around the world in an attempt to provide enough of an experience to get tourists to come visit their park or beach (Cheong, 1995).

Virtual tourism has existed for many years, long before we had a name for it. Imagine if you will, an early tourist reading the works of Charles Darwin before setting sail for some distant port. Even today, authors have detailed accounts of world travels and line the shelves of a nearby Barnes and Noble™. These essays in turn fill our bookshelves and provide a view of the world yet widely unknown. For example, contemporary author, Bill Bryson, (1998) wrote on his travels along the AT, in his humorous, yet detailed account of a long distance backpacking experience. How many "wannabe" long distance hikers will be encouraged by the book? And how many of us have studied a map before a hike, noting the contours and springs needed to fill our water bottles. These are all virtual experiences.

Virtual reality, coined by Myron Kruger in the mid-1970s, envisioned the potential link between humans and computers. Like the early writings of authors and the works of artists, we have been able to experience new worlds and thoughts of expression. Canedy (1992) summarized the potential of virtual reality in recreation noting how television may have introduced us to fantasy adventures and the potential threat of "sanitizing" nature. He further cautioned that TV removes the nasty elements of the experience from the virtual visitor.

Recognizing the potential of virtual reality and tourism, Williams and Hobson (1995) highlighted the emerging trends in the tourism industry. Computer allows instant access to a wealth of tourism related information. Cheong (1995) alerted tourism managers that the benefits from virtual experiences would be manifested at the macro level and the micro level. For the macro level, national or regional tourism policy could be altered, while the individual traveler could select destinations from a travel agent (micro level).

Today, a virtual tourist can use the Internet to obtain tropical weather reports and maps of popular attractions from online sources (Sheldon 1997). Live camera connections allow the virtual skier to see how much snow is on their favorite mountain slope. The Virtual Tourist Homepage (<http://www.vtourist.com>) is a good place to start your vacation search. The site provides links to Internet information in each country. Need more choices? Type in "virtual tourism" in your favorite search engine and you will find hundreds, if not thousands of web sites tempting you to experience a destination. From war torn Eastern Europe, (Bosnia Virtual Fieldtrip, <http://geog.gmu.edu/projects/bosnia/default.html>) to the bowels of the Earth (The Virtual Cave, <http://www.goodearth.com/vrtcave.html>) one can explore places without leaving our computer chair. Given that many folks cannot, or would not visit places mentioned above, virtual tourism via the Internet provides tourist an opportunity to learn more about a potential destination.

Still unsure of where to take the family vacation? Subscribe to a travel Newsgroup like [rec.travel.latin-america](mailto:rec.travel.latin-america) or [rec-scuba.vacations](mailto:rec-scuba.vacations) to learn about the possibilities. The wealth of information found via the Internet could overload your ability to read it all.

After deciding where to vacation, tourists can select and book hotels, air, sea and ground transportation on the Internet Travel Network (<http://www.itn.com>). A tourist can obtain current weather data to know how to dress (Weather Channel, <http://www.weather.com>). Tourists seek this information instantly and will make informed judgments on vacation choices based on it. And like any anticipation stage of recreation, prior exposure to the history, culture, language and natural resources will improve the tourist's appreciation of the destination (Eco Source, <http://www.podi.com/ecosource/ecotour>).

### Case Study: Ecotourism in Central America

The recent popularity of nature-based tourism or ecotourism, (Boo 1990) coincidentally parallels the popularity of the Internet. Typical ecotourists are highly educated and affluent couples willing to spend more than general tourists (The Ecotourism Society, <http://www.ecotourism.org>). Central America, found obviously between North and South America, has become a popular ecotourism attraction for these couples. And recognizing the potential, many of the countries in Central America have placed a recent emphasis on ecotourism. Rich tropical rainforests, exotic beach locations, historic Mayan ruins and the close proximity to the American market have provided tourists with more than enough reasons to explore this part of the world. In particular, Belize and Costa Rica are relatively safe and have extensive resources for the ecotourist.

A recent Belizean government mandate has placed ecotourism as a central theme in development (Boo 1990). In order to develop and sustain a viable travel industry, the Belizean Ministry of Tourism and the Environment has placed protection of the country's ecological base high in importance (Official Government of Belize Web Page, <http://www.belize.gov.bz>). While government support is important, for sustainable tourism to grow, local or community based tourism must occur, a principle theme in sustainable tourism (Hall and Lew 1998).

In neighboring Costa Rica, despite the outward appearance of government support for ecotourism, there has been declining revenue for the National Parks (Place 1998). She believes however, that the sheer attractiveness of major parks in the country will encourage local management of resources. This local input is vital for successes as Primack et al. (1998) warn. Without appropriate local input in the planning process, ecotourism development may leave local citizens worse off than when they started. Success stories are found however, with a fledgling community based tourism industry is the Community Baboon Sanctuary in Belize, devoted to the protection of the black howler monkey and found on private property (Horwich & Lyon 1998).

Internet tourism promotion for the region is as varied as the local customs. In the case of Belize, several commercial Internet sites provide excellent descriptions of the natural and cultural resources found in the small country. One of the more spectacular Internet sites describes the Mayan Ruins found throughout the country. On the western edge of Belize is Xunantunich. From the top of the main structure, "El Castillo," one can view east toward the large Mennonite farms and west into Guatemala. A virtual experience of this view, and others, is found at the web site maintained by Belize by Naturalight (<http://www.belizenet.com>). With the appropriate software plug-ins, one can experience an interactive view from on top of El Castillo, the tallest structure in Belize.

On a more somber note, health and safety facts about neighboring Guatemala are also found on the web, and may deter even the most worldly traveler to seek another destination. While information on health and safety considerations are important to all tourists, since ecotourists tend to travel off the beaten track it may be crucial for their well-being. For example, the US State Department's Bureau of Consular Affairs Homepage (<http://travel.state.gov>), cautions backcountry travel in Guatemala because of higher chance of crime.

Health considerations are found at the Center for Disease Control, (<http://www.cdc.gov>) which alerts Central American ecotourists about the potential outbreaks of Malaria and Yellow Fever. Protection against these hazards requires some common sense, insect protection and some preventative medicine.

Most Central American information on the web is more or less the standard tourist fodder, espousing popular tourist destinations. For example, one will find excellent descriptions of the Mayan Ruins, National Parks and Reserves, scenic attractions like waterfalls and caves and the famous dive sites along the barrier reef. Digital versions of this information are provided quickly and efficiently, and at a fraction of the cost necessary for printing and mailing typical tourist brochures. While most are in English, Costa Rica's government homepage is not (<http://www.cr>).

### Discussion

The Internet is perhaps the greatest invention of the Century. It provides relatively inexpensive access to enormous information and can link people around the world. Just as airline traffic has reduced the time necessary to travel, the Internet has reduced the time needed to get information. This information, good and bad, provides ecotourists with the necessary data to make informed decisions about visiting a destination. If the information prevents someone from visiting a destination, so be it! The end result will be less impact on the local environment (Cheong, 1995).

Ecotourists will typically have access to Internet promotion. But individuals must recognize the limitations of the material, especially from \*.com sites, which obviously have a commercial interest at heart. Official \*.gov sites have a somewhat equal agenda, albeit a political one. And lastly the \*.org sites are not without a predetermined mission. Yet, with all the information on the web literally at the touch of a mouse pad, ecotourist can develop an appreciation for the experience.

Will surfing the Net take the surprise out of a visit? Not yet! As Canedy (1992) and Mader (1996) state, at present technology, virtual Internet experiences will not replace the actual field experience. Unless the technology provides for a virtual experience of sight, sound, and the other senses of smell, feel and taste, one can only experience the cold stare

of a rattle snake, by misplacing a handhold, scrambling along the Appalachian Trail. The day will come, however!

#### Literature Cited

Boo, E. 1990. Ecotourism: The Potentials and Pitfalls. Vols. I and II. Washington, DC: World Wildlife Fund.

Bryson, B. 1998. A Walk in the Woods. NY: Broadway Books.

Canedy, L. 1992. Outdoor Recreation: A virtual Reality. Parks and Recreation 27(8):48-51.

Cheong, R. 1995. The Virtual Threat to Travel and Tourism. Tourism Management. 16(6):417-22.

Hall, M. and A. Lew, eds. 1998. Sustainable Tourism: A Geographical Perspective, Essex, United Kingdom: Longman.

Horwich, R. and J. Lyon. 1998. Community-Based Development as a Conservation

Tool: The Community Baboon Sanctuary and the Gales Manatee Project. In Timber, Tourists, and Temples: Conservation and Development in the Maya Forest of Belize, Guatemala, and Mexico, ed. R. Primack, D. Bray, H. Galletti, and I. Ponciano, 343-63. Washington DC: Island Press.

Mader, R. 1996. Travel in the Age of Internet. <http://www.txinfinet.com/mader/planeta/0596/0596honmader.html>

Place, S. 1998. How sustainable is ecotourism in Costa Rica? In Sustainable Tourism: A Geographical Perspective, C. M. Hall and A. Lew, eds. Pp. 107-118. Essex, United Kingdom: Longman.

Primack, R. D. Bray, H. Galletti, I. Ponciano, eds. 1998. Timber, Tourists and Temples: Conservation and Development in the Maya Forest of Belize, Guatemala, and Mexico. Washington DC: Island Press.

Sheldon, P. 1997. Tourism Information Technology. Wallingford, UK: CAB International.

Williams, P. and J. S. P. Hobson. 1995. Virtual reality and tourism: fact or fantasy. Tourism Management. 16(6): 423-427.