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Project Summary

This research proposes a study of the impacts of nature tourism, on local communities and key dimensions of these impacts, in the Lower Rio Grande Valley (LRGV) by developing a theoretically sound, comprehensive analysis method using quantitative and qualitative techniques and a Geographic Information System (GIS). Human driving forces behind the impacts will be studied in the region's social-political context. The relationships between nature tourism development and the environmental and societal changes over time will also be explored. This research seeks to contribute to the understanding of the actual and perceived impacts of nature tourism, and provide insight into the mechanisms of these impacts. Political ecology will be used to examine the role of social structures and the political institutions that are driving the process of nature tourism development and its impacts.

Introduction

Tourism is rapidly gaining momentum as one of the leading economic activities in the world. However, research on its impact has been riddled with challenges. Smith (1995) suggests these challenges are:

1) the lack of credible measurements for describing the size and impact of tourism;
2) great diversity in the industry, with some analysts questioning whether tourism is a single industry or group of related industries;
3) spatial and regional complexities; and
4) a high degree of fragmentation.

Due to these challenges, current research on tourism impacts is fragmented and often isolates different components of tourism impacts within disciplinary boundaries (Echtner and Jamal 1997). However, in order for tourism researchers, developers and planners to promote tourism with confidence, a clear understanding of its impacts economically, socially and environmentally is necessary. Thus, the necessity of developing a comprehensive method, that bridges disciplinary boundaries and combines multi-dimensional concerns, is imperative.

In Texas, nature tourism is recognized as the fastest growing segment of the tourism industry (Texas Department of Economic Development, 1998). As tourism continues to be considered a viable economic activity, the need to understand the impacts of tourism will continue to increase. This research focuses on conducting nature tourism impact analysis in the LRGV, with emphasis on combining economic, environmental, and social considerations. It intends to utilize credible techniques for tourism impact analysis and bring them together into a GIS system which will assist the research to deal with the above mentioned challenges.

This regional level research will provide local "substance" for generalization and also provide a specific example from which to draw for theoretical implications about nature tourism. This research will also identify how the unique nature of the LRGV, within the U.S. but adjacent to the international border, causes impacts apart from the general findings of prior tourism research.

Rationale and Significance of the Project

With the potential contribution of nature tourism to sustainable development of communities in marginalized areas, the need to study its environmental, economic and social impacts, and the mechanisms of these impacts is increasing more rapidly than the scope of current empirical research and theoretical development. Nonetheless, this research can establish a foundation from studies conducted in recent years on tourism impacts, environmental impact assessment, and the development of the theoretical approach of political ecology.

Tourism impact research

Economic impacts of tourism have been well documented in the literature on tourism. Various methods are used to assess impacts on a country, region or destination community. There is no doubt in the literature that tourism impacts the economies of destination areas. These studies did not provide a detailed examination of the full spectrum of economic effects. A more comprehensive and balanced approach, which examines both the benefits and costs of tourism, should be adopted for future research.

Although there are studies on social impacts of tourism, most of them reveal little on the nature of these impacts and the means for the investigation (A. Mathieson and G. Wall 1982: 134). Research addressing social issues appears to focus on residents' perceptions of tourism impacts (Wall 1996; Lindberg and Johnson 1996; King, Pizam and Milman 1993; Dogan 1989). Various techniques have been employed to conduct social impact assessment, however, no definitive models were revealed.

Articles on environmental impacts are not as numerous. Most often they discuss the issue in the context of resource management concerns associated with a specific area (Mak and Moncur 1995).

Limitations of previous work

Tourism research has been lacking of a strong theoretical basis. Echtner and Jamal (1997) suggest that the dilemma of tourism analysis is that it crosses many disciplinary boundaries, which then results in fragmented and weak tourism theory. However, instead of developing theories that solve this multi-disciplinary dilemma, current research often isolates different components of tourism impacts within disciplinary boundaries (Echtner and Jamal 1997).

Little research has attempted to provide a balanced assessment of tourism impact. Most research on tourism assessment has concentrated on individual components such as economic, environmental and social impacts. However, each component should not be considered in isolation. Tourism impact should be studied from a comprehensive perspective incorporating and integrating environmental, economic and social impacts, as well as perceptions and attitudes of the local residents.

The majority of studies of the impacts of tourism have been conducted at international and national levels, with fewer studies at the local level (A. Mathieson and Geoffrey 1982). However, tourism impacts are concentrated in local destination areas. Generalization based on studies at the national level can be misleading. There is a need to conduct research in destination areas where these impacts occur.

Despite the existence of studies as mentioned above, specific emphasis on nature and heritage tourism is quite limited. Thus, in-depth studies of the mechanisms and effects of nature tourism on the community, remain an area to be investigated.

Political Ecology as the Theoretical Framework for this Research

The dilemma of tourism impact analysis can be rectified through a comprehensive approach, which combines environmental, economic and sociopolitical considerations. Tourism is an inherently geographic activity in that its very nature involves travel and a sense of place (Smith 1995, 174). This aspect of tourism suggests developing a theoretical basis for tourism impact assessment within a geographical context. Blaikie and Brookfield's (1987) political ecology theory can be adapted to tourism impact assessment.

The impacts of nature tourism are the result of interactions between tourists and the destination area and its population. These impacts are strongly influenced by the social, economic and political context both within and outside the destination area. Political ecology stresses the role of social structures and political institutions that are the seen as the driving forces of these impacts. Emel and Peet (1989; 60) describe the theory as a combination of "two systems, the physical and the socio-economic in integration." Thus, political ecology can help in analyzing human causes of environmental and social changes as they relate to nature tourism.

Political ecology suggests that, in order to understand the "real" picture, one must focus on what is happening at the local level, whether that is the local biotic community or the larger human community. It demands a pluralistic approach rather than unicausal theories and analysis (Pickles and Watts 1992) in which a "few

strategic variables. . . relate together in a causal manner" (Blaikie and Brookfield 1987: 48). Blaikie and Brookfield were concerned with theorizing the environmental at the intersection of the local and the global. In doing so, they focus on three key concepts: "1) the notion of political, economic, and ecological marginality, in which environmental degradation is the outcome of rational survival strategies by poor households responding to changes in physical and political economic contexts; 2) the idea of pressure of production of resources, where surplus extraction and exploitation among classes or individuals may impose excessive demands on the environment, and; 3) the concept of *landesque* capital, where the investment in land beyond the life of the crop only takes place when other factors of production are present" (Pickles and Watts 1992).

Apparently, Blaikie's approach has received significant recognition as a valid geographical approach. It can be applied to other contexts and regions (Westcoat 1991), such as nature tourism impacts in the LRGV.

A Comprehensive Approach for Tourism Analysis

Comprehensive analysis is supported in the tourism analysis literature because tourism impacts are rarely confined to a specific category of impact. Research should integrate the findings within and between each impact category.

Comprehensive analysis is a prevalent practice and is gaining momentum globally (Morris et al. 1995). Analyzing impacts of projects from a comprehensive and multi-disciplinary perspective is supported by environmental impact assessment (EIA), which is the process mandated by the National Environmental Protection Act

(NEPA) of 1969. In most cases, this includes economic, social and environmental issues.

Various techniques developed by governmental resource managers also point towards a comprehensive approach. The Limits of Acceptable Change (LAC) management strategy developed by the United States Forest Service (USFS) outlines a specific integrated approach which considers the resource, and the social and economic situation as it applies to developing an effective management strategy for recreation settings (Stankey et al 1985). Lindberg and Johnson (1996) suggest the LAC process be considered as an alternative to benefit-cost analysis.

This research aims to develop a comprehensive approach to assess the impacts of nature tourism in the LRGV. This method will address the economic, social and environmental impacts of nature tourism in this region.

GIS as an Integration Tool

This research aims to develop a comprehensive system for analyzing nature tourism impacts. This approach will integrate impact analysis methods into a geographic information system (GIS) where the data can be visualized. This will assist researchers in deciphering and determining the intricate and complex relational and spatial patterns that are involved in nature tourism. MacEachren et al. (1992, 99) highlights this point in the following: “Even when dealing with nonspatial relationships, geographers are most comfortable with a depiction that allows them to visualize relationships and connections that in turn lead to hypothesis about underlying causes for the patterns that become apparent when data are presented in a spatial format”. MacEachren (1993, 108) further illuminates the process of visualization: “As

investigators gain confidence in a theory or perspective on a problem, they use visualization tools to synthesize ideas and formulate a coherent abstract statement of what at that stage might only be loosely connected threads". The "loosely connected threads" of tourism analysis suggests the need for developing computer applications in tourism impact analysis.

Background

The study area includes the counties of Cameron, Hidalgo, Willacy and Starr on the U.S. side of the Rio Grande River in Texas. Ecologically, the area maintains 10 distinct wildlife communities. More than 115 species of wildlife are recognized as being significant in the area, including numerous endangered species. The ecology of the area is threatened by agriculture and other development pressures. Some 90 percent of native brushland had already been lost by 1984 (USFWS 1984).

The LRGV is one of the fastest growth areas in the United States, with a population on both sides of the border at approximately two million. Between the years of 1975 and 1995, the counties of Cameron, Hidalgo and Willacy had grown an average of 29.4 percent (USFWS 1997a). This growth is equaled by bordering cities in Mexico whose combined growth with that of the U.S. in the LRGV is projected to grow to 4.3 million by the year 2020 (USFWS 1997a)

Growth in LRGV can be linked to the development of the maquiladora industry in Mexico, which is expected to double between 1990 and 2010. Yet, close to half of the population is on the U.S. side has an annual income below the poverty level. The LRGV is considered to be one of the most impoverished regions in the United States (USFWS 1997a).

Nature tourism is growing rapidly. The total LRGV tourist population surpassed the 1995 projected 150,000. Birdwatching is especially important since the area is considered one of the premier sites in the U.S. 400 species of birds have been seen in the LRGV. Results of a study by the USFWS revealed that the economic impacts of nature tourism associated with the Laguna Atascosa NWR, was $3.5 million to the local economy. This would result in $1.3 million in employee compensation and the creation of 81 jobs (USFWS 1997b).

It seems that there is great potential to bolster the area's economy through nature tourism development. However, questions arise about how nature tourism will change the community, the environment, or affect the local people socially and culturally. These questions should be studied in-depth, and in context with important factors such as policy, poverty and the areas ecology.

Objectives

Objective 1: To determine the economic impact of nature tourism in the LRGV

Input-output model will be used. Input-output uses secondary data and provides information on employment, personal income and tax receipts. Analysis can also be extended to type of accommodations, seasonal data and types of trips. IMPLAN is a model that was developed for the U.S. Forest Service and was designed for regional analysis.

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Objective 2: To determine the social impact of nature tourism in the LRGV

Using qualitative methods and contingent valuation, which estimates the economic values of social impacts, determine the social impacts of nature tourism.

Objective 3: To combine these findings in a GIS application to determine spatial relationships

GIS can serve as an integrative tool and will produce visual representations, which can assist with the interpretation of findings.

Objective 4: To determine the mechanisms and the nature of the impacts of nature tourism in the Lower Rio Grande Valley.

Political ecology theory provides the framework for this analysis.

Methods to be Used for this Research

Economic Impact Assessment -- Input-Output Model

Input-output techniques can generate information on employment, personal income and tax receipts and analysis can be extended to type of accommodations, season, and type of trip. It is designed to use secondary data on expenditures, payroll, employment, and taxes collected by government and industry sources at the national, state and local levels with state specific data on trip patterns from national surveys (Frechtling 1987).

Fletcher (1989) suggests that input-output models have several advantages to other analysis methods. First it is a general equilibrium approach that will provide policy makers with a comprehensive view of the economy. Second, it focuses attention upon the sectoral interdependencies, which exist in the economy. Third, the flexibility of the input-output structure enables the researcher to construct a model to suit the situation being assessed. Fourth, the very nature of input-output analysis makes the

technique “policy neutral”. Each sector is treated in a uniform manner and the only value judgements, that are encountered at the framework stage, concerns the aggregation specifications. A final benefit of the development of input-output models is an improvement in the level and quality of data available for the economy in general, and for the national accounts in particular.

IMPLAN will be used to conduct the economic analysis for this research. The IMPLAN model is an integrated modeling software developed for the U.S. Forest Service by the University of Minnesota, to conduct tourism research at the regional level (Johnson and Moore 1993; Laughland and Caudill 1997). Laughland and Caudill (1997) used IMPLAN to determine the economic benefits of National Wildlife Refuge Visitation on local communities. IMPLAN relies on regional information to modify a standard input-output framework of the U.S., developed by the Department of Commerce, Bureau of Economic Analysis, to describe local conditions (Laughland and Caudill 1997).

Social and environmental Impact Analysis

Qualitative methods

Important considerations for developing a social impact assessment method will need to be framed in the social context of the Lower Rio Grande Valley. As suggested by Eubanks (1998), impact analysis must be placed in the context of where the research is being conducted.

In the Lower Rio Grande Valley (LRGV), it is well known that incomes are low and there are high levels of illiteracy. Also, since the LRGV area is primarily

Hispanic it will be necessary to have interviewers be bilingual. Also, since illiteracy is high, the survey instrument should be developed with a fairly low sophistication level in order to avoid spurious effects on survey results.

This research necessitates integration of both quantitative and qualitative techniques. Qualitative research in sociology is a credible technique which is highlighted in a quote by Collins (1984) "much of the best work in sociology has been carried out using qualitative methods and without statistical tests" (as cited in Cohen 1988).

For this research the following considerations guide the qualitative methods:

1) Use Hispanic/bilingual individuals to conduct interviews
2) Develop a survey instrument that is designed to meet the educational level of the local population
3) Combine qualitative and quantitative methods
4) Utilize both primary and secondary data sets
5) Conduct longitudinal research if data is available

This portion of this research will be divided into three stages corresponding to three scales of analysis: region, county, and community. Besides seeking to identify regional differentiation, each subsequent stage will aim to highlight details about important human-environment links in the previous stage(s), and thus to identify human dimensions of environmental and social changes as they relate to nature tourism.

Stage 1. General interviews

These interviews seek to obtain information about the environment and society in order to achieve general understanding of the "human-environment" relationships

within the region. Questions for the local people will address a variety of issues, including their attitudes about everyday life, priorities and pursuits, current worries and hopes for the future, uses of the environment, and images of local and higher level governments. Questions for the leaders concern policy and programs, policy implementation, relationships with upper and lower levels of government and spatial differentiation within the region and its causes.

Stage 2. Interviews, Site Checks, and Surveys in Selected Counties

This stage of the fieldwork is designed to study specific social and environmental problems, causes and societal interventions. Interviews will be conducted to identify social and environmental changes, especially in relation to nature tourism. Interviews will be stratified according to ethnicity, education, and age so that cultural significance, and social and environmental perceptions may be defined. Site checks and vegetation surveys will be undertaken when nature tourism has caused environmental effects and land-use changes.

Interviews will seek to solicit information on social and environmental changes and their impacts, land-use patterns and styles, inputs and yields, population change, incomes, perception of the environment and of environmental change, environmental behavior, exposure to media, policy and resource institutions.

For county level leaders, interviews will address policy and institutional changes and overall changes in the county during the past 15 years. Questions will address policy making and implementation, relations with upper-level governments, local conditions, success of and why, and what policies and programs that effect nature tourism, are on the current agenda and why. Interviews will also address how

leaders view environmental problems, regulations, and programs, how policy and its implementation affect local people's perception and behavior, and what problems exist in seeking cooperation with local people.

Stage 3. Interviews and Site Checks in Selected Communities

This stage aims to solicit detailed information on typical communities and to understand specific human-environment relations revealed to be important in the previous stages of this research. For example, specific questions such as cultural differences, the impacts of nature tourism on the environment, and human perceptions of the impacts of nature tourism, and how they have changed over time, may be researched in this stage. Townships or villages experiencing significant socioeconomic and environmental changes during the past 15 years will be selected in the four counties. Both local people and community leaders will be interviewed.

In each selected community, a site visit and interview will gather information on land-use and environmental changes and their associated nature tourism factors/events during the past 15 years. Interviews with community leaders and local people will help to document policy changes, local environmental history, population profiles, and changes in the local economy.

Contingent Valuation

Another method that will be used to assess both social and environmental impacts is contingent valuation (CV). This method is a means by which social impacts can be given an economic value. Insufficient assessments of the social impacts of tourism are common because economic benefits and costs often dominate decisions for tourism development (Choy 1991). The impact of this can be substantial because

economic values of non-economic impacts tend to be negative. Therefore their exclusion leads to an over estimation of the net social benefits of tourism development (Lindberg and Johnson 1996, 90).

Contingent Valuation is widely accepted as a starting point for estimating a person's willingness to pay (WTP) for non-market goods, provided rigorous survey research methods are followed and certain CV-specific methodological standards are met (Lindberg and Johnson 1996, 93). These standards are outlined in Arrow et al (1993).

An important consideration of CV research is to estimate a value of a "good" independent of the manner for which it is paid. Lindberg and Johnson (1996, 101) developed two models for their research. The first is the "policy" model that reflects the value of the mitigation program (i.e., the reduction in congestion and the method for achieving the reduction). The second model is for the "commodity", which reflects the value of the reduction in negative impacts independent of how it is achieved. The policy model includes all values developed from research questions while the commodity model isolates certain values independently.

There are various methods for eliciting a respondent's WTP. The dichotomous choice method will be used in this research. This method asks the respondent to determine whether his/her WTP is greater or less than a specified amount. Eubanks et al (1998) recently used this method to assess the economic impact of wildlife watching near the Platte River in Nebraska. Their research suggests that CV would be appropriate for the LRGV research given that one of the major and growing tourist attractions is birdwatching.

Timeline

Completed prior to grant period

Spring and Summer '99
Ongoing collection of secondary economic data.

Summer '99
Get access to IMPLAN software and instruction manual and review

Summer '99
Begin preliminary development of contingent valuation questionnaires and implementation strategies

Summer '99
Identify key individuals for interviews for qualitative analysis

YEAR I

Fall '99
a. Begin detailed structuring of the input-output model for the Lower Rio Grande Valley.
b. Focus data collection to be included in the IMPLAN model.
c. Develop sampling strategy and questionnaires for interviews and surveys.

Spring '00
a. Identify and recruit bilingual interviewers to conduct interviews and surveys.
b. Conduct test of interviews and surveys

Summer '00
Develop GIS to contain the various data sets that will be collected and combine three techniques

YEAR II

Fall '00
a. Use sample data to test IMPLAN
b. Begin Stage 1 interviews and surveys
c. Evaluate results of first-run of IMPLAN

Spring '01

a. Begin Stage 2 interviews and surveys
b. Run IMPLAN based on data that has been collected

Summer '01
Begin Stage 3 interviews and surveys

YEAR III:

Fall '01
Integrate first-run IMPLAN results into GIS

Spring '02
a. Conduct statistical analysis
b. Integrate survey and interview data into GIS
c. Rerun IMPLAN for any corrections and input into GIS

Summer '02

a. Compile all results
b. Write research report

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