



Operationalizing sustainability in regional tourism planning: an application of the limits of acceptable change framework

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Abstract

Sustainability has been a useful concept but one that has proven difficult to operationalize. The limits of acceptable change (LAC) planning system was used as a basis for research to exemplify a model that may be useful in applying the sustainability concept in regional tourism planning. A county on the coast of Texas, USA was used to examine regional attitudes toward tourism development and the perceived change that tourism might create. Respondent attitudes from three communities were compared. Results indicated that communities differed in the way they felt about tourism. These differences provided some justification for tourism development zones (TDZs) that can help separate development and activity types related to tourism. Communities also differed in perceived change that might occur due to tourism suggesting that different conditions and indicators might be needed depending on the TDZ of concern. Implications for application of the LAC planning system are discussed. © 2001 Elsevier Science Ltd. All rights reserved.

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1. Introduction

With the heightened environmental concern of the late 1980s, the term sustainable development became “a theme common to much tourism research in the 1990s” (Pigram, 1995). The term continues to be influential as tourism enters the new millennium with an eye toward cultural, economic and environmental impacts. Though no universally accepted definition exists, the World Commission on Economic Development (WCED) suggested, in the Brundtland Report, that sustainable development is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987).” From the tourism perspective, some researchers (e.g., Bramwell & Lane, 1993) have broadened the meaning of sustainable development into a concept that implies long-term viability of good quality natural and human resources. Others (WTO, 1996; Hunter & Green, 1995)

suggest that sustainability includes quality of life for host communities, visitor satisfaction, and conservative use of natural and social resources. Whatever the position, a common theme among these perspectives is that sustainable tourism development includes a focus on attaining some level of harmony among stakeholder groups to develop a desirable quality of life that lasts.

Tourism facilities and programs are developed to create changes. Changes such as increased personal income or tax revenues are often viewed as providing more opportunity for residents and are among the “good” reasons for tourism development. However, tourism, as with any type of development, can also create change that removes opportunity or threatens quality of life. Some examples are disruptions of residents’ lives owing to increased population during the tourist season, increases in crime, displacements of residents by new developments, conflicts in values, and impacts on the local culture (McCool & Martin, 1994; Williams, McDonald, Riden, & Uysal, 1995). Considering these positive and negative impacts under the rubric of sustainability has been difficult when it comes to operationalizing research, planning and policy.

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Sustainability has largely been used conceptually as a “good idea” but has been difficult to enable through specific initiatives (Briassoulis, 1992; Boyd, 1995; Linden, 1993; McCool, 1994, 1995; Muller, 1997).

McCool (1994, 1995) has suggested that among several frameworks dealing with sustainable tourism development, the limits of acceptable change (LAC) planning framework has good potential as a tool that can assist in operationalizing the sustainability concept. The LAC planning system was developed in the context of designated wilderness in the USA where minimal change in the resource has been mandated by law. In a wilderness planning process, issues are typically decided by people who use (e.g., recreationists, scientists), manage (e.g., federal rangers, fire specialists) or live adjacent to (e.g., gateway communities) the resource. Applying the system to communities and urban regions provides the opportunity to ask residents, as a critical part of the resource, how they feel about development and change.

The purpose of this research was to use the LAC framework as a guide to examine and inform the process of sustainable tourism development on a regional scale. We examined resident attitudes toward tourism development in general, toward desirable types of tourism services, toward local conditions and finally, toward perceptions about if and how conditions might change due to tourism.

2. Background

2.1. Sustainable tourism development

Since the 1987 findings and recommendations of the WCED in the report entitled “Our Common Future” (WCED, 1987), the concept of “sustainable development” has become a buzzword within the international development community. Sustainable development evolved from maintaining natural resources for present and future generations to emphasizing values associated with cultural and community diversity, concern for social issues of justice and fairness, and a strong orientation towards stability. The evolution of the term “sustainable development” refers to all development paths that are environmentally beneficial, and lasting. It follows that sustainability of anything cannot be accomplished without imposing limits on use that are determined by the ability of the biosphere to absorb the effects of that use (Burr & Walsh, 1994).

Because tourism relies heavily on natural resources it lends itself well to the idea of sustainable development (Sadler, 1988; Wall, 1993). However, as Butler (1991) pointed out, the enthusiasm for linking sustainable development with tourism may often be tempered by reality. He listed two aspects of the reality: (1) there are

still many unknowns about tourism’s link with the environment, and (2) there is still a paucity of empirical information to demonstrate clearly that tourism can be sustainable in nature. In spite of these concerns, the sustainable development approach to planning tourism is acutely important because most tourism development, involving stakeholders such as tourists, tourist businesses, and community residents, depends on attractions and activities related to the natural environment, heritage and culture. If these resources are degraded or destroyed, then tourism itself will have lost its’ own *raison d’être*. For tourism development to be sustainable, Butler (1991) suggested that such prerequisites as co-ordination of policies, pro-active planning, acceptance of limitations on growth, and commitment to a long-term vision, should be fulfilled during the early stage of planning. The LAC framework developed by Stankey, Cole, Lucas, Peterson, and Frissell (1985) embodies these prerequisites.

2.2. Limits of acceptable change planning process

As a management process, the LAC framework outlines a sequence of steps that can help to define a set of desired conditions for any area when change is imminent, as well as the management actions necessary to maintain or restore those conditions (Stankey et al., 1985). The LAC framework searches for relationships between existing and desired or “acceptable” conditions, and relies on management judgment for implementing suitable strategies where problems are identified. The nine steps of the process are evident in Fig. 1. This study was primarily concerned with the first three steps in the process.

Step 1. Define issues and concerns: in this step the community residents, user groups/visitors and planner/managers identify and define the issues and concerns associated with the resource. For example, as a result of an economic recession, some residents may feel that their community would benefit from tourism development while others may not. This step is needed to draw stakeholder groups out and provide opportunities for them to express ideas about how planned change might impact them. Ideally, a series of efforts would be made to contact and involve diverse stakeholders in this first step.

Step 2. Define opportunity classes or zones: this step involves the identification of opportunity classes or zones. Presumably, each zone would have different social, natural resource or managerial conditions. Depending on the resources, areas may be designated and managed in a variety of ways in an attempt to align environmental characteristics with user desires and management goals. The final outcome might be a sort of zoning overlay that represents a range of conditions

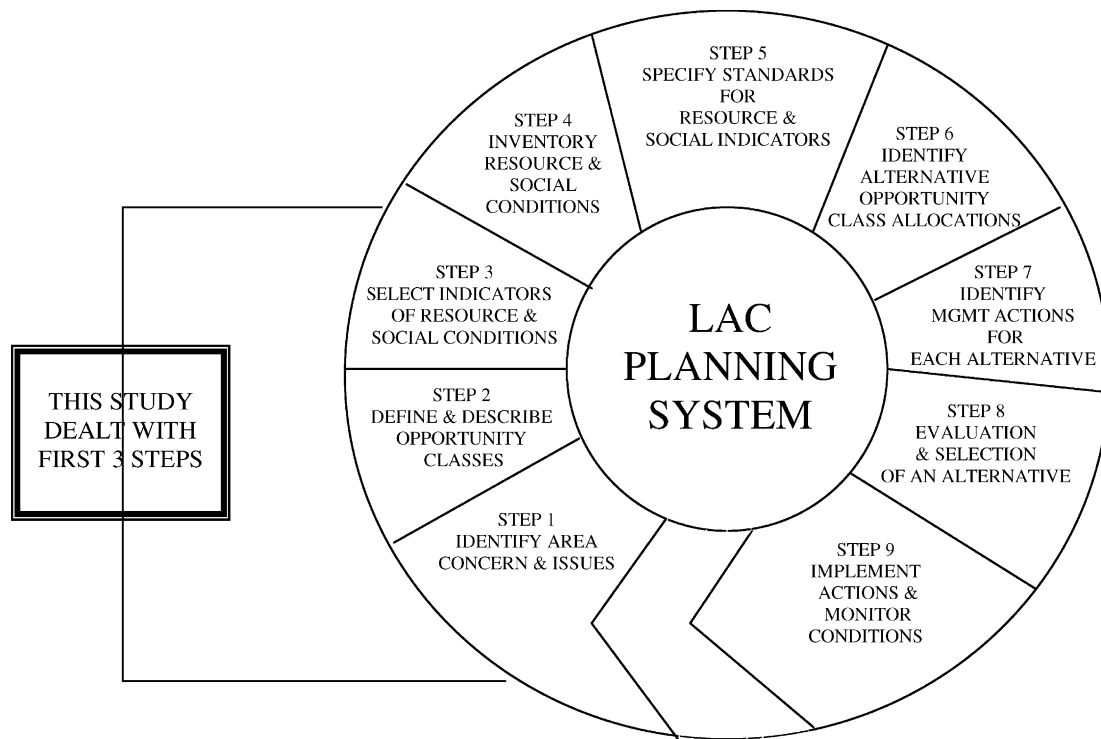


Fig. 1. The LAC planning system (after Stankey et al., 1985).

which, users, residents, planners/managers and developers agree aligns with the existing situation.

Step 3. Select indicators of resource and social conditions (as they apply to classes or zones): this step in the LAC framework involves the selection of indicators for conditions that represent the zones designated in step 2. While the first two steps should provide general descriptions of desired conditions, the third step should focus on identifying important conditions and then specific indicators that would be useful in measuring change in the condition(s) (e.g., no. of cars past point x as an indicator of a traffic condition). This has typically been done by asking recreational users of a resource like wilderness to rate the importance of various conditions in an area. In the LAC framework, much of the emphasis has been on getting input from visitors as the wildland areas where it has been applied have no human residents.

In previous studies, conditions related to tourism development have typically been grouped into the three categories that represent economic, environmental, and social characteristics. Economic conditions have included "contribution to income and standard of living," "increased employment opportunities," "improved investment," "infrastructure development," "increased tax revenues," and "increased opportunities for shopping." (e.g., Milman & Pizam, 1988; Perdue, Long, & Allen, 1990; Pizam, 1978; Ross, 1992; Rothman, 1978; Sethna & Richmond, 1978; Sheldon & Var, 1984; Tyrrell & Spaulding, 1984). Environmental conditions have

included state of the natural environment (e.g., Belisle & Hoy, 1980; Liu, Sheldon, & Var, 1987; Liu & Var, 1986; Sethna & Richmond, 1978), an area's appearance (e.g., Bystrzanowski, 1989), traffic crowding, noise, and litter (e.g., Brougham & Butler, 1981; Caneday & Zeiger, 1991; Pizam, 1978; Rothman, 1978; Thompson, Crompton, & Kamp, 1979; Var, Kendall, & Tarakcioglu, 1985), natural landscapes such as agricultural and pastoral lands, and flora and fauna (OECD, 1980). The social and cultural indicators are related to changes in value systems, individual behavior, family relations, collective lifestyles, safety levels, moral conduct, creative expressions, traditional ceremonies, community organizations, local resources and facilities, labor structures, and language (e.g., Affeld, 1975; Butler, 1974; Fox, 1977; Kadt, 1979; Keogh, 1989) due to tourism.

US Forest Service researchers initially proposed the LAC framework in the early 1980s as a means of improving recreation management. The framework stems from two earlier concepts developed to support the management of protected and/or multiple use areas (Stankey et al., 1985). The first of these concepts, carrying capacity, gained popularity in the ecological sciences (Odum, 1959) and is still invoked as a part of efforts to make tourism use sustainable (e.g., Hawkins & Roberts, 1997; Saveriades, 2000). However, carrying capacity has been criticized for some time because it holds out the promise of being objective and based on biophysical data but in fact requires many subjective and judgmental decisions (Graefe, Vaske, & Kuss, 1984,

Lindberg, McCool, & Stankey, 1997). Essentially, carrying capacity has been an intuitively appealing concept but has failed to take into account relationships between use and impact or to consider prescriptive measures regarding what kinds of conditions should be sought in a place (Stankey, 1991). The second planning concept that has contributed to development of LAC has been the Recreational Opportunity Spectrum (ROS) (Driver & Brown, 1978; Clark & Stankey, 1979). This concept is evident in LAC's step 2 as described above. The ROS was developed to help planners and managers of outdoor recreation and tourism consider ways to align physical settings with appropriate or desirable user activities. The system is based on the premise that a spectrum of settings exists from the more rural and natural to the more urban and less natural. Different settings along the spectrum are seen as accommodating primitive, low density to developed, high density activities. The LAC planning system moves away from carrying capacity by addressing desired conditions rather than a capacity number and the system recognizes that conditions (and thus their acceptability) vary considerably, whether planning for a specific wilderness or an urban region.

Defining the amount of change that is acceptable to stakeholders is at the heart of the LAC process. Roggenbuck, Williams, and Watson (1993) applied the framework to determine what types of conditions were most important to wilderness recreationists and to determine acceptable standards for them. They questioned users in four wilderness areas and developed ranges of acceptability for indicator conditions like, pieces of litter seen, other user groups seen or heard near camp, and amounts of vegetation damaged around campsites. Oliver (1995) used the LAC framework to guide stakeholder consensus on a dredging project adjacent to the Great Barrier Reef Marine Park, Australia. Prior to commencing the dredging, a group of managers, biologists and consultants agreed on sediment load as a key indicator of coral health and determined at what level the load would become unacceptable, triggering mitigating action (Oliver, 1995).

The use of a setting spectrum has been applied in several tourism situations. Kaltenborn and Emmilin (1993) invoked ROS as way to develop a research based management plan for a tourism destination in the Arctic. They recommended that five setting types be designated over a 62,000 km² area with each setting providing different levels of access, management intensity, traffic patterns and facilities. Settings (ROS classifications) were recommended largely to control changes in the physical resource, resident expectations and visitor experiences. Boyd and Butler (1996) used the ROS concept in conjunction with LAC to prioritize ecotourism activity by region. The authors recognized

the need to consider the relationship between activity and environmental impacts by zone. Shafer and Inglis (2000) used the ROS concept within LAC to examine visitor experiences as they related to settings in the Great Barrier Reef Marine Park. The study revealed that visitors perceived settings differently and that acceptable change in specific conditions might differ according to the type of setting (e.g., less developed or more developed).

This study was guided by two questions that were asked in reference to steps 2 and 3 in the LAC process. First, we questioned the existence of tourism development zones (TDZs) (McCool, 1994) that follow from a regional ROS. We wanted to determine if residents of different communities felt differently about tourism development and the type of tourism that might be appropriate for their "zone." Second, we wanted to determine how residents view conditions in their communities and their perceptions about how tourism development might change those conditions. Related to this second question, we wanted to know if communities that might represent different zones might also have different perceptions about conditions and change.

3. Methods and procedure

3.1. Study area

Calhoun County, Texas was selected as a study site because of its involvement in a regional plan for tourism development. The area is located near the central point of the Texas Gulf Coast (Fig. 2) and includes three incorporated communities, Port Lavaca, Port O'Connor and Seadrift. As this study commenced community representatives had already been involved in a series of workshops to discuss tourism and identify issues of concern to stakeholders in the area (step 1 in the LAC process).

Port Lavaca is a community of approximately 12,000 residents. It is the county seat and is situated along State Highway 35, a thoroughfare for travelers along the coast. Port O'Connor has approximately 1200 residents and has begun to attract some retirees to the area. It is located off the main thoroughfare and adjacent to Matagorda Island State Park, a popular destination for bird watchers and people who like to fish. Finally, Seadrift is also a small community of about 1300 people many of whom are involved in the fishing and shrimping industries. Seadrift is also off the main thoroughfare but is closer to it than Port O'Connor.

3.2. Data collection procedures

To generate data for steps 2 and 3 of the LAC process a mail survey was used. Information gleaned from

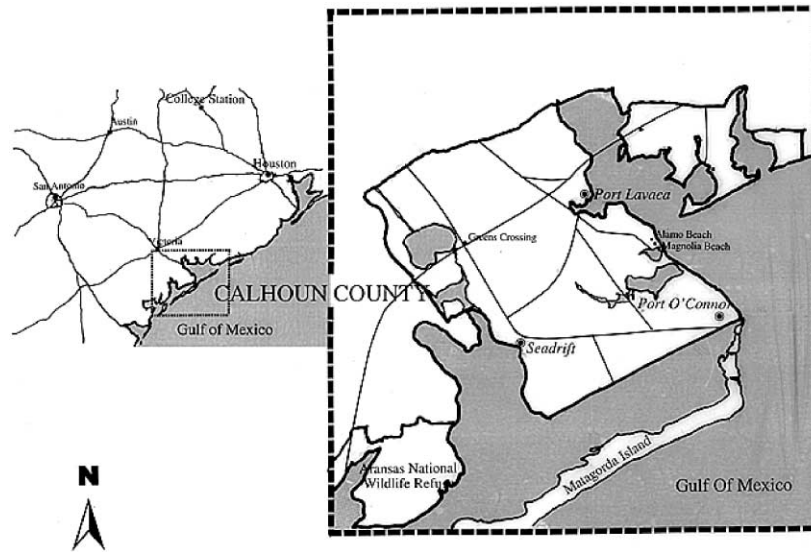


Fig. 2. Map of Calhoun County, Texas including the three primary communities of Port Lavaca, Port O'Connor and Seadrift.

workshop meetings was used as the basis of a survey instrument. Local telephone directories were used to develop a sampling frame. The sample was stratified in order to ensure representation of the three communities of Port Lavaca, Port O'Connor and Seaside. A systematic selection with a random start was used for each of the three communities as listed in the directory. This yielded a sample of 1092 to which surveys were sent. Eighty eight surveys were sent to Seadrift, 294 to Port O'Connor and 710 to Port Lavaca. The Dillman (1978) process was followed in sending two surveys and two reminder cards over a period of 6 weeks. Three hundred and seventy five residents (34 per cent) returned questionnaires. Among those, 79 respondents did not answer the question on where they lived. The answer to this item was important to the questions asked here which hinged on looking at differences among residents of the three communities. This resulted in 296 useable responses (27 per cent of the total). The returns for each strata in this useable group were: 37 from Seadrift (42 per cent of that strata), 60 from Port O'Connor (21 per cent of that strata) and 199 from Port Lavaca (28 per cent of that strata).

3.2.1. Sample limitations

The 27 per cent response rate is somewhat low and may present limitations in the way the data can be interpreted or generalized to the larger Calhoun County population. However, demographic information from the 1990 Census, and a recent study conducted on employees of four major industries in Calhoun County indicated that our results were within a few percentage points on gender, income and residence variables as reported in both studies. The data also serve here as input for an example of how the LAC process can be

used as a guiding framework in regional tourism planning.

3.2.2. Development of survey instrument

The survey consisted of questions regarding support for tourism, desirable type(s) of tourism and tourists, how (for better or worse) tourism development might change their communities, and socio-demographic characteristics. In particular, items related to desirable/undesirable tourism development and changes were based largely on feedback received in the earlier workshops. We also reviewed work by Belisle and Hoy (1980), Brougham and Butler (1981), Husbands (1989), Liu and Var (1986), Milman and Pizam (1988), Perdue et al. (1990), Pizam (1978), Ross (1992), Rothman (1978), Sethna and Richmond (1978), Sheldon and Var (1984), Tyrrell and Spaulding (1984) in formulating the items.

Two groups of items were used to measure resident attitudes toward tourism development. The first was comprised of 10 items related to feelings about development in general. For example, "I support new tourism development in my community," "My community can handle more tourists" and "Increased tourism would hurt my community's quality of life." Responses to these items were measured with a Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5) and a neutral midpoint (3). In order to examine what type(s) of tourism and tourists might be desirable if tourism development did occur, respondents were presented with specific items related to types of tourism such as "Places where visitors can see undeveloped natural environments," "Large groups of tourists visiting year round," and "Beach front resort development." Respondents were asked to rank the desirability of each on

a 5-point scale ranging from “undesirable” (1) to “very desirable” (5) with a midpoint labeled “neither desirable or undesirable” (3). The sections on indicator conditions asked the respondents to first rank their feelings about the current conditions in their respective communities. The scale ranged from a low of “poor (1)” to a high of “excellent (5).” Second, they were asked about how they felt the same conditions might change if tourism development occurred. The second response scale ranged from “large change for worse” (1) to “large change for better” (5) with a midpoint of “no change” (3). Because these two sections were based on identical items they were separated in the survey by two other sections of questions and the order was randomized to reduce response bias.

3.3. *Data analysis*

The Statistical Package for the Social Sciences (SPSS Inc., 1998) was used to analyze the data obtained from the survey. A simple mean was calculated for the scale developed to measure general attitudes toward tourism and compared using Oneway ANOVA to determine if residents from different communities had different attitudes toward tourism development. Principal component factor analyses with a varimax rotation and reliability analysis were used to analyze and verify the multi-item scales on desirable development. Mean values for factor scores on desirable forms of tourism were again compared using Oneway ANOVA to examine differences. To get a better understanding of resident perceptions about conditions and perceptions of how those conditions might change due to tourism development, an analysis similar to Importance-Performance (in this case “condition-change”) was conducted by plotting mean values for the 25 items in the two condition scales.

4. Results

4.1. *Respondents' profile*

Of the 296 respondents, 46 per cent of respondents were female and the average age was 53 yr, with a range between 16 and 94. Respondents had lived in their respective communities for an average of 26 yr. Most of them (93 per cent) lived in Calhoun County year around and worked in Calhoun County (68 per cent). Twenty three per cent of the respondents owned a business in Calhoun County. Among those saying they owned a business, most (80 per cent) had fewer than 5 employees. Approximately 57 per cent of all respondents had an annual income less than or equal to \$45,000.

4.2. *Attitudes toward tourism development*

Results from the ten items designed to measure how people felt about tourism development in general indicated that two of the communities (Port Lavaca and Seadrift) showed support for “new tourism development” while the third (Port O'Connor) was more likely to feel that such development would hurt quality of life. Table 1 shows the mean values for items and rank by community. The 10 items were then summed to create a tourism attitude score. Before creating the mean attitude score five of the “negatively” worded items were reverse coded so that mean values would reflect scores in an intuitive way. That is, higher mean values represented a more positive evaluation of tourism. The attitude scores indicated that the three communities differed in their evaluations of tourism. Consistent with the trends evident in the individual items, Port O'Connor residents had a significantly lower tourism attitude score (3.07) than did residents of Port Lavaca (3.66) or Seadrift (3.61) (Table 2).

4.3. *Desirable types of tourism development*

The 19 items used to measure desirability of different types of tourism were factor analyzed. Three factors emerged with eigenvalues greater than 1.00. These factors accounted for 56.65 per cent of total variance. A Bartlett's test of sphericity indicated a significant ($p < 0.001$) correlation matrix and a KMO produced a value of 0.9. These indicators revealed that a factor analyzed solution was appropriate for the items. Table 3 shows the results of the factor analysis.

Factor one included nine items that were interpreted as representing “Passive Low Development” types of tourism. For example, it included items related to older visitors, families, small groups, those who come for day use and historic sites. The second dimension was comprised of six items that were interpreted as representing “Active and High Development” types of tourism. The items that defined this dimension related to higher levels of infrastructure development and related activity through amusement parks, beach-front resorts and golf courses. The last dimension was interpreted to represent “Nature Based Development” types of tourism because it was defined by four nature-related items. These items suggested a desire for tourism that would be based on undeveloped wildlife viewing areas, birding businesses and nature based educational opportunities.

Respondents from the three communities showed some similarities but differed significantly in terms of preferred types of tourism development (Table 4). Residents from Port Lavaca and Seadrift were generally more positive than Port O'Connor residents toward tourism development of any type. “Passive and Low” tourism development was most attractive to Port

Table 1
Mean scores for attitudes toward tourism among residents of three coastal communities in Calhoun County, Texas

Item	Overall mean ^a (n = 296)	S.D. (n = 277)	Rank (n = 277)	Port Lavaca mean (n = 199)	S.D. (n = 186)	Rank (n = 186)	Port O'Connor mean (n = 60)	S.D. (n = 56)	Rank (n = 56)	Seadrift mean (n = 37)	S.D. (n = 35)	Rank
I support new tourist development in my community	4.12	1.08	1	4.38	0.82	1	3.18	1.47	3	4.20	0.93	1
My community can handle more tourists	3.89	1.22	2	4.10	0.99	2	2.87	1.52	7	4.06	1.03	2
There is a commitment from community leaders to expand the tourism climate	3.14	1.13	3	3.08	1.09	4	3.51	0.98	1	2.94	1.14	4
The leaders in my community are capable of developing tourism	3.14	1.21	3	3.11	1.20	3	3.00	1.15	6	3.17	1.36	3
Local tax should not be used for tourism	3.08	1.37	5	3.06	1.38	5	3.18	1.49	3	2.94	1.21	4
I will benefit financially if tourism increases in my community	2.77	1.46	6	2.80	1.34	6	2.69	1.57	8	2.94	1.47	4
People do not want to visit this area to see its natural resources	2.29	1.18	7	2.24	1.09	7	2.55	1.39	9	2.35	1.35	7
Distributing more information about the area will bring too many tourists	2.28	1.32	8	2.05	1.12	8	3.18	1.56	3	2.17	1.15	8
Increased tourism would hurt my community's quality of life	2.08	1.24	9	1.77	0.97	9	3.25	1.49	2	1.94	0.94	9
I have been opposed to tourism in my community in the past	1.87	1.18	10	1.67	0.99	10	2.41	1.55	10	1.77	1.19	10

^aScale ranges from 1 = strongly disagree to 3 = neither disagree or disagree to 5 = strongly agree.

Table 2

Comparison, using Oneway ANOVA, of a general attitude toward tourism development among three communities in Calhoun County, TX

Community	Attitude toward tourism ^a	F	p
Port Lavaca (n = 199)	3.66 ^a	18.17	<0.00
Port O'Connor (n = 60)	3.07 ^b		
Seadrift (n = 37)	3.61 ^a		

^aMean values represent average scores for a 10-item scale with some items reverse coded; 1 = strongly disagree, 3 = neither agree or disagree and 5 = strongly agree. Different superscripts by mean values indicate significant differences between communities at 0.05 based on Duncan's Multiple Range tests.

Lavaca and Seadrift ($x = 4.36$ and 4.27), and significantly less so to Port O'Connor respondents ($x = 3.79$). Residents from Port O'Connor showed different preferences toward tourism. As with the general tourism attitude scale, Port O'Connor residents scored all types of tourism as less desirable than people who lived elsewhere. However, it appeared that if Port O'Connor were to have any tourism development they would prefer that it be nature based. Port O'Connor was the only group that scored any of these types of development in the "undesirable" category. They felt that "active high development" tourism was undesirable ($x = 2.77$).

4.4. Resident's perceptions of conditions

Mean values for the way the three communities perceived present conditions, and the potential for tourism to change them, are presented in Table 5. Respondents of the three communities perceived conditions related to the natural environment (e.g., amount of wildlife, amount of open undeveloped space, quality of the natural environment) and safety aspects (e.g., amount of traffic, safety from crime) as good. Conditions related to transportation, new buildings and variety in entertainment and shopping were perceived as the worst conditions. Respondents from Port Lavaca and Seadrift felt that six and seven, respectively, of the conditions listed would get worse in their communities if tourism was developed. The two were very close in scoring crime, noise, pollution, open space and litter as conditions that were likely to deteriorate. Port O'Connor respondents indicated that twice as many (13) conditions would get worse with tourism development. Their concerns beyond those of the other two communities, included additional negative changes in the natural environment, local taxes and number of people in their community. Respondents from all three communities were similar in their views that tourism would change conditions like number of jobs, personal income, shopping and restaurants for the better.

Table 3
Factor analysis of desirable tourism development items for respondents from three coastal communities in Texas ($n = 296$)

Factor name	Factor loading		
	F1	F2	F3
<i>Passive low development</i>			
Older and retired visitors coming to the area	0.727		
Visitors who stay in the community for several weeks at a time	0.692		
More opportunities for visitors to fish	0.645		
Small groups of tourists at certain times of the year	0.611		
The development of historic sites for people to visit	0.575		
Families with children coming into the area	0.517		
Providing visitors with more access to the islands	0.517		
Visitors who come only for the day (do not spend the night)	0.505		
Restaurants built to allow more visitors to eat in this community	0.501		
<i>Active high development</i>			
The development of amusement park type facilities		0.778	
Beach front resort development		0.730	
The development of golf courses		0.685	
Large groups of tourists visiting year round		0.576	
The development of camping grounds		0.575	
College aged visitors coming to the area		0.537	
<i>Nature based development</i>			
Places where visitors can see undeveloped natural environments			0.778
Development of facilities which would educate visitors about the natural environment			0.757
Businesses that provide for birdwatchers			0.729
Increase number of places where people can view wildlife			0.691
Eigenvalue	8.03	1.67	1.06
Per cent of variance	42.25	8.81	5.59
Cumulative per cent of variance	42.25	51.06	56.65
Standardized item alpha ($\alpha = 0.92$)	0.87	0.81	0.85

Table 4
Comparison, using Oneway ANOVA, of the desirability of types of tourism development among three communities in Calhoun County, TX

Tourism development type	Community ^a			<i>F</i>	<i>p</i>
	Port Lavaca ($n = 199$)	Port O'Connor ($n = 60$)	Seadrift ($n = 37$)		
Passive low	4.36 ^a	3.79 ^b	4.27 ^a	13.15	<0.00
Active high	3.78 ^a	2.55 ^b	3.54 ^a	28.51	<0.00
Nature	4.24 ^a	3.85 ^b	3.81 ^b	5.42	<0.01

^aMean values for tourism development type based on factor means of items scored on a 5 point scale, where 1 = very undesirable, 3 = neither, 5 = very desirable. Different superscripts for mean values indicate significant differences between means at the 0.05 level based on Duncan's Multiple Range tests.

In order to look more carefully at how each community viewed conditions a condition-change plot was developed for each. This part of the analysis was patterned after the importance-performance concept. Plotting conditions based on how they exist now versus how they might change provides a simple way of analyzing, which conditions could be, good indicators. Four intuitive quadrants result in such plots when midpoints or mean values are used as dividers. Using "no change" (3 on the 5-point scale) as the divider on the "change in conditions" (*Y*) axis and the mean value as divider on the "current conditions" (*X*) axis creates the quadrants. The mean score was used as a quadrant divider on the current conditions axis because the response scale did not have a neutral or middle point.

Once quadrants were formed and points plotted, interpreting the conditions-change grid into actions was fairly straightforward (Figs. 3–5). Each quadrant can be summarized into specific directions for planners. In quadrant I (labeled "Tourism could help"), current conditions are below average and tourism development is expected to bring improvement. In quadrant II ("Keeping things good"), current conditions are above average and tourism development is perceived as helping to keep these conditions as is or improve on them. In quadrant III ("Bad and get worse"), current conditions are below average and tourism development is perceived to make these conditions even worse. In quadrant IV ("Tourism could hurt"), tourism development could detract from good conditions that exist now. Quadrants I and IV warrant special attention because conditions that plot in these two have the greatest perceived potential for positive and negative change due to tourism.

The first difference evident among the condition-change plots for the three communities is their shape and density. Port Lavaca (Fig. 3) and Seadrift (Fig. 5) have plots that are more concentrated and dense indicating less variance in the way that respondents scored conditions. Port O'Connor's plot (Fig. 4) is more dispersed and less concentrated indicating greater disparity in their perceptions of conditions. The second difference is in the number of positive and negative

Table 5
Mean values for perceived current, and potential change in, conditions in three Texas communities

Condition items	Combined communities perceptions: current conditions ^a	Potential for change in condition due to tourism ($n = 296$) ^b	Port Lavaca's perceptions: current conditions	Potential for change in condition due to tourism ($n = 199$)	Port O'Connor's perceptions: current conditions	Potential for change in condition due to tourism ($n = 60$)	Seadrift's perceptions: current conditions	Potential for change in condition due to tourism ($n = 37$)
Amount of wildlife	3.88	3.28	3.83	3.43	4.50	2.80	3.71	3.00
Amount of open space	3.49	2.65	3.54	2.83	3.42	1.95	3.54	2.71
Quality of the natural environment	3.06	3.15	2.98	3.37	3.46	2.30	2.94	3.23
Amount of traffic	3.00	2.86	3.08	2.98	3.00	2.04	2.69	3.26
Amount of noise heard	2.97	2.73	3.07	2.90	3.00	1.95	2.80	2.89
Safety from crime	2.97	2.82	3.05	2.91	2.95	2.21	3.00	2.97
Number of jobs	2.73	4.09	3.07	4.17	1.93	3.87	2.20	3.91
Community spirit	2.73	3.91	2.60	4.02	3.32	3.55	2.43	3.91
Availability of hotels	2.73	3.47	2.98	3.60	2.16	2.82	2.54	3.43
Chance to meet people	2.72	4.11	2.73	4.16	3.25	3.75	2.46	4.18
Number of people	2.72	3.77	2.74	3.94	2.84	2.96	2.37	3.94
Personal income	2.61	3.98	2.79	4.01	2.29	3.82	2.14	4.00
Awareness of local culture	2.57	3.94	2.59	3.99	2.91	3.45	2.14	4.03
Amount of pollution in the area	2.57	2.54	2.51	2.66	2.89	1.87	2.57	2.63
Amount of uncontrolled development	2.50	3.06	2.58	3.15	2.51	2.52	2.35	3.26
Amount of local tax	2.47	3.16	2.52	3.26	2.39	2.46	2.37	3.38
Historical buildings	2.46	3.98	2.54	4.04	2.34	3.57	2.06	3.88
Variety of restaurants	2.35	4.10	2.34	4.23	2.66	3.71	2.63	3.91
Amount of erosion	2.26	2.85	2.23	2.86	2.52	2.45	2.47	2.97
Attractiveness to invest	2.24	4.06	2.23	4.17	2.58	3.50	2.09	4.06
Amount of litter	2.19	2.22	2.26	2.25	1.92	1.61	2.03	2.46
Amount of new buildings	2.07	3.99	1.85	4.05	3.23	3.68	1.60	4.06
Quality of transportation	1.80	3.70	1.93	3.79	1.64	3.09	1.43	3.65
Variety of entertainment	1.59	4.02	1.61	4.17	1.77	3.50	1.37	4.03
Variety of shopping facilities	1.56	4.07	1.64	4.23	1.41	3.68	1.26	3.91

^a Mean values for current conditions based on a 5 point scale were 1 = poor to 5 = excellent.

^b Mean values for potential change based on a 5 point scale where 1 = large change for the worse, 3 = no change to 5 = large change for the better.

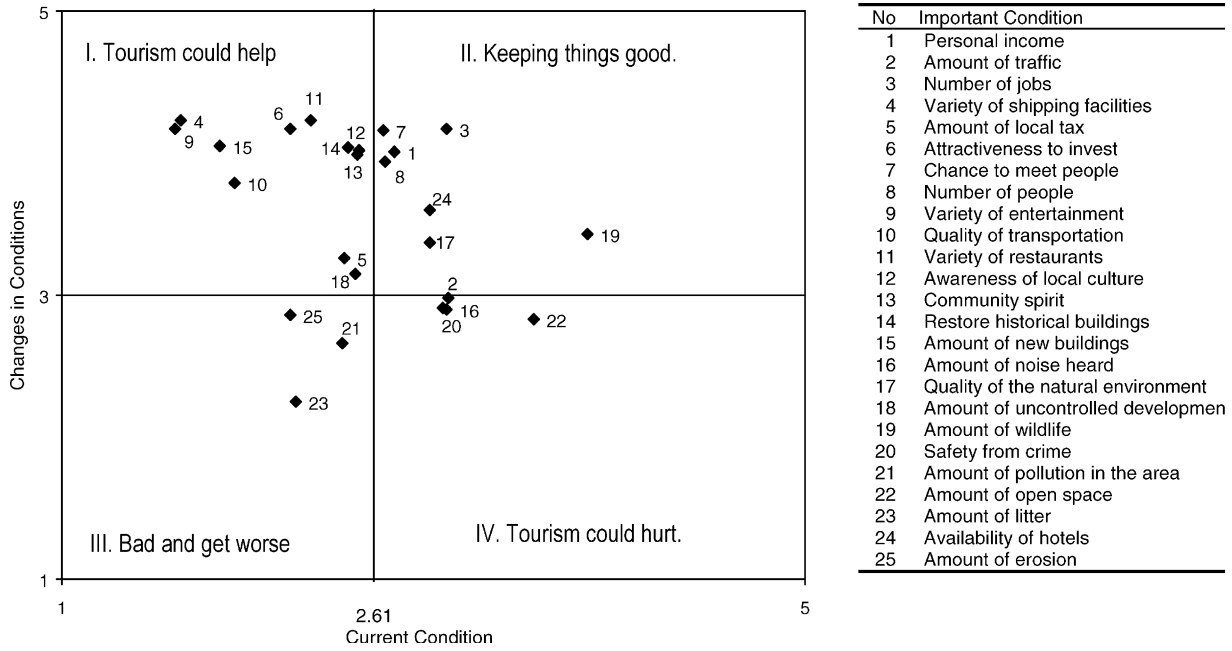


Fig. 3. Condition—change grid for respondents who lived in Port Lavaca, TX. Perceptions of current conditions on X axis (1 = poor to 5 = excellent) plotted against perceptions of how tourism development could change conditions on the Y axis (1 = change for the worse, 3 = no change to 5 = change for the better).

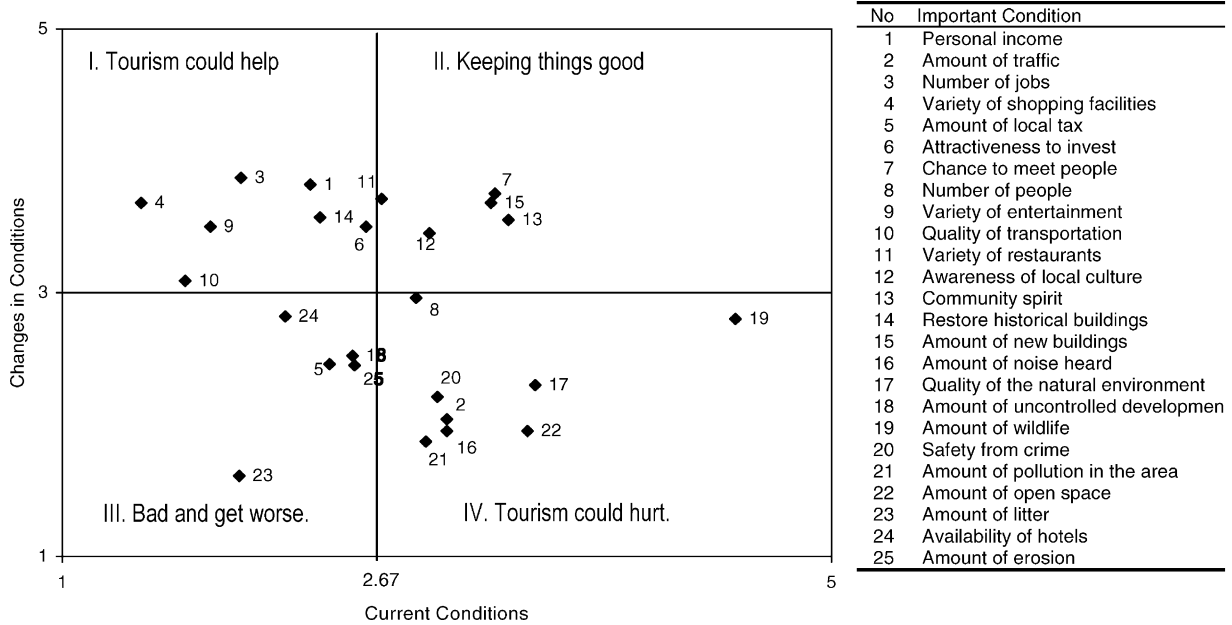


Fig. 4. Condition—change grid for respondents who lived in Port O'Connor, TX. Perceptions of current conditions on X axis (1 = poor to 5 = excellent) plotted against perceptions of how tourism development could change conditions on the Y axis (1 = change for the worse, 3 = no change to 5 = change for the better).

changes that are perceived as possible in the communities. Port O'Connor, for example, has seven conditions in quadrant IV that might be hurt by tourism development and six conditions in quadrant I that might be

helped by it. Port Lavaca and Seadrift each have four conditions that might be hurt by tourism (quadrant IV) and 10 or more conditions that might be helped by it (quadrant I). This pattern is consistent with differences

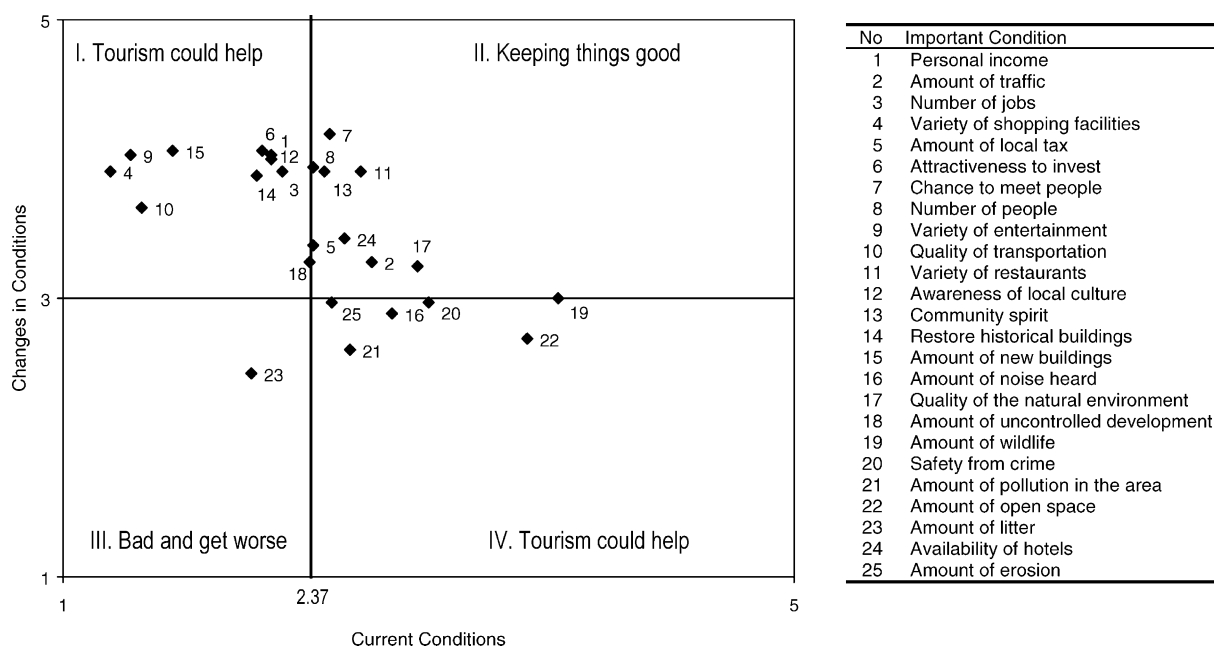


Fig. 5. Condition—change grid for respondents who lived in Seadrift, TX. Perceptions of current conditions on X axis (1 = poor to 5 = excellent) plotted against perceptions of how tourism development could change conditions on the Y axis (1 = change for the worse, 3 = no change to 5 = change for the better).

among the general attitudes toward tourism that respondents from these communities held. Port Lavaca and Seadrift seem to view tourism in a more positive light than do respondents from Port O’Conner.

More specifically, respondents from Port O’Connor again appeared to have stronger feelings about natural environment conditions. The amount of wildlife was scored as existing in a good to excellent state in their area at the time; however, they felt that tourism development would change that condition for the worse. The amount of noise, open space and pollution clustered as conditions in the lower portion of the “Tourism could hurt” quadrant indicating that all were currently good but that large changes for the worse would occur with tourism development. Another potential indicator was the amount of litter condition that plotted alone in the “Bad and get worse” quadrant. It was seen as one that was currently only poor to fair and was likely to get even worse. Port Lavaca and Seadrift also felt that noise and open space were likely to change some for the worse but, those conditions plotted much closer to the “Keeping things good” quadrant than they did for Port O’Conner. In the positive quadrants conditions related to variety in shopping, restaurants and entertainment were all seen as poor to fair now but as being aided by tourism.

5. Discussion and conclusion

Though sustainability is a concept developed to benefit the future it can only be operationalized based

on some agreement in the present. McCool (1994) suggests that managing for sustainability requires: “(1) a technical planning system that addresses problems and forces explicit decision making, and (2) a public involvement process that is oriented toward consensus building. The LAC planning process provides for both. In this study, we attempted to use the model as a starting point for research that would address questions of change in a technical way while informing consensus building. Given the impacts tourism can have on a community, it is imperative to gain an understanding of residents’ views if consensus is to be built and if it is to have any teeth (Andereck & Nickerson, 1997). Residents are, after all, a large component of the resource that stands to be impacted with the change tourism brings. The identities they ascribe, and attachments they have, to their communities are likely to be altered for better or worse (Williams et al., 1995).

One of the technical aspects of the LAC planning process involves the designation of zones that differ in their resource character. The zones are based largely on that resource’s ability (or in this case the desire) to accommodate given activities. This step in the process provides for diversity in a region and a reduction in scale so that smaller parts of the whole can be dealt with more fully. While the ROS or zoning step in LAC has been applied conceptually in several tourism planning situations (e.g., Kaltenborn & Emmilin, 1993; Boyd & Butler, 1996; Weaver, 1997) little empirical work has been done to support that differences in resource zones exist perceptually as well as geographically. The three

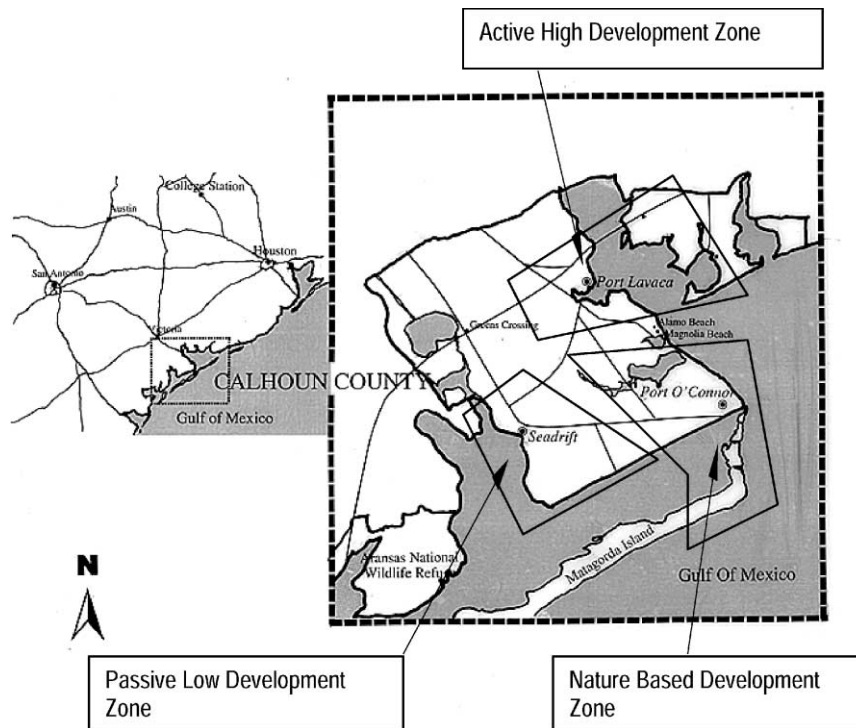


Fig. 6. Hypothetical tourism development zones (TDZs) based on resident attitudes toward the types of tourism desirable in their community.

communities examined here, Port Lavaca, Port O'Connor and Seadrift, exhibited quantifiable differences in perceptions toward tourism development and in how that development might change them. Port Lavaca and Seadrift showed few differences in their views toward tourism or toward what might be desirable development. There was no difference in their generally favorable attitudes toward tourism; however, there was a difference between the two regarding what type of tourism they desired. Port Lavaca desired all three types, passive low development, active high development and nature based. Seadrift scored active high development tourism significantly less desirable than Port Lavaca. Port O'Connor respondents sent a clear message that they were not as supportive of tourism as the other two groups. However, Port O'Connor was least different in its feelings about the desirability of nature based tourism. It appeared that if any tourism was going to be planned for the Port O'Connor area that nature based enterprises would be most accepted. The pattern among communities suggests that one approach to TDZ designation would be to differentiate communities based on physical/geographical strengths and resident attitudes (Fig. 6). For example, Port Lavaca is the largest of the communities with more infrastructure for development of active and high development tourism including golf courses, resorts and amusement parks. The hypothetical zone depicted in Fig. 6, for Port Lavaca includes some of the State Highway 35 corridor and an industrial area across the bay which has been touted as

having the potential to offer "ecoindustrial" tourism in association with an aluminum processing plant. Seadrift, a smaller fishing and shrimping community, has attitudes that beget passive low development tourism that might include shrimping adventures or fishing excursions, small inns or development of historic sites to foster day use. Finally, Port O'Connor seemed most likely to find development associated with natural environments, wildlife viewing and nature education appealing. Port O'Connor is a gateway community to Matagorda Island State Park, which is included in their hypothetical zone in Fig. 6. The area draws birdwatchers, campers and hikers to experience a Gulf Coast barrier island ecosystem.

The third step in the LAC process is to identify conditions of importance and then decide on specific indicators that can be used to monitor change in the conditions. The perception based TDZs suggested here are related to differences in geography and community attitudes toward desirable tourism and in perceived conditions. Our results indicated that two of the communities (Port Lavaca and Seadrift) were only moderately concerned about negative change and scored considerably more conditions as having a potential for positive change. Though these two communities were hypothesized as being central to different TDZs, but it appears that similar conditions were important to both. Crime, noise, open space, litter, erosion and pollution were conditions for which indicators (e.g., a percentage of change in specified crime(s), decibel changes at

designated times and places, or a per cent change in the amount of open space available in the city's jurisdiction) might be developed to monitor change in Port Lavaca and Seadrift. Given the high expectations for tourism in these two communities, it would be helpful to develop indicators for some of the positive change they anticipated as well. For example, transportation, shopping and entertainment conditions are all seen as potentially receiving a boost from tourism development. As development occurs indicators like miles of resurfaced roadway or periodic surveys of residents' perceptions of the local selection of goods or diversity and quality of restaurants might be used to determine what change, if any, has occurred. Port O'Connor had more negative feelings about tourism thus it may be necessary to add condition indicators beyond those used in the other two communities to address their concerns. Indicators for conditions related to wildlife (and other natural environmental characteristics like water quality) traffic and number of visitors may help locals to monitor change in these areas.

Using resident input to determine issues related to tourism, to designate TDZs that guide development patterns and to understand which conditions are important and potentially sensitive to change sets the stage for moving forward with a sustainable plan. If a comfortable level of consensus had been reached on TDZs and condition indicators, later steps in the LAC could be taken. Step 4 calls for an inventory of existing conditions. Specifically, planners would use the indicators selected so that baseline data could be recorded against which to monitor change. As McCool (1994) points out, the inventory is often the first step in a traditional planning process but is placed later in the LAC process to help identify opportunities and constraints in reference to TDZ's and conditions already formulated. The pre-inventory involvement of stakeholder groups in the process has presumably given them reference points from which to judge and develop ideas using information gleaned in the inventory process. The early consensus building is also likely to help in identifying individuals or groups to help champion the plan toward implementation. Steps 5 and 6 in the LAC process require that standards for conditions be set and that TDZs be revisited in light of information gathered in the inventory. The setting of standards is likely to be a difficult task because agreement should be reached on how much change (up or down) is acceptable before some sort of management action is taken. If, for example, Port O'Connor decided to use number of cars weekly as an indicator of traffic they might decide, what per cent change in traffic on weekdays, weekends or month to month is acceptable. If the traffic level exceeded standards for a specified period of time it might trigger a meeting among tourism providers to discuss sharing in a reduction of trips they offer until the standard is again met.

The inventory data from step 4 may also provide impetus for revisiting the TDZ allocation developed in step 2. LAC's step 6 suggests that new opportunities and capabilities may have been identified once infrastructure, access and natural resources are better understood. This information should allow stakeholders to carefully consider attraction clusters and circulation corridors within, and linkages between, TDZs (Gunn, 1988). Finally, monitoring of indicators must ensue. As suggested above, monitoring provides the feedback necessary to determine if change is occurring and what kind of change it is. This is part of the proverbial feedback loop that is ever present in textbook planning models.

Sustainability is an attractive but problematic concept. We invoked the LAC planning process which was originally developed to manage change in designated wilderness (Stankey et al., 1985); a place where sustainable change is mandated by law. There is rarely a mandate for the sustainability of some unspecified quality of life among regional communities but a technical planning process like LAC may provide the frameworks necessary to help define and operationalize sustainability as tourism development commences.

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