EXAMINING THE EFFECTS OF ECOTOURISM INVOLVEMENT AND TOURISM BENEFITS ON FLORIDA TOUR OPERATORS' CONSERVATION CONTRIBUTIONS TO WETLAND ECOSYSTEMS

A Dissertation

by

LI-PIN LIN

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2011

Major Subject: Urban and Regional Science

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ABSTRACT

Examining the Effects of Ecotourism Involvement and Tourism Benefits on Florida Tour Operators' Conservation Contributions to Wetland Ecosystems. (December 2011).

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Ecotourism is considered an effective agent to conserve environmentally fragile areas while bringing economic opportunities to local communities at the same time. In the past decades, empirical studies about ecotourism's conservation effects on wetland ecosystems attracted relatively less academic attention than rainforests and coral reefs. Florida, listed as one of the states with the greatest share of wetland loss in the U.S. due to rapid growth in agriculture, tourism, and urban development, has a small number of existing wetlands under the protection of the park and reserve system. To generate long-term positive environmental impacts, ecotourism stakeholders' contributions to planning and management activities could be an alternative beyond land use controls for conserving Florida wetlands.

The major objective of this study is to explore the relationship between ecotourism and wetland conservation contributions which lead to long-term environmental sustainability. The study surveyed 97 nature-based tour operators in Florida on their activeness in a set of wetland planning and management behavior, the proportion of

tourism revenue from ecotourism, and the perceived tourism benefits regarding economic, socio-cultural, and ecological aspects. Factor analysis was employed to identify indicators for the composite factors, such as the conservation contributions and incentives (i.e., economic benefits, socio-cultural benefits, and ecological benefits). The effects of ecotourism involvement and conservation incentives on tour operators' participation in wetland conservation practices were statistically modeled.

The results demonstrated the business characteristics, degrees of the perceived tourism benefits, and frequency of participation in wetland conservation activities of responding tour operators. On average, tour operators were not as active in wetland management and planning approaches leading to the long-term environmental health as theories suggest they should be. Generally, the regression analysis results illustrated the significant association between ecotourism involvement and tour operators' conservation contribution. It is noteworthy that the effects of ecotourism involvement on tour operators' participation in environmental planning and water management processes were relatively important. In addition, the incentive of the perceived socio-cultural benefits was identified as the leading factor by regression analysis. The findings lent to the policy suggestions in expanding the incentives to drive major stakeholders' active engagement in wetland conservation planning and management, which is critical for collaborative and adaptive management.

DEDICATION

To my family

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CHAPTER I

INTRODUCTION

1.1 Research background

Since the 1990s, ecotourism has been considered an environmentally sound activity for encouraging tourism stakeholders to be environmentally responsible and to conserve natural resources. In some critical environmental areas where human activity is restricted to some degree, such as national parks and coastal protected areas, ecotourism is considered one of the best approaches to development. Governments and other land managers tend to embrace ecotourism as a panacea for balancing the contrary needs of development and conservation. However, is ecotourism as an economic activity really capable of contributing to long-term environmental health? Some researchers suggest that ecotourism, also called more broadly sustainable tourism, is a viable alternative to mass tourism, leading to more sustainable development (Boyd and Butler, 1996; Ceballos- Lascu'ain, 1996; Dimanche and Smith, 1996; Fennell, 2002; Fennell and Dowling, 2003; Fennell and Weaver, 2005). Meanwhile, others argue that ecotourism is not automatically sustainable and instead emphasize the importance of tourist destination management (Fennell and Dowling, 2003; Holden, 2008; Honey, 1999; Wall, 1997).

This dissertation follows the style of *Journal of the American Planning Association*.

Measuring how actively tourism stakeholders participate in conservation activities becomes an emerging research approach that can help to answer the larger question of the environmental impact of ecotourism. While there are relatively few empirical studies that show the positive repercussions of ecotourism on the natural environment, some researchers have revealed that local residents in ecotourist destinations tend to be actively involved in conserving the local natural resources (Stem et al., 2003a, 2003b). However, what usually constitutes as conservation contributions by tourism stakeholders has not attracted enough academic and practitioner attention (Jamal et al., 2006). In addition, some researchers argue that both economic incentives and an emphasis on the socio-cultural benefits are key drivers for raising environmental awareness and developing new social relationships among tourism stakeholders, which in turn will encourage conservation behavior in the local residents of ecotourism communities (Stem et al., 2003a, 2003b; Stronza, 2007).

Florida is one of the most popular nature-based and outdoor tourism destinations in the United States. Meanwhile, threats to Florida's natural environment (considered one of the richest in biodiversity and one of the most valued ecosystems in the U.S.) from recreation development, population growth, and urban expansion continue to increase (Brody, 2008). In 1997, in response to the likely negative effects that will be caused by the continually rapidly growing tourism industry, Florida adopted state-wide policies addressing sustainable developments involving both ecotourism goals and implementation strategies. However, since the employment of that policy, research on

ecotourism development in Florida, especially concerning how ecotourism development is associated with stakeholders' conservation contributions, has been lacking.

1.2 Research purpose and objectives

Ecotourism is advocated by those who recognize and applaud its contributions to conserving significant ecosystems, such as wetland ecosystems (Baker, 2008; Das and Syiemlieh, 2009; Lim and McAleer, 2005; Rotherham et al., 2005). Florida has experienced a rapid and sizable degradation and loss of its natural wetlands. Could ecotourism have been used as a wetland conservation tool? To date, few quantitative studies have been conducted to assess whether and how ecotourism might contribute to wetland protection. This study targeted three aspects of tour operators: their conservation contributions, level of ecotourism involvement, and how they perceived tourism benefits. Nature-based tour operators in Florida were surveyed for their activeness in conservation behavior involving wetlands protection, their perceptions of the benefits of tourism, and general characteristics of the operation of their businesses.

The purpose of this study is to better understand whether ecotourism, and which incentives in ecotourism, could significantly contribute to wetlands conservation in Florida by assessing tour operators' conservation behavior, as well as the factors affecting such behavior. The objectives of this study are to

- Improve understanding of tour operators' activeness in conservation contributions to wetlands management activities;

- Test the presumed association between tour operators' involvement in ecotourism and their conservation role in generating positive environmental effects on the wetlands; and
- Examine the driving factors (i.e., conservational, economic, and socio-cultural benefits) for tour operators' composite conservation action and participation in planning and management processes.

1.3 Research justification

This research will present useful information for environmental planners, managers, and policy makers about the conservation actions of a major stakeholder (e.g., tour operators) regarding wetland ecosystem protection. First, the research will provide a general understanding of ecotourism concepts related to tour businesses and how actively involved these tour enterprises are in wetland conservation in Florida; this is an area of research that is particularly lacking in the existing literature. Examining operators' behavior regarding the generation of positive environmental outcomes will demonstrate the current status and future potential of the environmental impacts of ecotourism in Florida.

Second, findings about the relationship between ecotourism involvement and the conservation actions of tour operators will enhance the body of existing literature on conservation contributions attributable to ecotourism. Current materials assessing the environmental outcomes of ecotourism have drawn inconsistent conclusions about whether ecotourism drives conservation behavior (Stem et al., 2003a; Stronza, 2007;

Wallance and Pierce, 1996; Young, 1999). In addition, the existing research is centered on local residents and tourists in forest, rainforest, or coral reef areas. In contrast, there is little empirical literature examining the conservation outcomes of ecotourism associated with wetland areas. Florida, with its abundant wetland biodiversity, is an important area for empirical research related to the environmental results of ecotourism. Floridian tour operators, who provide numerous types of nature-based tours including both eco and non-eco tours, are an ideal target for exploring this relationship between ecotourism involvement and conservation behavior. In sum, the findings of this research will make a significant contribution to the present body of knowledge related to ecotourism conservation.

Third, research results will provide important insights for environmental decision makers considering managing critical habitats through the employment of an alternative conservation tool. First, the notion of ecotourism as an alternative tool for environmental management (Jamal and Stronza, 2009; Kay and Alder, 2005), and Florida's ecotourism state policy adopted in 1997, both emphasize the integration of ecotourism development with comprehensive land-use and environmental plans. For land use planners and natural resource managers, the challenge is to recognize the possible conservation outcomes of ecotourism if larger-scale assessment and monitoring of land use changes are not readily available (Nelson, 1994). Therefore, it is important to assess whether the conservation contributions of major stakeholders are significantly associated with their level of ecotourism involvement. Also, if the goal is manage adaptively, it is always helpful to know what incentives drive major stakeholders (e.g., tour operators) to take a proactive

stance in their engagement with nature and their level of resource management (Stein, 2003). In particular, natural resource managers are likely to be better informed about how to incorporate ecotourism measures into local plans and collaborate with tourism stakeholders during the plan making and implementation processes.

While empirical studies focusing on the above topics are lacking in the wetland conservation field, this research intends to fill the gap in empirical research noted above by testing the degree to which ecotourism involvement encourages tourism operators to engage in pro-environmental behavior in Florida.

1.4 Dissertation structure

The dissertation consists of seven chapters, as listed below:

Chapter I provides an introduction and problem statement, highlighting the research objectives and major theoretical and policy-related contributions.

Chapter II reviews the literature relevant to this dissertation topic, with the aim of laying the foundation for a conceptual model and research hypotheses. The first section includes various definitions of ecotourism and explores the concept of conservation-tourism symbiosis. The second section introduces the concept of the spectrum of environmental effects caused by ecotourism and the methods of measuring the environmental effects of ecotourism as they have been used in previous studies. The third section details conservation contributions of ecotourism from the perspective of tour businesses and discusses the incentives to perform conservation actions (i.e., economic, socio-cultural, and conservational benefits). The fourth section provides

background information on Florida ecotourism policy and land use conflicts associated with the intersection of development and wetland ecosystem issues.

Chapter III builds the research framework for measuring the conservation contributions of ecotourism to wetland ecosystem management. The first part organizes the conceptual model of this research. Three subsequent segments describes dependent, independent, and control variables, independent variables and identifies four sets of hypotheses regarding four independent variables. Each set includes five sub-hypotheses to test the associations between specific independent variables and the five dependent variables.

Chapter IV presents the research design and methods. The study population, sampling method, and data collection processes are all included in the first section. The second section explains how I measured dependent, independent, and control variables. Especially, this portion emphasizes the results of factor analyses for one dependent variable, three independent variables, and one control variable; environmental attitudes are also shown. The last two sections outline the statistical analysis process and validity threats.

Chapters V and VI consist of descriptive and explanatory analyses on the survey data. The descriptive statistical analysis mainly explores business characteristics of survey respondents and how well they recognize the ecotourism principles. In addition, this section examines how survey respondents rate the economic, socio-cultural, and conservational benefits of their tourism activities, and how vigorously they participate in planning and management activities to conserve wetland ecosystems, thus contributing

to positive environmental effects. The regression analyses measure the effects of "ecotourism involvement" and three incentives (i.e., "economic benefits," "socio-cultural benefits," and "conservational benefits") on the composite conservation contribution of tour operators. Also, the regression analyses reveal the effects on several subset items, including: contributing knowledge, skills, experience to land use, environmental planning, water resources management, and inventory and monitoring processes. The results illustrate how tour enterprises could effectively form long-term partnerships to facilitate natural resources planning and management.

Chapter VII summarizes the key research findings and conclusions, and remarks on the major limitations of this research. The research also provides implications of the theoretical concepts regarding whether ecotourism enhances wetland conservation and which incentives have greater influence on encouraging tour businesses' active participation in wetland conservation practices. The policy recommendations focus on enhancing the promulgation of ecotourism practices, as well as the compound benefits of sense of the place and environmental protection outcomes to tour operators through effective communication and using tools in social marketing and networking.

CHAPTER II

LITERATURE REVIEW

2.1 Ecotourism and conservation

2.1.1 Ecotourism: some definitions

Tracing the history of ecotourism development, Fennell (2002) concluded that "…the principles, which form the basis of ecotourism, evolved, at least in part, from the environmentalist crusade of the 1960s, the eco-development movement which emerged during the 1970s, and from sustainable development which took off during the 1980s" (p. 1). In 1983, working in an NGO and trying to conserve wetlands in Mexico, Ceballos-Lascur'ain envisioned how tourism could bridge economic development and ecological protection. Observing that tourism could increase local job opportunities and economic developments, as well as contribute to ecological preservation, Ceballos-Lascur'ain began using the term "ecotourism" to describe such an environment-community symbiosis (Jamal et al., 2006). This is a burgeoning concept which theorizes that the possible economic benefit obtained from ecotourism might encourage natural conservation within the community. When local residents receive sufficient alternative or substitute revenues from ecotourism, they will likely shift to such tourism services and away from less environmentally sustainable activities. After Ceballos-Lascur'ain, a number of scholars have embraced wider perspectives and developed theories on the ecological, economic, social, cultural, and educational aspects of ecotourism.

There are seven basic elements which have regularly been incorporated into the definition of ecotourism over the past three decades: experience or interest in nature; travel in protected, pristine, or environmentally fragile areas; low impact, responsible travel behavior or small visit groups; contributions to conservation; economic benefits; education; and social-cultural benefits to local communities and sustainability. The major foci are still environmental conservation, responsible behavior of tourists and local residents toward nature, community benefits, and interest in nature-based tours. Based on the definitions listed in Table 2-1, "contribution to conservation" has been a dominant component since the early years of ecotourism, and "economic benefit" is the second principle most widely mentioned. This reflects the prevailing acceptance of the notion of symbiosis between ecotourism and its economic incentives. Some scholars conclude that the economic benefits made possible by ecotourism directly lead to local residents having more positive attitudes and behaviors toward natural conservation (Brown and Decker, 2005; Langholz, 1999; Wunder, 1999). The component of "interest or experience in natural environment" is as frequently stressed as "economic benefit," demonstrating that appreciating natural beauty and observing wildlife are the most popular activities in ecotourism. Simply, ecotourism is a subset of nature-based tourism (NBT). Other elements underscored in such statements include low impact development and responsible travel behavior, environmental education, and cultural and social benefits for locals through sustainable economic activities.

The wide breadth of ecotourism components contained within the single definition has developed over time (see Table 2-1). Boo (1991) is one of the few

ecotourism researchers who, early on, embraced a more comprehensive perspective. She elaborated on the reciprocal relationship between tourism and conservation, and explained how conservation in protected areas could be accomplished through environmental education, raising funds, and employment incentives created by NBT. Ceballos- Lascur'ain (1996) broadened his initial definition of ecotourism, first proposed in 1983. He identified six principles, including appreciating nature, travel in undisturbed areas, low-impact and responsible visitation, contributions to conservation, economic benefits, and social benefits to local populations. In the last decade, several researchers have analyzed ecotourism from a more holistic viewpoint, broadly viewing it as a form of sustainable tourism. For instance, Honey (1999) introduced new ideas about human rights and democracy. Fennell and Dowling (2005) defined ecotourism as nature-based travel in natural areas, and addressed conservation, learning (education), and the principles of ecological, socio-cultural and economic sustainability. Based on the comprehensive definition provided by Honey (1999), ecotourism is

> … travel to fragile, pristine, and usually protected areas that strives to be low impact and (usually) small scale. It helps educate the traveler; provides funds for conservation; directly benefits the economic development and political empowerment of local communities; and fosters respect for different cultures and for human rights (p. 25).

The evolution of a vast array of definitions shows that ecotourism has developed to incorporate the basic elements of sustainability (Wight, 1993; McCool, 1994; Nelson, 1994; Boyd & Butler, 1996). In other words, ecotourism falls within the compass of sustainable tourism which spans five dimensions: economic and

socioeconomic benefits, social-cultural sustainability, ecological conservation, education and learning opportunities, and community participation (Choo and Jamal, 2009).

2.1.2 Conservation in ecotourism

The relationship between ecotourism and environmentalism has been heavily documented since the late 20th century, when nature-based tourism (NBT) and outdoor recreation both experienced dramatic growth. In response to negative effects caused by traditional tourism (Orams, 1995; Hill and Gale, 2009), ecotourism practices emphasize minimal environmental impacts through environmental education and a variety of techniques and regulating methods. Ecotourism also ignites the efforts of local communities and travel enterprises to pursue a long-term balance between conservation and socio-economic developments, which in turn contributes to environmental rehabilitation. In summary, the core principles of ecotourism, which distinguish it from NBT, are the principles of sustainability, learning during travel, and a contribution to conservation (Fennell, 2001; Fennell and Nowaczek, 2010; Weaver, 2001).

In contrast to some excessively optimistic descriptions of the contributions of ecotourism, some scholars argue that there is a tendency to overestimate its importance to natural preservation. First, ecotourism shares only 2 to 4% of the global tourism market (Hill and Gale, 2009). Second, some scholars acknowledged the shortcomings of economic leakage and susceptibility, deregulation of ecotourism operations, and cultural and social disharmony in ecotourism communities (Champbell, 2002; Narayan, 1998; Stem et al., 2003b). These limitations work together to make the goal of ecological

conservation in ecotourism less achievable. Third, ecotourism, a market-oriented business, may be similar to mass tourism in that it can also result in environmental damage (Schackley, 1996; DeAlwis, 1998; Rogers & Aitchison, 1998). Wight (1993) asserted that ecotourism was a business operated through "eco-sell," and thus it is difficult to use it to prevent the over-visitation that tends to cause negative environmental outcomes. Stein et al. (2003) observed opposite concerns expressed among the tourism industry and natural resource managers in Florida. Tourism enterprises focus on economic benefits, whereas public land managers usually have a strong stance towards natural conservation. The differences between the stakeholders' visions indicate the potential environmental conflicts and the risk of negative ecological impact if economic objectives are highly prioritized in ecotourism. In fact, it could be a risk to view ecotourism as a panacea for resolving natural resource-related conflicts in ecologically sensitive areas before assessing the environmental effects of ecotourism.

Table 2-1 Some definitions and components of ecotourism in the past three decades

	Researchers	Definitions of Ecotourism	Components						
			1	2	3	4	5	6	7
1980s	Ceballos-Lascur'ain (1983)	Ecotourism is tourism that involves traveling to relatively undisturbed natural areas with the specific object of studying, admiring and enjoying the scenery and its wild plants and animals, as well as any existing cultural aspects (both past and present) found in these areas.	○	○					
	Ziffer (1989)	An eco-tourist practices a non-consumptive use of wildlife and natural resources and contributes to the visited area through labor or financial means aimed at directly benefiting the conservation of the site.	○			○	○		
1990s	Boo (1991)	Nature tourism that contributes to conservation, through generating funds for protected areas, creating employment opportunities for local communities, and offering environmental education.	○	○		○	○	○	
	TIES (1991) (Lindberg and Hawkins, 1993)	Purposeful travel to natural areas to understand the culture and natural history of the environment, taking care not to alter the integrity of the ecosystem while producing economic opportunities that make the conservation of natural resources beneficial to local people.	○			○	○		
	The First World Congress on Tourism and the Environment (1992)	Ecotourism is travel that promotes conservation… that seeks to minimize negative environmental and cultural impacts while working to achieve authentic, intimate, meaningful, and educational encounters between visitors and local natural and cultural phenomena.			○	○		○	
	Wight (1993), the consensus-oriented milieu in National Workshop on Ecotourism	Ecotourism is an enlightening nature travel experience that contributes to conservation of the ecosystem, while respecting the integrity of host communities.	○			○			○
	Orams (1995)	Ecotourism operations should use education-based management strategies to prompt their customers to adopt more environmentally sensitive attitudes and, more importantly, change to more environmentally sound behavior. It is based on the natural environment and seeks to minimize its negative impact on that environment.	○		○			○	
	Ceballos-Lascur'ain (1996)	Ecotourism is environmentally responsible, enlightening travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature that promotes conservation, has low visitor impact, and provides for beneficially active socio-economic involvement of local populations.	○	○	○	○	○		○

Component 1: experience or interest in nature; **Component 2**: in protected areas, pristine or environmentally fragile areas; **Component 3**: low impact, responsible behavior, or small scale; **Component 4**: contribution to conservation; **Component 5**: economic benefit; **Component 6**: education; **Component 7**: social-cultural benefits to local communities / sustainable

Table 2-1 continued

	Researchers	Definitions of Ecotourism	Components						
			1	2	3	4	5	6	7
1990s	Dimanche and Smith (1996)	In sustainable development practices, alternative forms of tourism, such as ecotourism, have emerged where small scale development and ecological protection are foremost.			○	○			○
	Wall (1997)	Ecotourism is an agent of change. In some circumstances it may be a sustainable activity and contribute to sustainable development. If tourism is to contribute to sustainable development, then it must be economically viable, ecologically sensitive and culturally appropriate.					○		○
	The Ecotourism/ Heritage Tourism Advisory Committee, Florida (1997)	Responsible travel to natural areas which conserves the environment and sustains the well-being of local people while providing a quality experience that connects the visitor to nature.	○			○	○		○
	Scheyvens (1999)	A community-based approach to ecotourism recognizes the need to promote both the quality of life of people and the conservation of resources.				○	○		○
	Honey (1999)	Ecotourism is travel to fragile, pristine, and usually protected areas that strives to be low impact and (usually) small scale. It helps educate the travelers; provides funds for conservation; directly benefits the economic development and political empowerment of local communities; and fosters respect for different cultures and for human rights.	○	○	○	○	○	○	○
2000s	Wunder (2000)	Within the new array of green products and services, ecotourism claims to combine environmental responsibility with the generation of local economic benefits that will have both a developmental impact and serve as conservation incentives.			○	○	○		
	Fennell and Dowling (2003)	Ecotourism is a sustainable form of natural resource-based tourism that focuses primarily on experiencing and learning about nature, and which is ethically managed to be low-impact, non-consumptive and locally oriented (control benefits and scale). It typically occurs in natural areas and should contribute to the preservation of such areas.	○	○	○	○	○	○	○
	Stem et al. (2003a)	Under ideal circumstances, ecotourism offers communities an opportunity to improve their well-being and economic livelihood. It can also encourage individuals to conserve forests and wildlife.				○	○		○
	Fennell and Weaver (2005)	It is now widely acknowledged that ecotourism, a purportedly more benign alternative to laissez-faire mass tourism, entails three core criteria, namely, an emphasis on nature-based attractions, learning opportunities, and management practices that adhere to the principles of ecological, socio-cultural and economic sustainability.	○			○	○	○	○

Component 1: experience or interest in nature; **Component 2**: in protected areas, pristine or environmentally fragile areas; **Component 3**: low impact, responsible behavior, or small scale; **Component 4**: contribution to conservation; **Component 5**: economic benefit; **Component 6**: education; **Component 7**: social-cultural benefits to local communities / sustainable

2.1.3 Wetlands conservation through ecotourism

The vast majority of literature about environmental management discusses the significance of wetland conservation from the broad perspectives of ecosystem values. The values comprehensively cover both aesthetic and derived recreational values, biodiversity, flood mitigation, shoreline erosion control, water quality and atmospheric functions, food supply, energy resources, soil improving, and the importance of research and education (Bardecki, 1984; Brody et al., 2008; Moore, 2007; Randolph, 2004). The disappearance of wetlands, particularly in the coastal areas, has resulted in enormous damages to human society. For instance, in Barataria Bay in the Mississippi Delta, the penetration of salt water and the increasing erosion rates are believed to be attributable to the destruction of the wetland ecosystems partly caused by canal construction. There is also a significant impact on the fishing industry, with an estimated loss of $1 billion in the next two decades (Moore, 2007). In addition, it has been noted that wetland loss (i.e. the number of Section 404 Permits issued for wetland alteration) is associated with exacerbating flooding events and flood damages in the coastal areas (Brody et al., 2007; Highfield and Brody, 2006). The estimated property losses in the US resulting from floods ranged from $19.6 billion to $196 billion during the period between 1975 and 1994 (Mileti, 1999). Additionally, the economic values of the lost US estuarine wetlands (a space of around 146,000 hectares, or 360,000 acres) between 1950 and 1970 is estimated at an upwards of $70,000 per hectare (Moore, 2007).

Because wetlands all over the world have been threatened by farming, mining and urban land-use development, ecotourism has been advocated as an alternative

economic activity with the added benefit of environmental conservation. In many instances and in greatly diverse locations, ecotourism is expected to benefit wetland protection and the revitalization of traditional water management systems. For instance, the Boondall Wetlands Reserve in Queensland, Australia is a significant component of the Moreton Bay Ramsar site, accommodating a large number of rare and endangered species (Lim and McAleer, 2005). The visitor center in the Reserve brings in numerous opportunities for financial support and community involvement, and the Reserve's conservation has effectively shown preservation values and offered visitors enjoyment of wetlands. Ecotourism in developing countries is considered particularly positive for natural conservation. Ecotourism may generate social and economic benefits for residents in the wetland areas, where consumptive resource utilizations and related environmental degradation continue to plague local sustainability. Community-based ecotourism has been promoted in the Deepar Beel Wetland area in India in order to gain the multiplying effects of habitat conservation, economic opportunity, and community development (Das and Syiemlieh, 2009). In the coastal wetlands of the Yucantan Peninsula in Mexico, ecotourism, one of the fastest growing non-consumptive activities, is viewed as a contemporary tool for restoring ancient Mayan water management systems (Smardon, 2006).

The present or potential values of wetland conservation encourage sustainable tourism in environmentally critical areas. For example, sustainable nature-based tourism is valuated as a major economic contributor to the Barataria-Terrebonne Estuarine System (BTES), the wetland restoration program in Southeast Louisiana (Lindstedt,

2005). Nature-based leisure within the context of sustainable practices is considered a significant economic benefit of the natural conservation projects focused on reestablishing the wetlands in the Humberhead Levels, UK (Rotherham et al., 2005). Furthermore, the South Dongting Lake Wetland in China has been suggested as a location to establish a wetland reserve, based on the values of the preserved natural landscape (Ping and Wang, 2003). Baker (2008) discussed the advantages and weaknesses of the Sango Bat Wetland areas in Uganda within the context of developing more sustainable economic activities. He proposed ecotourism as an effective practice for resolving the current economic and environmental issues through its "3P" approach (economic profits, social and cultural benefits for the people, and biodiversity of place).

Some studies measure the feasibility of ecotourism development in wetland areas through examining the economic benefits and tourists' behavior. Pemberton and Mader-Charles (2005) employed the cost-benefit analysis to assert that ecotourism utilizing the Nariva Swamp on the island of Trinidad in the Caribbean was economically viable. Viewing ecotourism as a possible substantial income source might encourage local residents to become active in protecting their money-making opportunities. Pan et al. (2010) concluded that tourists in the Xixi National Wetland Park in Hangzhou, China demonstrated unique characteristics regarding their environmentally responsible behavior and perceptions of the wetland ecosystem. Tourist-oriented marketing, which stresses provision of high quality tourist services, might drive the park management agency to be engaged in natural landscape rehabilitation and restoration.

In summary, the existing literature on the expected benefits of ecotourism on wetland ecosystems is based upon the assumption that ecotourism will necessarily have a positive effect on the natural environment. However, research measuring whether and why ecotourism in wetland areas might encourage conservation actions leading to favorable environmental outcomes is lacking.

2.2 Environmental impact of ecotourism

2.2.1 The desirable forms of environmental outcomes

Traditional tourism used to be considered an industry of less pollution until it was generally recognized for its negative impact on the natural environment, blamed especially on the disorganized growth of the industry in the 1970s. While developments in tourism tend to improve the local economy, less desirable direct and indirect environmental outcomes take place cumulatively and exponentially (Key and Alder, 2005). Negative effects on natural environments caused by mass tourism are multi-dimensional (see Table 2-2). Those results linked to habitat loss in environmentally or ecologically critical areas are particularly emphasized by natural resource managers, environmental planners, and ecotourism developers. Defined as a non-consumptive, alternative, and value-based tourism, ecotourism aims to change the operations of traditional tourism and accomplish a tourism-conservation symbiosis, generating favorable environmental results.

Table 2-2 Environmental impacts caused by mass tourism (revised from Mason (2008))

Category	Impacted area	Negative impacts
The natural environment	Mountainous areas Seas Rivers and lakes Caves Beaches Natural woodland	• Loss of habitats through deforestation, wetland alternation and destruction, etc. • Destruction of vegetation through trampling • Soil erosion • Littering and pollution
Wildlife	Land-based mammals and reptiles Flora Birds Insects Fish and marine mammals	• Disruption of breeding and feeding of wildlife animals • Animal killing/ hunting
Natural resources	Water Climate Air	• Water/ air/ noise pollution • Depletion of local fuel/ building materials/ water sources

Mainly, ecotourism management includes a number of approaches to environmental and tourism planning, with the former driving the primary academic interest in environmental outcomes concerning ecotourism (Fennell and Dowling, 2003). The various environmental results of ecotourism appear between increasing adverse impacts and generating positive effects (see Figure 2-1). It is generally recognized that advancement towards a successful form of ecotourism shifts along a continuum from passively minimizing negative impacts to actively ensuring the effects of long-term environmental health (Buckley, 2009; Orams, 1995). Likewise, Fennell and Weaver (2005) contrasted a "comprehensive ecotourism" with a "minimalist ecotourism" by the degree of ecological sustainability (i.e., from "strong" to "weak"). Some researchers argue that the preferred form of ecotourism would likely be a comprehensive model that employs a strong approach toward active conservation (i.e., strong sustainability), which would in turn lead to long-term positive environmental outcomes such as biodiversity conservation and environmental rehabilitation (Butcher, 2006; Fennell and Weaver,

2005). In short, the most favorable form of ecotourism would generate positive environmental effects.

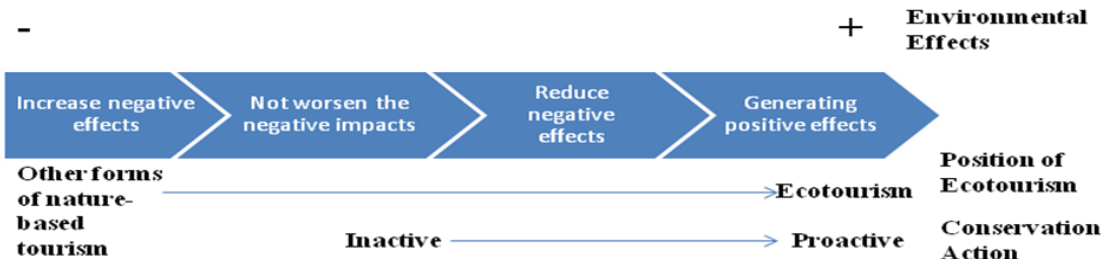

Figure 2-1 The spectrum of environmental effects of ecotourism (revised from Buckley, 2009; Fennell and Weaver, 2005; Orams, 1995; Wight, 1993)

The spectrum of environmental effects corresponds to movement in conservation activity in ecotourism from passive to proactive (see Figure 2-1). Wight (1993) believed that ecotourism could involve environmental actions ranging from inactive, to active, to proactive based on the environmental action model. The degree of activeness depends on the behavior and attitudes of the stakeholders (i.e., the local residents, tourism operators, and tourists). The corresponding attitudes and behavior result from the varying levels of cognition regarding environmental issues and conservation values of natural landscapes. For tour operators, the inactive or passive position might include some responsible behavior, such as only guiding small-group, non-consumptive, and low-impact visitations, causing less disturbance to local culture and wildlife. A more active or proactive approach lends itself to a long-term partnership between tourism

stakeholders and nature, encouraging them to pursue a high level of environmental quality so that as a group they would benefit both social-culturally and economically. For instance, "active intervention in rehabilitation, habitat acquisition and other practices" demonstrates proactive behavior motivated by a desire to achieve positive environmental outcomes (Fennell and Weaver, 2005, p. 376).

In addition, scale and management are generally agreed to be key in achieving ideal environmental results in ecotourism, despite alternative arguments that large-scale tours might also be conducted in ways considered environmentally sustainable (Lück, 2002). Adding more tourists beyond a specific limit and the so-called "self-destruct theory of tourism" can be damaging, regardless of any efforts to behave responsibly (Boo, 1993; Davenport and Davenport, 2005; Dimanche and Smith, 1996). The symptom of "a conservation back-fire" (Davenport and Davenport, 2005; Stem et al., 2003a, 2003b) demonstrates the notion that new income from ecotourism could encourage technology-intense exploitation of exactly those natural resources ecotourism seeks to protect. Also, over-growth of ecotourism, such as the type of growth that might change a small group of specialists into a broad collection of general travelers, would demand enhanced infrastructure and an increased supply of food, accommodations, and souvenirs, all of which might reverse the effects of conservation efforts. However, it is generally agreed upon that conservation actions, "wise use," and proper management (Beatley, 1989; Cullingworth and Caves, 2003; Hall, 1998) are essential to maintain its desired environmental outcomes caused by human activities.

2.2.2 Measuring environmental effects of ecotourism

Ecotourism remains subject to criticism due to its pursuit of a form of symbiosis between the environment and tourism development. Researchers use a wide variety of means to examine whether ecotourism reduces the negative environmental impacts, and if ecotourism generates any measurable positive effects. Generally, "on-site audit[s] with full access, internal and external documentary sources, and interviews with staff and third-party stakeholders" are heavily employed to answer these essential questions (Buckley, 2009, p. 646).

Scientific approaches

Scientific approaches evaluate environmental outcomes through direct impact assessments and scientific measurement methods, including "priority conservation values" (e.g., the areas which house the most important habitats, stream water quality, and so on) and "backcounty ecological impacts" (e.g., human noise, land erosion, population change of a specific species, and so on) (Buckley, 2003). Ecotourism has demonstrated mixed results, generating both negative and positive results, and may produce even more complicated outcomes in those cases where ecotourist sites share the space with other types of travel and industry. These compound factors make quantifying the impact of ecotourism less than straightforward (Buckley, 2004), despite scientific assessments that can often provide valuable explicit information. Therefore, while there are volumes of materials that assess the ecological impact resulting from general tourism activities, only a handful of studies directly involve ecotourism exclusively. The

common challenge for researchers is the difficulty they face in effectively isolating the impacts produced by the different sources.

To date, there are very few types of environmental impacts produced by ecotourism that are studied through on-site monitoring data; such impacts usually include land use and land cover changes, water quality, and wildlife activity and population (see Table 2-3). The impact caused by ecotourists' observations of wildlife is considered one of the most extensive and scientifically researched areas of ecotourism (Weaver and Lawton, 2007). Some studies reveal that viewing wild animals rarely generates measurable effects on the viewed (Fowler, 1999; Nevin and Gilbert, 2005), while others argue that human observations of wildlife have negative effects on the animals' behavior (Johnson et al., 1996; Olson et al., 1996; Weaver and Lawton, 2007). Other researchers illustrate the positive ecological contributions of ecotourism, such as the increased number of protected species and the introduction of new wildlife protection programs (Lieberknecht et al., 1999; Svoronou and Holden, 2005). Additionally, in his book *Environmental Impact of Ecotourism*, Buckley (2004) reviewed a wide array of environmental and ecological impacts caused by general types of tourism in various natural areas. Studies directly focusing on ecotourism are usually limited to topics such as land use and land cover changes, as well as water quality degradation and pollution (Alessa et al., 2004; Monz and Twardock, 2004; Mosisch and Arthington, 2004). In conclusion, there is plausible evidence that sizable and intensive visitations may create relatively significant adverse impacts, suggesting the need for

proper management of visitors' behavior (Alessa et al., 2004; Johnson et al., 1996; Priskin, 2004).

Table 2-3 Existing research on environmental impacts concerning ecotourism

Land use/ cover		
Alessa et al. (2004)	Canada	Monitor the percentage cover change of *Fucus spp* (macro-algae) per year from 1999 to 2002, and compare with control sites
Monz and Twardock (2004)	USA	Measure the impact of visitors during a 3-4 year period with the standard campsite assessment protocols
Priskin (2004)	Australia	Compare 4WD track length and access points between 1965 and 1998 by using GIS
Water quality		
Mosisch and Arthington (2004)	Australia	Compare water and sediment quality (PAHs) in 5 shoreline sites with different levels of recreational power boating
Warnken and Buckley (2004)	Australia	Compare water quality on stream sites with different levels of intensity of visitor uses through 3 year period (1992-1995)
Activities of wildlife		
Fowler (1999)	Argentina	Compare behavior and hormonal responses of penguins to tourist visitation levels, with a control group
Johnson et al. (1996)	Uganda	Study different sizes of visiting groups on chimpanzees and compare their effects on chimps' reactions to observers
Nevin and Gilbert (2005)	Canada	Observe the change in the proportion of time that brown bears spent on forging during salmon-abundant seasons coinciding with frequent tourist visitations, over 3 consecutive years
Olson et al. (1996)	USA	Compare activity changes of brown bears during visitation seasons during 2 periods of time
Population of wildlife		
Lieberknecht et al. (1999)	Rwanda	Find the increase in gorilla population after wildlife tourism and gorilla protection
Svoronou and Holden (2005)	Greece	Illustrate the introduction of the raptor feeding program to protect the targeted species

Holistic approaches

Beyond traditional species-based and small-scale assessments, some researchers have evaluated environmental integrity effects by using the concept of landscape scale and human-nature duality (Shultis and Way, 2006). For example, social science analysis

and tourism management perspectives are both incorporated into environmental impact assessments (Weaver and Lawton, 2007). This approach includes indicators related to environmental planning and management process, implementation and effort, and outcomes, which are indirect means of measuring the environmental impacts of tourism activities (Buckley, 2003).

Employment of holistic approaches has become an emerging trend (Weaver and Lawton, 2007). This measurement involves a broad array of pro-environmental indicators, and the existing literature mainly focuses on one or more conservation attitudes or values, behaviors, or practices of ecotourism stakeholders such as tourists, local communities, and the tourism industry (Fennell and Weaver, 2005). One or several conservation indicators (i.e., behavior such as a reduction in hunting or fishing, reforestation, establishing a communal zone for conservation purposes, etc.) are used to measure the achievements of conservation efforts in an area used for ecotourism. Some studies evaluate how the behavior of stakeholders' change to pro-environmental after they become involved in ecotourism businesses. Others analyze whether ecotourism stimulates the conservation contributions of stakeholders, which would, in turn, likely generate favorable forms of environmental outcomes in the visited areas.

However, there are inconsistent findings in the published empirical research regarding if and how ecotourism encourages contributions to conservation that lead to the expected environmental outcomes. While some empirical studies assert that villagers enjoying economic benefits from ecotourism decrease their own environmentally harmful behavior, others argue that the body of research on this subject lacks significant

evidence demonstrating how less environmentally sustainable behaviors are changed by ecotourism (see Table 2-4). For instance, fishermen in whale-watching villages who introduce ecotourism businesses in order to decrease reliance on the fishing industry fail to resolve environmental disputes regarding over-fishing issues and decline to cease the behavior seen as harmful to marine resources (Young, 1999). Wallance and Pierce (1996) concluded that ecotourism lodges were ineffective in contributing to environmental conservation by assessing several contribution items.

Table 2-4 Existing quantitative research on the conservation contributions of ecotourism

Type/Research	Study area	Study subject	Measuring topic
Powell and Ham (2008)	Galapagos Islands	Tourist	Test whether ecotourism interpretation raises tourists' attitudes and intentions to donate to conservation programs
Stem et al. (2003a, 2003b)	Costa Rica	Local residents	Test the relationship between conservation and ecotourism through examining the percentage of land covered by forest in houses' backyard and the employment status in the ecotourism industry
Stronza (2007)	Peru	Local residents	Test whether new employment opportunities provided by ecotourism are related to conservation by examining the changes in hunting behavior
Wallace and Pierce (1996)	Brazil	Ecotour ventures	Evaluate conservation contributions through rating conservation behavior regarding minimizing environmental impact, increasing the environmental awareness of local residents, and the conservation and management of protected areas
Wunder (2000)	Ecuador	Local residents	Analyze whether ecotourism income contributes to conservation behavior by examining villagers' behavior such as over-hunting, cattle ranching and farming cash crops
Young (1999)	Mexico	Local residents	Explore whether the economic benefits of ecotourism reduce the extractive pressures on fisheries and promote stewardship of marine resources
Zambrano et al. (2010)	Costa Rica	Local residents	Explore whether ecotourism benefits environmental conservation by examining reforestation, hunting behavior, and social/economic/ environmental benefits

Meanwhile, communities that strongly rely on ecotourism's economic benefits do seem to have better awareness and more genuine intentions towards environmental protection and the implementation of pro-environmental programs (i.e., establishing communal zoning and restrictions on hunting) (Wunder, 2000). There are studies that support the notion that less-impactful actions (i.e., reducing hunting hours and forest clearance) are the result of the direct employment opportunities and income that can be obtained from ecotourism (Stem et al., 2003a; Stronza, 2007). Moreover, tourists who enhance their environmental knowledge by going on ecotours are more willing to donate to organizations that conduct conservation programs (Peake, 2009; Powell and Ham, 2008). In conclusion, the theory that conservation contributions lead to favorable environmental effects is still relatively untested, particularly from the supply side of ecotourism (e.g., tour providers), a side that is less studied than that of tourists or residents of local communities.

Linking conservation behavior with environmental impacts of ecotourism

Holistic approaches are indirectly compared to the scientific methods that commonly focus on conservation values and ecological impacts; as a result, such research requires further specifications regarding the incorporation of a broader range of conservation indicators. First, the specific actions or practices and corresponding environmental outcomes should be identified. Second, the set of conservation behaviors subject to specific stakeholders such as local communities, ecotourists, and tour operators should be synthesized and organized.

With respect to ecotourists, one existing framework suggested by Orams (1995) includes two sets of guidelines for evaluating the success of ecotourism in terms of the environmentally responsible behavior of tourists. His criteria have been widely applied in research involving environmental education and interpretation (Dearden et al., 2007; Hill et al., 2007; Orams, 1997; Pan et al., 2010; Powell and Ham, 2008). The first criterion is based on the contributions made to the natural environment, ranging from mitigating negative environmental effects to enhancing environmental health (i.e., an active engagement with environmental protection). The second criterion covers tourists' "satisfaction enjoyment," "education-learning," "attitude-belief change," and "behavior-lifestyle changes" (Orams, 1995). The greater the behavior and lifestyle changes of ecotourists, the greater their contribution to positive environmental outcomes.

However, when evaluating tour enterprises, there is little existing research establishing analogous guidelines. For instance, Wallace and Pierce (1996) evaluated the contributions of ecotourism ventures (i.e., registered eco-lodges) to overall conservation efforts, according to several indicators, but did discuss the potential environmental effects. Their evaluation included "information available about protected areas," "trips to protected areas to make donations and park fee contributions," and "sustainable management plans for lodge property and natural resources."

A comprehensive set of guidelines assessing the potential environmental outcomes resulting from ecotourism enterprises' behavior was relatively absent, until the framework suggested by Buckley (2009). He analyzed the existing studies, synthesized actions that have been employed in different ecotourism destinations all over the world,

and categorized them into 3 groups: generating positive effects, reducing negative effects, and generating negative effects. The cornerstone contribution of his research is preliminarily identifying conservation mechanisms and actions in the ecotourism industry that lead to different levels of environmental outcomes (see Table 2-5). For implementation purpose, he also subjectively classified the environmental significance of those practices and the frequency in which they were applied by the ecotourism industry. For instance, "establishment of private reserves" was as the most effective tool to conserve the natural environment, but the activity least likely employed by tour operators because of the great amount of financial resources demanded.

The framework Buckley provides is a useful mixed-criterion classification system for examining conservation actions and the associated environmental effects of ecotourism. In addition, the mechanisms considered to produce positive environmental impacts included "political action," "support for NGOs," "support for park management," "community conservation," and "establishment of private reserve" demand tour enterprises' active participation in planning and management processes regarding natural resource uses and policy making. Therefore, partnership and collaboration between tour operators and natural resource management institutes play the critical role to ensure favorable environmental outcomes in ecotourism areas.

2.3 Conservation contributions of tour operators

With the direct control of natural and tourism resources and the larger share of social and economic benefits, tour operators are considered the primary stakeholder in

tourism-related environmental management. The collaborative ecotourism mechanism emphasizes that tour operators should form a long-term partnership with governments, NGOs, local communities, academic professionals, and tourists in managing their natural resources. It is noted that they could contribute to preserving and revitalizing local or traditional knowledge about natural conservation, financial support for sustainable programs, and physical conservation actions.

Table 2-5 Conservation behavior and environmental effects (revised from Buckley, 2009)

Mechanisms	Environmental significance	Frequency of adoption	Conservation behavior or methods
Generating positive effects			
Political action	2	1	Influencing government policies such as park and natural resource management, park and land use planning, and conservation programs in terms of legislation, land tenure, staffing and budgets
Support for NGOs	1	2	Supporting environmental NGOs in cash or in kind
Support for park management	1	2	Park fees, cash donations, volunteer work in conservation and monitoring operations and management, supply of equipment.
Community conservation	1	2	Communal land title and regulations, community-owned and operated tourism, ecotourism revenue sharing, employing locals
Establishment of private reserves	**3**	1	Commercial ecotourism operators build up private reserves
Reducing negative effects			
Environmental technologies	2	**3**	Emission and noise reduction during travel, sustainable accommodation of buildings and structures, less pavement and infrastructure on visiting sites, waste and litter disposal on sites, remote monitoring equipment
Behavior management tools	1	2	Minimal-impact codes of practice, selective marketing, tourist interpretations and education

Note: 3 denotes “great”; 2 denotes “ medium”; 1 denotes “ small”

It is particularly worthy to examine the conservation contributions of tour operators when they play a critical role in generating preferable forms of environmental outcomes in tourism destinations, which potentially and concurrently conflicts with profit maximization of their business. Some researchers note that ecotourism is a fashionable marketing vehicle (i.e., selling "green" or "eco"), and evidence has illustrated its negative environmental impacts (Wight, 1993). Ecotourism has also been deemed a convenient tool for commercial ecotourism services hoping to gain access to the environmentally fragile and/or protected areas under the rude disguise of being eco-friendly (Buckley, 2003 & 2004). However, a few researchers do argue that ecological sustainability can be achieved through responsible marketing, ethics, voluntary environmental actions, and concern for social equity amongst the tour operators (Fennell and Malloy, 1999; Fennell and Weaver, 2005; Jamal et al., 2006; Wight, 1993). In short, the question of whether ecotourism benefits conservation, eventually leading to positive environmental effects, can be examined by assessing tour operators' proactive behavior.

2.3.1 Conservation contributions and positive environmental impacts

Despite the growing number of research interests in ecotourism's conservation contributions, there are relatively few studies that focus on the supply-side views of tour providers. Conservation contributions made by tour operators could include a broad array of actions (i.e., on-site environmental behavior and indirect management partnerships) encompassing several aspects (i.e., financial, educational, and management). However, this study operates under the belief that contributions should consist of proactive measures leading directly to positive environmental effects, at least

when long-term ecological sustainability is generally agreed upon as the ultimate goal of ecotourism.

Conservation contributions highlighted in ecotourism

Ecotourism "should contribute to [the] conservation or preservation of [a natural] area" (Fennell, 1999, p. 43). Ziffer (1989) and Boo (1991) argued that ecotourism contributes to conservation through activities such as labor or direct actions to improve the environment, employment opportunities and financial support, as well as environmental education. When discussing the ethics of ecotourism operators, Fennell (2001) listed monetary and physical actions (e.g., removing litter and planting trees) as two common conservation contributions. Mainly, the conservation contributions suggested in ecotourism literature encompass five dimensions: monetary support, environmental education, on-site physical actions, planning and management participatory behaviors, and employment opportunities.

In addition, a few empirical studies show the multiple dimensions of ecotourism's conservation contributions of tour operators. Jackson (2007) outlined eleven ecotourism practices and approaches that illustrate the discrepancy between attitudes about ecotourism and the stated or implied conservation behavior of bird watching tour operators. Wallace and Pierce (1996) conducted a study on registered ecotourism ventures in Brazil, and employed four conservation-based benchmarks to evaluate each tour enterprise's ethical nature. Additionally, some of the heavily documented conservation actions of ecotourists and the local communities in ecotourism areas can be employed when studying tour operators' various conservation practices. For

instance, tour operators can contribute financial and labor support to conservation programs initiated by NGOs or park agencies (Hwang et al., 2000; Jackson, 2007; Wunder, 2000). Providing environmental education raises employees' and local residents' environmental awareness, which in turn encourages their pro-environmental attitudes and practices (Fennell and Malloy, 1999; Zambrano et al., 2010). Ecotourism job opportunities offered by tour operators often help local residents shift their economic reliance to the more sustainable sectors of natural resource uses, which is a positive outcome for local ecological sustainability (Langholz, 1999; Stronza, 2007; Stronza and Pêgas, 2008; Stem et al., 2003; Wunder, 2000). Table 2-6 outlines the conservation contributions that tour operators might engage in that would tend toward generating positive environmental effects.

Incorporating the principles of ecosystem management in ecotourism practices

"Comprehensive ecotourism" (Weaver and Fennell, 2004) encourages community participation and partnerships, and shares several principles with ecosystem management. Jamal (2004) noted that both ecotourism or sustainable tourism and ecosystem management emphasize the interdependence of humans and nature, consider the multiple-stakeholders' common interest in utilizing the available natural resources, and constitute a public-private partnership that yields sustainable natural resource management. In light of the uncertainty and unpredictability in environmental changes, ecosystem management focuses on navigating and capturing the nature of dynamic, multi-level, interconnected socio-ecological systems (Galaz et al., 2008; Plummer and Armitage, 2010; Wondolleck and Yaffee, 2000). In ecotourism, proactive conservation

actions encourage the tourism stakeholder to form partnerships with natural resource planners and managers, and participate in the processes of adaptive environmental governances. Stakeholders contribute traditional knowledge and useful information and skills during the learning and deliberation processes that usually precede environmental governance (Brody, 2003; Jamal and Stronza, 2009; Kay and Alder, 2005). Local capacity and a sense of place are thus enhanced (Brody, 2008; Grumbine, 1994; Lessard,1998; Ludwig et al., 1993; Williams and Stewart, 1998; Wondolleck and Yaffee, 2000). In addition, volunteer labor and individual environmental reports offer useful support for the activities of ecological inventories and monitoring; such a partnership has been demonstrated to be effective by the increase in number and quality of environmental impact observations in existing park management programs (Buckely, 2003; Wondolleck and Yaffee, 2000). In summary, tour operators' contributions to conservation are obtained through their engagement with environmental evaluations, planning, monitoring, review, and policy making processes, resulting in a form of collaborative ecotourism.

Such planning and management behavior is mainly voluntary and proactive practices dedicated to environmental improvement and rehabilitation is classified by Buckley (2009) as mechanisms leading to a generation of positive environmental effects on visited areas (see Table 2-6). This is an example of the "active" position of ecotourism defined by Orams (1995), and tour operators are categorized into "constructive" and "pro-active" groups by Tepelus (2005). In contrast to soft actions

Table 2-6 Conservation behavior leading to positive environmental effects in ecotourism

Dimensions of conservation contribution	Conservation behavior	Mechanisms generating environmental effects (Buckley, 2009)	Related research in ecotourism
Monetary	• Encourage tourists' donations to conservation projects • Increase revenues of parks • Directly donate to NGOs and park agencies for conservation projects, environmental research, or park management	▪ Support of park agencies ▪ Support of NGOs	Boo (1991) Buckley (2009) Fitzgerald & Stronza (2009) Jackson (2007) Powell & Ham (2008) Tepelus (2005) Wight (1993) Zambrano et al. (2010)
Actions in contributing labor, knowledge, and skills	• Guide tours of volunteers working in conservation projects • Initiate or directly work for restoration projects • Establish private reserves • Lobby for environmental policies • Provide information and skillful assistance for environmental management • Provide local and traditional knowledge and experiences for environmental management	▪ Support of NGOs ▪ Support of park agencies ▪ Private reserves ▪ Political action	Boo (1991) Buckley (2003 & 2009) Jackson (2007) Jamal et al. (2006) Jamal and Stronza (2009) Orams (1995) Stronza (2007) Stem et al. (2003 a& 2003b) Tepelus (2005) Wight (1993) Wunder (2000) Zambrano et al. (2010)
Employment	• Provide job opportunities to encourage employees to participate in sustainable methods of natural resource use	▪ Community conservation	Boo (1991) Buckley (2009) Jackson (2007) Stronza (2007) Stem et al. (2003 a& 2003b) Tepelus (2005) Wight (1993) Wunder (2000) Zambrano et al. (2010)
Education/ Environmental Awareness	• Provide education programs for tourists, students, and community residents to encourage their pro-environmental behavior	▪ Community conservation	Boo (1991) Buckley (2009) Hill et al. (2007) Jackson (2007) Madin & Fenton (2004) Orams (1995) Powell & Ham (2008) Wallace & Pierce (1996) Wight (1993) Zambrano et al. (2010)

such as education, information dissimulation, and attitudes to maintain "status quo sustainability," the active behavior of tour operators constitutes "hard" actions or

"strong" practices (Van der Duim and Van Marwijk, 2006; Weaver, 2001). The prototype of such proactive behavior is "advocat(ing) improvements … through active intervention in rehabilitation, habitat acquisition and other practices" (Fennell and Weaver, 2005, p. 376).

2.3.2 Conservation incentives

An abundance of studies pertaining to ecotourism's conservation contributions show the significant relationship between economic and social-cultural incentives and contributions to conservation. Despite the fact that existing research mainly focuses on local communities and tourists, its findings are also applicable to tour providers. Ecotourism is considered a useful marketing vehicle for "green" businesses that emphasize the possible coexistence of the environment and development (Wight, 1993). Additionally, ecotourism has evolved from a simple bi-lateral balance between economic and environmental concerns, and moved towards sustainability (i.e., ecological, economic, and social equity). Social and cultural benefits are considered pivotal to long-term conservation outcomes in ecotourism, while economic benefits are considered agents of the relatively short-term results. Both benefits sometimes interact and can mutually enhance one another, leading toward the achievement of more conservation goals (Stronza and Pêgas, 2008). However, there are relatively few studies that compare both elements by testing how they affect conservation actions. Furthermore, ecotourism was built upon the theory of an expected symbiosis between the environment and modern development, indicating that the conservational benefits should be the fundamental goal for ecotourism. Despite the fact that there is relatively little research

that explores how perceiving the conservational benefits of tourism can motivate tour operators' conservation contributions, conservational benefits should be considered one of many important incentives enticing tour operators to engage in more pro-environmental actions.

Economic benefits

According to the definition of ecotourism provided by Wunder (2000), "… ecotourism claims to combine environmental responsibility with the generation of local economic benefits that will have both a development impact and serve as conservation incentives" (p. 465). The theory of tourism and conservation symbiosis in ecotourism is based on the concept that changes in human behavior are motivated by economic benefits obtained from the conservation of valued natural resources that tourists pay to see. Economic benefits also reduce the local people's reliance on unsustainable use of natural resources. Additionally, Wunder (2000) revealed that "economic incentives are imperative for nature conservation, particularly in remote and ill-monitored regions where a weak presence of the state hinders the use of alternative tools of environmental regulation" (p. 465). Both the income and employment that comes from tourism encourage self-regulation and the implementation of locally initiated protection measures to conserve a location's outstanding landscape in an effort to maintain long-term tourism revenues (Langholz, 1999; Wunder, 2000). In short, the concept highlights that conservation actions can be valued in the form of income generation (Wilson and Tisdell, 2003), and that "conservation and income generation through sustainable resource management are mutually supportive activities" (Jamal et al., 2006, p. 154).

Several types of economic benefits and their effects on conservation are assessed in the ecotourism literature (see Table 2-7). First, substantial additional income and sufficient revenues from ecotourism effectively encourage local communities to engage in sustainable patterns of natural resource uses. Ecotourism revenues offer benefits not only to the ecotourism industry itself, but also to related businesses and the local economy in general (Wunder, 2000). However, research indicates that conservation effects may be difficult to distinguish if the revenues from ecotourism are not of a significant amount (Barkin, 2003; Young, 1999). Second, economic benefits from ecotourism-related activities that are greater than foregone benefits from land development will serve as a motivation for conservation actions (Solomon et al., 2004). Solomon et al. (2004) found that preservation values (e.g., economic benefits from ecotourism) surpassed the potential benefits generated by land development, and thus it was likely that manatee preservation in Florida would be avidly pursued. Third, stable income and revenue from ecotourism are recognized together as one of the keys to retaining conservation effects (Zambrano et al., 2010) when ecotourism revenues are threatened by economic leakage (Wunder, 2000), or when they fluctuate with the seasons or general economic conditions. Fourth, another important economic incentive in ecotourism is learning marketable skills and obtaining new knowledge. Zambrano et al. (2010) pointed out that workers in an eco-lodge enjoyed significantly more job training opportunities than non-ecotourism workers. Keeping local residents qualified to undertake tourism-related jobs and thus gain relevant revenue is the primary way to maintain the long-term development of local ecotourism, as well as to secure local

conservation effects. Fifth, for marketing purposes or for gaining sufficient and stable revenues from ecotourism, tour operators should be encouraged to become further involved in sustainable practices within their tourism operations (Wight, 1993). Furthermore, perceiving the general economic benefits to local communities, such as the generation of job opportunities, the provision of a well-trained labor force, and the boost to local business development, could strengthen tour operators' engagement in the sustainable operation of tourism-related businesses. In summary, both the theoretical and empirical studies demonstrate that the more economic benefits tourism stakeholders perceive or gain, the more likely they are to engage in ecotourism operation, as well as pro-environmental behavior.

Socio-cultural benefits

In addition to the economic benefits, social-cultural benefits are acknowledged as an important incentive for positive conservation behavior of community residents in ecotourism areas. Such a motivation may enhance the associated economic benefits and resolve any problematic social issues or undesirable environmental outcomes caused by ecotourism development (Scheyvens, 1999; Stronza and Gordillo, 2008). An over-emphasis of the economic benefits in ecotourism could, however, accelerate some of the possible negative impacts such as losing respect for existing cultural and social values, local cultural disintegration, economic leakage, inequity in tourism income distribution, and other environment-related problems. In "comprehensive ecotourism," scholars call

Table 2-7 Summary of economic and socio-cultural incentives in ecotourism

Incentives	Contents	Related research
Economic benefits	Sufficient incomes from ecotourism	Langholz (1999) Stronza (2007) Stronza &Pêgas (2008) Young (1999)
	General economic developments in local communities	Lindberg et al. (1996) Wunder (2000) Zambrano et al. (2010)
	Employment opportunities from ecotourism	Barkin (2003) Langholz (1999) Stem et al. (2003 a&b) Stronza (2007) Stronza & Pêgas (2008) Wunder (2000)
	Profits greater than those derived from other types of development	Solomon et al. (2004)
	Stable incomes from ecotourism	Wunder (2000) Zambrano et al. (2010)
	Provisions of knowledge, skills and technologies	Wunder (2000) Zambrano et al. (2010)
Socio-cultural benefits	Local ownership of tourism resources	Jamal & Tanase (2005) Stronza & Gordillo (2008) Stronza & Pêgas (2008) Stonich (2000)
	Local control of and equitable access to management of tourism/natural resources	Jamal & Tanase (2005) Stronza & Gordillo (2008) Stronza & Pêgas (2008) Stem et al. (2003a) Stonich (2000) Wunder (2000)
	Skills and educational opportunities for community residents to enhance management capacity	Schyvens (1999) Stein et al. (2003) Stronza & Gordillo (2008)
	Community cohesion and integrity/pride	Schyvens (1999) Stein et al. (2003) Stronza & Gordillo (2008)
	Appreciation and preservation of unique cultural values	Schyvens (1999) Jamal et al. (2006) Laing et al. (2009)
	Recognition and application of traditional knowledge in natural resource management	Schyvens (1999) Jamal et al. (2006)

for strong community involvement in the management, research, and decision making processes surrounding ecotourism, as well as the establishment of a sense of stewardship and partnership with the natural environment (Fennell and Weaver, 2005). Gaining social and cultural benefits through the mechanism of stakeholder participation may

drive ecotourism stakeholders to foster a sense of place and enhance the capacity of the local community, which would effectively facilitate the resolution of complex environmental issues. The benefits range from social and political empowerment and the preservation of traditional cultures to community-based natural resource management. In summary, local stakeholders who perceive social-cultural benefits brought on by tourism development may show a greater willingness to engage in active behavior that minimize the negative environmental impacts and help to maintain long-term environmental health.

A variety of social and cultural benefits associated with natural resource and environmental management in sustainable tourism are documented, including an emphasis on social capital and participation, recognition and preservation of local cultures, and community pride and cohesion (see Table 2-7). First, if local communities own or control tourism management, they are more willing and active in their participation in conservation programs because they perceive the direct benefits of their conservation practices. Some case studies indicate that local ownership or participatory operation in ecotourism businesses contributes to a pro-conservation status (Stonich, 2000; Stronza and Gordillo, 2008). Second, with a strong sense of place and community cohesion enhanced by collaborative ecotourism, local communities are likely to be adverse to the negative environmental impacts caused by tourism development and, in turn, have a greater commitment to preventing damage to and protecting their natural environments from environmental degradation (Schyvens, 1999). Florida's ecotourism policy emphasizes "creating a strong sense of place and community and multicultural

appreciation on the part of all Floridians." The "common pool" issue demonstrates that environmental problems could be resolved through grass roots democracy and community-based institutions that effectively employ self or cooperative management paradigms (Fenny et al., 1990; Wunder, 2000). Another example described by Laing et al. (2009) is the Australian protected area tourism partnerships between certain park agencies and the tourism industry. From a sustainable tourism perspective, the benefits gained by the tourism industry from this type of partnership fall into three major categories: (1) "understanding of the values of protected areas by partners," (2) improving "biodiversity conservation in the protected areas," and (3) encouraging a greater "respect for culture, heritage and/or traditions." Third, if social and cultural heritages are preserved or revitalized through sustainable tourism development, it should become easier to maintain conservation behavior in the tradition that embodies a sound relationship between humans and nature. Scheyvens (1999) explained this kind of relationship through an explanation of the concept of psychological and social empowerment. The social-cultural-environmental paradigm and human ecological well-being reveal humankind's commitment to and attitude toward protecting the natural landscape that also supports a secure social fabric (Jamal et al., 2006; Smardon, 2006). As a result, local and traditional cultures and heritages that have a healthy attitude towards their interactions with natural resources will be preserved or refortified by the development of ecotourism.

Accordingly, the compound benefits of social and cultural empowerment encourage tour operators to have a deeper connection to environmental conservation.

Ecotourism improves community capacity, accessibility of natural resources, community cohesion, and local cultural preservation. Power sharing in environmental management increases tour operators' level of responsibility for their natural resources and encourages a proactive attitude toward maintaining a high level of quality in their natural environments. Revitalization of traditional ecological cultures enhances these conservation effects. In sum, local tour operators may be encouraged to better manage natural resources if they perceive associated social and cultural benefits.

Conservational benefits

The most fundamental of principles in ecotourism is the notion that ecotourism benefits environmental conservation. In addition, environmental benefits motivate tourism stakeholders to maintain their conservation actions (Jamal et al., 2006). In the late 1980s and early 1990s, ecotourism was originally introduced in some environmentally fragile areas in order to replace the existing economic activities that were depleting natural resources in local communities. At that time, ecotourism was also promoted as an alternative remedy for the negative environmental impacts caused by ordinary tourism because ecotourism pursued environmentally sustainable practices (e.g., small-group visits and environmentally-friendly vehicles), environmental education, and an engagement in local environmental protection and management. In conclusion, the environmental benefits are twofold: (1) ecotourism tends to result in protecting natural resources and landscapes (Butcher, 2006; Fennell and Weaver, 2005; Hill and Gale, 2009; Orams, 1995), and (2) ecotourism provides incentives for tourism stakeholders to engage in environmentally responsible actions.

From the perspective of mitigating the environmental impact of tourism, the conservational benefits made available by sustainable tourism achieve the goal of ecological integrity. Targeting the heavily documented environmental impact of tourism on the environment, ecotourism's conservational benefits emphasize sustainable utilization of natural resources, wildlife protection, the prevention of habitat loss and the destruction of natural landscapes, and the elimination of a variety of pollution sources (Mason, 2008). Furthermore, researchers call for long-term ecological sustainability maintained through proactive conservation behavior and collaborative or community-based environmental actions that have occurred in the last decade (Butcher, 2006; Fennell and Weaver, 2005; Wall, 1997). These conservational benefits result from long-term and broad-based efforts, such as processing environmental inventory and ecological monitoring, completing a database of land and natural resource uses, establishing local environmental strategies and management programs, and enhancing the local community's environmental awareness. In other words, these advantages correlate with the economic and socio-cultural benefits in ecotourism and sustainable tourism, which together function to encourage tourism stakeholders' commitment and engagement in environmentally responsible behavior and proactive conservation measures.

2.4 Ecotourism policies and wetland ecosystems in Florida

Florida is one of the most well-known regions in the U.S. for its distinguished natural landscape, year-round sunny climate, and diverse ecosystems, all of which are significant elements in developing nature-based tourism. For example, the Everglades

National Park, created in 1934 as the first national park in the US designated for ecological preservation purposes (Hall, 1998), is an internationally known wetland preserve with conditions that are highly favorable to sustainable nature-based tourism. Both nature-based tourism and outdoor recreation have experienced a dramatic growth in Florida. In the 1990s, the total amount of expenditures on wildlife observation in natural areas reached over $5 million, which benefited the state economy to the tune of $2 billion (Teisl et al., 1998). In 2008, there were around 84 million visitors to Florida and 1 million Floridians directly employed by tourism, and the estimated $3.9 billion of state sales tax revenue collected was primarily from the tourism industry, according to VisitFlorida (2010). The tax revenue from tourism-related activities in Florida has become a major source of state funding for public services, infrastructure construction, and environmental protection (VisitFlorida, 2010). Additionally, it is estimated that about 70% of domestic and foreign visitors to Florida participated in nature-based tours, according to 2003 statistical data obtained by the Florida Fish and Wildlife Conservation Commission (Wyman and Stein, 2007). Clearly, NBT has become the economic backbone of the Sunshine State, since the second half of the last century.

2.4.1 Ecotourism policies and development

The major issue with rapidly growing natural tourism is the threat it poses to the natural environment. Recognizing the importance of balance among the ecological, economic, social, and cultural benefits promoted by ecotourism, the Ecotourism/Heritage Tourism Advisory Committee developed the first state-wide policy regarding ecotourism in 1997. This state-wide blueprint for developing ecotourism, as

well as heritage tourism, was designed to include goals, strategies, and recommendations (Edwards et al., 1998; Fennell, 2001; Stein et al., 2003) (see Table 2-8). The policy was established by a collaborative effort made by the public and private sectors, including all levels of government, environmental NGOs, the tourism industry, historical preservation groups, and commercial enterprises (Fennell, 2001). The policy defined ecotourism as "responsible travel to natural areas that conserves the environment and sustains the well-being of local people while providing a quality experience that connects the visitor to nature" (The Ecotourism/Heritage Tourism Advisory Committee, 1997). The policy listed types of ecotourism activities, such as nature-based tours, managed access to sanctuaries, wildlife viewing, nature-based attractions, visitation to natural areas (e.g., beaches, forests, lakes and greenways), outdoor recreational activities (e.g., hiking, canoeing, snorkeling, horseback riding, boating, diving, kayaking, biking, and fishing), and visiting Native American reservations (The Ecotourism/Heritage Tourism Advisory Committee, 1997).

Seemingly, the vagueness of the definition of ecotourism in this state policy shows a concession to the current status of Florida tourism development by avoiding any long-term disputes over the legitimacy of ecotourism. The policy's broad inclusion of various types of ecotourism indicates that it was intended to accommodate the notion that NBT would be the predominant type of tourism servicing the natural areas of Florida. Generally, NBT is differentiated from "ecotourism" which has several major principles: (1) a strong learning or educational component, (2) eco-centric values (i.e., the non-consumptive and ethical treatment of wildlife), and (3) conservation

Table 2-8 Florida's statewide policy for ecotourism and heritage tourism development (The Ecotourism/Heritage Tourism Advisory Committee, 1997)

Components	Goals
Strategic Relationships (stakeholder collaboration)	• Create a regional plan that links state and community initiatives and coordinates public and private sector efforts to protect and promote natural, coastal, historical, cultural, and commercial resources • Encourage the integration of ecotourism and heritage tourism into comprehensive land-use plans • Develop necessary initiatives to provide public access while ensuring protection of ecotourism and heritage tourism assets • Increase private sector participation in natural, coastal, historical, cultural, and commercial tourism assets
Inventory (identification of natural and cultural assets)	• Develop a list of information sources (by region) that would inventory all ecotourism and heritage tourism resources by category and division thereof • Develop criteria that would "qualify" resources to be included on the inventory list • Assess and improve educational signage for ecotourism and heritage tourism destinations and coordinate with other programs • Create a plan to identify additional infrastructure needed to access resources
Protection (balance between tourism industry and ecosystem protection)	• Identify the government and private sector roles in maintaining ecotourism and heritage tourism guidelines • Determine a method for management and protection guidelines • Define "carrying capacity" and encourage the development of site-specific guidelines • Create a model of ecotourism and heritage tourism visitor guidelines • Create a model of guidelines for the ethical behavior of tour providers
Education (environmental awareness of communities, visitors, and tourism providers)	• Develop local and regional training and credential/certification programs for ecotourism and heritage tourism providers • Encourage and support the development of local, regional and statewide education initiatives focusing on the natural, coastal, historical, cultural, and commercial tourism assets of Florida designed to inform and educate residents, visitors, government officials, and the tourism industry • Encourage and support local, regional and statewide partnerships to develop and share education materials, programs, etc.

contributions. (Fennell, 2008; Fennell and Nowaczek, 2010; Goodwin, 1996; Weaver, 2001). As Stein et al. (2003) noted, NBT, a "value free term," could best fit the current status of tourism in Florida. The disadvantages of NBT in Florida observed by Wyman and Stein (2007) include increased visitation and general environmental degradation. Thus, they suggest that ecotourism should serve as the "ideal" when managing and

planning NBT. In addition, the fact that the state policy listed some relatively consumptive types of tours (e.g., fishing and boating) in the ecotourism activities implies its strategy to guide the mainstream NBTs toward ecotourism. In this policy, the ethical guidelines for tour providers were designed for future adoption, which was later documented in the Guide to Responsible Nature and Cultural Heritage Tourism in Florida (The Cultural Heritage and Nature Tourism Development Committee, 2007). The Guide outlines what constitutes as responsible behavior in tourists, tour providers, and local communities, which also varies based on the various forms of natural settings. Moreover, after browsing the websites of many tour operators who provide ecotourism services in Florida, it is clearly common for mixed-type operators to provide both relatively less consumptive ecotours (e.g., hiking and bird-watching) along with traditional, nature-based tours (e.g., cruises). Ecotourism can be a loosely-laden term for many tour operators, especially when the mixed-type of tour business so clearly illustrates the profit consideration of current tourism enterprises. On the other hand, it also indicates the transaction potential in Florida in transitioning from ordinary NBT to ecotourism. It could be reasoned that Florida operators of NBT might be involved in ecotourism to differing degrees, which could then be distinguished by the extent of their environmentally responsible on-tour practices and conservation contributions.

The Florida state policy is characterized by an emphasis on regional multi-stakeholder collaboration and coordination between tourism and land use planning. First, the link between environmental land use planning and tourism development in the state policy can be seen as a tool that can facilitate a symbiosis between the environment and

development. When ecotourism is considered an alternative tool for environmental management (Jamal and Stronza, 2009; Kay and Alder, 2005), the integration between environmental concerns, land use planning, and tourism stakeholders' conservation contributions will be properly managed. Second, the policy recognizes the need for the private and public sectors' cooperation at the regional level when making policies related to natural resource inventory, conservation, utilization, and management. It would be a vital step for environmental managers and planners to incorporate important stakeholders into their policy-making processes with the goal being collaborative and adaptive nature resource management. The natural landscape could be conserved through stakeholder participation in the planning and decision-making process.

2.4.2 Issues in wetland ecosystems

Although wetlands are important natural resources for NBT development in Florida, the state has experienced the issue of wetland loss since more than one century ago. The initiation of the vast effort to drain the wetlands in Florida can be traced back to 1845, the year Florida became a state. The estimated 50,000 acres between the Kissimmee River region and the region north of Lake Okeechobee was drained in 19th century in order to plant sugarcane and rice (Moore, 2007). In the first half of the 20th century, canal and levee constructions used to lower the water table permitted the alteration of even more marshlands south of Lake Okeechobee, converting the land for agricultural uses. The wetland alterations for agricultural use and land development due to urban and recreation growth, coupled with droughts and a declining and unstable

water supply, accelerated the loss of wetlands in the second half of the 20th century (Brody et al., 2008; Highfield and Brody, 2006; Moore, 2007; Randolph, 2004).

Florida has suffered some of the greatest total wetland losses in the U.S. (Mitch and Gosselink, 2000). In contrast to the staggering rate of wetland loss before the 1970s, the situation has improved in the last decade; however, the net loss still reaches 58,500 acres per year (Randolph, 2004). In their research on wetland alteration in coastal areas, Brody and Highfield (2005) and Brody et al. (2007) assessed Section 404 Permits, observing that the number of permits issued in Florida has increased significantly from 1993 to 2002. The wetland loss during this period was spatially concentrated along the coastlines, as well as in the southern part of Florida- areas that have experienced the rapid increase in both urban and tourism development. Unfortunately, only about 50% of the original wetlands in Florida still exist, and only one-fifth are under the protection of national park or reserve systems, according to Moore (2007). Another issue is water pollution resulting from waste disposal or waste water discharges near areas of excessive recreation. In particular, south Florida is estimated to experience a net gain of 12 million people by 2050 (Moore, 2007), which will be a major source of increased pollution and water demand.

Many measures have been taken to manage the various issues of endangered wetland ecosystems through legal, planning, engineering, and economic mechanisms. Although the federal wetland mitigation policy (i.e., Section 404 Program of the Clean Water Act, CWA) is believed to be responsible for partially decreasing the rate of wetland alterations, Brody et al. (2005 and 2007) has identified the problem of flood

damage associated with wetland loss as still prominent. In 1975, Florida adopted a state program to regulate dredge-and-fill activities, requiring the mitigation ratio to change from 2.5:1 (created wetlands) to 4:1 (enhanced wetlands), and approved the mitigation banking system (Randolph, 2004). Some important measures have been initiated, such as restoring water flow patterns to increase the water flowing through the marshlands to assist in wildlife preservation and increasing the flow through waste water treatment plants. Moore (2007) indicated that wetland conservation demands active intervention, and called for approaches of ecosystem management that recognize humans' social values in their natural resource management systems (Lackey, 1998). Accordingly, reiterating the values of wetland conservation is pivotal for motivating people's appreciation of the wetlands and encouraging local communities to advocate active environmental responsibility. The concept of natural capital underlines the role of ecotourism or sustainable tourism. Hence, it shows three key elements to ensure the future of wetland conservation: evident economic advantages, substitute production activities, and quick revenue (Moore, 2007).

2.5 Findings of existing research

It is generally recognized that legitimate ecotourism can offer economic and socioeconomic benefits, as well as maintain social-cultural sustainability and ecological conservation in communities through education and community participation in both the tourism industry and environmental management (Choo and Jamal, 2009). The most notable evidence of this notion is ecotourism's contribution to conservation (Fennell,

2001; Fennell and Nowaczek, 2010; Weaver, 2001), especially long-term efforts made to increase ecological integrity.

However, there is an ongoing dispute regarding whether the development of ecotourism actually generates the positive environmental results it desires. A wide range of empirical research does not provide consistent conclusions regarding the environmental impacts of ecotourism. Some researchers suggest that the spectrum of environmental effects from ecotourism correspond to conservation actions, ranging from passive to proactive environmental behavior (Fennell and Weaver, 2005; Wright, 1993). Therefore, the conservation contributions of ecotourism should be composed of a series of proactive measures involving financial, educational, and management aspects, which will ultimately lead to positive environmental effects. Furthermore, motivation (e.g., economic, socio-cultural, and conservational benefits) and background factors may all influence tourism stakeholders' personal pro-environmental behavior, in addition to their ecotourism involvement (which inherently guides their level of activeness in conservation actions).

2.6 Limitations and future research directions

While the vast majority of the literature suggests the introduction of ecotourism as an agent for conserving the important wetland ecosystems, there is little present research examining whether ecotourism actually encourages conservation. Particularly, tour operators' conservation contributions to protecting wetland ecosystems seemingly attract less research interest. In addition, Florida demonstrates the strong interplay

between local economies and natural landscapes (e.g., the wetlands), and has become one of only a few states that adopted state-wide ecotourism policies in the late 1990s. Notably, Florida's policy promotes multi-stakeholder collaboration and the integration of ecotourism and local comprehensive planning. However, since the announcement of the state's policy, there has been little research assessing the relationship between ecotourism and conservation actions initiated by the tourism industry.

In lieu of the above-described gap, this study identifies the driving forces of tour operators' pro-environmental behavior which is considered to generate positive environmental outcomes. A multiple regression analysis will be employed to assess whether ecotourism involvement and conservation incentives significantly affect the composite conservation contribution and several planning and management actions, after controlling for a set of pertinent variables. Theoretical implications and policy recommendations will be proposed by this study, based on the findings of statistical analyses.

CHAPTER III

RESEARCH FRAMEWORK

This chapter discusses the research framework used to formulate the hypotheses about the relationships between dependent and independent variables. First, the conceptual framework depicting all associations between dependent, independent, and control variables is presented. Second, the dependent variables, including the composite conservation contribution and 4 subset conservation actions are introduced. Third, 4 independent variables are described, and the rationale and research hypotheses are discussed. Fourth, the control variables are introduced, and the statements of expected outcomes are summarized.

3.1 Conceptual framework

Based on the theoretical and empirical literature, there are some important motivators influencing tour operators' conservation contributions, including tour operators' participation in ecotourism businesses, a set of incentives (i.e., economic, socio-cultural, and conservational benefits of tourism activities), company size, frequency of wetland visits, and environmental awareness. The conceptual frame is constructed as Figure 3.1, which includes identified important driving factors to tour operators' conservation contributions to generate positive environmental results in wetland ecosystems. The purpose of this study is to examine the degree to which ecotourism involvement and tourism benefits (i.e., economic, socio-cultural, and

conservational) encourage tour operators' conservation actions, both are incorporated in the model as independent variables while the other significantly influential factors (i.e., business size, frequency of visiting natural landscapes, and environmental attitudes) are included as control variables.

The following sections describe the dependent, independent, and control variables used in this research and the rationales and research hypotheses used to measure the associations among them.

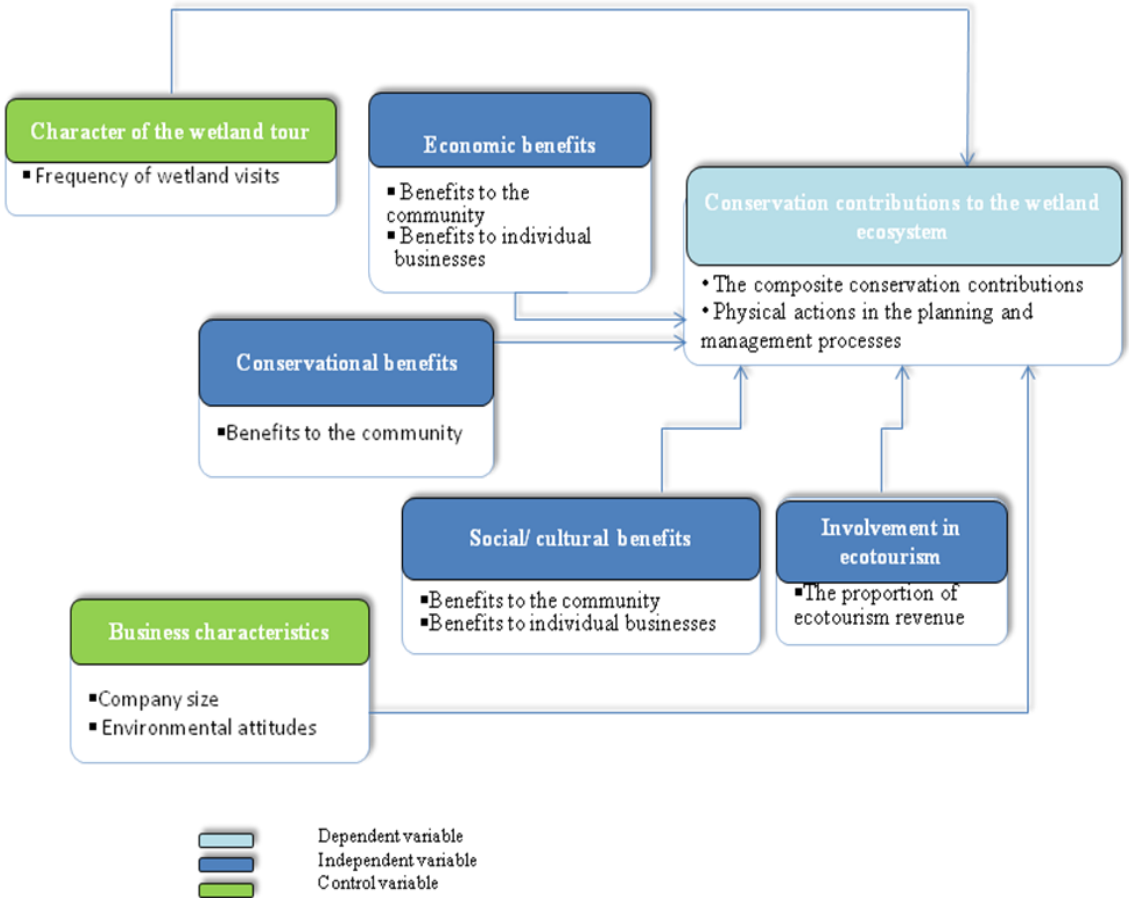

Figure 3-1 Conceptual Model

3.2 Dependent variables

The dependent variable for this study is conservation contributions of tour operators to generate positive environmental outcomes in wetland ecosystems. Conservation contribution, one of the main components in the definition of ecotourism (Boo, 1991; Fennell and Dowling, 2003; Wunder, 2000; Ziffer, 1989), is the key to positive environmental results in tourism destinations (e.g. wetlands) (Buckley, 2009; Orams, 1995; The First World Congress on Tourism and the Environment, 1992; Wight, 1993). Moreover, in evaluating the environmental impacts of ecotourism, researchers in the most recent decade have embraced a holistic way to examine conservation behavior and perceptions of tourism stakeholders (Stem et al., 2003; Stronza, 2007; Wunder, 2000; Young, 1999; Zambrano et al., 2010). Following the research trend, this study examines conservation contributions toward generating positive environmental outcomes through assessing tour operators' pro-environmental actions.

The first dependent variable is the composite conservation contribution which can generate positive environmental impacts in wetland ecosystems, including 10 planning and organizational measures (see Figure 3-2). Conservation contributions discussed in the existing ecotourism literature indicate a diversity of active or proactive management and planning approaches likely leading to long-term environmental health and ecological sustainability (Fennel and Weaver, 2005). However, there is no pre-existing and standardized scale for measuring the conservation contribution of ecotourism or sustainable tourism. In order to fit the research objectives, ten wetland restoration and rehabilitation-related actions were identified and modified based on the

literature on the natural resource conservation of ecotourism and adaptive and collaborative ecosystem management (also see Table 2-6). They include the aspects of financial supports, direct contribution of voluntary labors, establishment of private reserves, lobbying government policies and plans, contribution of skill and knowledge to environmental planning and management, employment opportunities in sustainable sectors, promotion of community conservation, and environmental education. In reference to the framework set by Buckley (also see Table 2-5), the actions are categorized as mechanisms leading to the positive environmental effects.

The second set of dependent variable includes 4 sub-items extracted from the "Participatory Action I" under the composite conservation contribution (see Figure 3-2). Focusing on collaborative planning and management of nature-natural resources, this study examines separately how four conservational practices regarding participating in environmental planning and management processes are associated with independent variables. They include participation in public hearings of land use planning processes to express concerns of conserving wetlands (PPC), participation in land use environmental planning processes through contribution of professional knowledge and experience (PPK), participation in water management processes through contribution of professional knowledge and experience (WMK), and participation in environmental monitoring and inventorying (EMI).

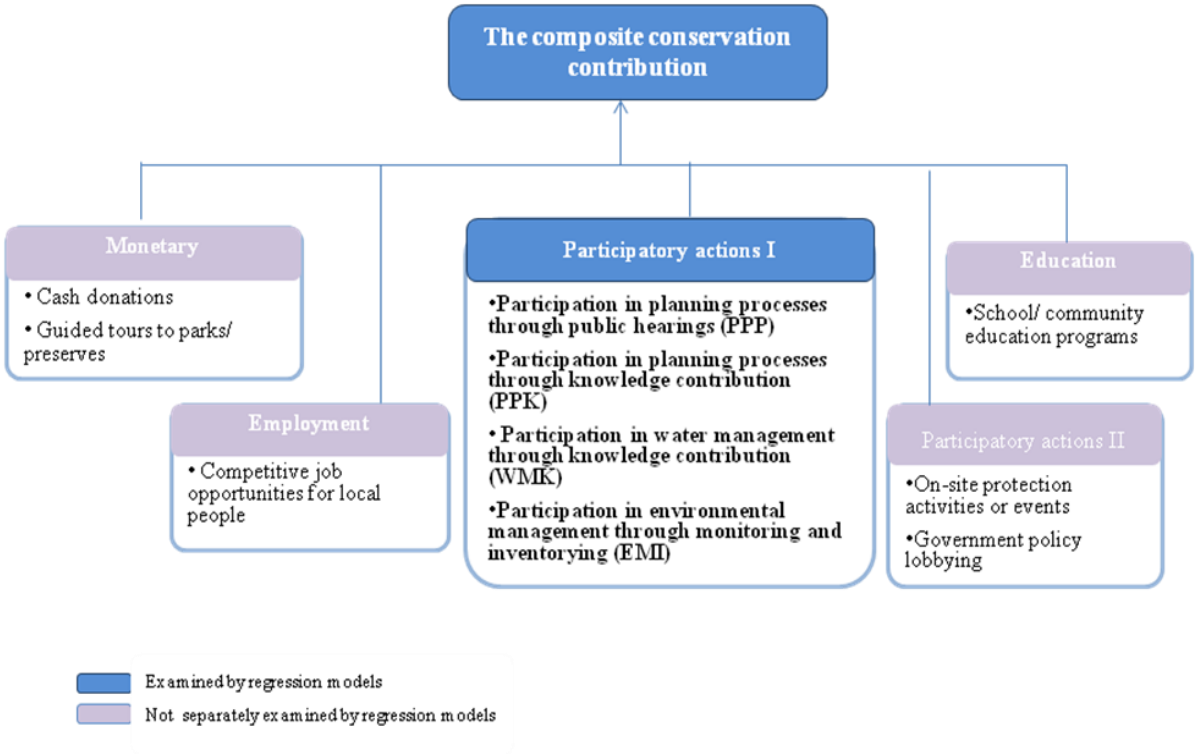

Figure 3-2 Dependent Variables

Analyzing the relationships between these dependent variables and tour operators' ecotourism involvement and conservation incentives, this research constructs five separate models with the same independent and control variables. The measurements allow cross-model comparisons and provide insights into how ecotourism related factors have different effects on a variety of conservation actions.

3.3 Independent variables

Involvement in ecotourism and the presence of ecotourism incentives such as economic, conservational, and social and cultural benefits play important roles in the conservation behavior of tourism stakeholders. The following paragraphs describe the

rationales and hypotheses for the relationship between each independent variable and five dependent variables.

3.3.1 Involvement in ecotourism

Proportion of tourism revenue from ecotourism

Rationale 1: Local ecotourism benefiting from environmental conservation forms the fundamental concept of environment and development symbiosis in ecotourism. Human behavior resulting in the depletion of natural resources could be changed to conserving natural or socio-cultural assets in order to sustain the ecotourism industry. Additionally, ecotourism incorporates sustainable business practices, which drives environmentally responsible actions of tour operators through learning, ecological conservation, and community participation (Choo and Jamal, 2009). The spectrum of ecotourism illustrating the relationships between conservation actions within ecotourism ranges from inactive to proactive, and the corresponding environmental effects reflect the extent of success of ecotourism development (Fennel and Weaver, 2005; Orams, 1995; Wight, 1993). In other words, the theory researchers generally agree upon is that genuine ecotourism has the long-term environmental goal of generating positive environmental impacts. Therefore, stakeholders who are involved in ecotourism businesses are inherently responsible for this ultimate goal through participation in a wide array of conservation activities.

The existing studies apply income, working hours, or services in the ecotourism industry to measure ecotourism involvement (Sirakaya and McLellan, 1998; Stem et al., 2003a; Stronza, 2007; Wilson and Tisdell, 2003; Zambrano et al., 2010). For tour

operators, the business revenue from ecotourism can also be a useful indictor to measure ecotourism involvement.

In some studies, researchers concluded that participation in ecotourism encouraged local employees to raise environmental awareness or to abandon less-sustainable uses of natural resources (Stem et al., 2003a, 2003b; Zambrano et al., 2010). However, Sirakaya and McLellan (1998) found that the percentage of business revenue from ecotourism was not a significant predictor of tour operators' compliance with ecotourism guidelines. Despite inconsistent findings in the literature, it is conceivable that greater involvement in ecotourism could familiarize tourism stakeholders with sustainable tourism practices and inspire their environmental concerns and active conservation behavior. Accordingly, having a higher percentage of revenues from ecotourism, tour operators could perform better in conserving tourism destinations and related resources (e.g., wetlands).

Hypothesis 1.1: A higher proportion of tourism revenue derived from ecotourism will motivate tour operators to be more active in the composite conservation contribution to wetland ecosystems.

Hypothesis 1.2: A higher proportion of tourism revenue derived from ecotourism will encourage tour operators to more actively participate in public hearings of land use planning processes to express concerns of conserving wetland ecosystems (PPC).

Hypothesis 1.3: A higher proportion of tourism revenue derived from ecotourism will encourage tour operators to more actively participate in land use

environmental planning processes through contribution of professional knowledge and experience relevant to wetland ecosystems (PPK).

Hypothesis 1.4: A higher proportion of tourism revenue derived from ecotourism will encourage tour operators to more actively participate in water management processes through contribution of professional knowledge and experience relevant to wetland ecosystems (WMK).

Hypothesis 1.5: A higher proportion of tourism revenue derived from ecotourism will encourage tour operators to more actively participate in environmental monitoring and inventorying relevant to wetland ecosystems (EMI).

3.3.2 Economic benefits

Rationale 2: Tracing back to concepts in the 1990s, ecotourism suggests that economic benefits would galvanize conservation actions of local tourism stakeholders. Conservation contribution plays the critical role in effectively conserving the natural landscape tourists pay to see and the natural resources on which tourism relies. In other words, protecting the natural assets includes maintaining ecosystem functions. In the ecotourism concept, conservation actions are not only the function of income generation, but the results of a mutual support with tourism-related income (Jamal et al., 2006; Wilson and Tisdell, 2003).

In addition to the business revenue or household income from ecotourism, economic benefits highlighted by the ecotourism literature consist of profitable agents and tools for an individual business or the community (Barkin, 2003; Langholz, 1999; Stem et al., 2003a, 2003b; Stronza, 2007; Stronza & Pêgas, 2008; Wunder, 2000) (also

see Table 2-7). They are composed of the sufficiency and stability of ecotourism income, good marketing, and enhancement of knowledge and skills of employees in the tourism industry. For the community, economic benefits are indications of local jobs, a boost to the local economy, and an increase in tax revenue. The economic benefits discussed in this section focus on the extent of perceived benefits for the survey respondents and their communities.

The conceptual and empirical material above generally indicates that economic benefits play a main role in conserving natural features. Specifically, research on tourism businesses in America by Sirakaya and McLellan (1998) revealed that "perceived economic benefits" was a significant predictor of tour operators' implementation of ecotourism guidelines. In summary, tour operators who experience or perceive higher economic benefits from tourism could have stronger incentives to conduct conservation behavior to sustain the natural landscape (e.g., wetlands) upon which their tourism relies.

Hypothesis 2.1: Tour operators who perceive the higher economic importance of ecotourism will be more engaged in the composite conservation contribution to wetland ecosystems.

Hypothesis 2.2: Tour operators who perceive the higher economic importance of ecotourism will be more engaged in public hearings of land use planning processes to express concerns of conserving wetland ecosystems (PPC).

Hypothesis 2.3: Tour operators who perceive the higher economic importance of ecotourism will be more engaged in land use environmental planning processes through

contribution of professional knowledge and experience relevant to wetland ecosystems (PPK).

Hypothesis 2.4: Tour operators who perceive the higher economic importance of ecotourism will be more engaged in water management processes through contribution of professional knowledge and experience relevant to wetland ecosystems (WMK).

Hypothesis 2.5: Tour operators who perceive the higher economic importance of ecotourism will be more engaged in environmental monitoring and inventorying relevant to wetland ecosystems (EMI).

3.3.3 Socio-cultural benefits

Rationale 3: In addition to economic incentives, some researchers call for preserving local socio-cultural values as an important mechanism to conserve natural resources and landscape in ecotourism practices (Scheyvens, 1999; Smardon, 2006; Stonich, 2000; Stronza and Gordillo, 2008). Emphasizing socio-cultural benefits in ecotourism communities would resolve the undesired social issues and environmental outcomes caused by tourism development (Scheyvens, 1999; Stronza and Gordillo, 2008). The existing studies find that the benefits, such as enhancing social interaction and local cohesion, fostering a sense of place, greater capability to manage natural resources, and preserving and redeveloping cultural heritage and traditional environmental management, could be shared by ecotourism stakeholders if the stakeholder partnership or stewardship in natural resource management is formed. The partnership should be established and implemented during research, monitoring, and policy making processes of tourism and natural resource management (Fennell and

Weaver, 2005). This stewardship is also highlighted by collaborative or adaptive ecosystem management and community-based environmental management. The social-cultural-environmental paradigm and human ecological-well-being (Jamal et al., 2006; Smardon, 2006) illustrate the sound relationship between humans and nature, which also supports local residents' social fabrics.

Some sustainable or ecotourism researchers stress the social and cultural benefits of ecotourism as an incentive to conserve natural resources (also see Table 2-7). Mainly, these benefits include the increase of local cultural and heritage preservation and redevelopment, enhancement of the sense of place, and improvement of the capacity and accessibility of natural resource management through emphasis on social capital. For local and traditional cultural heritage, the existing studies indicate that ecotourism helps local communities recover sustainable ways of utilizing and managing natural resources (Jamal et al., 2006; Kay and Alder, 2005; Scheyvens, 1999). Florida's 1997 state policy highlighted sense of place and community integrity in ecotourism development, which has been heavily discussed as an effective tool in the literature of community-based environmental management (Fenny et al., 1990; Laing et al., 2009; Wunder, 2000). Through sustainable methods of natural resource management (e.g., ecotourism), community residents and the tourism industry would have more partnership opportunities in activities of environmental and natural resources planning and management, strengthening their identities, and introducing more management resources.

It is generally agreed that tourism stakeholders who gain greater socio-cultural benefits would be more active in conservation activities. Noticeably, Laing et al. (2009) found that the tourism industry considered its benefits in cultural and traditional heritage and bio-diversity conservation during partnerships with park agencies in sustainable tourism practices. In other words, tour operators who could receive socio-cultural benefits from sustainable tourism activities would be inclined to behave more responsibly and work collectively toward conserving environmentally critical lands (e.g., wetlands).

Hypothesis 3.1: Tour operators who recognize greater socio-cultural benefits from ecotourism will be more active in the composite conservation contribution to wetland ecosystems.

Hypothesis 3.2: Tour operators who recognize greater socio-cultural benefits from ecotourism will be more active in public hearings of land use planning processes to express concerns of conserving wetland ecosystems (PPC).

Hypothesis 3.3: Tour operators who recognize greater socio-cultural benefits from ecotourism will be more active in land use and environmental planning processes through contribution of professional knowledge and experience relevant to wetland ecosystems (PPK).

Hypothesis 3.4: Tour operators who recognize greater socio-cultural benefits from ecotourism will be more active in water management processes through contribution of professional knowledge and experience relevant to wetland ecosystems (WMK).

Hypothesis 3.5: Tour operators who recognize greater socio-cultural benefits from ecotourism will be more active in environmental monitoring and inventorying relevant to wetland ecosystems (EMI).

3.3.4 Conservational benefits

Rationale 4: Ecotourism is founded on the theory of coexistence between tourism development and environmental conservation. Some researchers support the concept that ecotourism is a viable alternative to mass tourism in order to minimize the ecological footprint of travelers seen in ordinary tourism (Hill and Gale, 2009; Orams, 1995), and the others believe that ecotourism will benefit long-term ecological sustainability (Butcher, 2006; Fennell and Weaver, 2005). In summary, conserving natural landscapes and resources becomes one of the reasons that motivate tourism operators to shift to sustainable and environmentally-responsible practices.

There is no pre-existing scale to measure conservational benefits in the ecotourism although a broad array of ecological impacts and pro-environmental activities were discussed in previous conceptual and empirical studies. The general environmental problems caused by traditional mass tourism, including habitat destruction, threats on wildlife, and pollution, would be the targets for correction in sustainable tourism (Holen, 2008; Mason, 2008). For long-term conservation in sustainable tourism, increased environmental awareness in local communities, a completed dataset of human activities and natural resources, and other continued efforts are believed to be the benefits ecotourism stakeholders might appreciate (Choi and Sirakaya, 2003; Stein et al., 2003).

Relatively few literature tests whether the incentive of conservation benefits in ecotourism galvanizes more sustainable behavior of ecotourism stakeholders. However, Stein et al. (2003) investigated 67 county tour professionals about ecotourism development in Florida, and found that 7.5% of county tour professionals reported "conservation and protection of natural areas" as a potential benefit if the area managed by public agencies could be developed for NBT. If tourism operators perceive that ecotourism would help environmental conservation, they could take more pride in practicing sustainable methods and become active in environmentally responsible behavior. In other words, tour operators might continue or improve their conservational behavior when they consider that their tourism activities result in positive environmental outcomes.

Hypothesis 4.1: Tour operators who perceive greater conservation benefits will be more active in the composite conservation contribution to wetland ecosystems.

Hypothesis 4.2: Tour operators who perceive greater conservational benefits will be more willing to participate in public hearings of land use planning processes to express concerns of conserving wetland ecosystems (PPC).

Hypothesis 4.3: Tour operators who perceive greater conservational benefits will be more willing to participate in land use environmental planning processes through contribution of professional knowledge and experience relevant to wetland ecosystems (PPK).

Hypothesis 4.4: Tour operators who perceive greater conservational benefits will be more willing to participate in water management processes through contribution of professional knowledge and experience relevant to wetland ecosystems (WMK)

Hypothesis 4.5: Tour operators who perceive greater conservational benefits will be more willing to participate in environmental monitoring and inventorying relevant to wetland ecosystems (EMI).

3.4 Control variables

3.4.1 Company size

It is a global trend that the importance of corporate social responsibility for the environment has risen along with the issues of environmental degradation, climate change, and the depletion of natural resources (Sheldon and Park, 2011). Some researchers conclude that small or medium enterprises tend to be more active in carrying out this responsibility than larger companies (Carey et al., 1997). Fennel and Malloy (1999) suggested that organizational size was a factor in their research discussing the ethical nature of ecotour operators. They implied that the larger the company, the less likely the ethical approaches were consistent with ethical values. Because it is hard for a larger business to ensure all workers comply with the moral guidance of the central leadership. Therefore, the tour operators owning larger tour companies would be less likely to be actively engaged in implementing conservation measures gearing toward favorable environmental outcomes.

3.4.2 Environmental attitudes

Environmental values are shown in paid respects to animals, plants, and natural environments, and could influence the conservation behavior of tour operators. Ecotourism operators are found distinguished in ecologically ethical natures compared to operators of other types of tours (Fennell and Malloy, 1999). Ecotourism operators were

found to be more willing to practice eco-friendly tour services by Hwang, et al (2000). Additionally, Jackson (2007) employed the New Environmental Paradigm (NEP) (Dunlap and Van Liere, 1978) and self-developed an ecotourism scale to measure tour operators' attitudes and found that high scores on the NEP scale significantly correlated with attitudes toward ecotourism guidelines. In other words, tour operators who have better environmental attitudes might be more likely to implement ecotourism guidelines, participate in conservation associations, and incorporate environmental knowledge into the collective environmental effort. Positive environmental attitudes might contribute to tour operators' pro-environmental behavior.

3.4.3 Frequency of wetland visits

Generally, a high intensity of visitation in the wetlands could stimulate tour operators' active roles in conservation because they have more chances to conduct close and deep observations of environmental issues and take immediate corresponding actions. In addition, high frequency of visitation also indicates that tour services rely heavily on wetland resources, and thus the quality of environment could be their top concern in order to maintain stable business revenues. Accordingly, tour operators who guide tourists to wetland areas more frequently could be more aggressive in wetland protection activities.

CHAPTER IV

RESEARCH DESIGN AND METHOD

This chapter includes four sections describing the research design and methods used in this research. First, the study population, sampling method, and data collection process are discussed. Second, concept measurements are described for the dependent variables, independent variables, and control variables. I also show the results of factor analyses employed to select items for some dependent and independent variables. Finally, the third section outlines the analysis of the data. The chapter concludes with validity threats to this research.

4.1 Study population and sample selection

The study population was comprised of tour operators who engaged in nature-based tours in Florida. The sampling frame for this research drew from a tour partner list posted on the website VISITFLORIDA.COM, which included 32 categories of nature-based tours and a total of 318 tour businesses. VISITFLORIDA, a public and private partnership created by the Florida Legislature in 1996, is partnered with the Governor's office and acts as the state's official tourism marketing corporation. Based on the sample size calculation formula suggested by Dillman (2007), this study required a sample size of approximately 138 businesses, providing 0.2 as the proportion of population expected to choose one of the five response categories, 5% as an acceptable sampling error, and 95% as the confidence interval. Sampling methods are used by

researchers to avoid errors caused by sample selection and increase the external validity of a survey; stratified sampling methods are especially useful for avoiding the possibility of a disproportionate selection of samples among various groups (Fink, 2009). However, due to the size of the population, the sample size needed, and the research purpose of obtaining a representative sample from different locations in Florida, this research employed a census study to include the entire population: all 318 tour operators.

The practice of Dillman's (2007) modified Total Design Method (TDM) was employed in the survey. One e-mail invitation and five e-mail reminders with a questionnaire link were sent to all non-respondents every seven to ten days after the previous reminder through the survey website www.Surveymonkey.com. During the seven weeks spanning November and December of 2010, a total of 97 responses were received. Based on the Response Rate 2 Calculator in the Standard Definitions of American Association for Public Opinion Research (AAPOR), the response rate for this survey was approximately 31% (see Appendix I for the Survey Questionnaire).

For this research, a web-based survey was employed to collect cross-sectional data from tour operators involved in nature-based tours in Florida. Potential respondents were inquired for their business characteristics, conservation behavior, involvement in ecotourism, and perceptions of three types of tourism benefits. This research was justified for employing cross-sectional datasets for statistical analysis and hypothesis testing (Wooldridge, 2006).

Table 4-1 Operation and data source for independent and control variables

Variable	Type of variable	Operational Measurement	Question number/ Scale	Data Sources	Expected relationship with both dependent variables
Involvement in ecotourism	Independent variable	Interval : measuring the level of ecotourism involvement through the proportion of ecotourism revenue	1; 0-100	Survey Question naire	+
Economic benefits	Independent variable	Interval: measuring the average degree of economic benefits of nature-based tourism to tour operators and their communities	5; 1-5	Survey Question naire	+
Socio-cultural benefits	Independent variable	Interval: measuring the average degree of socio-cultural benefits of nature-based tourism to tour operators and their communities	9; 1-5	Survey Question naire	+
Conservational benefits	Independent variable	Interval: measuring the average degree of conservational benefits of nature-based tourism to tour operators' communities	6; 1-5	Survey Question naire	+
Company size	Control variable	Ratio: the number of operator's part-time and full-time employees	1; .5-100	Survey Question naire	-
Environmental attitudes	Control variable	Interval: measuring the average degree of operator's general environmental values	5: 1-5	Survey Question naire	+
Frequency of wetland visitation	Control variable	Interval: measuring the frequency of operator's tourism visitation to wetlands	1; 1-7	Survey Question naire	+

4.2 Concept measurement and factor analysis

In measuring how ecotourism involvement and incentives affect tour operators' activeness in conservation contributions, the operation of the independent variables and control variables was illustrated (see Table 4-1). The survey was the only data source for variables used in this research. The details of the measurement of those variables are described in the following paragraphs.

4.2.1 Dependent variables

The composite conservation contribution

The first dependent variable is one composite set of tour operators' conservation contributions, which was considered a group likely to generate positive environmental outcomes regarding wetland ecosystems through planning and management activities. Such conservation actions were drawn from the following four categories: financial support, participatory actions (e.g., voluntary labors to conservation activities, establishment of private reserves, lobbying government entities for environmental policies and plans, and making skill and knowledge contributions to environmental monitoring and management), employment opportunities, and environmental education (Buckley, 2009; Boo, 1991; Ziffer, 1989). These actions were identified from a number of previous studies that focused on the measurement of the environmental impacts of sustainable tourism, conservation behavior in ecotourism, and ecosystem management (see Table 2-6). In addition, these pro-environmental actions were oriented towards tour operators and made specific to wetland conservation.

The survey questionnaire incorporated one construct composed of 10 items with 5-scale Likert responses formulated to inquire as to respondents' activeness in any management and planning processes related to wetlands conservation practices (see Table 4-2). Items considered to be of the sort that would lead to long-term positive environmental outcomes included providing financial support, lobbying for environmental policies, environmental monitoring and management, providing competitive employment opportunities, and offering community environmental education. Potential respondents were queried for the extent of their engagement in such conservation actions and practices through 10 Likert-scaled questions, the anchors to which were "always" = 5 and "never" = 1.

Table 4-2 Items used in "composite conservation contribution" with the results of reliability analysis (Cronbach's Alpha=0.876)

Statement of items	Cronbach's Alpha if item deleted
Gave cash donations to wetland conservation programs	0.860
Guided tours to parks, preserves, or wildlife refuges to increase their revenue	0.881
Participated in events or activities for wetland conservation	0.866
Participated in NGO's government policy lobbying related to wetlands and water resource conservation	0.858
Participated in public hearings for zoning or land development projects to express concerns of conserving wetlands	0.857
Gave comments to planning officials related to wetlands or water resources based on your knowledge or experience	0.854
Gave comments to water use and recreation managers based on your knowledge or experience	0.853
Participated in environmental inventories or monitoring relevant to wetlands	0.868
Ensured whether your employees paid salary equal to or higher than normal market rates	0.884
Helped schools or community education programs with their environmental curriculum relevant to wetlands	0.861

Factor analysis is viewed as a practical tool to evaluate a measurement model that can identify possible factor structures underlying a set of interrelated observed variables or indicators. This research employed factor analysis using a Principal Component Analysis (PCA) with Eigenvalues greater than 1 for component extraction (Harman, 1976). Therefore, factor analysis increases the interpretability of the identified factor in this research (Child, 1990).

First, the preliminary analysis was conducted to examine the results of the 10 items in the dependent variable category in order to confirm roughly normal distribution and no serious high-correlation issues. Second, the results of the Kaiser-Meyer-Olkin (KMO) test of sampling adequacy and Bartlett's Test of Sphericity were 0.833 and less than 0.001 for the probabilities, respectively. According to Kaiser (1974), the data collected through this research survey was appropriate for factor analysis. Third, based on the results of factor analysis, two items had the lowest factor loadings: "Guided tours to parks, preserves, or wildlife refuges to increase their revenue" (0.45) and "Ensured whether your employees paid salary equal to or higher than normal market rates" (0.43). According to Hair et al. (1992), the factor loadings of these two variables were relatively low (close to 0.4) and might not be well presented by the specific factor. Therefore, both were not retained in the composite of the dependent variable. Additionally, a reliability analysis was utilized to check the accuracy and precision of the measurement procedure and the instrument showing relatively fewer errors (Thorndike et al., 1991). The results of the reliability analysis showed that the Cronbach's Alpha could be raised to 0.894 from 0.876 after deleting both items with the lowest factor loadings (see Table 4-2).

This Cronbach's Alpha value reveals an ideal internal consistency of the set of items in the instrument used to measure the planning and organizational approach. Also, the factor of the dependent variable retaining eight items with the extraction Eigenvalue of 4.68 can account for 58.54% of the total variance. Table 4-3 outlines the results of the factor analysis and Cronbach's Alpha.

Table 4-3 The factor loadings and Cronbach's Alpha for the factor of "composite conservation contribution"

Statement of items	Factor Loading	EV	Variance (%)	α
Gave cash donations to wetland conservation programs	0.646	4.68	58.54	0.894
Participated in events or activities for wetland conservation	0.618			
Participated in NGO's government policy lobbying related to wetlands and water resource conservation	0.818			
Participated in public hearings for zoning or land development projects to express concerns of conserving wetlands	0.831			
Gave comments to planning officials related to wetlands or water resources based on your knowledge or experience	0.864			
Gave comments to water use and recreation managers based on your knowledge or experience	0.869			
Participated in environmental inventories or monitoring relevant to wetlands	0.705			
Helped schools or community education programs with their environmental curriculum relevant to wetlands	0.724			

KMO=0.833, Bartlett's Test of Sphericity ($p<0.001$)

Each respondent's scores from each of the above eight selected indices were averaged to indicate the degree of respondents' conservation contributions according to their level of participation in planning and management processes during the past year. The derived score, ranging from 1 to 5 for the dependent variable, was used to test the conceptual framework through multiple regression analyses.

Participation in public hearings of planning processes (PPC)

The second dependent variable was the degree to which tour operators participated in public hearings regarding the land use planning process in an effort to conserve wetlands. This was one of the composite variables in the first dependent variable. The survey question with 5-scale Likert responses was formulated to ask potential respondents about how often they "participated in public hearings for zoning or land development projects to express concerns about wetland conservation" (PPC) over the past year (see Table 4-2). The scale had the anchors "always"=5 and "never"=1, and its derived score (ranging from 1 to 5 for the dependent variable) was used to test the conceptual framework through multiple regression analyses.

Participation in planning processes through knowledge contribution (PPK)

The third dependent variable was the degree to which tour operators built partnerships with planners by providing their local professional and practical knowledge during the planning process in order to conserve wetlands. This was one of the composite variables in the first dependent variable. The survey question asked potential respondents about how often they "gave comments to planning officials related to wetlands or water resources based on your knowledge or experience" (PPK) in the past year (see Table 4-2). The scores ranged from 1 to 5 and were derived from a 5-scale Likert set of responses, with the anchors "always"=5 and "never"=1. The scores were used to test the conceptual framework through multiple regression analyses.

Participation in water management through knowledge contribution (WMK)

The fourth dependent variable was the level of activeness in the past year of tour operators in working towards partnerships with water resource managers in order to conserve wetlands. This was one of the composite variables in the first dependent variable. The potential respondents were asked about the frequency of giving "comments to water use and recreation managers based on your knowledge or experience" in the past year (see Table 4-2). The scale had the anchors "always"=5 and "never"=1, and its derived score (ranging from 1 to 5 for the dependent variable) was used to test the conceptual framework through multiple regression analyses.

Participation in environmental monitoring and inventorying (EMI)

The fifth dependent variable dealt with how active tour operators were in the past year in building management partnerships through environmental monitoring and inventorying in order to conserve wetlands. Using one of the eight items in the first dependent variable, the survey question asked the potential respondents about the frequency with which they "participated in environmental inventories or monitoring" (EMI) in the past year (see Table 4-2). The scale had the anchors "always"=5 and "never"=1, and its derived score (ranging from 1 to 5) was used to test the conceptual framework through multiple regression analyses

4.2.2 Independent variables

There are four independent variables in this research, including (1) involvement in ecotourism, (2) economic benefits, (3) socio-cultural benefits, and (4) conservational

benefits for tour operators. Measurements of those variables are described below in detail, along with the results of the factor analysis.

Involvement in ecotourism

When measuring how ecotourism involvement affects pro-environmental and conservation activities, some researchers use participation in the ecotourism industry, while others consider the ratio of household income from jobs in ecotourism-related services (Stem et al., 2003a; Stronza, 2007; Zambrano et al., 2010). The literature shows that when community residents shifted their economic sources to ecotourism, they became more active in protecting the natural environment. Based on the measurements recorded in this past research, the ecotourism involvement independent variable was measured by only one survey question involving the ratio of tour-related revenue obtained from the ecotourism services. The open question asked respondents to fill in the percentage of their tour-related business revenues derived from ecotourism. The answers from respondents ranged from 0 to 100, which were utilized to test the conceptual framework through multiple regression analyses.

Economic benefits

The independent variable of the economic benefits enjoyed by tour operators' businesses and their communities was measured by a set of five items. These items were developed based on the literature (Lindberg et al., 1996; Langholz, 1999; Stronza, 2007; Stronza and Pêgas, 2008; Young, 1999; Wunder, 2000; Zambrano et al., 2010), including business revenue sufficiency and stability, marketing effectiveness, economic opportunities for other local businesses, and tax benefits to the community (see Table 4-

3). These benefits discussed in the literature revolved around the business itself and the communities to which the tour businesses belonged. Therefore, the potential respondents were asked how they perceived tourism developments in terms of benefits to their own businesses and to their communities. The responses to the five survey questions were recorded on a 1-to-5 rating scale (from "not at all" to "very well").

After collecting the survey data, factor analysis using a Principal Component Analysis (PCA) was conducted to identify the latent factor structure underlying these five observed variables. First, the five items were analyzed to confirm normal distribution by checking skewness and kurtosis, and that there were no extraordinarily high levels of correlation between these items. Second, the Kaiser-Meyer-Olkin (KMO) of sampling adequacy (0.799) and Bartlett's Test of Sphericity ($p<0.001$) revealed that the data in this research was appropriate for factor analysis (Kaiser, 1974) (see Table 4-4). Third, with the setting of the Eigenvalue greater than 1 for the extraction, the results of the factor analysis suggested that statistically, the five observed variables could be considered one component (Harman, 1976). All five items together could explain 75.15% of the variances of the dataset within the factor of economic benefits. Fourth, the reliability analysis showed that the internal consistency among these five items was considerably ideal when the Cronbach's Alpha value reached 0.917. Therefore, all five items were retained in this "economic benefits" independent variable (see Table 4-4).

Table 4-4 The factor loadings and Cronbach's alpha for the factor of "economic benefits"

Statement of Items	Factor Loading	EV	Variance (%)	α
Bringing economic opportunities to other businesses	0.854	3.76	75.15%	0.917
Improvement of local tax revenue	0.819			
Increasing business revenues	0.896			
Stable business revenues	0.908			
High potential for business marketing	0.854			

KMO=0.799, Bartlett's Test of Sphericity (p<0.001)

Interestingly, three items concerning economic benefits to the tourism businesses, including "increasing business revenues," "stable business revenues,"and "high potential for business marketing" were in the group with the highest factor loadings, based on the results of the factor analysis (see Table 4-4). Two items with relatively lower factor loadings were "bringing economic opportunities to other businesses" and "improvement of local tax revenue," both of which were part of the section dealing with economic benefits to the overall community. However, both groups of economic benefits had very high factor loadings of greater than 0.82.

Each respondent's scores from all of the above five indices were averaged to indicate how well tour operators perceived the economic benefits of nature-based tourism over the past year. A derived score ranging from 1 to 5 for this independent variable was used to test the conceptual framework through multiple regression analyses.

Socio-cultural benefits

This set of variables refers to the socio-cultural benefits of tourism activities for the communities that house these tours and the businesses which conduct them, and was used to measure the degree of those benefits for tour operators in the past year. The composite set of nine survey questions included references to cultural and heritage

preservation and revitalization, the enhancement of decision-making powers and management knowledge, and a sense of place based on past research regarding ecotourism benefits (see Table 4-5). Among these nine questions, two were developed to measure cultural benefits and three to explore the empowerment of businesses in policy and plan making, based on past literature on the topic (Jamal and Tanase, 2005; Jamal et al., 2006; Laing et al., 2009; Schyvens, 1999; Stein et al., 2003; Stonich, 2000; Stronza and Gordillo, 2008; Wunder, 2000). In addition, four items measured the benefits of enhancing a sense of place, which was identified by Schyvens (1999) as a primary socio-cultural benefit. Those items were selected and modified from items with higher factor loadings (greater than 0.5) on the scale of "Sense of Community with City" constructed by Davison and Cotter (1986). The survey used the above nine items with 5-scale Likert responses formulated to inquire how respondents perceived the socio-cultural benefits of tourism in the past year (see Table 4-5). The answers to those Likert-scaled questions were recorded on a 1-to-5 rating scale (ranging from "not at all" to "very well").

Factor analysis was employed to identify the possible factor structure underlying this set of socio-cultural benefits. A Principal Component Analysis (PCA) set with the Eigenvalues greater than 1 was used for component extraction (Harman, 1976). First, a preliminary analysis was conducted to examine results of ten items in the dependent variable to confirm roughly normal distribution and no serious high-correlation issues. Second, the results of the Kaiser-Meyer-Olkin (KMO) test of sampling adequacy and Bartlett's Test of Sphericity were respectively 0.899 and less than 0.001, for the probability. Based on Kaiser's theory (1974), the high value of KMO revealed that the

data collected through this research survey was appropriate for factor analysis. Third, according to the results of factor analysis, factor loadings of all nine items ranged from 0.565 to 0.884. Two items, including cultural preservation and revitalization of local traditions, had the lowest factor loadings, while four items about enhancing a sense of place had the average highest loadings. In addition, PCA extracted two components; one was composed of two items dealing with cultural preservation and revitalization, and the other consisted of the other seven items which constructed empowerment and a sense of place (see Table 4-5). Fourth, the results of the reliability analysis showed that the Cronbach's Alpha could be raised to 0.927 from 0.922 after deleting the second item: "revitalizing local or tribal traditions on natural resources uses." This was also the item with the lowest factor loading (0.565) (see Table 4-6).

Considering all the above nine items with factor loadings greater than 0.5 and that the Cronbach's Alpha increased only by 0.005 after deleting "revitalizing local or tribal traditions on natural resources uses," all items were retained on this scale. The Cronbach's Alpha was measured to be as high as 0.922, demonstrating the ideal internal consistency of this set of items in the instrument used to measure socio-cultural benefits. In addition, the factor of this independent variable composed of nine items had the total Eigenvalue of 6.906 and could account for 76.74% of the total variances. Table 4-5 shows the results of the factor analysis and the Cronbach's Alpha value.

Table 4-5 The factor loadings and Cronbach's Alpha for the factor of "socio-cultural benefits"

Statement of Items	Factor Loading	EV	Variance (%)	α
Preserving local cultures or heritages	0.630	6.91	76.74%	0.922
Revitalizing local or tribal traditions on natural resources uses	0.565			
Increasing decision-making power through participating in local tourism planning/policy processes	0.810			
Increasing decision-making power through participating in local environmental policy processes	0.782			
Increasing knowledge and training about managing natural resources in a sustainable manner	0.823			
A greater sense of pride when showing tour participants my natural environment	0.842			
A stronger sense of belonging to my community	0.884			
A greater appreciation for my community	0.879			
More chances to interact with my community residents, landowners, and organizations	0.867			

KMO=0.899, Bartlett's Test of Sphericity (p<0.001)

Table 4-6 Items used in "socio-cultural benefits" with the results of the reliability analysis (Cronbach's Alpha=0.922)

Statement of items	Cronbach's Alpha if item deleted
Preserving local cultures or heritages	0.922
Revitalizing local or tribal traditions on natural resource uses	0.927
Increasing decision-making power through participating in local tourism planning/policy processes	0.911
Increasing decision-making power through participating in local environmental policy processes	0.913
Increasing knowledge and training about managing natural resources in a sustainable manner	0.910
A greater sense of pride when showing tour participants my natural environment	0.910
A stronger sense of belonging to my community	0.906
A greater appreciation for my community	0.907
More chances to interact with my community residents, landowners, and organizations	0.907

Each respondent's scores from these nine indices were averaged to indicate how important tour operators considered the socio-cultural benefits of nature-based tourism in the past years. The derived score ranging from 1 to 5 for this independent variable was used to test the conceptual framework through multiple regression analyses.

Conservational benefits

This set of variables referred to the conservational benefits of tourism activities to the communities that house tour operators in the past year. Conservational benefits were measured by six survey questions. These six items were developed based on some previous studies about ecotourism and nature-based tourism (Choi and Sirakaya, 2003; Holden, 2008; Mason, 2008; Stein et al., 2003), including less pollution, wildlife protection, protection of the natural landscape and habitat, an increase in environmental awareness, long-term conservation efforts and policies, and the establishment of data-bases of natural resources (see Table 4-7). These benefits were considered to be at the contextual level or the community level. The potential respondents were asked about how they perceived the conservational benefits to their communities. The responses to these items were recorded on a 1-to-5 rating scale (from "not at all" to "very well").

Factor analysis using a Principal Component Analysis (PCA) was conducted to analyze the data collected through the survey. The purpose of the factor analysis was to identify the latent factor structure underlying the six observed variables. First, the six items were analyzed to confirm normal distribution by checking skewness and kurtosis, and to verify that there was no serious high-correlation issue. Second, the Kaiser-Meyer-Olkin (KMO) test of sampling adequacy was 0.856, and the Bartlett's Test of Sphericity

showed $p<0.001$, meaning that the data in this research was appropriate for factor analysis (Kaiser, 1974) (see Table 4-7). Third, using the setting of the Eigenvalue greater than 1 for the extraction (Harman, 1976), factor analysis produced results indicating that the six observed variables were one component. The factor loadings of the six items ranged from 0.905 to 0.656. Except for the last item, "collection of data about natural resources and human activities," had the lowest factor loading. The other five items had factor loadings greater than or closer to 0.8. All six variables were considered "high" in the factor loadings (Hair et al., 1992), referring to the notion that the correlations of those items with the factor of conservational benefits were at a high level. Fourth, all six items together could explain 66.57% of the variances of the dataset concerning the factor of conservational benefits. The reliability analysis showed that the internal consistency between the six items was ideal, with a Cronbach's Alpha value of 0.897. Although deleting the item "collection of data about natural resources and human activities" raised the Cronbach's Alpha value to 0.905 (see Table 4-8), the increase of 0.008 was very small. Therefore, all six items were retained within the factor of conservational benefits. Table 4-7 outlines the results of the factor analysis and the Cronbach's Alpha.

The rated scores of each respondent for the above six indices were averaged to indicate the degree of conservational benefits that respondents perceived such nature-based tourism brought to their community in the past year. The derived score was between 1 and 5, and was used to test the conceptual framework through multiple regression analyses.

Table 4-7 The factor loadings and Cronbach's Alpha for the factor of "conservational benefits"

Item Description	**Factor Loadings**	**EV**	**Variance (%)**	**α**
Less pollution compared to other tourism activities	0.762	3.99	66.57%	0.897
Wildlife protection	0.905			
Natural landscape or habitat protection	0.893			
Increase in local residents' environmental awareness	0.813			
Long-term conservation efforts	0.840			
Collection of data about natural resources and human activities	0.656			

KMO=0.856, Bartlett's Test of Sphericity ($p<0.001$)

4.2.3 Control variables

The research incorporates three control variables into the model analysis, including company size, environmental attitudes, and the frequency of wetland visitations of tour operators. These are considered positively contributable to tour operators' pro-environmental or conservation behaviors based on the literature. Along with the results of the factor analysis for environmental values, the measurements of the control variables are described below.

Table 4-8 Items used in "conservational benefits" with the results of reliability analysis (Cronbach's Alpha=0.897)

Statements of items	Cronbach's Alpha if item deleted
Less pollution compared to other tourism activities	0.889
Wildlife protection	0.860
Natural landscape or habitat protection	0.863
Increase in local residents' environmental awareness	0.879
Long-term conservation efforts	0.872
Collection of data about natural resources and human activities	0.905

Company size

The company size might affect an individual tour operator's conservation contributions in planning and management approaches. The number of employees was used to measure company size. Tour operators usually had medium or small-sized business, and sometimes part-time workers made up an important body of labor support during peak tour seasons in Florida. Thus, this research considered both full-time and part-time labor forces when measuring the company sizes of respondents. In the background information part of the survey, one open question was included to ask respondents about their company size based on the number of employees working part-time and full-time.

After the survey data was collected, the preliminary analysis was processed in order to check the correlation between the dependent variable and different types of calculations in company size. The first type was the sum of the numbers of part-time and full-time workers while the second type summed up the number of full-time workers and half of the number of part-time workers. The rationale of the second computation was based on the amount of working hours, and part-time workers were generally assumed to contribute, on average, 50% less labor than full-time workers in terms of working hours. The correlation coefficient of the first calculation (0.144) between the company size and the dependent variable was slightly smaller than that of the second calculation (0.160). Therefore, the company sizes of respondents were measured by adding the number of full-time employees with the weighted number of part-time employees by 0.5. The answers of respondents to the questions about full-time and part-

time employees ranged from 0 to 100 and from 0 to 30, respectively. Therefore, the company sizes calculated by the above equation fell between 0.5 and 100.

Environmental attitudes

The dependent variable of the environmental attitudes recognized by tour operators referred to a general environmental awareness of the tour operators, and was operationalized by a set of five items (Table 4-9). These five items were selected and modified from the New Environmental Paradigm (NEP) scale that is composed of 12 items and was originally developed by Dunlap and Van Liere (1978). The five items were found to have high factor loadings in the research of Albrecht et al. (1982) who applied the NEP to Iowa's farm and urban samples. This research mainly measured the dimensions of "balance of nature" and "limits to growth" in the NEP. The responses to the five questions were recorded on a Likert-type scale, with the anchors "strongly agree"=5 and "strongly disagree"=1.

Factor analysis was processed to analyze the data collected by the survey. First, the five items were analyzed to confirm that there was no serious high-correlation issue and that there was a normal distribution. Second, the Kaiser-Meyer-Olkin (KMO) of sampling adequacy and Bartlett's Test of Sphericity were measured at 0.819 and $p<0.001$, respectively. This information revealed that the data in this research was appropriate for factor analysis (Kaiser, 1974) (see Table 4-9). Third, using the setting of an Eigenvalue greater than 1 for the extraction (Harman, 1976), the factor analysis suggested that the five observed variables should be considered one component. The factor loadings of these items ranged from 0.614 to 0.885. Most items had factor

loadings greater than 0.8, except for the first which dealt with the dimension of limits to growth (and had the lowest factor loading of 0.614). All five variables were considered either "high" or "moderate" with their factor loadings (Hair et al., 1992), meaning that the correlations of those items with the factor of environmental values were at a moderate to high level. Fourth, all five items together could explain the 66.72% variance of the dataset in the factor of environmental attitude. The reliability analysis showed that the internal consistency between the five items was ideal with the Cronbach's Alpha value of 0.857. Despite the fact that removing the item "our earth is approaching the limit of the number of people it can support" raised the Cronbach's Alpha value to 0.883 (see Table 4-10), the removal makes it so that the measurement is concentrated on a single dimension of the NEP scale. Therefore, all five items were retained in the factor of "environmental attitudes." Table 4-9 abstracts the results of the factor analysis and the Cronbach's Alpha.

Table 4-9 The factor loadings and Cronbach's Alpha for the factor of "environmental attitudes"

Item Description	**Factor Loadings**	**EV**	**Variance (%)**	**α**
Our earth is approaching the limit of the number of people it can support	0.614	3.29	65.72%	0.857
When we interfere with nature, it often produces disastrous consequences	0.885			
We must live in harmony with nature in order to survive	0.801			
We are severely abusing the environment	0.858			
The balance of nature is very delicate and easily upset	0.864			

KMO=0.819, Bartlett's Test of Sphericity ($p<0.001$)

Each respondent's scores from the above five indices were averaged to indicate the degree of environmental attitudes of each tour operator. The derived scores of the

environmental attitudes ranging from 1 to 5 were incorporated in the regression analysis as the control factor.

Frequency of wetland visitation

The frequency of wetland visitation could illustrate tour operators' reliance on and acquaintance with wetland ecosystems, which would directly or indirectly affect his or her applications of knowledge and resources when engaging in pro-environmental, wetland conservation-related behavior. On the first question of the survey, respondents were asked for the frequency of their wetland tours, and were offered six scales of response: 1 as "never"; 2 as "very rarely, 1-2 times per month"; 3 as "rarely, 1 day per week"; 4 as "occasionally, 2-3 days per week"; 5 as "very frequently, 4-5 days per week"; and 6 as "almost daily, 6-7 days per week."

Table 4-10 Items used in "environmental attitudes" with the results of the reliability analysis (Cronbach's Alpha=0.857)

Statements of items	Cronbach's Alpha if item deleted
Our earth is approaching the limit of the number of people it can support	0.883
When we interfere with nature, it often produces disastrous consequences	0.795
We must live in harmony with nature in order to survive	0.836
We are severely abusing the environment	0.804
The balance of nature is very delicate and easily upset	0.810

4.3 Multiple regression models and diagnosis

4.3.1 Regression model

Data analysis of this study included two major stages, descriptive statistics and regression analyses, along with a diagnosis process used to ascertain whether or not the regression assumptions were satisfied. At the first stage, this research processed descriptive statistics mainly to assess the conservation contributions of tour operators. In addition to the composite set of conservation contributions of tour operators, each specific activity in the composite contribution was compared to show how active-involved the tour operators were in the different wetland conservation practices. Ecotourism involvement of, and economic, socio-cultural, and conservational benefits to tour operators were all evaluated. The figures concerning the frequency of wetland visits, company size, and environmental attitudes were also illustrated.

At the second stage, this research developed a number of multiple linear regression (MLR) models to incorporate explanatory variables and to examine the causal association between independent and dependent variables. There were five MLR models built to assess the effects of independent variables on five dependent variables. In each of five MLR models, six sequential and nested regressions examined the effects of each individual independent variable on dependent variables, while holding all control variables constant. The Ordinary Least Squares (OLS) models used to generate statistical results are shown below.

The composite conservation contribution

$$CC=\beta_0+\beta_1X_1 \qquad +\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$CC=\beta_0+\beta_1X_1+\beta_2X_2 \quad +\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$CC=\beta_0+\beta_1X_1 \quad +\beta_3X_3 \quad +\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$CC=\beta_0+\beta_1X_1 \quad +\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$CC=\beta_0+\beta_1X_1 \quad +\beta_3X_3 \ +\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$CC=\beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

Participation in public hearings of planning processes

$$PPC=\beta_0+\beta_1X_1 \quad +\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$PPC =\beta_0+\beta_1X_1+\beta_2X_2 \quad +\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$PPC =\beta_0+\beta_1X_1 \quad +\beta_3X_3 \quad +\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$PPC =\beta_0+\beta_1X_1 \quad +\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$PPC = \beta_0+\beta_1X_1 \quad +\beta_3X_3 \ +\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$PPC=\beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

Participation in planning processes through knowledge contribution

$$PPK=\beta_0+\beta_1X_1 \quad +\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$PPK =\beta_0+\beta_1X_1+\beta_2X_2 \quad +\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$PPK =\beta_0+\beta_1X_1 \quad +\beta_3X_3 \quad +\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$PPK =\beta_0+\beta_1X_1 \quad +\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$PPK=\beta_0+\beta_1X_1 \quad +\beta_3X_3+\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$PPK=\beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

Participation in water management through knowledge contribution

$$WMK=\beta_0+\beta_1X_1 \quad +\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$WMK =\beta_0+\beta_1X_1+\beta_2X_2 \quad +\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$WMK =\beta_0+\beta_1X_1 \quad +\beta_3X_3 \quad +\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$WMK =\beta_0+\beta_1X_1 \quad +\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$WMK=\beta_0+\beta_1X_1 \quad +\beta_3X_3+\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$WMK=\beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

Participation in environmental monitoring and inventorying

$$Ln\ EMI=\beta_0+\beta_1X_1 \qquad +\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$Ln\ EMI =\beta_0+\beta_1X_1+\beta_2X_2 \qquad +\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$Ln\ EMI =\beta_0+\beta_1X_1 \quad +\beta_3X_3 \qquad +\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$Ln\ EMI =\beta_0+\beta_1X_1 \qquad +\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$Ln\ EMI =\beta_0+\beta_1X_1 \quad +\beta_3X_3 \quad +\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

$$Ln\ EMI =\beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3 \ +\beta_4X_4 +\beta_5X_5+\beta_6X_6+\beta_7X_7+e$$

where, CC= the composite of conservation contribution

PPC= "participation in public hearings of planning processes"

PPK="participation in planning processes through knowledge contribution"

WMK="participation in water management through knowledge contribution"

Ln EMI= natural log of "participation in environmental monitoring and inventory"

β0 = intercept or constant

βi= coefficient of each independent variable

X1= involvement in ecotourism

X2= economic benefits (independent variable)

X3= socio-cultural benefits (independent variable)

X4= conservational benefits (independent variable)

X5= company size (c*ontrol variable)*

X6= environmental attitudes (c*ontrol variable)*

X7= frequency of wetland visits (c*ontrol variable)*

e = error term

4.3.2 Regression assumption and diagnostics

There are a series of assumptions in linear regression analysis, and a failure to meet these assumptions will lead to biased estimates (i.e., "BLUE," best linear unbiased estimates). That is, the estimates based on the sample data collected by this research could accurately represent the relationships in the real world. Table 4-11 outlines the assumptions of the regression analysis and the consequences if those assumptions are violated (Hamilton, 1992). It is vitally important that researchers process regression diagnose to check whether or not regression assumptions are met in order to get the efficient and unbiased estimators.

Table 4-11 OLS assumptions and statistical consequences if violated

Assumption	Biased b	Biased SE	Invalid t & F tests
1a:Nonlinear relationship	yes	yes	yes
1b:Omit Relevant X	yes	yes	yes
1c:Include Irrelevant X	no	no	no
2a:X measured w/ error	yes	yes	yes
2c:Multi-collinearity	no	no	no
2e:Hetero-scedasticity	no	yes	yes
2f:Auto-correlation	no	yes	yes
2g:X correlated with ε	yes	yes	yes
2h:ε distribution not normal	no	no	yes

This study completed several diagnoses to check the important regression assumptions. First, the test for heteroscedasticity was used to check the assumption of constant variance of the error terms. It examined whether the squared standardized residuals had a linear relationship with the predicted values. In addition, the test was a useful tool for checking on model specifications (Hamilton, 1998). This research also diagnosed all predictors for this assumption of homoscedasticity by viewing the plots of the residuals versus all predictor variables, and by examining whether or not there was any pattern. If the pattern showed an increase or decrease in the residuals, it indicated a

heteroscedasticity problem. Second, in order to check the regression assumption that the error term was normally distributed, this study utilized the plot of residual versus quantile, the plot of residual versus leverage for identifying outliers, and several tests for normal distribution provided by the SAS Enterprise Guide 4.3. In addition, Hamilton (1992) suggested that the bivariate analysis could be used as the basis for detecting the normality problem in the multivariate analysis, and that power transformation could pull in the outliers and reduce any skew. This study thus conducted the bivariate analysis for all variables in order to examine the normal distribution of the dataset. Furthermore, it assessed the changes in the regression results by deleting the problematic observations and transforming the dependent and independent variables. Dealing with the outliers, model diagnostics tools (e.g. leverage scores, studentized residuals, Cook's D scores) were also used to detect the potential influence of extreme observations. Third, for the assumption of no multicollinearity, this research examined the correlation table, the Variance Inflation Factor (VIF) and tolerance values and to ensure that there was no serious multicollinearity problem. For instance, the independent variables, including socio-cultural benefits, economic benefits, and conservational benefits were strongly correlated with each other with high correlation coefficients close to 0.7. The VIF and tolerance values in the results of the regression analyses were further checked. In conclusion, all regression models of the original or transformed forms of the dependent variable in this research passed the above diagnoses and did not have any serious problems within heteroscedasticity, specification, non-normality, and multicollinearity.

4.4 Validity threats

According to Acock (2008), "the gist of validity is simply that a measure needs to measure what you are trying to measure and not something else." (p. 297). To some extent measurement validity issues occur in most research. In this study some issues could be caused by the measurement instrument used in the web-based survey, especially when all data for analysis was collected from that survey. It is necessary to ascertain the validity of the survey in order to generate accurate information. Furthermore, the key to resolving the validity issue in measurement is grounding the research concept in both theory and experience. In other words, the measurement tool or survey questions should reflect the underlying theoretical concepts (i.e., the correspondence between the measurement and the theoretical concept). The following paragraphs describe the validity threats in this research, including statistical conclusion validity, internal validity, construct validity, and external validity.

4.4.1 Statistical conclusion validity

Statistical conclusion validity indicates an accurate relationship between the dependent variables and independent variables assessed in the research. Generally, it concerns the statistical power that is significantly influenced by the sample size in the analysis. When applying quantitative data analysis, a larger sample size usually helps to better represent the population. There is no standard for "large," but the researcher needs enough completed samples to eliminate subject variance (Fink, 2009). There were 97 responses collected from tour operators through the survey, but only 80 with completed data were included in the multiple regression analysis. The analysis of this study was

limited by the relatively small sample size and influenced by some existing outliers likely to generate unbiased results.

In order to avoid issues of statistical conclusion validity, this research employed several methods to obtain a larger sample size during data collection and to increase the statistical power for the sampling data of the relatively smaller size. First, this research collected data from the tour industry that had at times declined to provide business information or was reluctant to participate in a survey especially during peak seasons. This research incorporated some key strategies highlighted by Dillman's (2007) Social Exchange Theory to encourage the return rate of the web-based survey, including providing rewards and establishing trust through the cover letter and reducing social costs through well-constructed questions. Second, establishing regression models of BLUE, this research cautiously processed the diagnosis to avoid issues likely caused by the relatively smaller sample size. In addition, considering the restrictions on the number of variables included in the regression models due to the smaller sample size, this study constructed the composite dependent and independent variables and was still able to assess the relationship between them effectively. Therefore, the perceived socio-cultural, conservational, and economic benefits can be compared for their effects on the dependent variables, the composite conservation contributions, and the statistical significances of the effects can be detected through the regression analyses.

4.4.2 Internal validity

Inferences concerning internal validity in a particular piece of research can always be obtained by properly measuring the causal relationship between independent

variables and dependent variables. The properness of measurement relies considerably on quality research designs, such as a reliable measurement instrument, a random selection of participants, and a reliable manipulation process. For this study, the threats to internal validity could be generated by the failures in processing random sampling, designing the reliable instrument, controlling the temporal effects, detecting the spurious relationships, excluding the influence of contextual factors, and ruling out the influence of extreme outliers.

However, this research incorporated some strategies suggested by the literature to combat potential internal validity issues. First, the measurement instrument contained multiple Liker-style items, and the various reliabilities were examined by analyzing their Cronbach's Alpha values, considered the most effective mode of assessment by Acock (2008). All Cronbach's Alpha values for the scales measuring dependent and independent variables were greater than 0.8, indicating good reliability (see also Section 4.2). Second, the longitude of the survey lasted less than two months, and the instrument investigated respondents' behaviors specifically in the past year, which could avoid any bias caused by history and time factors. Third, the regression diagnosis process was used to detect the problems caused by the outliers, and some remedies addressed by the literature were applied in order to achieve the unbiased estimates. Fourth, some control variables suggested by the literature were properly included in the multiple regression models in order to exclude the likelihood of spurious relationships occurring. However, inclusion of a wide range of contextual factors is a challenge for most social science research. The same is true for this research; policy and regulation factors, social and

cultural contexts, specific geographical circumstances, and the like could not be considered in the measurements. Fifth, random sampling was not feasible in this research because the sample size needed to be large enough to have statistic power when the population size of 318 tour operators was relatively limited. This research, applying the census study, might not avoid the potential issues involving bias in collected survey data.

4.4.3 Construct validity

Construct validity concerns the establishment of a hypothetical model to describe the constructs being assessed and postulate their relationships. Construct validity assess whether the theoretical hypothesized construct is an adequate model, and whether the measurement instrument can correspond to the construct. Regarding the scales built by this research, many strategies are suggested to analyze construct validity, such as internal consistency and correlation analyses.

This research applied both reliability analysis and factor analysis to ensure construct validity. First, all Cronbach's Alpha values of the scales built in this research to measure dependent, independent, and control variables reached 0.8 or higher, representing valid scales. Second, without many 'ready-to-use' scales provided in the literature for the dependent and independent variables, the research-constructed items were called upon to highlight the relevant theoretical and empirical studies. The factor analysis was used to check the correlation pattern for construct validity. The results of the factor analysis were used to confirm the scales developed for dependent,

independent, and control variables in this research measuring one specific concept or dimension.

4.4.4 External validity

External validity refers to the generalization of the research findings outside of the study area. Generally, data collected from a relatively small group of people in a specific geographical area, and from volunteers with specific features or during a specific period of time, could inherently lead to external validity issues. External validity is a potential threat to this research in that it assesses the causal relationships between dependent and independent variables based on human participants' self-claimed and cross-sectional data. Many tour operators' individual and contextual factors might limit the generalization of findings in this research obtained from tour operators in Florida.

CHAPTER V

EXPLORING BUSINESS CHARACTERS, TOURISM BENEFITS, AND THE CONSERVATION CONTRIBUTIONS OF TOUR OPERATORS

This chapter includes four sections of descriptive analysis of survey responses. The first section describes the business and environmental characteristics of the respondents, including the company size (i.e., the number of full-time and part-time employees), the educational backgrounds of tour guides, the frequency of visits to the wetlands, and the environmental attitudes held by tour business managers. The second section outlines the self-checked dimensions of ecotourism and the self-reported level of ecotourism involvement of the respondents. The third section presents the self-rated tourism benefits in economic, socio-cultural, and conservational aspects. The fourth section includes the conservation contributions of tour operators in protecting wetland ecosystems.

5.1. Business and environmental characteristics of respondents

5.1.1 Business characteristics

The business characteristics of respondents are shown in Table 5-1. The tour operators who responded to the survey generally operated relatively smaller businesses with smaller numbers of full-time and part-time employees. The average company size was about 10 employees (mean 10.38), and more than 50% of businesses employed less than six workers, including both full time and part time. The average number of full-time

employees was about six people (mean 6.6). Over 60% of businesses hired less than four full-time employees. In addition, it seems that part-time workers comprise an important labor source for Florida tour operators; as high as 76% of responding tour operators hired part-time workers. The average number of part-time workers employed by respondents was approximately four (mean 3.8). Interestingly, there were three responding operators (3.8%) that were fully operated by part-time workers, while 20 respondents (24.7%) stated that they had no part-time employees at all.

Higher education was emphasized by tour operators who responded to the survey. On average, the education level of the tour guides interviewed was between having some college credit and possessing a bachelor's degree (mean 4.3). While 42% of respondents (34) reported that the average education level of their tour guides was that they had completed some college credit, another 42% of respondents (34) reported tour guides with education levels above a bachelor's degree. In addition, one tour operator had tours guided by the holder of a doctoral degree. There were only two operators (2.4%) who stated that the average schooling level of their tour guides was lower than that of a high school graduate.

Table 5-1 Business characteristics of respondents

Variable	Frequency	Percentage	Variable	Frequency	Percentage
Company Size (N=81)			**Education of tour guides** (N=81)		
The number of total employees			1 (9th, 10th, or 11th grade)	1	1.2%
1-3	27	33.3%	2 (12th grade, no diploma)	1	1.2%
4-6	21	15.9%	3 (High school graduate)	11	13.6%
7-10	17	21.0%	4 (Some college credit)	34	42.0%
11-20	7	8.7%	5 (Bachelor's degree)	26	32.1%
21-30	4	4.9%	6 (Master's degree)	7	8.7%
31-50	3	3.7%	7 (Professional degree)	0	0.0%
51-100	2	2.5%	8 (Doctoral degree)	1	1.2%
Missing	16		Missing:16		
Mean: 10.4			Mean :4.3		
S.D: 16.4			Median: 4		
Median : 6			**Environmental degree of tour guides**(N=78)		
The number of full-time employees			0%	40	51.3%
0	3	3.7%	1-20%	10	12.8%
1-3	46	56.8%	21-40%	4	5.1%
4-6	18	22.2%	41-60%	12	15.4%
7-10	6	7.4%	61-80%	5	6.4%
11-20	3	3.7%	81-100%	7	9.0%
21-40	3	3.7%	Missing:19		
41-100	2	2.5%	Min.:0		
Missing	16		Max:100		
Mean:6.6			Mean:24.79 Median:0		
SD:13.7			SD:33.83		
Median :3					
The number of part-time employees			**Visit frequency (N=96)**		
0	20	24.7%			
1-3	33	39.5%			
4-6	18	21.2%	1 (never)	21	21.88%
7-10	5	6.2%	2 (very rarely,1-2 times/month)	10	10.42%
11-20	3	3.7%	3 (rarely,1 day/week)	5	5.21%
21-30	3	3.7%	4 (occasionally, 2-3 days/week)	17	17.71%
Missing: 16			5 (very frequently,4-5 days/week)	11	11.46%
Mean:3.8 Median:2			6 (almost daily, 6-7 days/week)	32	33.33%
S.D.: 5.4			Missing:1 Mean: 3.86 Median: 4 SD: 1.98		

However, employing tour guides with a high level of education in environmentally-related majors was not really stressed as practically important. When asked for the average percentage of tour guides who had biological, geographical, or environmentally-related degrees, about 51% of tour operators (40) reported zero, and about 13% (10) stated less than 20%. Around 9% of tour operators (7) claimed that they employed more than 81% of tour guides holding environmentally-related degrees. On average, the percentage of tour guides receiving degrees from environmentally-related programs was around 25% (mean 24.79).

Wetlands were identified as the tourism "hot spots" for the respondents, which reflected the natural geographical conditions and popular tourism types most prominent in Florida. There were 33% (33) of the respondents visited wetland areas every day. Approximately 22% (21) of tour operators responding to the survey never guided their tours to wetlands areas, while 58% of tour operators (65) held tours in wetlands areas at least once a week. The high frequency of wetland visitation indicates the importance of wetland conservation indicates the economic and social importance of wetland conservation for tourism development in Florida.

5.1.2 Environmental attitudes

When assessed by the NEP scale for their environmental attitudes, respondents of this research were concerned with the negative environmental impacts caused by humans, and were very positively inclined to protect the natural environment. On average, more than 80% of respondents' attitudes (80) fell between "agree" and "strongly agree" regarding their environmental concerns, while only about 5% of

respondents (4) strongly disagreed or disagreed about those items. The breakdown analysis for each concern involving environmental attitudes is described in the following paragraphs.

Table 5-2 Environmental attitudes of respondents

Environmental attitudes	N	Mean	SD.	1	2	3	4	5
Approaching the limit	83	3.73	1.14	2.4 %	15.7 %	19.3 %	31.3 %	31.3 %
Interfering with nature	83	4.20	1.05	2.4 %	7.2 %	9.7 %	28.9 %	51.8 %
In harmony with nature	83	4.59	.75	1.2 %	2.4 %	1.2 %	26.5 %	68.7 %
Abusing the environment	83	4.18	1.07	2.4 %	7.2 %	13.3 %	24.1 %	53.0 %
Delicate balance of nature	83	4.30	1.00	3.6 %	3.6 %	6.0 %	32.5 %	54.2 %
Total*	83	4.20	.80	1.2 %	3.6 %	10.8 %	41.0 %	43.4 %

Note: "1" represents strongly disagree, "2" represents disagree, "3" represents neither," 4" represents agree, and "5" represents Strongly agree. * For the average, "1" denotes 1~1.5, "2" denotes 1.6~2.5, "3" denotes 2.6~3.5, "4" denotes 3.6~4.5, and "5" denotes 4.6~5

Except for "approaching the limit," four statements about the environmental crisis or general environmental awareness gained the support of more than 77% of respondents. An approximately 63% of respondents (52) agreed or strongly agreed with the statement that "our earth is approaching the limit of the number of people it can support," while 18% of tour operators (15) disagreed with this statement. Next to "approaching the limit" was "interfering with nature," a claim to which about 10% of respondents (8) either disagreed or strongly disagreed. Almost 81% of respondents (67) agreed or strongly agreed with the statement that "when we interfere with nature, it often produces disastrous consequences." Similarly, eight respondents (about 10%) were not supportive of the statement that "we are severely abusing the environment," while 64 (about 77%) agreed or strongly agreed with this viewpoint. On the other hand, only six

respondents (about 7%) objected to the statement "the balance of nature is very delicate and easily upset," while as high as 87% (72) of tour operators favored this statement. Finally, 95% of those (79) who responded to the questionnaire supported the concept that "we must live in harmony with nature in order to survive," while only about 4% (3) did not. Only one respondent (about 1%) responded that they were uncertain.

5.2 Ecotourism familiarity and involvement

5.2.1 Familiarity with ecotourism principles

When asked to identify ecotourism principles from seven items suggested by the literature, respondents showed a high familiarity with the major tenants of ecotourism. There were two principles, "responsible travel that has low impact on the natural environment" and "provides educational opportunities for tourists and local residents," that were recognized by more than 90% of the respondents. It is notable that around 98% (80 out of 82) of the respondents believed that ecotourism should focus on responsible travel with low impacts on nature, while only two respondents did not identify this principle as an element of ecotourism. Education was the second principle emphasized by responding tour operators, with about 94% (77 out of 82) checking this principle as important (only five did not stress it as important).

In addition, there were three principles, "benefits local environmental conservation," "travel in natural areas," and "provides job opportunities and income to local residents," that were identified by more than 80% of respondents as ecotourism elements. Interestingly, tour businesses in Florida seemed to highlight their

responsibility for conserving nature more than the job or economic opportunities the businesses provided. There were 72 respondents (about 88%) who identified "benefits local environmental conservation" as an ecotourism element, while a slightly lower number of respondents (66 or 80%) stressed "job opportunities and income" as an ecotourism element. There were 68 respondents (about 83%) favored "travels in natural areas" as an ecotourism principle, which might be due to the growth in popularity of some semi-natural areas (e.g., private natural parks or farms) as ecotourism destinations in Florida. The social and cultural dimensions of ecotourism principles attracted less attention from respondents than did the economic and environmental dimensions ecotourism posed for Florida. Around 74% (61) and around 70% (57) of respondents recognized "attention to local culture preservation" and "enhances community participation and cohesion" as ecotourism elements, respectively. Table 5-3 illustrates the principles and the rankings of those principles as they were recognized by the respondents to this research survey.

In addition, it is interesting that 83 respondents' definitions of ecotourism are comprehensive and broad, which is consistent with the elements underscored by researchers over the past two decades. More than half of the respondents (44 or 53%) believed that ecotourism should include all seven principles listed in the survey. Another 15 respondents (about 18%) identified six elements as important to their definitions of ecotourism (see Table 5-4). However, all of the 59 respondents who identified at least six principles agree that ecotourism shall include both "providing educational opportunities" and "benefiting local environmental conservation." Among these 59

respondents, only 1 respondent did not consider "produce low impacts on natural environment" as integrated into the definition of ecotourism.

Table 5-3 Ecotourism principles identified by respondents

Ecotourism elements	N	Mean	SD	Rank	Yes (1)	No (0)
Travel in natural areas	82	.83	.380	4	68	14
Produce low impacts on natural environment	82	.98	.155	1	80	2
Provides educational opportunities	82	.94	.241	2	77	5
Provides jobs and income to local residents	82	.80	.399	5	66	16
Benefits local environmental conservation	82	.88	.329	3	72	10
Attention to local culture preservation	82	.75	.439	6	61	21
Enhances community participation and cohesion	82	.70	.463	7	57	25

There were 13 respondents (about 16%) who selected four or five principles as essential to their ecotourism definition (see Table 5-4). "Produce low impacts on natural environment" was the only principle agreed upon by all of them. In addition, "provide educational opportunities," "travel in natural areas," and "benefit local environmental conservation" were relatively important principles for them. Finally, only 9 respondents (about 11%) believed that ecotourism involved fewer than four principles listed by the survey. "Produce low impacts on natural environment" and "provide educational opportunities" were still the most recognized principles for those 9 respondents.

The results above illustrate that tour operators who responded to the survey in Florida were primarily in agreement regarding the importance of minimizing the impact on the environment, providing environmental education opportunities, and increasing environmental conservation, even though they had some slight differences in opinion

concerning the principles of ecotourism. Table 5-4 shows the composition of the definition of ecotourism as comprised by the responses of all respondents.

5.2.2 Ecotourism involvement and experience

When requested to self-rate their tour services based on the principles they identified above as essential to ecotourism, the respondents were inclined to have high levels of self-reported involvement in the listed aspects of ecotourism. More than 84% of respondents stated that they categorized more than 60% of their tours as ecotours. Among those respondents, 46 (approximately 56%) circled the scale 5, meaning that at least 81% of their tours were categorized as ecotours. On the other hand, only 4 respondents (approximately 5%) reported that ecotourism made up 20% or less of their total tour services.

Similarly, when asked to fill in the percentage of tour-related revenues obtained from ecotourism, respondents were more likely to claim that higher percentages of the revenues they derived were from ecotourism. On average, respondents stated that more than 68% (mean 68.27) of their tour revenues came from ecotourism. More than half of the respondents indicated that ecotourism revenues comprised over 87% (median 87.5) of their total tour-related revenue. Interestingly, there were 7 respondents (8.7%) who did not report any revenue from ecotourism services. In contrast, 36 respondents (about 44%) believed that their tour revenues were all from ecotourism. In addition, approximately 25% of respondents (20) claimed that their ecotourism revenues comprised more than 50% of their overall tourism revenue, while over 22% of respondents (18) stated that the proportion of their revenue from ecotourism fell between

Table 5-4 The composition of individual respondents' definition of ecotourism (N=83)

The principle of ecotourism / The number of principles identified by respondents	1: Travel in natural area	2: Produce low impacts on natural environment	3: Provide educational opportunities	4: Provide jobs and income to local residents	5: Benefit local environmental conservation	6: Attention to local cultural preservation	7: Enhance community participation and cohesion	The number of respondents
1	*							1
		*						1
2			*		*			1
3		*	*			*		2
		*	*		*			2
		*	*	*				1
		*			*	*		1
4	*	*	*	*				2
		*	*		*	*		2
	*	*	*		*			2
		*	*	*	*			1
5	*	*	*	*	*			3
	*	*	*	*			*	2
	*	*		*	*	*		1
6	*	*	*	*	*	*		4
	*	*	*	*	*		*	4
	*	*	*		*	*	*	3
		*	*	*	*	*	*	3
	*		*	*	*	*	*	1
7	*	*	*	*	*	*	*	44
The number of responders favoring the principle	68	80	77	66	72	61	57	**83**

1% and 50%. Table 5-5 lists the descriptive analysis of the ecotourism involvement of respondents by tour number and tour revenue.

Table 5-5 Ecotourism involvement of respondents

Variable	Frequency	Percentage	Variable	Frequency	Percentage
The percentage of ecotourism services (N=82)			The proportion of ecotourism revenues (N=81)		
1 (<= 20%)	4	4.9%	0%	7	8.7%
2 (21-40%)	5	6.1%	1-25%	14	17.3%
3 (41-60%)	4	4.9%	26-50%	4	5.0%
4 (61-80%)	23	28.0%	51-75%	7	8.6%
5 (81-100%)	46	56.1%	76-99%	13	16.0%
Missing: 15			100%	36	44.4%
Mean: 4.24			Missing: 16		
Median: 5			Mean: 67.27		
SD: 1.12			Median: 87.5		
The number of years in ecotourism (N=82)			SD: 38.40		
0	7	8.5%			
1-5	12	14.6%			
6-10	20	24.4%			
11-15	18	22.0%			
16-20	12	14.6%			
21-30	9	11.0%			
31-60	4	4.9%			
Missing:15					
Mean:13.11					
Median:11					
SD:10.60					

On average, respondents reported a relatively long ecotourism experience of more than 10 years (see Table 5-5), which was quite consistent with the history of the ecotourism policy in place in Florida, first announced in 1997. The number of years that the respondents were involved in ecotourism was, on average 13.11 (mean 13.11), and more than 50% of respondents had had some experience with ecotourism for over 11 years (median 11). The greatest percentage of tour operators (20 or 24.4%) had ecotourism experience ranging between six and ten years; the next group of tour

operators (18 or 22%) had experience ranging between eleven and fifteen years. Meanwhile, there were 7 respondents who defined themselves as non-ecotourism operators, without ecotourism experience and with no revenue from ecotourism.

5.3 Tourism benefits to respondents

5.3.1 Economic benefits

On the average, respondents to the survey considered that nature-based tourism they were engaged in could offer a medium to high level of economic benefit to their community and local business. The mean economic benefit reported by all respondents was 3.55 (see Table 5-6), and over 50% of respondents rated the benefits approximately a 4 (median 3.8) in the 5-scale Likert. 37% (32) and 21% (18) of respondents rated the economic benefits of tourism with which they were involved to fall within 4 and 5, respectively. In contrast, only about 16% of respondents (14) considered the economic benefits as being below the median level (below 3).

Generally, respondents recognized that the economic benefits to their respective communities (e.g., bringing economic opportunities and tax revenue increases) were greater than the benefits to individual businesses (e.g., providing greater business revenue, more stable revenue, and higher visibility marketing). The benefits of "bringing economic opportunities to other businesses" and "improvement of local tax revenue" had relatively higher mean scores than the other three items relevant to respondents' businesses. Also, the highest percentage of respondents (about 40%) rated "bring

economic opportunities to other businesses" as a 5, while only 23% of respondents rated the benefit of providing "stable business revenues" at the same level.

Table 5-6 Economic benefits to respondents

Economic benefits	N	Mean	SD.	1	2	3	4	5
Bringing economic opportunities to other businesses	90	3.76	1.27	6.7 %	11.1 %	22.2 %	20.0 %	40.0 %
Improvement of local tax revenues	90	3.48	1.30	10.0 %	12.2 %	26.7 %	22.2 %	28.9 %
Increasing business revenues	90	3.60	1.25	8.1 %	11.6 %	20.9 %	30.2 %	29.1 %
Stable business revenues	86	3.37	1.30	11.6 %	14.0 %	23.3 %	27.9 %	23.3 %
High potential for business marketing	86	3.50	1.26	9.3 %	14.0 %	18.6 %	33.7 %	24.4 %
Total *	86	3.56	1.10	7.0 %	9.3 %	25.6 %	37.2 %	20.9 %

Note: 1 represents "not at all" and 5 represents "very well" on the 1-to-5 rating scale
* For the average, "1" denotes 1~1.5, "2" denotes 1.6~2.5, "3" denotes 2.6~3.5, "4" denotes 3.6~4.5, and "5" denotes 4.6~5

Among the five economic benefits, "bringing economic opportunities to other businesses" had the greatest mean score (3.76), as well as the greatest share of respondents (approximately 60% or 54) who considered that it should be scored at higher levels (rated it as a 4 or 5); the lowest share of respondents (approximately 7% or 6) rated it as a 1 (no benefit at all). The next highest was the benefit of "increasing business revenues" of tour operators (mean 3.60), with around 59% of respondents (51) rating it at higher levels, while nearly 8% of respondents (7) did not consider it a benefit at all (they rated it a 1). Providing "high potential for business marketing" was identified by approximately 58% of respondents (50) as a considerable benefit (ratings 4 and 5), while around 9% of respondents (8) did not perceive this benefit. However, the degree to which nature-based tourism was considered beneficial to increasing local tax revenue

was relatively low (mean 3.48) among the five items concerning economic benefits, with the lowest percentage (approximately 51% or 46) of respondents rating it as a 4 or 5. Interestingly, nature-based tours seemed not to be valued highly in terms of bringing in stable business revenues (mean 3.37) in Florida, a perception that might be caused by the apparent discrepancy between tourist numbers during peak and off seasons. This response had the highest percentage of respondents (approximately 12% or 10) who rated it a 1, while there was a slightly lower percentage of respondents (approximately 51% or 44) who supported it as considerably beneficial. Table 5-6 outlines the details about the percentages of the respondents in the five rating scales for all five of the economic benefit items.

5.3.2 Socio-cultural benefits

On average, respondents considered the socio-cultural benefits of nature-based tourism for their businesses and communities to be at a medium level (mean 3.35), and at a relatively lower level than they perceived the possible economic benefits to be (see Table 5-7). Over 50% of respondents agreed that the socio-cultural benefits should be rated approximately a 4 (median 3.56). There were about 41% (30) and 12% (7) of respondents who rated the socio-cultural benefits as a 4 and 5, respectively. However, only 17 respondents (21%) rated these benefits as a 1 or 2 (i.e., as having no benefit and a low benefit).

For cultural benefits, respondents rated the benefit of "preserving local cultures or heritages" (mean 3.21) as much greater than "revitalizing local or tribal traditions on natural resources" (mean 2.63). About 26% of respondents (23) rated the former benefit

as very high (the score of 5), while only approximately 14% of respondents gave the same rating to the latter. Additionally, there were around 16% of respondents (14) who did not see tourism as an agent for "preserving local cultures or heritages" (the score of 1), and nearly 29% of respondents (26) shared the same judgment for "revitalizing local or tribal traditions on natural resources".

Concerning empowerment in areas involved in natural resource and environmental management, respondents emphasized the benefits of enhancing management knowledge rather than participation in the policy-making processes. Respondents believed that the benefits they gained in "increasing knowledge and training about managing natural resources in a sustainable manner" were, on average, greater than the median level (mean 3.27). Nearly half of the respondents (47% or 40) considered it a relatively high benefit (ratings 4 and 5), while around 26% of respondents (22) rated it as a 1 or 2. Furthermore, the tour operators generally thought the benefits relevant to decision making, "increasing decision-making power through participating in local tourism planning/policy processes" and "increasing decision-making power through participating in local environmental policy processes," lower in importance than the median level (mean 2.91 and 2.75, respectively). Interestingly, a similar percentage of respondents both favored (ratings 4 and 5) and did not favor (ratings 1 and 2) the benefits obtained from participation in the tourism planning/policy process, 40% (34) and 36% (31) respectively. Surprisingly, the number of respondents (34 or 40%) who either did not appreciate or appreciated at a low level (ratings 1 and 2) the benefits of "increasing decision-making power through participating in local environmental policy

processes" is significantly higher than the number of respondents (27 or 31%) who favored it (rating 4 and 5).

Generally, the tour operators emphasized the benefits gained by enforcing their sense of place. Among the set of socio-cultural benefits, "a greater sense of pride when showing tour participants my natural environment," "a stronger sense of belonging to my community," "a greater appreciation for my community," and "more chances to interact with my community residents, landowners, and organizations" had the highest mean scores, ranging between 3.56 and 4.11. As many as 78% of respondents (67) rated "a greater sense of pride when showing tour participants my natural environment" as a 4 or 5, and about 65% (56) and 66% (57) gave the same rating to "a stronger sense of belonging to my community" and "a greater appreciation for my community," respectively. The number of respondents rating "more chances to interact with my community residents, landowners, and organizations" as a 4 or 5 was relatively low, at approximately 57% (49). In contrast, the percentages of respondents who rated those four items as a 1 or 2 were much lower, ranging from 9% (8) to 21% (18).

Table 5-7 Socio-cultural benefits to respondents

Socio-cultural benefits	N	Mean	SD.	1	2	3	4	5
Preserving local cultures or heritages	89	3.21	1.40	15.6 %	16.7 %	24.4 %	17.8 %	25.6 %
Revitalizing local or tribal traditions on natural resources uses	89	2.63	1.39	29.0 %	20.0 %	24.4 %	12.2 %	14.4 %
Increasing decision-making power through participating in local tourism planning/policy processes	86	2.93	1.34	22.1 %	14.0 %	24.4 %	27.9 %	11.6 %
Increasing decision-making power through participating in local environmental policy processes	86	2.77	1.24	22.1 %	17.4 %	29.1 %	24.4 %	7.0 %
Increasing knowledge and training about managing natural resources in a sustainable manner	86	3.27	1.27	12.8 %	12.8 %	27.9 %	27.9 %	18.6 %
A greater sense of pride when showing tour participants my natural environment	86	4.11	1.13	5.8 %	3.5 %	12.8 %	29.1 %	48.8 %
A stronger sense of belonging to my community	86	3.81	1.29	7.0 %	11.6 %	16.3 %	23.3 %	41.9 %
A greater appreciation for my community	86	3.79	1.24	5.8 %	12.8 %	15.1 %	29.1 %	37.2 %
More chances to interact with my community residents, landowners, and organizations	86	3.56	1.25	8.1 %	12.8 %	22.1 %	29.1 %	27.9 %
Total*	86	3.35	1.01	5.8 %	15.1 %	26.7 %	40.7 %	11.6 %

Note: 1 represents “not at all” and 5 represents “very well” on the 1-to-5 rating scale

* For the average, “1” denotes 1~1.5, “2” denotes 1.6~2.5, “3” denotes 2.6~3.5, “4” denotes 3.6~4.5, and “5” denotes 4.6~5

5.3.3 Conservational benefits

On average, respondent tour operators in Florida tended to believe that the nature-based tourism in which they were engaged could benefit natural conservation. They reported relatively high scores for conservational benefits, with the mean score of 3.61 being higher than economic benefits (mean 3.56) and socio-cultural benefits (mean 3.35) (see Table 5-8). Over half of the respondents greatly appreciated the conservational benefits that nature-based tourism could bring (median 3.83). Among the 90 respondents, 41 (46%) and 13 (14%) rated these benefits as a 4 and 5, respectively, while only 11 (12%) rated them below 3.

Table 5- 8 Conservational benefits to respondents

Conservation benefits	N	Mean	SD.	1	2	3	4	5
Less pollution compared to other tourism activities	90	3.72	1.23	6.7 %	9.0 %	25.6 %	23.3 %	35.6 %
Wildlife protection	90	3.99	1.23	7.8 %	5.6 %	12.2 %	28.9 %	45.6 %
Natural landscape or habitat protection	90	3.91	1.22	8.9 %	4.4 %	12.2 %	35.6 %	38.9 %
Increase in local residents' environmental awareness	90	3.63	1.28	9.0 %	9.0 %	25.6 %	23.3 %	33.3 %
Long-term conservation efforts	90	3.54	1.20	7.8 %	10.0 %	27.8 %	28.9 %	25.6 %
Collection of data about natural resources and human activities	90	2.84	1.24	20.0 %	16.7 %	30.0 %	25.6 %	7.8 %
Total*	90	3.61	1.00	7.78 %	4.44 %	27.78 %	45.56 %	14.44 %

Note: 1 represents "not at all" and 5 represents "very well" on the 1-to-5 rating scale
* For the average, "1" denotes 1~1.5, "2" denotes 1.6~2.5, "3" denotes 2.6~3.5, "4" denotes 3.6~4.5, and "5" denotes 4.6~5

Generally, respondents prioritized the direct benefits of environmental protection (e.g., habitat and natural landscape conservation). Among the six items, "wildlife protection" (mean 3.99) was best rated, followed by "natural landscape or habitat protection" (mean 3.91) and "less pollution compared to other tourism activities" (mean 3.72). Both "wildlife protection" and "natural landscape or habitat protection" received as high as 75% of respondents' favorable ratings (with rating of 4 or 5) while only approximately 13% of respondents (12) did not consider these elements to be beneficial (rating 1 or 2). Also, the concept of "less pollution compared to other tourism activities" was well recognized as beneficial to the respondents' communities. Higher ratings (4 and 5) versus lower ratings (1 and 2) for this statement were 59% (53 respondents) to 16% (14 respondents).

More long-term and less direct benefits obtained from natural resource conservation tended not to be observed by respondents. On the average, the benefits of "increase in local residents' environmental awareness" and "long-term conservation efforts" were considered slightly greater than the median level (mean 3.63 and 3.54, respectively). More than 50% of respondents appreciated the benefits of "increase of local residents' environmental awareness" (57% or 51) and "long-term conservation efforts" (54% or 49) and rated them above 3. The same number of respondents (16 or 18%) rated both benefits as a 1 or 2. Meanwhile, "collection of data about natural resources and human activities," usually considered a long-term administration of benefits, was less likely to be observed by the respondents (mean 2.84). More

respondents (33, or 37%) considered there to be no or only a low level of benefits (rating 1 or 2), while others (30 or 33%) viewed it as having greater benefits (rating 4 or 5).

5.4 Conservation contributions of respondents

Generally speaking, the level of respondent participation in wetland conservation activities that effectively led to positive environmental outcomes was relatively disappointing. Respondents reported a relatively low frequency of engagement in conservation activities and projects, with a mean score of 2.75, ranking their participation somewhere lower than "sometimes." On average, 11 respondents (13%) never involved themselves in active or proactive conservation activities, and the majority of respondents either rarely (26 or 46%) or only sometimes (34 or 40%) participated in management and planning processes. Meanwhile, only 14 respondents (16%) very often or always considered themselves actively involved in environmental management behavior. Table 5-9 includes the mean, standard deviation, and percentage of the five categories involving the participation frequency of respondents in environmental planning and management activities.

Not surprisingly, respondents were more active in those processes attached to their tour businesses, such as providing environmental education services, guiding tours to increase park revenues, contributing their labor to conservation events, and providing competitive employment opportunities. On average, respondents contributed their efforts to environmental education programs more frequently than "sometimes" (mean 3.21). Approximately 47% of respondents (40) reported a high level of participation ("very

often" or "always") in educational activities. Respondents also tended to be active in guiding tours to parks and preserves in order to increase their revenue for future conservation purposes; the mean score was 3.16. There were 40 respondents (47%) who stated high frequency of participation in this activity.

In addition, tour operators also preferred contributions to wetland conservation events on site, such as cleaning or removing alien species and trash from the wetlands (mean 3.11). There were 41% of respondents (35) who always or quite often had this experience, while 31% of respondents (26) never or rarely performed this type of activity. As high as 47% of respondents (40) always or very often considered "reasonable or better levels of employee salaries," while approximately 36% of respondents (25) neglected such pursuit. On average, the respondents were active in considering reasonable salary levels (mean 3.07).

Interestingly, the tour operators' participation in land use, environmental, and natural resource planning and management processes was less than expected, with the mean score from 2.4 to 2.72 (lower than "sometimes"). Respondents reported a high frequency of participation in the planning processes through which they offered comments or expressed concerns related to wetland conservation, including "giving comments to planning officials related to wetlands or water resources based on your knowledge or experience" (PPK, mean 2.72) and "participating in public hearings for zoning or land development projects to express concerns about wetland conservation" (PPC, mean 2.67). Less than 30% of respondents reported that they never participated in PPK or PPC activities in the past year, while approximately 28% of respondents always

or very often contributed efforts to both activities. On average, the frequency of respondents "giving comments to water use and recreation managers based on your knowledge or experience" (WMK) was slightly lower than "sometimes" (mean 2.6). There were 25% of respondents who revealed a high frequency ("very often" or "always") in WMK, while 26% of respondents stated that they never had experiences with WMK. However, "environmental inventories or monitoring" (EMI) was the activity with the lowest level of respondent participation (mean 2.4) among the group of activities that included environmental planning and management activities. Among the 10 conservation contribution items, EMI, second only to "policy lobbying," had a high percentage of respondents (35%) who expressed that they never participated in such an endeavor. In contrast, a relatively low percentage of respondents (22%) always or very often became involved in EMI in the past year.

In addition, some activities that demanded either organizational networking and long-term proactive attitudes or financial contributions were pursued relatively less frequently by most tour operators. On average, the self-reported frequency of working with NGOs for policy lobbying in order to preserve wetlands was "rarely" (mean 2.02), and as many as 51% of respondents (43) never engaged in this activity. Direct donations to wetland conservation programs were relatively limited for respondent tour operators (mean 2.55), and only 18 respondents (21%) either very often or always made donations.

Table 5-9 Conservation contributions of respondents

Items	N	Mean	SD.	1	2	3	4	5
Gave cash donations to wetland conservation programs	85	2.55	1.27	27.1 %	21.2 %	30.6 %	11.8 %	9.4 %
Participated in events or activities for wetland conservation (e.g. cleaning spilled oil or removing intrusive species)	85	3.11	1.31	16.5 %	14.1 %	28.2 %	24.7 %	16.5 %
Participated in NGO's government policy lobbying related to wetlands and water resource conservation	85	2.02	1.23	50.6 %	16.5 %	16.5 %	12.9 %	3.5 %
Participated in public hearings for zoning or land development projects to express concerns about wetland conservation (PPC)	85	2.67	1.33	29.4 %	11.8 %	30.6 %	18.8 %	9.4 %
Gave comments to planning officials related to wetlands or water resources based on your knowledge or experience (e.g. in public meetings of comprehensive or land use plans) (PPK)	85	2.73	1.24	24.7 %	11.8 %	36.5 %	20.0 %	7.1 %
Gave comments to water use and recreation managers based on your knowledge or experience (e.g. in recreational or water supply public meetings of Water Management District offices) (WMK)	85	2.60	1.23	25.9 %	18.8 %	30.6 %	18.8 %	5.9 %
Participated in environmental inventories or monitoring (EMI)	85	2.40	1.36	35.3 %	22.4 %	20.0 %	11.8 %	10.6 %
Helped schools or community education programs with their environmental curriculum (e.g. providing lectures or field trips to wetlands)	85	3.21	1.36	15.3 %	15.3 %	24.7 %	22.4 %	22.4 %
Guided tours to parks, preserves, or wildlife refuges to increase their revenues	85	3.16	1.51	23.5 %	9.4 %	20.0 %	21.2 %	25.9 %
Ensured whether your employees with salary were paid equal to or higher than normal market rates	85	3.07	1.59	29.4 %	7.1 %	16.5 %	21.2 %	25.9 %
Total*	85	2.75	.93	12.9 %	30.6 %	40.0 %	12.9 %	3.5 %

Note: 1 represents "never", 2 represents "rarely", 3 represents "sometimes", 4 represents "very often", and 5 represents "always"

* For the average, "1" denotes 1~1.5, "2" denotes 1.6~2.5, "3" denotes 2.6~3.5, "4" denotes 3.6~4.5, and "5" denotes 4.6~5

5.5 Summary

Generally, the respondents operated relatively small businesses with an average of six employees. Over 50% of respondents highly relied on wetlands as their tour destination and guided their nature-based tours to wetland areas at least two days a week. On average, the respondents to this research had positive environmental attitudes, especially in that they often agreed on the human impact on fragile natural systems and the importance of maintaining a harmonious relationship between humans and nature.

The respondents were quite well informed regarding the major principles involved in ecotourism, especially those introduced in Florida as a foundation for formatting state policies in the late 1990s. Based on the high level of consensus regarding the definition of ecotourism, the majority of respondents reported a significant level of involvement in ecotourism in terms of the proportion of revenue their businesses gained from ecotours (mean 67.27%). The respondents, on average, identified the conservational benefits (mean 3.61) of nature-based tourism as higher in importance than the economic benefits (mean 3.56). The socio-cultural benefits (mean 3.35) of nature-based tourism were considered by respondents as the lowest in importance among the above three potential incentives for making conservation contributions to ecotourism.

When queried about conservation behavior that was identified by the literature as an avenue leading to positive environmental impacts, respondents expressed relatively less activeness in nature resource management and planning processes or programs [mean 2.75, between “rarely” (2) and “sometimes” (3)]. The majority of respondents had more experience in conservation activities attached directly to their tour businesses, such

as environmental education, guiding tours to reserve parks in order to increase park revenues, and contributing labor to on-site wetland protection (mean between 3.21 and 3.07). Respondents' participation in land use or environmental management and planning processes was relatively low (mean between 2.4 and 2.72), which might reveal one limit to collaborative management of natural resources in Florida when such management should emphasize the major stakeholders' involvement. Additionally, participating in NGO's policy lobbying and making monetary donations to conserve wetlands seemed to be less attractive activities to the respondents. Those actions might demand the regular practice, strong motivation, and sufficient resources of more deeply passionate conservationists, which might be lacking in small-sized companies and general business operators in the Florida tourism industry.

CHAPTER VI

EXAMING EFFECTS OF ECOTOURISM INVOVLEMENT AND TOURISM BENEFITS ON CONSERVATION BEHAVIOR

This chapter incorporates five regression models to assess the causal relationships between independent and dependent variables identified by the conceptual model of this research (see Chapter III). These five separate multiple linear regression models are applied to examine how independent variables affect four individual activities and one composite set of activities regarding tour operators' wetland conservation contribution. Among the independent variables, "socio-cultural benefits," "economic benefits," and "conservational benefits" are highly related to each other with the correlation coefficients between .59 and .69 (see Appendix II). Each regression model separately examines these three independent variables first, and then sequentially adds them to construct a fully specific model. There are a total of six sequential regression equations in each regression model.

All models were diagnosed for the assumptions of OLS regression, including model specification, normality, heteroskedasticity, and multicollinearity to ensure to the production of unbiased and effective estimates (see Table 4-11). In addition, outlier issues in each model were analyzed for their influences on estimates, and the results of 2 different remedies, including deleting the offending case (i.e., Observation #64) and transforming variables (i.e., natural log on dependent and explanatory variables) were

checked. The purpose is to create theoretically and statistically sound models based on date collected in the research.

The results of the five groups of regression models are presented and analyzed in the following sections. Models in each group were compared for the standardized coefficients of independent variables to identify the one with better predictive power. In addition, the one-tailed t-test for each variable in the models was referred to in order to specify that these coefficients were statistically significant and greater than 0.

6.1 Composite conservation contribution

For this model examining the effects of independent variables on the composite conservation contribution of tour operators, the exclusion of Observation 64 was plausible in remedying the outlier issues. The research hypotheses were better confirmed, and the R-square values were considerably raised with 79 observations in the regression analysis. Table 6-1 outlines the results of six sequential and nested sets of regression models in measuring the relationship between the composite conservation contribution and independent and control variables (also see Appendix III).

Model 1 was a simple regression on the composite conservation contribution of one independent variable, "ecotourism involvement," and all three control variables, "company size," "environmental attitudes," and "the visit frequency" to wetlands. This model explained around 17.5% of the variation in the composite conservation contribution. "Ecotourism involvement" was a significant predictor at the .05 level, and had positive effects on increasing tour operators' participation in planning and

management processes regarding wetland conservation, which supports **Hypothesis 1.1**. In this equation, "ecotourism involvement" was the most powerful predictor with the Beta coefficient of .249, meaning one standard deviation increase of ecotourism involvement would raise tour operators' participation in wetland conservation activities by .249 units of standard deviation holding all other variables constant. "Environmental attitudes" and "the visit frequency" had significant and positive effects on wetland conservation actions of tour operators at the .05 and .10 levels respectively. "Company size" had a positive, but not significant, relationship with the active conservation behaviors of tour operators. In summary, **Hypothesis 1.1**, which theorizes that the higher involvement of tour operators in ecotourism services, the greater their participation in management and planning activities regarding wetland conservation is supported by this model.

The second independent variable, "economic benefits," was entered into the model. Model 2 explained about 25.1% of the variation in the composite conservation contribution. "Economic benefits" had significantly positive effects on the activeness of tour operators' conservation contribution at the .01 level, which supports **Hypothesis 2.1**. In this equation, "economic benefits" was the most influential factor in predicting tour operators' composite conservation contribution with the Beta coefficient of .297, meaning one standard deviation increase of economic benefits would raise tour operators' participation in wetland conservation activities by .297 units of standard deviation holding all other variables constant. "Ecotourism involvement," was still significant at the .05 level, and "environmental attitudes" was still a significant predictor

($p<0.05$). This model supports **Hypothesis 2.1**, in that the higher the economic benefits tour operators could perceive, the more active their participation in management and planning activities pertaining to wetland conservation.

The third independent variable, "socio-cultural benefits," was added to Model 1, and Model 3 saw a dramatic rise in the Adjusted R^2, explaining greater than 40.1% of the total variance in the composite conservation contribution. "Socio-cultural benefits" had a positive relationship with the composite conservation contribution of tour operators, which was significant at the .01 level. One standard deviation increase on "socio-cultural benefits" would raise tour operators' participation in wetland conservation activities by .5 units of standard deviation holding all other variables constant, which supports **Hypothesis 3.1**. However, "ecotourism involvement" became statistically insignificant in predicting the composite conservation contribution. The significant effect of "environmental attitudes" on the composite conservation contribution as reported in Models 1 and 2 was sustained. Interestingly, "company size" of tour operators became significantly positively related to the rise of conservation contribution, against the expected association. The results of this model support **Hypothesis 3.1** which theorizes that the higher socio-cultural benefits tour operators could perceive, the more active their participations in management and planning activities regarding wetland conservation.

The fourth independent variable, "conservational benefits," was entered into the model 1. Model 4 had the considerate increase in Adjusted R^2 (.3042) and could account for around 30.4% of the total variance in the composite conservation contribution. The

results showed that "conservational benefits" were significantly and positively related to the composite conservation contribution of tour operators regarding wetland ecosystems, which supports **Hypothesis 4.1**. All things held equal, one standard deviation change in "conservational benefits" would increase tour operators' participation in the composite conservation activities by .38 units of standard deviation. "Ecotourism involvement" ($p<0.10$) was still a significant and positive predictor of the composite conservation contribution. Two control variables, "company size" ($p<0.10$) and "environmental attitudes" ($p<0.05$), remained significant predictors for the composite conservation contribution of tour operators. "The visit frequency" to the wetland areas was still positively related to the composite conservation contribution, but not significant. Model 4 produced the results supporting **Hypothesis 4.1** which theorizes that the higher the "conservational benefits" tour operators could perceive, the more active their participation in management and planning activities regarding wetland conservation.

Model 5 was a relatively complete model after "socio-cultural benefits" was entered into the equation 4, and could explain nearly 40.2% of the total variance in the composite conservation contribution (Adjusted R^2= .4016, greater than .4011 of Model 3 and .3042 of Model 4). The regression result showed that "socio-cultural benefits" remained the most significant predictor to the composite conservation contribution of tour operators at the .01 level. Keeping other variables constant, one standard deviation increase in "socio-cultural benefits" would raise the composite conservation contribution by .46 units of standard deviation, which still supports **Hypothesis 3.1**. The positive effects of "ecotourism involvement" and "conservational benefits" as reported in Model

4 were sustained after the factor of "socio-cultural benefits" was added in the equation, but became insignificant. The control variables, "company sizes" and "environmental attitudes" of tour operators, were significantly and positively associated with the composite conservation contribution ($p<0.1$).

The full Model 6 included all independent and control variables. About 39.6% of total variance in the composite conservation contribution could be explained by Model 6. However, the Adjusted R^2 decreased to .3962 from .4016 in Model 5. The slightly dwindled SSE (error sum of square) in Model 6 revealed that adding economic benefits still increased predictive power when compared to the parsimonious model. The results indicated that **Hypothesis 3.1** was supported; the higher the "socio-cultural benefits," the more active tour operators' participation in management and planning activities regarding wetland conservation. "Socio-cultural benefits" retained its high Beta (.502) as the most powerful predictor. However, "conservational benefits," "ecotourism involvement," and "economic benefits" became weaker in the powers to predict the composite conservation contribution with the Beta values of .143, .131, and -.074 respectively, when compared to Models 1-4. Especially, the Beta values of "economic benefits" and "conservational benefits" dropped more than two thirds, indicating their effects on the composite conservation contributions were dramatically absorbed by "socio-cultural benefits." "Economic benefits" became negatively related to the composite conservation contribution, but not statistically significant with the very minimal t-value of .59. The results also suggested that two control variables, "company

size" and "environmental attitudes," retained a significantly positive relationship with the composite conservation contribution ($p<0.1$).

Table 6-1 Results of MLR models to predict the composite conservation contribution

	Model 1 Coefficient (Beta)	Model 2 Coefficient (Beta)	Model 3 Coefficient (Beta)	Model 4 Coefficient (Beta)	Model 5 Coefficient (Beta)	Model 6 Coefficient (Beta)
Ecotourism Involvement	.006** (.249)	.005** (.193)	.003 (.125)	.004* (.150)	.003 (.113)	.003 (.113)
Economic Benefits		.277*** (.297)				-.069 (-.074)
Socio-cultural Benefits			.554*** (.546)		.470*** (.464)	.509*** (.502)
Conservational Benefits				.393*** (.384)	.125 (.122)	.147 (.143)
Company Size	.008 (.123)	.007 (.106)	.008* (.117)	.010* (.155)	.008* (.128)	.009* (.134)
Environmental Attitudes	.227** (.189)	.222** (.185)	.155* (.129)	.233** (.194)	.168* (.140)	.164* (.137)
Visit Frequency	.078* (.158)	.059 (.119)	-.008 (-.017)	.055 (.111)	-.003 (-.005)	-.005 (-.010)
(Constant: coeff.)	.906**	.092	-.145	-.314	-.374	-.313
	N= 79 $F_{(4,74)}$= 5.15 Prob.>F=0.0010 R-square =.2178 Adj.R-square =.1755	N=79 $F_{(5,73)}$= 6.22 Prob.>F=0.0000 R-square =.2989 Adj.R-square =.2509	N= 79 $F_{(5,73)}$= 11.45 Prob.>F=0.0000 R-square =.4395 Adj.R-square =.4011	N= 79 $F_{(5,73)}$= 7.82 Prob.>F=0.0000 R-square =.3488 Adj.R-square =.3042	N= 79 $F_{(6,72)}$= 9.73 Prob.>F=0.0000 R-square =.4477 Adj.R-square =.4016	N= 79 $F_{(7,71)}$= 8.31 Prob.>F=0.0000 R-square =.4503 Adj.R-square =.3962

***<0.1 level, **<0.05 level, and ***<0.01 level in one-tailed tests**
Independent variables: ecotourism involvement, economic benefits, socio-cultural benefits, and conservational benefits
Control variables: company size, environmental attitudes, and visit frequency

Generally, the models tested significantly supported **Hypotheses 1.1, 2.1, 3.1, and 4.1** at level of .05 or .01. The full model showed insignificant test results for

Hypotheses 1.1, 2.1, and 4.1 because independent variables were inter-correlated to some degree. However, it is important to note that this type of inter-correlation is a normal situation in social science research and will not cause problems in statistic results and conclusions if OLS assumptions are not violated. Additionally, the model fit showed that adding "socio-cultural benefits" could considerably increase the Adjusted R^2. It was consistent with the suggestion of regressions that "socio-cultural benefits" were the most influential predictor. Furthermore, the Adjusted R^2 reached .4 in the full model, which is regarded as moderate to high in social science that inherently involves multiple interconnected factors.

6.2 Participatory action in the planning and management processes

6.2.1 Participation in public hearings of planning processes (PPC)

In this group of models, there were two remedies applied to deal with the outlier issues, including deleting the offending case and transforming the dependent variable. Both methods did not generate radical changes on hypothesis testing and model fit (i.e., Adjusted R^2); therefore all 80 observations in the sample were retained in the models and analyzed. The results are shown in Table 6-2 (also see Appendix IV).

The results of Model 1 suggested that "ecotourism involvement" would slightly increase tour operators' contribution through expressing concerns of conserving wetlands in public hearings of land use planning processes (PPC). However, it was not significant in predicting tour operators' PPC, and thus could not support **Hypothesis 1.2**. "Environmental attitudes," one of the control variables, was the most influential and

statistically significant ($p<0.10$) factor in this regression, and one standard deviation increase was associated with .151 units of standard deviation increase in tour operators' PPC, holding other explanatory variables constant. However, this model could account for only 7.24% of the variation in PPC.

In Model 2, the "economic benefits" factor was entered to account for 11.36% of the variation in PPC. This factor became the most influential factor in predicting PPC, which was statistically significant at the .05 level. One standard deviation increase of "economic benefits" was associated with .232 units of standard deviation increase in PPC, holding other explanatory variables constant. The results support **Hypothesis 2.2,** which predicts that tour operators who perceived greater "economic benefits" would likely participate in public hearings concerning wetland conservation during planning processes. "Ecotourism involvement" had a positive, but insignificant, association with PPC (ß=.09). In addition, "environmental attitudes" remained a statistically significant factor (ß=.148) in this regression at the level of .10.

Model 3 included two independent variables, "ecotourism involvement" and "socio-cultural benefits," along with three control variables. Adjusted R^2 had a noticeable increase to .1774 from .0724 in Model 1, indicating that this model could explain 17.74% of the total variance in PPC. As expected, the "socio-cultural benefits" factor was significantly and positively associated with PPC at the .01 level, which supports **Hypothesis 3.2**. One standard deviation increase of "socio-cultural benefits" raised PPC by .377 units of standard deviation, holding other explanatory variables constant. "Ecotourism involvement", and two control variables, "company size" and "the

visit frequency," remained insignificant in predicting the tour operators' active planning participation. "Environmental attitudes" turned out to be an insignificant factor after adding "socio-cultural benefits" to Model 1.

Table 6-2 Results of MLR models to predict the "participation in public hearings of land use planning processes" (PPC)

	Model 1 Coefficient (Beta)	Model 2 Coefficient (Beta)	Model 3 Coefficient (Beta)	Model 4 Coefficient (Beta)	Model 5 Coefficient (Beta)	Model 6 Coefficient (Beta)
Ecotourism Involvement	.004 (.124)	.003 (.090)	.002 (.054)	.003 (.080)	.002 (.057)	.002 (.057)
Economic Benefits		.288** (.232)				.014 (.011)
Socio-cultural Benefits			.508*** (.377)		.543*** (.403)	.535*** (.397)
Conservational Benefits				.283** (.209)	-.049 (-.036)	-.053 (-.039)
Company Size	.009 (.105)	.008 (.091)	.009 (.100)	.011 (.121)	.009 (.097)	.009 (.096)
Environmental Attitudes	.251* (.151)	.245* (.148)	.183 (.111)	.254* (.153)	.178 (.107)	.179 (.108)
Visit Frequency	.106 (.156)	.085 (.124)	.025 (.036)	.088 (.129)	.022 (.032)	.023 (.033)
(Constant: coeff.)	.874	.003	-.086	.000	-.001	-.012
	N= 80 $F_{(4,75)}$= 2.54 Prob.>F=0.0465 R-square =.1194 Adj.R-square =.0724	N=80 $F_{(5,74)}$= 3.02 Prob.>F=0.0154 R-square =.1697 Adj.R-square =.1136	N= 80 $F_{(5,74)}$=4.41 Prob.>F=0.0014 R-square =.2295 Adj.R-square =.1774	N= 80 $F_{(5,74)}$=2.81 Prob.>F=0.0225 R-square =.1593 Adj.R-square =.1025	N= 80 $F_{(6,73)}$=3.64 Prob.>F=0.0033 R-square =.2302 Adj.R-square =.1669	N= 80 $F_{(7,72)}$=3.08 Prob.>F=0.0068 R-square =.2302 Adj.R-square =.1554

***<0.1 level, **<0.05 level, and ***<0.01 level in one-tailed tests**
Independent variables: ecotourism involvement, economic benefits, socio-cultural benefits, and conservational benefits
Control variables: company size, environmental attitudes, and visit frequency

Model 4 focused on examining the relationship between "conservational benefits" and PPC. The addition of conservational benefits into Model 1 generated the slight increase of the Adjusted R^2 to .1025 from .0724; however, the magnitude was less than the effect of adding "socio-cultural benefits" or "economic benefits." "Conservational benefits" were positively related to PPC, which significantly supports **Hypothesis 4.2** *($p<0.05$)*. One standard deviation increase of "conservational benefits" raised PPC by .209 units of standard deviation, holding other explanatory variables constant. "Ecotourism involvement" remained positively associated with PPC in this planning activity, which is nevertheless insignificant (ß=.080). Following "conservational benefits" was "environmental attitudes" of tour operators (ß=.153) in terms of the extent of the effects, which was statistically significant at the level of .10.

After the "socio-cultural benefits" factor was added, Model 5 could account for 16.69% of the variation in PPC. The independent variable "socio-cultural benefits" was the strongest positive factor to predict PPC, which significantly supports **Hypothesis 3.2** (*$p<0.01$*). One standard deviation increase in "socio-cultural benefits" raised PPC by .403 units of standard deviation, holding other variables constant. "Conservational benefits" became negatively associated with PPC; however, the t-value was close to 0, meaning the negative direction was insignificant. "Ecotourism involvement" and all control variables in the model were positive, but insignificant in predicting PPC.

The full Model 6 included all independent and control variables in the regression analysis. All variables together explained only 15.54% of the variation in PPC. However, unchanged SSE after adding "economic benefits" to Model 5 illustrated that

the "economic benefits" could not increase the predictive power of the full model. The results confirmed the significance of "socio-cultural benefits" in predicting PPC, which supports **Hypothesis 3.2** (*p<0.01*). "Socio-cultural benefits" remained the strongest factor. One standard deviation increase in "socio-cultural benefits" stimulated tour operators' PPC by .397 units of standard deviation, controlling effects of all other variables. Meanwhile, effects of all other independent variables on PPC dramatically decreased and became insignificant when compared to the simple models (Models 1- 4). Again, the association between "conservational benefits" and PPC stays negative. However, its t-value near 0 (-.26) showed that the negative direction was insignificant. Two other independent variables, "economic benefits" and "conservational benefits," were not independent to "socio-cultural benefits," thus their effects on the dependent variable were greatly offset. Following "socio-cultural benefits," the effects of "environmental attitudes" (ß=.108), "company size" (ß=.096), and "ecotourism involvement" (ß=.057) were also important in predicting PPC.

The results of this group of regression models support **Hypotheses 2.2, 3.2, and 4.2** at the .05 or .01 level. However, the Adjusted R^2 of all models were relatively small, which revealed that the models did not consider some other important factors influencing tour operators' participation in zoning and land development meetings for wetland protection purposes (PPC). The models built on the survey data could explain a very limited amount of the variation.

6.2.2 Participation in planning processes through contribution of professional knowledge or experience (PPK)

Two major remedies were suggested by the literature for dealing with the outliers occurring in this group of regression models, including deletion of the problematic case and power transformation of the dependent variable, which were both employed. Both methods, separated or combined, did not generate fundamental changes to reject or confirm hypotheses or significantly improve the model fit. The regression analyses were processed based on all 80 observations. Table 6-3 abstracts the results of six nested and sequential sets of regression models (also see Appendix V**)**.

Model 1 showed that "ecotourism involvement" was the most influential (ß=.310) and significant predictor ($p<0.01$) for tour operators' participation in planning processes through contribution of professional knowledge or experience (PPK). This supports **Hypothesis 1.3** which theorizes that the deeper the involvement in ecotourism, the more active tour operators' participation in planning processes through giving suggestions or comments. "Environmental attitudes" constructed a powerful predictor at the level of .10. In addition, Model 1 could account for 13.4% of the total variation in PPK.

As the independent variable "economic benefits" was entered into Model 2, "ecotourism involvement" maintained its significant effects on the dependent variable PPK ($p<0.01$), tour operators' participation in planning processes by providing professional knowledge or experience. "Economic benefits" had significant effects on the dependent variable at the .10 level, which supports **Hypothesis 2.3**; the greater the

economic benefits, the more active the tour operators' conservation contribution in planning processes through providing professional comments. However, its effect (ß=.154) on PPK was not as great as that of "environmental attitudes" (i.e., the magnitude of Beta value). "Environmental attitudes" constructed a powerful predictor at the .10 level with the Beta value of .177. The addition of "economic benefits" slightly increased the model fit from .1339 (Adjusted R^2) in Model 1 to .1458 in Model 2.

Table 6-3 Results of MLR models to predict the "participation in planning processes through contribution of professional knowledge or experience" (PPK)

	Model 1 Coefficient (Beta)	Model 2 Coefficient (Beta)	Model 3 Coefficient (Beta)	Model 4 Coefficient (Beta)	Model 5 Coefficient (Beta)	Model 6 Coefficient (Beta)
Ecotourism Involvement	.010*** (.310)	.009*** (.287)	.008** (.258)	.009** (.271)	.008** (.256)	.008** (.256)
Economic Benefits		.178* (.154)				-.054 (-.047)
Socio-cultural Benefits			.352*** (.279)		.330** (.262)	.361* (.286)
Conservational Benefits				.233** (.184)	.031 (.025)	.049 (.039)
Company Size	.007 (.088)	.007 (.079)	.007 (.084)	.009 (.102)	.007 (.087)	.007 (.090)
Environmental Attitudes	.279* (.180)	.275* (.177)	.232* (.150)	.282* (.182)	.235* (.152)	.232* (.150)
Visit Frequency	.024 (.037)	.010 (.016)	-.033 (-.051)	.009 (.134)	-.031 (-.049)	-.033 (-.052)
(Constant: coeff.)	.744	.221	.078	.025	.024	.068
	N= 80 $F_{(4,75)}$= 4.05 Prob.>F=0.0050 R-square =.1778 Adj.R-square =.1339	N=80 $F_{(5,74)}$= 3.70 Prob.>F=0.0048 R-square =.1999 Adj.R-square =.1458	N= 80 $F_{(5,74)}$= 4.63 Prob.>F=0.0010 R-square =.2383 Adj.R-square =.1868	N= 80 $F_{(5,74)}$= 3.90 Prob.>F=0.0034 R-square =.2087 Adj.R-square =.1552	N= 80 $F_{(6,73)}$=3.81 Prob.>F=0.0023 R-square =.2386 Adj.R-square =.1760	N= 80 $F_{(7,72)}$=3.24 Prob.>F=0.0048 R-square =.2396 Adj.R-square =.1656

***<0.1 level, **<0.05 level, and ***<0.01 level in one-tailed tests**
Independent variables: ecotourism involvement, economic benefits, socio-cultural benefits, and conservational benefits
Control variables: company size, environmental attitudes, and visit frequency

Model 3 mainly examined the effect of "socio-cultural benefits" on the dependent variable PPK by adding the independent variable, "socio-cultural benefits," to Model 1. At the .01 level, the regression result significantly supports **Hypothesis 3.3,** which theorizes that tour operators who perceive greater socio-cultural benefits are likely to participate in the planning process by contributing their professional experience and knowledge. One standard deviation increase was associated with the increase of PPK by .279 units of standard deviation. "Ecotourism involvement" (ß=.258) and "environmental attitudes" (ß=.150) retained significant prediction powers at the .05 and .10 levels, respectively. Model 3 could explain 18.7% of the total variance in PPK.

Model 4 focused on assessing the relationship between the fourth independent variable, "conservational benefits," and the dependent variable PPK. At the .05 level, the regression result significantly supports **Hypothesis 4.3**, which theorizes that tour operators perceiving greater "conservational benefits" would be more likely to participate in planning processes through providing professional comments. One standard deviation increase in "conservational benefits" would encourage tour operators' PPK by .184 units of standard deviation. In addition, "ecotourism involvement" (ß=.271) and "environmental attitudes" (ß=.182) remained significant predictors at the .05 and .10 levels, respectively. "Ecotourism involvement" was the strongest predictor in this regression model. The addition of "conservational benefits" increased the model fit from .1339 (Adjusted R^2) in Model 1 to .1552 in Model 4.

As the "socio-cultural benefits" factor was added, the significant effect (ß=.256) of "ecotourism involvement" on PPK was maintained at the .05 level while "conservational benefits" turned out to be an insignificant predictor in Model 5. The unique contribution of "conservational benefits" was washed out with the Beta value dramatically dropping to .025 from .184 in Model 4. Not surprisingly, "socio-cultural benefits" was still the most influential (ß=.262) and significant factor in predicting PPK at the .05 level. The results support **Hypothesis 1.3 and 3.3**. The control variable "environmental attitudes" remained a significant predictor at the .10 level (ß=.152). The inclusion of "socio-cultural benefits" slightly raised the model fit of Model 5 to .1760 (Adjusted R^2) from .1552 (Adjusted R^2) in Model 4.

The full Model 6 included all independent and control variables. However, incorporation of "economic benefits" into Model 5 decreased the Adjusted R^2 to .1656. Results indicated that adding "economic benefits" did not increase the predictive power of the model. "Ecotourism involvement" and "socio-cultural benefits" retained their significant effects on PPK at the .05 and .10 levels, which still support **Hypothesis 1.3 and 3.3**. Both also had the highest Beta values in predicting PPK. The independent variable, "conservational benefits," had a slight increase in its Beta value when compared to Model 5, but was still not a significant predictor. Surprisingly, "economic benefits" became negatively related with PPK; however, the t-value close to 0 (-.30) indicated that the negative direction was insignificant. Obviously, the effects of "economic benefits" on PPK were greatly absorbed by other variables, especially "socio-

cultural benefits" and "conservational benefits." Again, "environmental attitudes" still had significant effects on PPK at the .10 level.

The overall results of the above models support **Hypotheses 1.3, 2.3, 3.3, and 4.3**. However, the highest Adjusted R^2, .1868 of Model 3, which incorporates "ecotourism involvement" and "socio-cultural benefits" and all control variables, proves the moderate level of model fit. It also suggests that some other factors could be included in models to predict tour operators' behavior in contributing knowledge regarding water or wetland resources to planners during planning processes.

6.2.3 Participation in water management processes through contribution of professional knowledge or experience (WMK)

Some regressions in this group of models had the issues of outliers. Two major remedy methods, deletion of outlier cases and power transformation of the dependent variable, were applied. After checking the results of both methods to see whether there were considerable changes on hypothesis testing and model fit, this research included all 80 observations for regression analyses. The results are shown in Table 6-4 (also see Appendix VI).

Model 1 accounted for 11.12% of the variation in tour operators' participation in water resource management processes through contribution of their professional knowledge or experience (WMK). The results showed "ecotourism involvement" as a significant factor to predict tour operators' WMK ($p<0.01$). One standard deviation increase was associated with .332 units of standard deviation increase in WMK when other explanatory variables were kept equal, which supports **Hypothesis 1.4**. All control

variables, including "the company size," "environmental attitudes," and "the visit frequency" were positively associated with WMK, but not statistically significant.

Table 6-4 Results of MLR models to predict the "participation in water management processes through contribution of professional knowledge or experience" (WMK)

	Model 1 Coefficient (Beta)	Model 2 Coefficient (Beta)	Model 3 Coefficient (Beta)	Model 4 Coefficient (Beta)	Model 5 Coefficient (Beta)	Model 6 Coefficient (Beta)
Ecotourism Involvement	.011*** (.332)	.010*** (.306)	.009*** (.280)	.009*** (.294)	.009** (.279)	.009** (.279)
Economic Benefits		.199* (.175)				-.001 (-.000)
Socio-cultural Benefits			.345*** (.279)		.326** (.264)	.327* (.264)
Conservational Benefits				.225* (.181)	.026 (.021)	.026 (.021)
Company Size	.008 (.103)	.008 (.093)	.008 (.099)	.010 (.117)	.008 (.101)	.008 (.101)
Environmental Attitudes	.132 (.087)	.128 (.084)	.086 (.057)	.135 (.089)	.089 (.058)	.089 (.058)
Visit Frequency	.025 (.040)	.010 (.016)	-.030 (-.048)	.011 (.017)	-.029 (-.046)	-.029 (-.046)
(Constant: coeff.)	1.209	.626	.558	.513	.513	.513
	N= 80 $F_{(4,75)}$= 3.47 Prob.>F=0.0117 R-square =.1562 Adj.R-square =.1112	N=80 $F_{(5,74)}$= 3.36 Prob.>F=0.0087 R-square =.1849 Adj.R-square =.1298	N= 80 $F_{(5,74)}$= 4.63 Prob.>F=0.0010 R-square =.2383 Adj.R-square =.1868	N= 80 $F_{(5,74)}$= 3.39 Prob.>F=0.0082 R-square =.1863 Adj.R-square =.1313	N= 80 $F_{(6,73)}$= 3.37 Prob.>F=0.0055 R-square =.2167 Adj.R-square =.1523	N= 80 $F_{(7,72)}$= 2.85 Prob.>F=0.0112 R-square =.2167 Adj.R-square =.1405

***<0.1 level, **<0.05 level, and ***<0.01 level in one-tailed tests**
Independent variables: ecotourism involvement, economic benefits, socio-cultural benefits, and conservational benefits
Control variables: company size, environmental attitudes, and visit frequency

The addition of "economic benefits" slightly increased the prediction power of Model 2, in which Adjusted R^2 reached .1298, or the model accounted for 12.98% of the

variation in WMK. One standard deviation of "economic benefits" was positively associated with .175 units of standard deviation in WMK, holding other explanatory variables constant, which significantly supports **Hypothesis 2.4** (*p<0.10*). However, "ecotourism involvement" was the strongest factor (ß=.306) in predicting WMK and maintained its significance (*p<0.01*). All three control variables maintained positive, but insignificant relationships with WMK.

The addition of "socio-cultural benefits" demonstrated the best model fit for Model 3 (i.e. Adjusted R^2, .1635) among all 6 models. This model explained 16.35% of the total variance in WMK. "Socio-cultural benefits" had significantly positive effects on WMK (*p<0.01*), which supports **Hypothesis 3.4**. One standard deviation increase of "socio-cultural benefits" raised WMK by .279 units of standard deviation, holding other explanatory variables equal. However, "ecotourism involvement" remained the strongest predictor to WMK with the Beta value of .280, which was significant (*p<0.01*). Three control variables maintained insignificant relationships with WMK. Among them, "the visit frequency" became negatively associated with WMK; however, the t-value was closed to 0 (-.39), therefore the negative direction was not noteworthy.

The addition of "conservational benefits" slightly increased Adjusted R^2 from .1112 of Model 1 to .1313 of Model 4. The independent variable, "conservational benefits," was a significant and positive factor in predicting WMK (*p<0.1*), which supports **Hypothesis 4.4**. However, the effect of "conservational benefits" (the Beta value of .181) was not as influential as "ecotourism involvement," which remained the strongest and most significant predictor to WMK with the Beta value of .294 at the .01

level. All 3 control variables maintained insignificant and positive associations with WMK.

Model 5 had a slightly higher adjusted R-square (.1523) than Model 4 (.1313) after entering "socio-cultural benefits," indicating that 15.23% of the variation in WMK could be accounted for. "Ecotourism involvement" (ß=.279) and "socio-cultural benefits" (ß=.264) were the two strongest factors in positively predicting WMK, which significantly supports **Hypotheses 1.4 and 3.4** ($p<0.05$). However, "conservational benefits" became an insignificant predictor to WMK and had the Beta value of .021. All three control variables remained insignificantly associated with WMK.

The full Model 6 included all variables and explained only 14.05% of the variation in WMK. However, unchanged SSE value between Model 5 and Model 6 revealed that the added "economic benefits" could not increase the predictive capability of the full model. "Economic benefits" (ß=.000) demonstrated the above result. Both "ecotourism involvement" and "socio-cultural benefits" remained the most important and significant predictors for WMK, which supports **Hypotheses 1.4 and 3.4**. The Beta values of "ecotourism involvement" and "socio-cultural benefits" were .279 and .264, respectively. "Conservational benefits" maintained a small (ß=.021) and insignificant association with WMK. The insignificant relationships between all three control variables and WMK remained. The "visit frequency" had a very small negative Beta value (-.046), but its t-value was so closed to 0 (-.37) that the negative direction was not significant.

The results of this group of regression models support **Hypotheses 1.4, 2.4, 3.4, and 4.4** at the .05 or .01 level. The Adjusted R^2 of all models are between .1112 and .1405, which are relatively small. Obviously, some other factors in predicting tour operators' contribution of knowledge in water resource and recreation management processes might need to be considered in this group of models.

6.2.4 Participation in environmental monitoring and inventory (EMI)

This group of models applied the natural log transformation to the dependent variable, "participation in environmental management through monitoring and inventory" (EMI) in order to fulfill the normality assumption of OLS. Dealing with one outlier in Models 3, 5 and 6, this research compared the results of regression analyses before and after deleting Observation 64. Without finding considerable changes on hypothesis tests and model fits (e.g., Adjusted R^2), the regression results including 80 observations were reported in Table 6-5 (also see Appendix VII).

Model 1, including "ecotourism involvement" and all three control variables, "company size," "environmental attitudes," and "the visit frequency," proved to be insignificant (Prob>F=.052) at the .05 level and could explain only 6.91% of the variation in EMI. "Ecotourism involvement" was the most influential (ß=.242) and significant predictor at the .05 level, which supports **Hypothesis 1.5**. The second most influential factor was "environmental attitudes" (ß=.191), which had significantly positive effects on EMI. The other two control variables were not significant in predicting EMI.

Adding the independent variable "economic benefits," Model 2 had a very limited increase on Adjusted R^2, accounting for 8.51% of the variation in EMI. "Economic benefits" had significantly positive effects on EMI at the .10 level (ß=.169), which supports **Hypothesis 2.5**. However, "ecotourism involvement" remained the strongest and most significant predictor (ß=.217) at the .05 level. The control variable, "environmental attitudes" remained the significant and positive effect on EMI as reported by Model 1.

After adding "socio-cultural benefits," Model 3 had a dramatic increase of the adjusted R-square value and could explain 20.03% of the total variance in EMI. "Socio-cultural benefits" had a significant ($p<0.01$) and positive (ß=.417) association with EMI, which supports **Hypothesis 3.5**. Additionally, the Beta value of "ecotourism involvement" dwindled from .242 in Model 1 to .164 in Model 3, but was still significant at the .10 level. "Environmental attitudes" maintained significant ($p<0.10$) and positive effects on EMI.

Entering "conservational benefits" made a slight increase in Adjusted R^2 to .093 in Model 4 from .069 of Model 1. Model 4 could explain about 9.3% of the total variance in EMI. "Conservational benefits" had significantly positive effects (ß=.193) on EMI at the .05 level, which supports **Hypothesis 4.5**. As the most influential predictor in this regression, "ecotourism involvement" (ß=.201) had significant effects on EMI at the .10 level. "Environmental attitudes" remained a positive (ß=.193) and significant predictor at the level of .05 while the other two control variables were still insignificant in predicting EMI.

Table 6-5 Results of MLR models to predict the "participation in environmental monitoring and inventory" (EMI)

	Model 1 Coefficient (Beta)	Model 2 Coefficient (Beta)	Model 3 Coefficient (Beta)	Model 4 Coefficient (Beta)	Model 5 Coefficient (Beta)	Model 6 Coefficient (Beta)
Ecotourism Involvement	.004** (.242)	.003** (.217)	.003* (.164)	.003* (.201)	.003* (.173)	.003* (.171)
Economic Benefits		.094* (.169)				-.079 (-.143)
Socio-cultural Benefits			.252*** (.417)		.299*** (.494)	.344*** (.569)
Conservational Benefits				.117** (.193)	-.065 (-.108)	-.039 (-.064)
Company Size	.002 (.049)	.002 (.039)	.002 (.043)	.003 (.063)	.001 (.034)	.002 (.044)
Environmental Attitudes	.142** (.191)	.140* (.189)	.109* (.146)	.144** (.193)	.102 (.137)	.098 (.131)
Visit Frequency	-.002 (-.007)	-.009 (-.030)	-.043 (-.140)	-.010 (.-.032)	-.046 (-.150)	-.049* (-.160)
(Constant: coeff.)	-.152	-.428	-.628**	-.515	-.515*	-.045
	N= 80 $F_{(4,75)}$= 2.47 Prob.>F=0.0521 R-square =.1162 Adj.R-square =.0691	N=80 $F_{(5,74)}$= 2.47 Prob.>F=0.0399 R-square =.1430 Adj.R-square =.0851	N= 80 $F_{(5,74)}$= 4.96 Prob.>F=0.0006 R-square =.2509 Adj.R-square =.2003	N= 80 $F_{(5,74)}$= 2.62 Prob.>F=0.0310 R-square =.1503 Adj.R-square =.0929	N= 80 $F_{(6,73)}$= 4.21 Prob.>F=0.0011 R-square =.2569 Adj.R-square =.1958	N= 80 $F_{(7,72)}$= 3.73 Prob.>F=0.0017 R-square =.2662 Adj.R-square =.1948

***<0.1 level, **<0.05 level, and ***<0.01 level in one-tailed tests**
Dependent variable: natural log of EMI
Independent variables: ecotourism involvement, economic benefits, socio-cultural benefits, and conservational benefits
Control variables: company size, environmental attitudes, and visit frequency

Model 5 considerably increased its Adjusted R^2 to .1958 from .0929 of Model 4 after "social-cultural benefits" was entered into the regression. In addition, Model 5 had a slight decrease in its Adjusted R^2 when compared to Model 3 (Adjusted R^2= .2003) after adding "conservational benefits." Such a situation is also illuminated by the

insignificance of "conservational benefits" in this model. Despite the fact that the Beta value turned out to be negative, the relatively small t-value (-.76) indicated that the negative direction was not significant. On the other hand, "socio-cultural benefits" remained the strongest positive predictor (ß=.494) for EMI at the .01 level, which significantly supports **Hypothesis 3.5**. "Ecotourism involvement" retained significant effects (ß=.172) on EMI at the .10 level. All three control variables had no significant associations with EMI.

Model 6 could account for 19.48% of the variation of EMI, which was smaller than Model 5 after "economic benefits" was entered into the model. The "socio-economic benefits" factor remained significant in predicting EMI at the level of .01 and continued to be the most influential predictor with the beta value of .569, which supports **Hypothesis 3.5.** "Ecotourism involvement" maintained its significance in predicting EMI at the .10 level. Both independent variables, "economic benefits" (ß=-.143) and "conservational benefits" (ß=-.064), had negative and insignificant effects on EMI. The negative association between "economic benefits" and EMI (t-value= -.96) was relatively noteworthy compared to "conservational benefits" (t-value= -.43). Interestingly, the "visit frequency," which showed a negative association with EMI in Models 1-6, became significant at the .10 level, while the other two control variables remained insignificant and positive in predicting EMI.

Although the Adjusted R^2 of all six models were relatively low (between .0691 and .1948), the set of models performed better in explaining the variance of EMI than PPC, PPK, and WMK concerning participation in the planning and management

processes. Certainly, there might be some influential factors that need to be considered in predicting tour operators' conservation action through EMI.

6.3 Summary

This chapter presents the regression analysis results in order to test hypotheses built upon theories and empirical findings in ecotourism conservation and environmental impacts as outlined in Chapter II. The five fully-specified regression models were analyzed to assess the relationships between independent and dependent variables. The dependent variables include the composite conservation contribution and four subordinate conservation activities regarding protection of wetland ecosystems. The four subsets of conservation contributions are participation in public hearings of planning processes to preserve wetlands (PPC), participation in land use and environmental planning processes through contribution of professional knowledge (PPK), participation in water management processes through contribution of professional knowledge and experience (WMK), and participation in environmental inventory and monitoring (EMI). Table 6-6 below outlines the major findings of regression analyses.

First, "ecotourism involvement," "economic benefits," "socio-cultural benefits," and "conservational benefits" behaved as expected, significantly and positively associated with the overall conservation contribution of tour operators to wetland ecosystems, supporting **Hypotheses 1.1, 2.1, 3.1, and 4.1**. "Socio-cultural benefits" become the strongest factor when compared to the three other independent variables.

Next were "conservational benefits" and "economic benefits." Both played significant roles in encouraging tour operators' overall conservation contributions. However, these effects were dramatically weakened by "socio-cultural benefits" when all independent variables were included in the full model. The impact of "ecotourism involvement" was significant, indicating that tour operators who were involved in ecotourism at higher level would be more likely to participate in wetland conservation activities. In addition, "environmental attitudes" and "company size" were significant in predicting tour operators' overall conservation contributions.

Second, all independent variables except "ecotourism involvement" significantly and positively influenced tour operators' participation in land use or zoning processes to express their concerns about wetland conservation (PPC). The results supported **Hypotheses 2.2, 3.2, and 4.2**. The more economic, socio-cultural, and conservational benefits perceived by tour operators, the more active they become in PPC. "Socio-cultural benefits" had the greatest effect on PPC among the three incentive factors, followed by "economic benefits" and "conservational benefits," in that order. It is noteworthy that the effects of "conservational benefits" and "economic benefits" on PPC were considerably washed out by "socio-cultural benefits" and became very minimal in the fully saturated model.

Third, "ecotourism involvement," "economic benefits," "socio-cultural benefits," and "conservational benefits" had statistically significant effects on encouraging tour operators' participation in land use planning processes through contributing their professional knowledge regarding wetlands (PPK). **Hypotheses 1.3, 2.3, 3.3, and 4.3**

were all significantly supported. Tour operators who were more involved in ecotourism activities would be more engaged in PPK. The influence of "ecotourism involvement" was slightly less than the "socio-cultural" incentive, but greater than "conservational" and "economic" incentives. The issue caused by mutual-correction among three incentives was shown on the dwindled "conservational" and "economic" effects on PPK in the full model. Importantly, "environmental attitudes" played an imperative role in encouraging tour operators' PPK.

Fourth, all four independent variables were significantly associated with tour operators' participation in water resource management through contribution of their professional knowledge or experience (WMK). **Hypotheses 1.4, 2.4, 3.4, and 4.4** were all supported. Interestingly, "ecotourism involvement" was the most influential factor in encouraging tour operators' participation in WMK, followed by "socio-cultural," "conservational," and "economic" incentives, in that order. Again, the effects of the latter two incentives shrank in the full model because of their strong correlation with "socio-cultural benefits."

Fifth, all four independent variables were positively related to tour operators' participation in environmental management through inventory and monitoring activities (EMI), which significantly supported **Hypotheses 1.5, 2.5, 3.5, and 4.5**. The "socio-cultural" incentive played the most significant role in encouraging EMI, and its effect on EMI was much greater than the second most important factor, "ecotourism involvement." Following "ecotourism involvement" were "conservational benefits" and

"economic benefits." Surprisingly, the "visit frequency" significantly and negatively impacted EMI, which went against the expectation.

Generally, the research hypotheses were supported by the regression results. Policy suggestions would be made in terms of encouraging tour operators' general conservation behaviors and some specific contributions related to environmental planning and management.

Table 6-6 Summary of regression models (Model 1, 2, 3, and 4)

Composite Conservation Contribution				
Model	**Adj-R^2**	**Variable**	**ß**	**Supp Hypo**
1	.1755	**Ecotour**	**.249****	1.1
2	.2509	Ecotour	.193**	1.1
		Economic	**.297*****	2.1
3	.4011	Ecotour	.125	
		Soc-cultu	**.546*****	3.1
4	.3042	Ecotour	.150*	1.1
		Conservat	**.384*****	4.1

PPC				
Model	**Adj-R^2**	**Variable**	**ß**	**Supp Hypo**
1	.0724	**Ecotour**	**.124**	
2	.1136	Ecotour	.090	
		Economic	**.232****	2.2
3	.1774	Ecotour	.054	
		Soc-cultu	**.377*****	3.2
4	.1025	Ecotour	.080	
		Conservat	**.209****	4.2

PPK					WMK					EMI				
Model	**Adj-R^2**	**Variable**	**ß**	**Supp Hypo**	**Model**	**Adj-R^2**	**Variable**	**ß**	**Supp Hypo**	**Model**	**Adj-R^2**	**Variable**	**ß**	**Supp Hypo**
1	.1339	**Ecotour**	**.310*****	1.3	1	.1112	**Ecotour**	**.332*****	1.4	1	.0691	**Ecotour**	**.242****	1.5
2	.1458	Ecotour	.287***	1.3	2	.1298	Ecotour	.306***	1.4	2	.0851	Ecotour	.217**	1.5
		Economic	**.154***	2.3			**Economic**	**.175***	2.4			**Economic**	**.169***	2.5
3	.1868	Ecotour	.258**	1.3	3	.1635	Ecotour	.280***	1.4	3	.2003	Ecotour	.164*	1.5
		Soc-cultu	**.279*****	3.3			**Soc-cultu**	**.279*****	3.4			**Soc-cultu**	**.417*****	3.5
4	.1552	Ecotour	.271**	1.3	4	.1313	Ecotour	.294***	1.4	4	.0929	Ecotour	.201*	1.5
		Conservat	**.184*****	4.3			**Conservat**	**.182***	4.4			**Conservat**	**.193****	4.5

"Ecotour" denotes "Ecotourism involvement"
"Economic" denotes "Economic Benefits"
"Soc-cultu" denotes "Socio-cultural benefits"
"Conservat" denotes "Conservational benefits"
"Supp Hypo" denotes "Supporting Hypothesis"

PPC denotes "participation in public hearings of planning processes"
PPK denotes "participation in planning processes through contribution of professional knowledge or experience"
WMK denotes "participation in water management processes through contribution of professional knowledge or experience"
EMI denotes "participation in environmental monitoring and inventory"

***<0.1 level, **<0.05 level, and ***<0.01 level in one-tailed tests**

Table 6-6 continued (Full model or Model 6)

Composite Conservation Contribution			
Rank	**Variable**	**ß**	**Supporting hypothesis**
1	**Socio-cultural benefits**	.502***	3.1
2	**Conservational benefits**	.143	
3	Environmental attitudes	.137*	
4	Company size	.134*	
5	**Ecotourism involvement**	.113	

PPC			
Rank	**Variable**	**ß**	**Supporting hypothesis**
1	**Socio-cultural benefits**	.397**	3.2
2	Environmental attitudes	.108	
3	Company size	.096	
4	**Ecotourism involvement**	.057	
5	**Conservational benefits**	-.039	

PPK				WMK				EMI			
Rank	**Variable**	**ß**	**Supporting hypothesis**	**Rank**	**Variable**	**ß**	**Supporting hypothesis**	**Rank**	**Variable**	**ß**	**Supporting hypothesis**
1	**Socio-cultural benefits**	.286*	3.3	1	**Ecotourism involvement**	.279**	1.4	1	**Socio-cultural benefits**	.569***	3.5
2	**Ecotourism involvement**	.256**	1.3	2	**Socio-cultural benefits**	.264*	3.4	2	**Ecotourism involvement**	.171*	1.5
3	Environmental attitudes	.150*		3	Company size	.101		3	Visit frequency	-.160*	
4	Company size	.090		4	Environmental attitudes	.058		4	**Economic benefits**	-.143	
5	Visit frequency	-.052		5	Visit frequency	-.046		5	Environmental attitudes	.131	

PPC denotes "participation in public hearings of planning processes"
PPK denotes "participation in planning processes through contribution of professional knowledge or experience"
WMK denotes "participation in water management processes through contribution of professional knowledge or experience"
EMI denotes "participation in environmental monitoring and inventory"

Independent variables: "ecotourism involvement," "economic benefits," "socio-cultural benefits," and "conservational benefits"
Control variables: "the company size," "environmental attitudes," and "visit frequency"
***<0.1 level, **<0.05 level, and ***<0.01 level in one-tailed tests**

CHAPTER VII

CONCLUSION

In an effort to examine the conservation contributions of tour operators associate to the management of wetland ecosystems, this study models ecotourism involvement, incentive factors, and several control variables using the case of tour operators in Florida. This section will further discuss the research findings of the statistical analyses and offer implications and recommendations for both theoretical knowledge and policy implementation.

7.1 Summary of key findings and conclusion

This study assessed the conservation contributions of Florida ecotourism activities leading to positive environmental effects on wetland ecosystems, and also explored the driving factors behind tour operators' conservation practices. In this regard, the statistical models identified the significant factors motivating conservation contributions. This information provides useful insights concerning how to manage wetland resources over the long term by guiding tourism development towards more sustainable practices.

The results of the descriptive analyses on the survey data outlined in Chapter V revealed that the majority of the tour operators considered themselves involved in ecotourism activities. Especially, wetlands were a popular destination for NBT; nearly 63% of tour operators guided wetland tours at least two days per week, while approximately only 22% of them never conducted tours that visited the wetlands. On average, the respondents had a high level of environmental awareness. However, their participation in planning and

management activities towards conserving wetland ecosystems was relatively limited. Respondents generally believed, though, that their nature-based tourism activities could bring economic, socio-cultural, and conservational benefits to their businesses and communities.

First, the respondents considered their ecotourism involvement, on average, to make up greater than half of their business revenue. Although the present research asserts that ecotourism is a loosely-defined term in Florida, this study found that tour operators were well aware of the essential elements of ecotourism or sustainable tourism. Nearly 79% of the respondents identified at least five out of seven listed principles often highlighted in the current ecotourism literature. Three principles, "produce low impacts on natural environment," "provide educational opportunities," and "benefit local environmental conservation," plus the overarching elements in generally recognized definitions of ecotourism, were recognized by approximately 90% of the respondents. Based on this fairly thorough understanding of ecotourism, more than 90% of the respondents considered themselves involved in ecotourism activities to varying extents, and only 7 respondents (8.7%) reported that none of their tourism revenue came from this category of tourism. On average, the amount of respondents' tourism revenue derived from ecotourism was about 67%.

Second, respondents basically supported the notion that the NBT they were involved with could bring conservational, economic, and socio-cultural benefits to both themselves and their communities. The mean values of these three benefits rated by the respondents ranged from 3.35 to 3.61 on a 5-point Likert scale. Conservational benefits were considered the highest among these three incentives for tour operators to engage in

conservation behavior. Direct and apparently observed items (e.g., "wildlife protection" and "natural landscape or habitat protection") were rated higher than the indirect and inexplicit (e.g., "collection of data about natural resources and human activities") for tour operators. Next to conservational benefits, economic benefits, including items that benefit the community (e.g., "bringing economic opportunities to other businesses" and "improvement of local tax revenues"), were perceived as greater than those benefits to individual businesses (e.g., providing "high potential for business marketing" and "stable business revenues"). Furthermore, benefits from the socio-cultural aspects were observed as the lowest when compared to conservational and economic categories. Items relevant to a sense of place (e.g., "a greater sense of pride when showing tour participants my natural environment") were rated considerably higher than those related to empowerment in nature resource management (e.g., "increasing knowledge and training about managing natural resources in a sustainable manner") and cultural preservation (e.g., "revitalizing local or tribal traditions on natural resources uses").

Third, the respondents were generally not active in long-term wetland conservation activities that would lead to positive environmental outcomes; the mean value of 2.75 fell between "rarely" and "sometimes." Conservation activities that could be held or supported through tours (e.g., "helped schools or community education programs with their environmental curriculum" and "guided tours to parks, preserves, or wildlife refuges to increase their revenues") or during a specific short time and in a specific small area (e.g., "events or activities for wetland conservation, such as cleaning spilled oil or removing intrusive species") received greater support from tour operators. In addition, it is worth noting that stakeholder participation was lacking in areas such as

inventory and monitoring, knowledge coproduction and learning, and policy making, which collaborative and adaptive environmental management always emphasizes. Wetland management and policy-related activities, including direct financial support, policy lobbying, land use planning, natural resource and recreation management, and natural resource inventories or monitoring, attracted considerably lower levels of attention from the respondents. Tour operators stated that their average frequency of involvement in land use or environmental planning and management processes was much lower than "sometimes." Seemingly, tour operators did not prefer monetary contributions and long term policy lobbying as their preferred method of participation in these activities, and the level of their participation was measured as close to "rarely" in frequency.

The main findings of explanatory analysis in Chapter VI showed that all independent variables, ecotourism involvement, and three incentives (i.e., economic, socio-cultural, and conservational benefits) were significant predictors of respondents' composite conservation actions leading to positive environmental outcomes in wetland ecosystems. Particularly, the independent variables were significant predictors of tour operators' participation in land use and natural resource planning and management processes (PPC, PPK, and WMK), which had the highest factor loadings among all conservation contributions based on the results of factor analysis. Generally speaking, conservation incentive factors ("economic benefits," "conservational benefits," and "socio-cultural benefits") were more powerful for predicting respondents' composite conservation actions than the ecotourism practice factor (i.e., "ecotourism involvement"). Tour operators involved in ecotourism businesses might be innately motivated to

participate in conservation activities. Also, tour operators were enthusiastic about wetland conservation activities if they perceived relevant tourism benefits, rather than simply engaging in ecotourism practices on the job. Furthermore, the cross-model comparison revealed that "socio-cultural benefits" had a greater effect on overall pro-environmental behavior than "conservational benefits" and "economic benefits," in that order, when holding "ecotourism involvement," "company size," "environmental attitudes," and "wetland visit frequency" constant.

First, "ecotourism involvement" was significantly influential in explaining the variance in conservation contributions, according to the regression results. The high proportion of tourism revenue from ecotourism encourages tour operators to be active in wetland planning, management, and policy making efforts. Likewise, a greater reliance on ecotourism in terms of business revenue influences tour operators' willingness to contribute their knowledge, experience, and energy to land use and environmental planning processes (PPK), water management processes (WMK), and environmental inventory and monitoring (EMI). However, its influence on tour operators' expression to conserve wetlands in public hearings of planning processes (PPC) was not significant. Interestingly, "ecotourism involvement" is the most important factor for motivating tour operators to make an effort regarding water resource management processes (WMK), and its effect on encouraging tour operators' activeness in PPK and EMI is second only to "socio-cultural benefits."

Second, the perceived "socio-cultural benefits" had a relatively greater effect than other independent variables on conservation contributions based on the results of regression analysis. Tour operators who feel substantial benefits from cultural

preservation, the powers and capacities of environmental governance, and a sense of community are likely to be engaged in a composite conservation contribution that is geared toward generating positive ecological outcomes, as well as environmental planning and management activities relating to wetland protections (i.e., PPC, PPK, WMK, and EMI). Considering the factor loadings illustrated by the factor analysis, the indicators related to a sense of community (i.e., "a stronger sense of belonging to my community," "a greater appreciation for my community," "more chances to interact with my community residents, landowners, and organizations," and "a stronger sense of pride when showing tour participants my natural environment") would have greater influences on tour operator's conservation actions than other items of "socio-cultural benefits". It is notable that "socio-cultural benefits" play the most important role in motivating tour operators' conservation actions in land use planning processes and environmental inventory and monitoring (PPC, PPK, and EMI).

Third, the regression analysis revealed that the perceived "conservational benefits" were a significant predictor in the level of conservation contributions of the respondents. Tour operators are likely to become active in conservational behaviors when they observe positive environmental outcomes enhanced by tourism development. These "conservational benefits" include less pollution, protecting wildlife and natural landscapes, increasing local residents' environmental awareness, completing a database of natural resource uses and impacts, and initiating long-term protection projects. Based on the factor loadings shown by the factor analysis, "wildlife protection" and "natural landscape or habitat protection" among "conservational benefits" were the most influential factors to encourage tour operator's conservation behavior. However, the

effect of "conservational benefits" on the composite conservation contribution, as well as on activities such as the planning and management processes (PPC, PPK, WMK, and EMI), was dramatically weakened after adding "socio-cultural benefits" in the full regression models.

Fourth, the regression models showed that economic incentives were significantly associated with the conservation contributions of the respondents. Benefits, including bringing in stable revenue, an increase of business opportunities, marketing effectiveness, local economic development, and an increase in tax revenue, have a positive effect on tour operators' willingness to contribute their knowledge, skills, experience, cash donations, and labor to conservation programs or activities. Surprisingly, the compound set of "economic benefits" was not as powerful as other two incentives (i.e., "socio-cultural benefits" and "conservational benefits") in enhancing tour operators' engagement in conservation actions based on the cross-model comparisons. Among "economic benefits," "increasing business revenues" and "stable business revenues" were the most important forces driving tour operators' conservation actions based on the results of factor analysis.

Fifth, the environmental attitudes of the respondents significantly influence whether or not they are proactive in their environmental behavior. Tour operators who have higher scores regarding their environmental attitudes tend to be more willing to engage in conservation behavior, which is significant particularly to the composite conservation contributions and contributing professional knowledge in planning processes (PPK) in the full model (or Model 6). Additionally, company size is positively related to tour operators' conservation actions. Tour operators who hire more employees

are significantly more active in composite conservation actions. Tour operators who visit wetlands more often are more likely to make active conservation contributions to wetland ecosystems compared to those who visit less often or conduct no tours in the wetland areas.

The following is a summary of the above findings at the explanatory phase:

- "Ecotourism involvement" could significantly increase tour operators' activeness in the composite conservation contribution and three planning and management-related activities: PPC, WMK, and EMI.
- Generally, "socio-cultural benefits" are the most powerful incentive for steering tour operators towards conservation actions. Tour operators who perceive greater socio-cultural benefits might be better motivated toward overall conservation contributions and four particular land use and environmental planning and management activities (i.e., PPC, PPK, WMK, and EMI).
- "Conservational benefits" and "economic benefits" play important roles in enhancing tour operators' participation in the compound set of conservation approaches and the four land use and environmental planning and management activities (i.e., PPC, PPK, WMK, and EMI). However, the results of the full regression models (Models 6) reveal that "socio-cultural benefits" downplay the effects of both benefits on tour operator' active conservation approaches.

7.2 Theoretical and policy implications

7.2.1 Theoretical implications

This study synthesizes existing knowledge about ecotourism, environmental impact, and national resource conservation, and incorporates those theoretical concepts into the models to assess the various relationships between these factors. The findings of this study enhance the existing literature from the perspectives of ecotourism and conservation contributions to collaborative nature resource management, and expand the understanding of general theories of ecotourism practices. The implications of this theory and policy are provided based on the findings of this study.

First, the study contributes to the existing body of knowledge by integrating the concepts of collaborative and comprehensive ecotourism and ecosystem management. It identifies a series of indicators of conservation contribution to develop valid measures of tour operators' behavior that leads to positive environmental effects in ecotourism destinations. There is a growing body of ecotourism and sustainable tourism scholarship pointing to the notion that sustainable practices of tourism comprise an important element in environmental or natural resource management, and is invaluable in the pursuit of long-term ecological integrity (Buckley, 2009; Fennell and Weaver, 2005; Jamal, 2004; Weaver and Fennell, 2004). In other words, ecotourism or sustainable tourism involves active conservation behavior and a partnership with natural resource management institutions. Additionally, the emphasis on the public-private partnership and multi-stakeholder interests in complex social-ecological systems (SESs) helps to form the common ground between the fields of ecosystem management and ecotourism. As a pioneer effort, this study established a set of indicators of conservation contribution in an

attempt to integrate business operation, land use and environmental planning, and natural resource use and conservation (Jamal and Stronza, 2009; Healey, 1997) in order to capture these various connected principles. The indicators can be used to measure tour operators' participatory efforts in natural resource planning and management activities, and to illustrate tour operators' engagement in those types of activities that lead to desirable environmental outcomes.

Second, the findings of the descriptive analysis of the tour operators' activeness in composite conservation contribution add support to the theory of collaborative ecotourism or sustainable tourism. A growing number of researchers have called for a greater focus on directing a community's participation in natural resource management and environmental land use planning to the sustainable tourism domain, where the social-cultural-environmental foci is profoundly articulated (Choi and Jamal, 2010; Jamal et al., 2006; Jamal and Stronza, 2009; Kay and Alder, 2005; Stronza and Gordillo, 2008; Stronza and Pêgas, 2008). Wide-scale recognition of the contributions of the experiences, knowledge, and volunteer labor of professional tour operators during the planning and management processes essential to adaptive environmental governance implies that tour operators' participation provides an increasingly important element in the ecotourism-conservation symbiosis. However, the empirical evidence in this study reveals that this theoretical concept was not necessary true in practice in the tourism industry because a relatively low number of tour operators who indicated that they took part in planning and management activities contributed to environmental conservation.

Third, the explanatory findings of the study provide valuable support to the theory of environmental-development symbiosis in ecotourism (Fennell, 2001; Fennell and

Nowaczek, 2010; Weaver, 2001). To date, there is still little quantitative evidence leading researchers to conclude that ecotourism activities could encourage tourism stakeholders' (e.g., community residents, tourists, and tour providers or guides) in their wetland conservation actions. In addition, no consistent findings have demonstrated that ecotourism engagement measured by working hours, income or revenue, or employment opportunities could motivate conservation behavior. The regression analysis demonstrated that ecotourism involvement was significantly associated with the positive conservation behavior of tour operators. It indicated that greater ecotourism revenue could enhance tour operators' engagement in activities benefiting wetland conservation.

Fourth, the explanatory findings of the study provide insight into the best incentives for fostering conservation through ecotourism activities. The findings suggest that socio-cultural, economic, and conservational benefits are all significant factors for ensuring conservation contributions of tour operators. In addition, the regression results revealed that perceived "socio-cultural benefits" were the leading factor for driving tour operators' conservation contributions. The strong relationship between "socio-cultural benefits" and "ecological benefits" or "economic benefits" provides an interpretation of why both "economic benefits" and "ecological benefits" are also significantly related with tour operators' active approaches in wetland conservation. This presents a clearer illustration of the theory of the social-cultural-environmental paradigm (Jamal et al., 2006) for the role of the conservation principle in ecotourism. It also supplements the argument that social benefits as an incentive lead to long-term conservation while economic benefits ensure short-term outcomes (Jamal and Stronza, 2009; Stonza and Pêgas, 2008). Furthermore, the findings of the explanatory analysis support the literature

in that they affirm the notion that the generation of economic benefits constructs an effective motivation for natural resource conservation. On the other hand, the high correlation between the "socio-cultural benefits" and "economic benefits" found in this study supports the implications of the existing case studies, in that both were mutually supported and connected to ensure positive conservation outcomes (Barkin, 2003; Lindberg et al., 1996; Stem et al. 2003; Stronza and Gordillo, 2008; Young, 1999). In summary, this study can help to answer the question of whether ecotourism works for environmental conservation and what drives it towards the favorable outcomes.

7.2.2 Policy recommendations

This research offers recommendations for policies and practices for planners and natural resource managers who seek to produce positive environmental outcomes for wetland ecosystems in tourism "hot spots." Key motivators for promoting tour businesses' activeness in conserving wetland ecosystems are identified, which provides valuable information about how to encourage the public-private partnerships in natural resource planning and management.

Policy for ecotourism development

The recommendation of this study for ecotourism policy is the continuous and integrated effort to promote ecotourism through adopting regional ecotourism policies and implementation guidelines to nurture sustainable practices. The research findings reveal that "ecotourism involvement" constitutes a significant driver of tour operators' composite conservation contribution. "Ecotourism involvement" is also the most or the second important factor in influencing tour operators' participation in water management and environmental planning processes through knowledge contribution (WMK and PPK).

The reason might be that ecotourism essentially includes dimensional conservation concerns and activities in implementation, and operators engaged in the business are inherently obligated to practice related conservation action.

After Florida's ecotourism state policy was announced in 1997, there seemed to be fragmented and limited policy effort put forth on promoting ecotourism or sustainable tourism by the state tourism development and other related sectors. VISITFLORIDA prepared a comprehensive guide for responsible nature tourism targeting diverse ecosystems, such as forests, rivers and springs, lakes, marshes and swamps, beaches and dunes, and coral reefs in Florida. This is considered an education-oriented task which includes guidelines for environmentally responsible behaviors for visitors, tour providers, and local residents in order to help them minimize the impact of visits. Furthermore, this research can find only one regional professional organization (the Southwest Society for Ethical Ecotourism), and the local or regional credentialing or certification programs for tour providers suggested by the 1997 state policy are still lacking in Florida. On the other hand, many state and county departments and offices (e.g., Florida Department of Environmental Protection (FDEP) and Florida Fish and Wildlife Conservation Commission (FWC)) generally view ecotourism as an important economic activity that benefits both the local economy and natural resource conservation. Numerous state programs have been initiated to stress the positive effects of providing ecotourism opportunities, such as water resource and recreation programs run by several Water Management District offices, as well as the Greenway, Blueway, and Trails projects run by FDEP. Along with an emphasis on various education programs, certain counties have attempted to include ecotourism development strategies in their county's comprehensive

plan, looking for collaborative ways to provide access to renewable natural resources and facilities and opportunities for using them. For instance, the Park and Recreation Plan in Sarasota Country's Comprehensive Plan (updated in November, 2006) highlighted the objective to build partnership with local agencies and the private sector to create opportunities in attracting ecotourists and identified several implementation policies. This measure reflects the strategy suggested by the 1997 state policy. Several institutions of higher education have established ecotourism education programs by integrating environmental conservation and interpretation classes, such as "the Green Guide Certification Program" of Tallahassee Community College and the "Florida Master Naturalist Program" of the University of Florida.

This study suggests the importance of public-private cooperation to market the concepts and practices of ecotourism and the integrated efforts among governmental institutes at different levels to provide long-term healthy ecotourism destinations. The state tourism agency should initiate a leadership and organize a new partnership that coordinates natural, human, and financial capital through the liaison of multiple governmental institutes, NGOs, tourism businesses, and local communities. Such collaborative mechanism forms a learning organization in ecotourism destination management and avoids potential problems from isolated operations for marketing, land use planning, resource use, and conservation (Jamal and Jamrozy, 2006). In addition, an ethical code for ecotourism operators that could guide active and proactive ecotourism practices and certification programs is currently absent, but will need to be adopted and marked through the aforementioned collaborative effort. Furthermore, Florida Department of Community Affairs (FDCA) should add requirements on county's

comprehensive plans to include multi-dimensional ecotourism policies that focus on incorporation with environmental management, and intergovernmental coordination and citizen participation. The measure can promote the role of tourism stakeholders beyond providing sustainable recreation services and stimulate their active conservation approaches.

Policy for enhancing tour operators' perceived social-cultural benefits

This study's recommendation to encourage tour operators' active conservation practices is enhancing the perceived socio-cultural benefits of tourism activities. In this research, tour operators have been found to be considerably motivated to engage in wetland conservation management and planning activities when they perceive greater levels of tourism benefits in the socio-cultural aspect. In addition, the results of factor analysis demonstrate that the composite socio-cultural benefits weigh more on tour operators' greater sense of community and their increased sustainable knowledge about natural resource uses than cultural preservation and empowerment in policy processes of natural resource management. On the other hand, a relatively low frequency of tour operators contributing labor, knowledge, skill, and experience to policy making and management processes, as revealed by the exploratory analysis results, also reflects the need to promote operators' professional capacity for managing natural resources. Therefore, the policy implications of these findings focus on expanding socio-cultural benefits in two ways: intrinsic (i.e., bonds to the community's natural environment), and extrinsic (i.e., gains in resource management capabilities and environmental knowledge). Both will be mutually enhanced through tour operators' participation in natural resource management and decision making.

The first policy suggestion is that environmental planners and water resource managers should strengthen professional information and knowledge sharing with tourism businesses through formal and informal connections for conservation planning and management purposes. Fostering the sense of place and management capability of the professional stakeholders (e.g., tour operators) relies on how well they are informed about their natural environments and incorporated into the environmental management mechanism. Many scholars recognize the mutually supportive requirements of learning, deliberation through multiple types of knowledge contribution, and the building of trust in adaptive and collaborative environmental management (Folke, et al., 2003; Jamal and Watt, 2011; Plummer and Armitage, 2010; Wondolleck and Yaffee, 2000). Although community-based tourism has gradually become emphasized in environmental governance in Florida (e.g., the Florida Scenic Highway Programs of DOT), adequate access to management information, effective sharing of professional and scientific information, and effective sharing participation opportunities still need to be enhanced, especially for professional stakeholders (e.g., nature-based tour operators).

Strategies of information and knowledge sharing for planning and management institutions could include disclosing updated research and management information in public meetings or workshops, providing free training courses about environmental management, diversifying environmental volunteer opportunities, and information campaigning through social media. The most effective way could be linking scientific information and management effort with tourism development. Planners should greatly utilize the advantage of Florida tour operators' stronger orientation to a sense of place. As discovered by this research's survey results, tour operators tend to show strong

attachment to their natural landscapes, which could account for their dependence on Florida's natural environments. This also illuminates the high potential of tour operators' responsibility toward natural resources because of tour operators' strong bond with and common interest in wetland ecosystems, in which guided tours often take place. Therefore, tour operators should always be updated about how emerging environmental issues and governmental environmental strategies concerning wildlife and natural landscape conservation are related to their sustainable tourism practices. It could effectively increase tour operators' connection to their natural environments and enhance their sustainable knowledge through tourism operations. In addition, effective data and policy communication through high-tech data presentations and social media should be applied to this target group (i.e., tour operators) to reduce distrust of private businesses, facilitate their contribution of practical environmental knowledge, and turn their concerns or awareness into productive actions.

The second policy recommendation is to actively incorporate sustainable tourism practices into relevant community environmental management programs. Tour operators who are properly engaged in the environmental management and policy making processes could be inspired to have a stronger sense of place and be more capable of sustainably managing natural resources. For instance, most communities in FDCA's Waterfronts Florida Program are interested in expanding ecotourism development using the program's funding. Emphasizing sustainable tourism operations in this kind of initiative is a critical measure to engage tour operators in environmental management systems and encourage their conservation actions. However, the mandatory enactment

and implementation of locally adaptive ecotourism practices in applying for this state financial subsidy to manage water resources seems to be lacking.

The involvement of sustainable tour operators at different levels of government could be facilitated by broadening social networking and enhancing social marketing in the collaborative environmental management processes. Innovative and contemporary networking mechanisms (e.g., Facebook or Twitter) and multiple education means (e.g., local mass media, community signage, and tourism websites) could be used to capture existing social networks and create new networks. They also offer effective communication tools and supportive resources for collaborative natural resource management. The purpose of these networking tools is not only to launch information campaigns, educate the public, and to compound the efforts of business marketing and conservation, but also to encourage participants to seek out mutual interactions. In addition, working with NGOs or educational institutions is a significant way to establish informal relationships with professional stakeholders (e.g., tour operators). The traditional distrust between tour businesses and governmental natural resource institutions arose due to their often conflicting roles, with one side supporting deregulation in the pursuit of profits and the other more intense regulation for controlling the issue of "the commons." Non-government institutes can work as a mediator or bridging organization between stakeholders with the shared goal of conservation. For instance, the Biosphere Institutes, a nonprofit society founded to ensure ecological integrity through education, research, and outreach in the Bow Valley in Canada, initiated sustainable pedagogic approaches to engage residents and visitors in environmental participatory governance in tourism destinations (Jamal and Watt, 2011).

7.3 Study limitations and future research

7.3.1 Study limitations

The study has several limitations, primarily because it is a pioneer study focusing on tour operators' conservation behavior concerning wetland ecosystems in Florida. The first limitation involves sampling, and is also discussed in the section describing validity threats in Chapter IV. This study has a relatively small sample size. The survey received a 31% response rate (or 97 responses), and 80 samples that included complete data were incorporated in the regression analyses. This influences the statistical power to make accurate conclusions about the associations between the dependent and independent variables. In addition, the failure of random sampling, which is not applicable when the population size is very limited (i.e., 318 tour operators were drawn from the sampling frame), might induce a potential bias on the collected data. The second limitation to this study is that it did not include some influential contextual factors in the analysis. This, however, is a common challenge in social science research. The dependent variables in this study are conservation actions pertaining to involvement in land use and environmental planning, and natural resource management activities. Those are generally external to a tour operator's regular business operation, and considerably influenced by policy frameworks and collaborative environments at different levels of government. In addition, Florida's historical development might facilitate tour operators' higher level of environmental ethics and greater conservation contributions, coincidently reflecting ecotourism's ethical principles and overarching goal of sustainability. Florida also has particularly special wetland environments, a long-developed history of nature-based tourism, and a relatively higher level of environmental

awareness in its residents, which might affect the application of the findings of this study to other places. The last limitation of this study is the difficulty of expressing the causalities and effects among three incentives for tour operators to engage in conservation activities. The literature has discussed the mutual support of these incentives in leading local residents to participate in conservation contributions in ecotourism areas. However, it could not be explicitly shown by regression analyses due to their mutual strong relationships. Factor analyses illustrate the relationship between each item and the underlying factor (i.e., economic, conservational, or socio-cultural benefit) by the factor loading; however, policy recommendations are limited because the significance test for each specific item or indicator is lacking.

7.3.2 Future studies

This study is a preliminary effort toward helping researchers understand whether ecotourism can contribute to wetland conservation. As such, there are several opportunities for further study. First, tour operators' corporate social responsibility for sustainable destinations management has gradually attracted research attentions due to environmental degradation and climate change, especially in Europe (Sheldon and Park, 2011). There are multiple macro-level factors influencing tour operators' environmental behaviors; therefore, future studies should explore the effects of those contextual factors on individual tour operators' behaviors in Florida. The Contextual Interaction Theory (Bressers, 2009) indicates that individual actor's characteristics influence the social interaction process, and in turn are also influenced during the process. The regression analyses should consider the differences between tour operators' various actions derived from different motivations, cognitions (i.e., information for support), and resources (i.e.,

capacity) in order to identify the significant predictors to conservation contributions at the micro level. At the same time, some external factors at the macro level may play important roles, including specifics within the context of wetland resources (e.g.. the experience of wetland loss and the abundance of wetland resources for tourism development), the structural context regarding planning and management (e.g.. the quality of a county's comprehensive plans in light of public participation and the activeness of NGOs), and other wider contexts (e.g., social, economic, and political background). For the analysis method, both single and multiple level modeling analyses can be applied in exploring the causal relationships between independent and dependent variables. The data in social science research is often nested or hierarchical; indicating that different groups or nests of tour operators (e.g., based on "county") might have distinct regression relationships caused by the effects of such context factors. Some variation in the dependent variables might be accounted for by the variance between the groups of tour operators. In order to capture the effects of such variables across groups (i.e., random effects), future studies should also attempt to run Hierarchal Linear Models (HLM) to better explain how the contextual factors at the county levels might influence tour operators' engagement in a fixed set of conservation activities.

Second, future studies should also attempt to understand the relationship between the "ecotourism involvement" of tour operators and their on-tour and in-field sustainable approaches during visits, considered essential for minimizing negative environmental impacts (Buckley, 2009). Those sustainable tourism practices were constructed based on the literature and the *Guide to Responsible Nature and Cultural Heritage Tourism* prepared by VISITFLORIDA (e.g., "keep the group sizes small to

reduce impact") and incorporated in this research survey to investigate the respondents' environmental behavior in light of minimizing negative impacts on wetland ecosystems. Further research interests will be centered on using this collected data to examine whether increased ecotourism involvement in terms of revenue could encourage more environmentally responsible behavior during visitation to these wetland areas.

Third, future studies should seek to include more items of conservation contribution regarding participatory activities in environmental planning and management, which are considered effective in leading to positive environmental impacts. These items might include working with governmental institutes (e.g., volunteering to report environmental problems in wetland areas or guiding a working holiday tour to restore wetlands) and NGOs (e.g., volunteering for NGO-sponsored land trust programs). Future studies would need to further define such elements through interviews with natural resource planning and management staff. The purpose would be to list the planning and management activities currently open to the public's involvement and the activities potentially proper for incorporation into the expected conservation contributions of tour businesses. Furthermore, an important consideration is that the series of conservation behaviors should be adaptive to the characteristics of different research areas (i.e., in other states or countries). The planning and decision making framework and management organization and structures might change with changes in geographical location. In addition, inclusion of or changes to some items specific to the research area would increase the validity and reliability of the measurement. The application of the measurement in other states with different tourism focuses and environmental management policies would facilitate the comparison among places and

the more precise predictions with a bigger sample size. Eventually, it will provide more information to guide policy makings.

REFERENCES

Albrecht, D., Bultena, G., Hoiberg, E. & Nowak, P. (1982). Measuring environmental concern the new environmental paradigm scale. *Journal of Environmental Education*,*13*(3),39-43.

Alessa, L., Kliskey, A., & Robards, M. (2004). Ecological impacts of ecotourist visitation on Macroalgal Beds in Pacific Rim National Park Reserve (Ch.23) in Buckley, R. (ed). *Environmental impacts of ecotourism*. New York:CABI

Baker, N. J. (2008). Sustainable wetland resource utilization of Sango Bay through eco-tourism development. *African Journal of Environmental Science and Technology*, *2* (10), p.326-335

Bardecki, M. J. (1984). What value wetlands? *Journal of Soil and Water Conservation*, *39*(3), 166-169.

Barkin, D. (2003). Alleviating poverty through ecotourism: Promises and reality in the Monarch Butterfly Reserve of Mexico. *Environment, Development and Sustainability*, *5* (3-4), 371-382

Beatley, T. (1989). Environmental ethics and planning theory. *Journal of Planning Literature*, *4* (1),1-32.

Boo, E. (1991). *Ecotourism: The potentials and pitfalls (v.1)*. Washington D.C.: World Wildlife Fund.

Boo, E. (1993). Ecotourism planning for protected areas (p.15-31) in Lindberg, K. & Hawkins, D. (Eds.) *Ecotourism: A guide for planners and managers.* North Bennington, VT: The Ecotourism Society.

Boyd, S. & Butler, R. (1996). Managing ecotourism: An opportunity spectrum approach. *Tourism Management*, *17*,557-566

Bressers, H.T.A. (2009). From public administration to policy networks: Contextual interaction analysis (p.123-42) in Nahrath, S. and Varone, F. (Eds.) *Rediscovering public law and public administration in comparative policy analysis*. Berne, Switzerland: Haupt Verlag.

Brody, S. D. (2003). Measuring the effects of stakeholder participation on the quality of local plans based on the principles of collaborative ecosystem management. *Journal of Planning Education and Research*, *22*, 407-419.

Brody, S. D. & Highfield, W.E. (2005). Does planning eork? Testing the implementation of local environmental planning in Florida. *Journal of American Planning Association*,*71**(2)***,159-175.

Brody, S.D., Highfield, W.E., Ryu, H. & Spanel-Weber, L. (2007). Examining the relationship between wetland alternation and watershed flooding in Texas and Florida. *Nat Hazards, 40*(2), 413-428.

Brody, S.D. (2008). *Ecosystem planning in Florida: Solving regional problems through local decision making*. Hampshire, England: Ashgate Press.

Brody, S.D., Davis, S., Highfield, W. & Bernhardt, S. (2008). A spatial-temporal analysis of wetland alteration in Texas and Florida: Thirteen years of impact along the coast. *Wetlands,28*(1), 107-116.

Brown, T. & Decker, D. (2005). Research needs to support community-based wildlife management: Global perspective. *Human Dimensions of Wildlife, 10*, 137-140

Buckley, R. (2003). Ecological indicators of tourism impacts in parks. *Journal of Ecotourism, 2*(1), 54-66

Buckley, R. (2004). *Environmental impacts of ecotourism*. New York:CABI

Buckley, R. (2009). Evaluating the net effects of ecotourism on the environment: A framework, first Assessment and future research. *Journal of Sustainable Tourism*, *17*(6), 643-672

Butcher, J. (2006). Natural capital and the advocacy of ecotourism as sustainable development. *Journal of Sustainable Tourism*, *14* (6), 529-544

Ceballos-Lascur'ain, H. (1996). *Tourism, ecotourism, and protected Areas: The state of nature-Based tourism around the world and guidelines for its development*. Gland, Switzerland: International Union for Conservation of Nature and Natural Resources (IUCN)

Campbell, L. (2002). Conservation narratives and the 'received wisdom' of ecotourism: Case studies from Costa Rica. *The Journal of Sustainable Development, 5* (3),300-326

Child, D. (1990). *The essentials of factor analysis (2nd Ed.)* London: Cassel Educational Limited.

Choo, H. & Jamal, T. (2009). Tourism on organic farms in South Korea: a new form of ecotourism. *Journal of Sustainable Tourism, 17* (4),431-454

Cullingworth, B. & Caves, R.W. (2003). Environmental policy (Ch 15). in *Planning in the U.S.A. : Policies, issues, and processes* (2nd Edition). London, New York : Routledge

Davenport, J. & Davenport, J.L. (2005). The impact of tourism and personal leisure transport on coastal environments: A review. *Estuarine, Coastal and Shelf Science*, *67,* 280-292

Das, N. & Syiemelieh, H.J. (2009). Ecotourism in wetland ecology. *An International Journal of Tourism and Hospitality Research*, *20* (2), 445-449

De Alwis, R. (1998). Globalization of ecotourism, in East, P., Luger, K. & Inmann, K. (eds) *Sustainability in mountain tourism: Perspectives for the Himalayan countries*. Delhi: Book Faith India.

Dearden, P., Bennett, M. & Rollins, R. (2007). Perceptions of diving impacts and implications for reef conservation. *Costal Management*, *35*,305-317.

Dillman, D.A. (2007). *Mail and internet surveys: The tailored design method (2nd ed)*. New York: John Wiley & Sons.

Dimanche, F. & Smith, G. (1996). Is eco-tourism and appropriate answer to tourism's environmental concerns?' *Journal of Hospitality and Leisure Marketing*, *3* (4), 67-76

Dunlap, R.E. & Van Liere, K. (1978). The new environmental paradigm: A proposed measuring instrument. *Journal of Environmental Education, 9*,10-19

Edwards, S. N., McLaughlin, W.J., & Ham, S.H. (1998). Volume I, executive summary, The definitions-based ecotourism model, ecotourism policy comparison in *Comparative Study of Ecotourism Policy in the Americas*. Department of Resources Recreation and Tourism, College of Forestry, Wildlife and Range Resource, University of Idaho/ Inter-sectoral Unit for Tourism. Organization of American States.

Feeny, D., Berkes, F., McCay, B. & Acheson, J. (1990). The Tragedy of the commons: Twenty-two years later. *Human Ecology*, *18*(1), 1-19.

Fennell, D. A. & Malloy, D. (1999). Measuring the ethical nature of tourism operators. *Annals of Tourism Research, 26* (4)*,* 928-943.

Fennell, D. A. (2001). Areas and Needs in Ecotourism Research (p.639-655) in Weaver, D. (ed) *The encyclopedia of ecotourism*, New York: CABI.

Fennell, D.A. (2002). Editorial, Ecotourism: Where we've been; Where we're going. *Journal of Ecotourism*, *1* (1), 1-6

Fennell, D. A. & Dowling, R.K. (2003). *Ecotourism policy and planning*. New York: CABI Publishing

Fennell, D. A. & Weaver, D. (2005). The Ecotourism concept and tourism-conservation symbiosis. *Journal of Sustainable Tourism*, *13* (4), 373-390

Fennell, D. A. (2008). *Ecotourism (3rd ed.)*. London: Routledge.

Fennell, D. A. & Nowaczek, A. (2010). Moral and empirical dimensions of human-animal interactions in ecotourism: Deepening an otherwise shallow pool of debate.' *Journal of Ecotourism*, *9* (3), 239-255.

Fink, A. (2009). *How to conduct surveys: A step-by-step guide (4th ed).* Thousand Oaks, CA: Sage Publications, Inc

Fitzgerald, L. A. & Stronza, A. L. (2009). Applied biodiversity science: Bridging ecology, culture, and governance for effective conservation. *Interciencia*, *34* (8), 563-570

Florida Department of Environmental Protection. (1994). *1994 State Comprehensive Outdoor Recreation Plan*. Tallahassee, FL: Florida Department of Environmental Protection, Division of Recreation and Parks, Office of Park Planning.

Fowler, G. (1999). Behavioral and hormonal responses of Magellanic penguins (Spheniscus Magellanicus) to tourism and nest site visitation. *Biological Conservation, 90*, 143–149.

Folke, C., Colding, J. & Berks, F. (2003). Synthesis: Building resilience and adaptive capacity in social-ecological Systems.(p.252-387) in Berks, F., J. Colding, C. Folke. (ed.) *Navigating social-ecological systems*. Cambridge University Press, Cambridge.

Galaz, V., Olsson, P., Hahn, T., Folke, C. & Svedin, U. (2008). The problem of fit among biophysical systems, environmental and resource regimes, and broader governance systems: Insights and emerging Challenges.(p.147-186) in Young, O.R., King, L.A. & Schroeder, H. (ed.) *Institutions and environmental change*. Cambridge: MIT.

Goodwin, H. (1996). In pursuit of ecotourism. *Biodiversity and Conservation*, *5*(3), 277-291.

Grumbine, E. (1994). What is ecosystem management? *Conservation Biology*, *8*(1), 27-38.

Hair, J. F., Anderson, R. E. Tatham, R. L., & Black, W. C. (1992). Multivariate data analysis with readings (3rd ed.). New York: Macmillan.

Hall,C.M.(1998). Historical antecedents of sustainable development and ecotourism: New labels on old bottles? (p.3-24) in Hall, C.M. & Lew, A.A. (eds), *Sustainable tourism: A geographical perspective*. New York: Longman

Hamilton, L. (1992). *Regression with graphics: A second course in applied statistics*. Belmont, CA: Brooks/Cole

Hamilton, L. (1998). *Statistics with STATA5*. Belmont, CA: Duxbury Press

Harman, H. H. (1976). *Modern factor analysis (3rd Ed.)*. Chicago: University Of Chicago Press

Hawken, P. (1993). *The ecology of commerce: A declaration of sustainability*. New York: Harper Business Publications

Highfield, W. & Brody, S. D. (2006). The price of permits: Measuring the economic impacts of wetland development on flood damages in Florida. *Natural Hazards Review*, *7*(3), 123-130.

Hill, J. , Woodland, W., & Gough, G. (2007). Can visitor satisfaction and knowledge about tropical rainforests be enhanced through biodiversity interpretation, and does this promote a positive attitude towards ecosystem conservation? *Journal of Ecotourism*, *6*(1), 75-85.

Hill, J. & Gale, G. (edit). (2009). *Ecotourism and environmental sustainability*. Burlington, Virginia: Ashgate

Hoffman, A. (2000). *Competitive environmental strategy: A guide to the changing business landscape*. Washington D.C.: Island Press.

Holden, A. (2008). *Environment and tourism*. New York: Routledge.

Honey, M. (1999). *Ecotourism and sustainable development- who owns paradise*. Washington D.C.: Island Press.

Hwang, Y-H, Kim, S-I, & Jeng, J-M. (2000). Examining the causal relationships among selected antecedents of responsible environmental behavior. *Journal of Environmental Education*, *31* (4), 19-25

Jackson, S. (2007). Attitudes towards the environment and ecotourism of stakeholders in the UK tourism industry with particular reference to Ornithological tour operators. *Journal of Ecotourism*, *6* (1),34-66.

Jamal, T. & Eyre, M. (2003). Legitimation struggles in national park spaces: The Banff Bow Valley Round Table. *Journal of Environmental Planning and Management, 46* (3), 417-441

Jamal., T. (2004). Conflict in natural area destinations: A critique of representation and interest in participatory processes. *Tourism Geographies*, *6* (3), 352-379.

Jamal, T. & Tanase, A. (2005). Impacts and conflicts Surrounding Dracula Park, Romania: The role of sustainable tourism principles. *Journal of Sustainable Tourism, 13* (5),440-455.

Jamal, T. & Jamrozy, U. (2006). Collaborative networks and partnerships for integrated destination management (p.164-172). in Buhalis, D. & Costa, C. (Eds.) *Tourism management dynamics*. Amsterdam: Elsevier.

Jamal, T., Marcos, B. & Stronza, A. (2006). The institutionalisation of ecotourism: Certification, cultural equity and praxis. *Journal of Ecotourism*, *5* (3),145-175.

Jamal, T. & Stronza, A. (2009). Collaboration theory and tourism practice in protected areas: Stakeholders, structuring and sustainability. *Journal of Sustainable Tourism*, *17* (2), 169-189

Jamal, T. & Watt, E. M. (2011). Climate change pedagogy and performative action. *Journal of Sustainable Tourism*, *19* (4-5), 571-588.

Johnson, S. A., Bjorndal, K. A., & Bolten, A.B. (1996). A survey of organized turtle watch participants on sea turtle nesting beaches in Florida. *Chelonian Conservation and Biology*, *2*(1), 60-65.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrka, 39*, 31-36.

Kay, R. & Alder, J. (2005). Major coastal management and planning techniques.(p.133-240) and Coastal management planning.(p.241-336) in *Coastal Planning and Management (2nd Ed)*. London & New York: Taylor & Francis Group.

Klein, R.B. (2005). *Principles and practices of structural equation modeling (2nd Ed).* New York: The Guilford Press.

Laing, J. H., Lee, D., Moore, S.A., Wegner, A. & Weiler, B. (2009). Advancing conceptual understanding of partnerships between protected area agencies and the tourism industry: A postdisciplinary and multi-theoretical approach. *Journal of Sustainable Tourism*, *17* (2), 207-229.

Lackey, R. (1998). Seven pillars of ecosystem management. *Landscape and Urban Planning*, *40*, 21-30.

Langholz, J. (1999). Exploring the effects of alternative income opportunities on rinforest use. *Society and Natural Resources,12* (2), 139-150.

Leiberknecht, K., Papazian, J. & McQuay, A. (1999). Balancing conservation and economics: The development of an ecotourism plan for Panama. *Journal of Sustainable Forestry*, *8* (3/4), 107-126.

Lessard, G. (1998). An adaptive approach to planning and decision-making. *Landscape and Urban Planning*, *40*, 81-87.

Lim, C. & McAleer, M. (2005). Use of wetlands for sustainable tourism management. *Ecological Sustainable Tourism Management*, *2005*, 490-495.

Lindberg, K., Enriquez, J. & Sproule, K. (1996). Ecotourism questioned case studies from Belize. *Annals of Tourism Research*, *23*(3), 543-562.

Lindstedt, D.M. (2005). Renewable resources at stake: Barataria-Terrebonne esturine system in Southeast Louisiana. *Journal of Coastal Research*, *44*,162-175.

Lück, M. (2002). Large-scale ecotourism- A contradiction in itself? *Current Issues in Tourism*, *5* (3&4), 361-370.

Ludwig, D., Hilborn, R. & Walters, R. (1993). Uncertainty, resource exploitation, and conservation: Lessons from history. *Science*, *60*(17), 36.

Mileti, D.S. (1999). 'Disasters by Design: A Reassessment of Natural Hazards in the United States". Washington D.C.: Joseph-Henry

Monz, C. A. & Twardock, P. (2004). Campsite impacts in Prince William Sound (Ch.19) in Buckley, R. (ed). *Environmental impacts of ecotourism*. New York:CABI

Moore, P.D. (2007). *Wetlands (revised edition)*. New York: Facts on File, Inc.

Mosisch, T. D. & Arthington, A.H. (2004). Impacts of recreational power-boating on freshwater ecosystems (Ch.8) in Buckley, R. (ed). *Environmental impacts of ecotourism*. New York:CABI

Narayan, S. (1998). *Below the Surface : the Impacts of Ecotourism in Costa Rica* (Ch.7) in The course material of population-environment dynamics: Transitions and Sustainability. University of Michigan, School of Natural Resources and Environment.

Nelson, J. G. (1994). The spread of ecotourism: Some planning implications. *Environmental Conservation, 21*(3),248-255

Nevin, O., & Gilbert, B. (2005). Measuring the cost of risk avoidance in brown bears: Further evidence of positive impacts of ecotourism. *Biological Conservation, 123*, 453–460.

Olson, T. L., Gilvert, B. K., & Squibb, R. C. (1996). The effects of increasing human activity on brown bear use of an Alaskan river. *Biological Conservation, 82,* 95-99.

Orams, M. (1995). Towards a more desirable form of ecotourism. *Tourism Management, 16* (1),3-8.

Orams, M. (1997). The effectiveness of environmental education: Can we turn tourists into greenies? *Progress in Tourism and Hospitality Research, 3* (4),295-306.

Pan, L., Cui, L. & Wu, M. (2010). Tourist behaviors in wetland park: A preliminary study in Xixi National Wetland Park, Hangzhou, China. *Chinese Geographical Science, 20* (1),66-73.

Peake, S., Innes, P. & Dyer, P. (2009). Ecotourism and conservation: Factors influencing effective conservation messages. *Journal of Sustainable Tourism, 17* (1), 107-127.

Pemberton, C. A. & Mader-Charles, K. (2005). Ecotourism as a means of conserving wetlands'. *Journal of Agricultural and Applied Economics, 37* (2), 463-474.

Plummer, R. & Armitage, D. (2010). Integrating perspectives on adaptive capacity and environmental governance. (Ch.1) in Plummer, R. & Armitage, D. (ed). *Adaptive capacity and environmental governance*. Heidberlberg, Germany: Springer.

Powell, R. & Ham, S. (2008). Can ecotourism interpretation really lead to pro-conservation knowledge, attitudes and nehavior? Evidence from the Galapagos Islands. *Journal of Sustainable Tourism, 16* (4),467-489.

Priskin, J. (2004). Four-wheel drive vehicle impacts in the central coast region of Western Australia. (Ch.22) in Buckley, R. (ed). *Environmental impacts of ecotourism*. New York: CABI

Randolph, J. (2004). Ecosystem and watershed management; Landscape ecology, urban forestry, and wetlands; Land use, wildlife habitats, and biodiversity; Integration methods for environmental land analysis (ch10; ch16-18). in *Environmental land use planning and management*. Island Press: Washington, D.C.

Rogers, P. & Aitchison, A. (1998). *Towards sustainable tourism in the Everest region of Nepal*. Kathmandu: International Union for Conservation (IUCN)

Rotherham, I. D. , Doncaster, S. & Egan, D. (2005). Nature-based leisure and tourism in England's Humberhead Levels. *Current Issues in Tourism, 8* (2&3),214-230.

Schackley, M. (1996). *Wildlife tourism.* London: International Thomson Business Press.

Scheyvens, R. (1999). Ecotourism and the empowerment of local communities. *Tourism management, 20* (2), 245-249

Sheldon, P.J. & Park, S-Y. (2011). An exploratory study of corporate social responsibility in the U.S. travel industry. *Journal of Travel Research, 50*(4), 392-407.

Shultis, J. D. & Way, P. A. (2006). Changing conceptions of protected areas and conservation: Linking conservation, ecological integrity and tourism management. *Journal of Sustainable Tourism, 14* (3), 223-237.

Sirakaya, E. & McLellan, R.W. (1998). Modeling tour operators' voluntary compliance with ecotourism principles: A behavioral approach. *Journal of Travel Research, 36* (3),42-55.

Smardon, R.C. (2006). Heritage values and functions of wetlands in Southern Mexico. *Landscape and Urban Planning, 74*, 296-312.

Solomon, B. D., Corey-Luse, C.M. & Halvorsen, K.E. (2003). The Florida manatee and eco-tourism: Toward a safe minimum standard. *Ecological Economics, 50*,101-115.

Stein, T. V., Clark, J.K., & Rickards, J.L. (2003). Assessing nature's role in ecotourism development in Florida: Perspectives of tourism professionals and government decision-makers. *Journal of Ecotourism, 2*(3), 155-172.

Stem, C., Lassoie, J., Lee, D., Deshler, D. & Schelhas, J. (2003). Community participation in ecotourism benefits: the links to conservation practices. *Society and Natural Resources, 16,* 387-413.

Stem, C., Lassoie, J., Lee, D., & Deshler, D. (2003). How "Eco" is ecotourism? A comparative case study of ecotourism in Costa Rica. *Journal of Sustainable Tourism, 11* (4), 322-347.

Stonich S.C. (2000). *The other side of paradise: Tourism, conservation, and development in the Bay Islands.* New York: Cognizant Commun.Corp.

Stronza, A. (2007). *The economic promise of ecotourism for conservation. Journal of Ecotourism, 6* (3),170-190.

Stronza, A. & Gordillo, J. (2008). Community views of ecotourism. *Annals of Tourism Research, 35* (2), 448-468.

Stonza, A. & Pêgas, F. (2008). *Ecotourism and conservation: Two cases from Brazil and Peru. Human Dimensions of Wildlife, 13*, 263-279.

Svoronou, E. & Holden, A. (2005). Ecotourism as a tool for nature conservation: The role of WWF Greece in the Dadia-Lefkimi-Soufli Forest Reserve in Greece. *Journal of Sustainable Tourism, 13* (5), 456-467.

Teisl, M.F., Southwick, R.I. & Hussey, S.L. (1998). *The 1996 economic benefits of watchable wildlife recreation in Florida.* Tallahassee, FL: Florida Game and Fresh Water Fish Commission.

Tepelus, C. M. (2003). Aiming for sustainability in the tour operating business. *Journal of Cleaner Production, 13*, 99-107.

The Cultural Heritage and Nature Tourism Development Committee. (2007). *Guide to responsible nature and cultural heritage tourism in Florida (reprinted April, 2007)*. VISITFLORIDA.

Thorndike, R.M., Cunningham, G.K., Thorndike, R.L. & Hagen, E.P. (1991). *Measurement and evaluation in psychology and education*. New York: Macmillan Publishing Company.

Van der Duim, R. & Marwijk, R. (2006). The implementation of an environmental management system for Dutch tour operators: An actor-network perspective. *Journal of Sustainable Tourism, 14* (5), 449-472.

VISITFLORIDA. (2010). Inside VISIT FLORIDA. Retrieved May 30, 2010, from http://www.visitflorida.org/AM/Template.cfm?Section=Inside_Visit_Florida.

Wall, G. (1997). Is ecotourism sustainable? *Environmental Management, 21*,483-491.

Wallace, G.N.& Pierce, S.M. (1996). An evaluation of ecotourism in Amazonas, Brazil. *Annals of Tourism Research, 23* (4), 843-873.

Warnken, J. & Buckley, R. (2004). Instream bacteria as a low-threshold management indicator of tourist impacts in conservation reserves' (ch. 21) in Buckley, R. (ed). *Environmental empacts of ecotourism.* New York:CABI.

Weaver, D. B. (ed.) (2001). *The encyclopedia of ecotourism*. New York: CABI.

Weaver, D. & Lawton, L.J. (2007). Twenty years on: the state of contemporary ecotourism research. *Tourism Management, 28,* 1168-1179.

Wight, P. (1993). Ecotourism: Ethics or eco-Sell? *Journal of Travel Research, 31* (3), 3-9.

Williams, D. & Stewart, S. (1998). Sense of place: An elusive concept that is finding a home in ecosystem management. *Journal of Forestry, 96* (5),18-23.

Wilson, C. & Tisdell, C. (2003). Conservation and economic benefits of wildlife-based marine tourism: Sea turtles and whales as case studies. *Human Dimensions of Wildlife, 8* (1),49-58.

Wondolleck, J. & Yaffee, S. (2000). *Making collaboration work: Lessons from innovation in natural resource management*. Washington, D.C.: Island Press.

Wunder, S. (1999). *Promoting forest conservation through ecotourism income? A case study from the ecuadorian Amazon region*. Bogor, Indonesia: CIFOR.

Wunder, S. (2000). Ecotourism and economic incentives- An empirical approach. *Ecological Economics, 32*, 465-479.

Wyman, M.S. & Stein, T.V. (2007). *Introducing ecotourism to Florida's counties and landowners: An ecotourism/ nature based tourism fact sheet.* The series of the School of Forest and Conservation, Florida Cooperative Extension Service, Institute of food and Agricultural Sciences. University of Florida.

Yates, G.E., Stein, T.V. & Wyman, M.S. (2010). Factors for collaboration in Florida's tourism resources: Shifting gears from participatory planning to community-based management. *Journal of Landscape and Urban Planning, 97*, 213-220.

Young, E. (1999). Balancing conservation with development in small-scale fisheries: Is ecotourism an empty promise? *Human Ecology, 27*(4), 581-620.

Zambrano, A. M. A., Broadbent, E. N., & Durham, W.H. (2010). Social and environmental effects of ecotourism in the Osa Peninsula of Costa Rica: the Lapa Rios case. *Journal of Ecotourism, 9* (1), 62-83.

Ziffer, K. (1989). *Ecotourism: An uneasy alliance*. Working Paper No. 1, Conservation International, Washington, DC

APPENDIX I

TEXAS A&M UNIVERSITY
DIVISION OF RESEARCH AND GRADUATE STUDIES - OFFICE OF RESEARCH COMPLIANCE

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Human Subjects Protection Program

Institutional Review Board

DATE: 25-Oct-2010

MEMORANDUM

TO: LIN, LI-PIN
77843-3578

FROM: Office of Research Compliance
Institutional Review Board

SUBJECT: Initial Review

Protocol Number:	2010-0737
Title:	Examining the effects of Ecotourism Involvement and Tourism Benefits on Tour Operator Conservation Contributions to Wetland Ecosystem in FL.
Review Category:	Exempt from IRB Review

It has been determined that the referenced protocol application meets the criteria for exemption and no further review is required. However, any amendment or modification to the protocol must be reported to the IRB and reviewed before being implemented to ensure the protocol still meets the criteria for exemption.

This determination was based on the following Code of Federal Regulations:
(http://www.hhs.gov/ohrp/humansubjects/guidance/45cfr46.htm)

45 CFR 46.101(b)(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior, unless: (a) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (b) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Provisions:

This electronic document provides notification of the review results by the Institutional Review Board.

APPENDIX I

November 1, 2010

1. What is the zip code of your business location (in your mailing address)? _____

2. How many employees your company has? _____ full-time, and _____part-time

3. On average, how often do you have your company's guided tours in wetlands areas (SWAMPS, FRESHWATER AND SALTWATER MARSHES, BOGS, EVERGLADES, and similar areas) in the past year?

Almost daily (6-7days/ week)	Very frequently (4-5 days/ week)	Occasionally (2-3 days /week)	Rarely (1 day/ week)	Very rarely (1-2 times/ month)	Never
☐	☐	☐	☐	☐	☐

4. Please answer the following questions about your company's tours in WETLAND areas in the past year. (If you did not have wetland tours, please skip to Question 5.)

(1) On average, what is the distance between your business office and your wetland destination?
- ☐less than 1 mile (including, but not limited to the on-site wetland)
- ☐farther than 1 mile, about _____miles

(2) What was the average size of travel groups?_____ tourists.

(3) How was trash on tours disposed? (check all that apply)
- ☐ Provided tourists with garbage bags,
- ☐ Collected the garbage from tourists at the end of tour,
- ☐ Told tourists where they can dump trash,
- ☐ Told tourists how they can dump trash,
- ☐ Had trash recycling,
- ☐ Provided other ways to collect trash produced by tourists,
- ☐ Special attention was not paid to trash management.

(4) Did you allow your tourists to pick wild plants? ____ yes ,_____no, _____ sometimes under proper circumstances

(5) Did you allow your tourists to touch, feed, or play with wild animals? ____ yes, ____no, _____,sometimes under proper circumstances

(6) How was information about the environmental characteristics of wetlands disseminated? (check all that apply)
- ☐ Oral or video presentations,
- ☐ Brochures or other handout materials,
- ☐ Personally answering environmental –related questions from tourists,
- ☐ Information was not provided.

(7) On your company's tours in WETLAND areas over the past year, what was the approximate percentage (%) of time used for the above environmental information dissemination? _____%

(8) Did you use **WATERCRAFTS** on wetland tours?
Yes__ , and what was the approximate percentage of tours
using trolling motor? ____%,
using pole or paddle?_____%,
using other types of watercrafts? ____%
No__, please skip to Question (9)

(9) Did you use **OFF-ROAD VEHICLES** on wetland tours?
____ Yes, and what was the approximate percentage of tours
using Swamp Buggy?____%
using Hummer? ____%
using other types of vehicles? ____%, and what is it? _____(please list)
____No, please skip to Question (10)

(10) Did you guide **WALK /HIKE TOURS** in wetland areas?
_____ Yes, and what was the approximate percentage of tours
remaining on the boardwalks? _____%
remaining on the walking trails? _____%
creating new trails?_____%
others? _____% and what is it? _____ (please list)
____No.

5. Please rate how well nature-based tourism benefited YOUR COMMUNITY in terms of the following items in the past year?

	Not at all				Very well
(1) Bringing economic opportunities to other businesses.....	1	2	3	4	5
(2)Improvement of local tax revenue.....	1	2	3	4	5
(3)Less pollution (water, air, soil, or noise) compared to other tourism activities.....	1	2	3	4	5
(4) Wildlife protection (e.g., the population of manatee)	1	2	3	4	5
(5)Natural landscape or habitat protection.....	1	2	3	4	5
(6) Increase in local residents' environmental awareness	1	2	3	4	5
(7) Long-term conservation efforts (e.g., Florida's Greenway and Trials Project).....	1	2	3	4	5
(8) Collection of data about natural resources and human activities (e.g. Florida's Blueways Project).....	1	2	3	4	5
(9) Preserving local cultures or heritages.....	1	2	3	4	5
(10) Revitalizing local or tribal traditions on natural resources uses	1	2	3	4	5

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6. Please indicate the average frequency of your company's involvement in the following activities in the past year.

	Never	Rarely	Sometimes	Very often	Always
(1) Gave cash donations to wetland conservation programs.....	1	2	3	4	5
(2) Guided tours to parks, preserves, or wildlife refuges to increase their revenue	1	2	3	4	5
(3) Participated in events or activities for wetland conservation (e.g., cleaning spilled oil or removing intrusive species).....	1	2	3	4	5
(4) Participated in NGO's government policy lobbying related to wetlands and water resources conservation	1	2	3	4	5
(5) Participated in public hearings for zoning or land development projects to express concerns about wetland conservation	1	2	3	4	5
(6) Gave comments to planning officials related to wetlands or water resources based on your knowledge or experience (e.g. in public meetings of comprehensive or land use plans)	1	2	3	4	5
(7) Gave comments to water use and recreation managers based on your knowledge or experience (e.g., in recreational or water supply public meetings of Water Management District offices).....	1	2	3	4	5
(8) Participated in environmental inventories or monitoring	1	2	3	4	5
(9) Ensured whether your employees with salary equal or higher than normal market rates	1	2	3	4	5
(10) Helped schools or community education programs with their environmental curriculum (e.g., providing lectures or field trips to wetlands)	1	2	3	4	5

7. Please rate how well nature-based tourism benefited YOU or YOUR BUSINESS in terms of the following items in the past year?

	Not at all				Very well
(1) Increasing business revenues	1	2	3	4	5
(2) Stable business revenues	1	2	3	4	5
(3) High potential for business marketing.....	1	2	3	4	5
(4) Increasing decision-making power through participating in local tourism planning/policy processes.....	1	2	3	4	5
(5) Increasing decision-making power through participating in local environmental policy processes	1	2	3	4	5
(6) Increasing knowledge and training about managing natural resources in a sustainable manner.....	1	2	3	4	5
(7) A greater sense of pride when showing tour participants my natural environment	1	2	3	4	5
(8)A stronger sense of belonging to my community	1	2	3	4	5
(9) A greater appreciation for my community	1	2	3	4	5

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(10) More chances to interact with my community residents, landowners, and organizations.....	1	2	3	4	5

8. Ecotourism is a type of nature-based tourism. According to YOUR understanding, what are components of eco-tourism (please select all that apply)?

- ☐ Travel in natural areas
- ☐ Responsible travel that has low impacts on natural environment
- ☐ Provides educational opportunities for tourists and local residents
- ☐ Provides job opportunities and income to local residents
- ☐ Benefits local environmental conservation
- ☐ Attention to local culture preservation
- ☐ Enhances community participation and cohesion

9. Based on the ABOVE characteristics you identified for eco-tourism,

(1) Please rate the average NUMBER of your company's tours over the past year adhered to ecotourism characteristics?

0% 100%

1 2 3 4 5

(2) What was the percentage of your company's tourism revenues derived from ecotours in the past year? _____ % (Please put 0 if you never had ecotours)

(3) How many YEARS have you been involved in the eco-tourism business (Please put 0 if you never had eco-tours)? _____

(4) Please rate the DEGREE to which your company's tours in WETLANDS over the past year adhered to ecotourism characteristics? (If you did not have wetland tours, please skip to Question 10)

Not ecotour Eco-tour

1 2 3 4 5

10. Please indicate your agreement with each of the following statements.

	Strongly disagree	Disagree	Neither	Agree	Strongly agree
(1)Our earth is approaching the limit of the number of people it can support.....	1	2	3	4	5
(2)When we interfere with nature, it often produces disastrous consequences.....	1	2	3	4	5
(3)We must live in harmony with nature in order to survive	1	2	3	4	5
(4)We are severely abusing the environment.....	1	2	3	4	5
(5)The balance of nature is very delicate and easily upset	1	2	3	4	5

11. Please answer the following questions about your TOUR GUIDES .

(1) On average, what is the highest level of school they have completed?

____ 9th, 10th, or 11th grade

____12th grade, no diploma

____ High school graduate- high school diploma or the equivalent

____ Some college credit

____ Bachelor's degree

____ Master's degree

____ Professional degree

____ Doctorate degree

(2) Do they have special training, such as special certificates or accreditations (e.g. Green Guide, or Florida Master Naturalist)? _____NO ___ YES

(3) What percentage of them have biological, geographical, or environmental related degrees? _____%

12.Your other comments about the survey

_____

APPENDIX II

Pearson's correlation matrix

	Con	PPC	PPK	WMK	EMI	Econom	Socio	Conser	Ecotour	ComSz	EnvAtt	Vist
Con	1.000											
PPC	0.820**	1.000										
PPK	0.843**	0.798**	1.000									
WMK	0.852**	0.713**	0.892**	1.000								
EMI	0.710**	0.509**	0.540**	0.555**	1.000							
Econom	0.283**	0.304**	0.215*	0.256*	0.211	1.000						
Socio	0.506**	0.426**	0.375**	0.354**	0.395**	0.665**	1.000					
Conser	0.322**	0.216*	0.241*	0.226*	0.200	0.594**	0.692**	1.000				
Ecotour	0.357**	0.200	0.358**	0.354**	0.245*	0.176	0.344**	0.274*	1.000			
ComSz	0.160	0.153	0.116	0.113	0.096	0.074	0.071	-0.072	-0.046	1.000		
EnvAtt	0.286**	0.213	0.246*	0.150	0.227*	0.071	0.234*	0.063	0.205	0.188	1.000	
Vist	0.316**	0.291**	0.245*	0.230*	0.077	0.226*	0.425**	0.208	0.415**	0.145	0.234*	1.000

"Con" denotes "Composite conservation contribution"
PPC denotes ""participation in planning processes through public hearing" (PPC)
PPK denotes "participation in planning processes through knowledge contribution"
WMK denotes "participation in water management through knowledge contribution"
EMI denotes "participation in environmental management through monitoring and inventory"
"Econom" denotes "Economic Benefits"
"Socio" denotes "Socio-cultural benefits"
"Conser" denotes "Conservational benefits"
"Ecotour" denotes "Ecotourism involvement"
"ComSz" denotes "Company size"
"EnvAtt" denotes "Environmental attitudes"
"Vist" denotes "Visit frequency"

***<0.05 level and **<0.01 level**

APPENDIX III

The MLR results for the composite conservation contribution (all 80 observations)

Model1	B	S.E.	t-value	Pr>|t|	ß	VIF
Intercept	.914	.550	1.66	.101		
Ecotourism involvement	***.007***	***.003***	***2.32***	***.023***	***.267***	***1.263***
Company Size	.008	.007	1.10	.274	.116	1.069
Environment Attitudes	.224	.134	1.67	.100	.180	1.117
Frequency	.075	.060	1.25	.216	.146	1.301
N=80 F(4,75)=5.13 Pr>F=0.0010 R-square=.2147 Adj R-square=.1729						
Model 2	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	.376	.610	.62	.540		
Ecotourism involvement	***.006***	***.003***	***2.08***	***.041***	***.238***	***1.286***
Economic benefits	***.184***	***.097***	***1.90***	***.061***	***.198***	***1.071***
Company Size	.007	.007	1.00	.319	.105	1.073
Environment Attitudes	.220	.132	1.67	.100	.177	1.118
Frequency	.061	.059	1.03	.308	.119	1.321
N=80 F(5,74)=4.97 Pr>F=0.0006 R-square=.2512 Adj R-square=.2007						
Model 3	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	.157	.549	.29	.775		
Ecotourism involvement	***.005***	***.003***	***1.79***	***.078***	***.193***	***1.307***
Socio-cultural benefits	***.401***	***.109***	***3.69***	***.000***	***.396***	***1.291***
Company Size	.007	.007	1.13	.261	.110	1.069
Environment Attitudes	.171	.125	1.36	.177	.137	1.132
Frequency	.010	.058	.18	.861	.020	1.431
N=80 F(5,74)=7.51 Pr>F =0.0000 R-square=.3365 Adj R-square=.2917						
Model 4	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	.098	.622	.16	.876		
Ecotourism involvement	***.006***	***.003***	***1.88***	***.065***	***.212***	***1.311***
Conservational benefits	***.264***	***.105***	***2.52***	***.014***	***.260***	***1.095***
Company Size	.009	.007	1.33	.188	.136	1.075
Environment Attitudes	.227	.130	1.75	.084	.183	1.118

Frequency	.058	.058	.99	.324	.113	1.318
N=80 F(5,74)=5.66 Pr>F=0.0002 R-square=.2767 Adj R-square=.2279						
Model 5	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	.097	.600	.16	.872		
Ecotourism involvement	***.005***	***.003***	***1.74***	***.086***	***.191***	***1.319***
Socio-cultural benefits	***.376***	***.146***	***2.58***	***.012***	***.372***	***2.290***
Conservational benefits	***.035***	***.135***	***.26***	***.798***	***.035***	***1.943***
Company Size	.008	.007	1.15	.255	.114	1.083
Environment Attitudes	.174	.127	1.37	.174	.140	1.147
Frequency	.012	.059	.20	.840	.023	1.450
N=80 F(6,73)=6.19 Pr>F=0.0000 R-square=.3371 Adj R-square=.2827						
Model 6	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	.179	.611	.29	.770		
Ecotourism involvement	***.005***	***.003***	***1.73***	***.089***	***.189***	***1.319***
Economic benefits	***-.100***	***.131***	***-0.76***	***.449***	***-0.107***	***2.185***
Socio-cultural benefits	***.433***	***.164***	***2.64***	***.010***	***.428***	***2.894***
Conservational benefits	***.068***	***.142***	***.48***	***.635***	***.067***	***2.145***
Company Size	**.008**	**.007**	**1.22**	**.228**	**.122**	**1.096**
Environment Attitudes	**.169**	**.127**	**1.33**	**.188**	**.136**	**1.151**
Frequency	**.008**	**.059**	**.14**	**.890**	**.016**	**1.460**
N=80 F(7,72)=5.36 Pr>F=0.0000 R-square=.3426 Adj R-square=.2785						

The MLR results for the composite conservation contribution (delete #64 observation)

Model 1	B	S.E.	t-value	Pr>|t|	ß	VIF
Intercept	.906	.533	1.70	.094		
Ecotourism involvement	***.006***	***.003***	***2.15***	***.035***	***.249***	***1.263***
Company Size	.008	.007	1.16	.249	.123	1.068
Environment Attitudes	.227	.130	1.74	.086	.189	1.117
Frequency	.078	.058	1.35	.181	.158	1.301
N=79 F(4,74)=5.15 Pr>F=0.0010 R-square=.2178 Adj R-square=.1755						
Model 2	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	.092	.580	.16	.875		
Ecotourism involvement	***.005***	***.003***	***1.73***	***.089***	***.193***	***1.301***
Economic benefits	***.277***	***.095***	***2.91***	***.005***	***.297***	***1.088***
Company Size	.007	.007	1.04	.300	.106	1.072
Environment Attitudes	.222	.124	1.79	.078	.185	1.118
Frequency	.059	.056	1.06	.295	.119	1.321
N=79 F(5,73)=6.22 Pr>F=0.0000 R-square=.2989 Adj R-square=.2509						
Model 3	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	-0..145	.495	-0.29	.771		
Ecotourism involvement	***.003***	***.003***	***1.24***	***.219***	***.125***	***1.332***
Socio-cultural benefits	***.554***	***.103***	***5.37***	***.000***	***.546***	***1.346***
Company Size	.008	.006	1.29	.200	.117	1.069
Environment Attitudes	.155	.112	1.38	.170	.129	1.134
Frequency	-0.008	.052	-0.16	.876	-0.017	1.439
N=79 F(5,73)=11.45 Pr>F =0.0000 R-square=.4395 Adj R-square=.4011						
Model 4	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	-0.314	.584	-0.54	.592		
Ecotourism involvement	***.004***	***.003***	***1.38***	***.173***	***.150***	***1.337***
Conservational benefits	***.394***	***.103***	***3.83***	***.000***	***.384***	***1.126***
Company Size	.010	.006	1.59	.117	.155	1.076
Environment Attitudes	.233	.120	1.95	.056	.194	1.118

Frequency	.055	.054	1.03	.308	.111	1.318
N=79 F(5,73)=7.82 Pr>F=0.0000 R-square=.3488 Adj R-square=.3042						
Model 5	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	-0.374	.542	-0.69	.493		
Ecotourism involvement	***.003***	***.003***	***1.11***	***.272***	***.113***	***1.351***
Socio-cultural benefits	***.470***	***.131***	***3.59***	***.001***	***.464***	***2.176***
Conservational benefits	***.125***	***.121***	***1.03***	***.306***	***.122***	***1.820***
Company Size	.008	.006	1.41	.164	.128	1.084
Environment Attitudes	.168	.113	1.49	.140	.140	1.148
Frequency	-0.003	.052	-0.05	.962	-0.005	1.455
N=79 F(6,72)=9.73 Pr>F=0.0000 R-square=.4477 Adj R-square=.4016						
Model 6	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	-0.313	.554	-0.57	.573		
Ecotourism involvement	***.003***	***.003***	***1.10***	***.275***	***.113***	***1.351***
Economic benefits	***-.069***	***.117***	***-0.59***	***.558***	***-0.074***	***2.028***
Socio-cultural benefits	***.509***	***.147***	***3.46***	***.001***	***.502***	***2.717***
Conservational benefits	***.147***	***.127***	***1.15***	***.252***	***.143***	***1.994***
Company Size	.009	.006	1.45	.150	.134	1.096
Environment Attitudes	.164	.113	1.45	.151	.137	1.151
Frequency	-0.005	.053	-0.10	.925	-0.010	1.465
N=79 F(7,71)=8.31 Pr>F=0.0000 R-square=.4503 Adj R-square=.3962						

APPENDIX IV

The MLR results for "Participation in Planning Processes through Public Hearing" (PPC)

Model1	B	S.E.	t-value	Pr>|t|	ß	VIF
Intercept	.875	.777	1.13	.264		
Ecotourism involvement	***.004***	***.004***	***1.02***	***.310***	***.124***	***1.263***
Company Size	.009	.010	.94	.352	.105	1.069
Environment Attitudes	.251	.190	1.32	.191	.151	1.117
Frequency	.106	.085	1.26	.212	.156	1.301
N=80 F(4,75)=2.54 Pr>F=0.0465 R-square=.1194 Adj R-square=.0724						
Model 2	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	.032	.860	.04	.970		
Ecotourism involvement	***.003***	***.004***	***.75***	***.458***	***.090***	***1.286***
Economic benefits	***.288***	***.136***	***2.12***	***.038***	***.232***	***1.071***
Company Size	.008	.010	.83	.409	.091	1.073
Environment Attitudes	.245	.186	1.32	.191	.148	1.118
Frequency	.085	.083	1.02	.312	.124	1.321
N=80 F(5,74)=3.02 Pr>F=0.0154 R-square=.1697 Adj R-square=.1136						
Model 3	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	-.085	.789	- .11	.914		
Ecotourism involvement	***.002***	***.004***	***.47***	***.643***	***.054***	***1.307***
Socio-cultural benefits	***.508***	***.156***	***3.25***	***.002***	***.377***	***1.291***
Company Size	.009	.009	.94	.348	.100	1.069
Environment Attitudes	.183	.180	1.02	.312	.111	1.132
Frequency	.025	.083	.30	.769	.036	1.431
N=80 F(5,74)=4.41 Pr>F =0.0014 R-square=.2295 Adj R-square=.1774						
Model 4	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	.000	.895	.00	.999		
Ecotourism involvement	***.003***	***.004***	***.66***	***.512***	***.080***	***1.311***
Conservational benefits	***.283***	***.151***	***1.87***	***.065***	***.209***	***1.095***
Company Size	.011	.010	1.09	.278	.121	1.075

Environment Attitudes	.254	.187	1.36	.177	.153	1.118
Frequency	.088	.084	1.05	.295	.129	1.318
N=80 F(5,74)=2.81 Pr>F=0.0225 R-square=.1593 Adj R-square=.1025						
Model 5	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	-.001	.862	-.00	.999		
Ecotourism involvement	***.002***	***.004***	***.48***	***.630***	***.057***	***1.319***
Socio-cultural benefits	***.543***	***.210***	***2.59***	***.012***	***.403***	***2.290***
Conservational benefits	***-.049***	***.194***	***-.256***	***.802***	***-.036***	***1.943***
Company Size	.009	.010	.90	.370	.097	1.083
Environment Attitudes	.178	.182	.98	.332	.107	1.147
Frequency	.022	.085	.26	.794	.032	1.450
N=80 F(6,73)=3.64 Pr>F=0.0033 R-square=.2302 Adj R-square=.1669						
Model 6	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	-.012	.882	-.01	.989		
Ecotourism involvement	***.002***	***.004***	***.48***	***.632***	***.057***	***1.319***
Economic benefits	***.014***	***.189***	***.07***	***.942***	***.011***	***2.185***
Socio-cultural benefits	***.535***	***.237***	***2.26***	***.027***	***.397***	***2.894***
Conservational benefits	***-.053***	***.205***	***-.26***	***.795***	***-.039***	***2.145***
Company Size	**.009**	**.010**	**.88**	**.380**	**.096**	**1.096**
Environment Attitudes	**.179**	**.184**	**.97**	**.334**	**.108**	**1.151**
Frequency	**.023**	**.085**	**.27**	**.792**	**.033**	**1.460**
N=80 F(7,72)=3.08 Pr>F=0.0068 R-square=.2302 Adj R-square=.1554						

APPENDIX V

The MLR results for "Participation in Planning Processes through Knowledge Contribution" (PPK)

Model 1	B	S.E.	t-value	Pr>|t|	ß	VIF
Intercept	.744	.702	1.06	.293		
Ecotourism involvement	***.010***	***.004***	***2.63***	***.010***	***.310***	***1.263***
Company Size	.007	.009	.82	.417	.088	1.069
Environment Attitudes	.279	.172	1.62	.109	.180	1.117
Frequency	.024	.076	.31	.756	.037	1.301
N=80 F(4,75)=4.05 Pr>F=0.0050 R-square=.1778 Adj R-square=.1339						
Model 2	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	.022	.787	.28	.780		
Ecotourism involvement	***.009***	***.004***	***2.43***	***.017***	***.287***	***1.286***
Economic benefits	***.178***	***.125***	***1.43***	***.157***	***.154***	***1.071***
Company Size	.007	.009	.74	.464	.079	1.073
Environment Attitudes	.275	.170	1.61	.111	.177	1.118
Frequency	.010	.076	.14	.892	.016	1.321
N=80 F(5,74)=3.70 Pr>F=0.0048 R-square=.1999 Adj R-square=.1458						
Model 3	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	.078	.734	.11	.915		
Ecotourism involvement	***.008***	***.004***	***2.22***	***.029***	***.258***	***1.307***
Socio-cultural benefits	***.352***	***.145***	***2.42***	***.018***	***.279***	***1.291***
Company Size	.007	.009	.80	.424	.084	1.069
Environment Attitudes	.232	.167	1.39	.170	.150	1.132
Frequency	-.033	.078	- .42	.673	-.051	1.431
N=80 F(5,74)=4.63 Pr>F =0.0010 R-square=.2383 Adj R-square=.1868						
Model 4	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	.025	.812	.03	.976		
Ecotourism involvement	***.009***	***.004***	***2.29***	***.025***	***.271***	***1.311***
Conservational benefits	***.233***	***.137***	***1.70***	***.093***	***.184***	***1.095***
Company	.009	.009	.95	.343	.102	1.075

Size						
Environment Attitudes	.282	.170	1.66	.101	.182	1.118
Frequency	.009	.076	.12	.907	.014	1.318
N=80 F(5,74)=3.90 Pr>F=0.0034 R-square=.2087 Adj R-square=.1552						
Model 5	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	.024	.802	.03	.976		
Ecotourism involvement	***.008***	***.004***	***2.18***	***.032***	***.256***	***1.319***
Socio-cultural benefits	***.330***	***.195***	***1.69***	***.095***	***.262***	***2.290***
Conservational benefits	***.031***	***.180***	***.17***	***.863***	***.025***	***1.943***
Company Size	.007	.009	.81	.418	.087	1.083
Environment Attitudes	.235	.170	1.39	.170	.152	1.147
Frequency	-.031	.079	-.40	.692	-.049	1.450
N=80 F(6,73)=3.81 Pr>F=0.0023 R-square=.2386 Adj R-square=.1760						
Model 6	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	.068	.820	.08	.934		
Ecotourism involvement	***.008***	***.004***	***2.17***	***.034***	***.256***	***1.319***
Economic benefits	***-.054***	***.176***	***-.03***	***.762***	***-.046***	***2.185***
Socio-cultural benefits	***.361***	***.221***	***1.64***	***.106***	***.286***	***2.894***
Conservational benefits	***.049***	***.190***	***.26***	***.798***	***.039***	***2.145***
Company Size	**.007**	**.009**	**.84**	**.406**	**.090**	**1.096**
Environment Attitudes	**.232**	**.171**	**1.36**	**.178**	**.150**	**1.151**
Frequency	**-.033**	**.079**	**-.42**	**.676**	**-.052**	**1.460**
N=80 F(7,72)=3.24 Pr>F=0.0048 R-square=.2396 Adj R-square=.1656						

APPENDIX VI

The MLR results for "Participation in Water Management through Knowledge Contribution" (WMK)

Model 1	B	S.E.	t-value	Pr>|t|	ß	VIF
Intercept	1.209	.697	1.73	.087		
Ecotourism involvement	***.011***	***.004***	***2.79***	***.001***	***.332***	***1.263***
Company Size	.008	.009	.94	.349	.103	1.069
Environment Attitudes	.132	.170	.77	.442	.087	1.117
Frequency	.025	.076	.33	.741	.040	1.301
N=80 F(4,75)=3.47 Pr>F=0.0117 R-square=.1562 Adj R-square=.1112						
Model 2	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	.626	.779	.80	.424		
Ecotourism involvement	***.010***	***.004***	***2.57***	***.012***	***.306***	***1.286***
Economic benefits	***.199***	***.124***	***1.61***	***.111***	***.175***	***1.071***
Company Size	.008	.009	.85	.396	.093	1.073
Environment Attitudes	.128	.169	.76	.451	.084	1.118
Frequency	.010	.076	.13	.894	.016	1.321
N=80 F(5,74)=3.36 Pr>F=0.0087 R-square=.1849 Adj R-square=.1298						
Model 3	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	.558	.730	.76	.447		
Ecotourism involvement	***.009***	***.004***	***2.38***	***.020***	***.280***	***1.307***
Socio-cultural benefits	***.345***	***.145***	***2.39***	***.020***	***.279***	***1.291***
Company Size	.008	.009	.93	.354	.099	1.069
Environment Attitudes	.086	.166	.52	.607	.057	1.132
Frequency	-.030	.077	- .39	.696	-.048	1.431
N=80 F(5,74)=4.09 Pr>F =0.0025 R-square=.2165 Adj R-square=.1635						
Model 4	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	.513	.808	.64	.527		
Ecotourism involvement	***.009***	***.004***	***2.45***	***.017***	***.294***	***1.311***
Conservational benefits	***.225***	***.136***	***1.65***	***.102***	***.181***	***1.095***
Company Size	.010	.009	1.08	.285	.117	1.075

Environment Attitudes	.134	.169	.80	.427	.089	1.118
Frequency	.011	.076	.14	.888	.017	1.318
N=80 F(5,74)=3.39 Pr>F=0.0082 R-square=.1863 Adj R-square=.1313						
Model 5	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	.513	.798	.64	.523		
Ecotourism involvement	***.009***	***.004***	***2.34***	***.022***	***.279***	***1.319***
Socio-cultural benefits	***.326***	***.194***	***1.68***	***.097***	***.264***	***2.290***
Conservational benefits	***.026***	***.179***	***.14***	***.885***	***.021***	***1.943***
Company Size	.008	.009	.94	.351	.101	1.083
Environment Attitudes	.089	.169	.53	.600	.058	1.147
Frequency	-.029	.078	-.37	.712	-.046	1.450
N=80 F(6,73)=3.37 Pr>F=0.0055 R-square=.2167 Adj R-square=.1523						
Model 6	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	.513	.816	.63	.531		
Ecotourism involvement	***.009***	***.004***	***2.32***	***.023***	***.279***	***1.319***
Economic benefits	***-.001***	***.175***	***-.01***	***.995***	***-.001***	***2.185***
Socio-cultural benefits	***.327***	***.219***	***1.49***	***.141***	***.264***	***2.894***
Conservational benefits	***.026***	***.190***	***.14***	***.890***	***.021***	***2.145***
Company Size	**.008**	**.009**	**.93**	**.357**	**.101**	**1.096**
Environment Attitudes	**.089**	**.170**	**.52**	**.603**	**.058**	**1.151**
Frequency	**-.029**	**.079**	**-.37**	**.715**	**-.046**	**1.460**
N=80 F(7,72)=2.85 Pr>F=0.0112 R-square=.2167 Adj R-square=.1405						

APPENDIX VII

The MLR results for "Participation in Environmental Management through Monitoring and Inventory" (EMI)

Model 1	B	S.E.	t-value	Pr>|t|	ß	VIF
Intercept	-.152	.349	-.44	.664		
Ecotourism involvement	***.004***	***.002***	***1.98***	***.0510***	***.242***	***1.263***
Company Size	.002	.004	.43	.665	.049	1.069
Environment Attitudes	.142	.085	1.67	.100	.191	1.117
Frequency	-.002	.038	-.06	.953	-.007	1.301
N=80 F(4,75)=2.47 Pr>F=0.0521 R-square=.1162 Adj R-square=.0691						
Model 2	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	-.428	.391	-1.10	.277		
Ecotourism involvement	***.003***	***.002***	***1.77***	***.080***	***.217***	***1.286***
Economic benefits	***.094***	***.062***	***1.52***	***.133***	***.169***	***1.071***
Company Size	.002	.004	.35	.730	.039	1.073
Environment Attitudes	.140	.085	1.66	.102	.189	1.118
Frequency	-.009	.038	-.25	.806	-.030	1.321
N=80 F(5,74)=2.47 Pr>F=0.0399 R-square=.1430 Adj R-square=.0851						
Model 3	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	-.628	.349	-1.80	.076		
Ecotourism involvement	***.003***	***.002***	***1.43***	***.157***	***.164***	***1.307***
Socio-cultural benefits	***.252***	***.069***	***3.65***	***.001***	***.417***	***1.291***
Company Size	.002	.004	.41	.682	.043	1.069
Environment Attitudes	.109	.080	1.37	.176	.146	1.132
Frequency	-.043	.037	- 1.16	.250	-.140	1.431
N=80 F(5,74)=4.96 Pr>F =0.0006 R-square=.2509 Adj R-square=.2003						
Model 4	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	-.515	.404	-1.27	.206		
Ecotourism involvement	***.003***	***.002***	***1.64***	***.105***	***.201***	***1.311***
Conservational benefits	***.117***	***.068***	***1.72***	***.089***	***.193***	***1.095***
Company Size	.003	.004	.57	.570	.063	1.075

Environment Attitudes	.144	.084	1.71	.092	.193	1.118
Frequency	-.010	.038	-.26	.797	-.032	1.318
N=80 F(5,74)=2.62 Pr>F=0.0310 R-square=.1503 Adj R-square=.0929						
Model 5	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	-.515	.380	-1.35	.180		
Ecotourism involvement	***.003***	***.002***	***1.49***	***.140***	***.173***	***1.319***
Socio-cultural benefits	***.299***	***.092***	***3.24***	***.002***	***.494***	***2.290***
Conservational benefits	***-.065***	***.085***	***-.76***	***.447***	***-.108***	***1.943***
Company Size	.001	.004	.32	.751	.034	1.083
Environment Attitudes	.102	.080	1.26	.210	.137	1.147
Frequency	-.046	.037	-1.24	.220	-.150	1.450
N=80 F(6,73)=4.21 Pr>F=0.0011 R-square=.2569 Adj R-square=.1958						
Model 6	**B**	**S.E.**	**t-value**	**Pr>|t|**	**ß**	**VIF**
Intercept	-.450	.386	-1.16	.248		
Ecotourism involvement	***.003***	***.002***	***1.47***	***.145***	***.171***	***1.319***
Economic benefits	***-.079***	***.083***	***-.96***	***.343***	***-.143***	***2.185***
Socio-cultural benefits	***.344***	***.104***	***3.31***	***.001***	***.569***	***2.894***
Conservational benefits	***-.039***	***.090***	***-.43***	***.665***	***-.064***	***2.145***
Company Size	**.002**	**.004**	**.42**	**.677**	**.044**	**1.096**
Environment Attitudes	**.096**	**.081**	**1.21**	**.230**	**.131**	**1.151**
Frequency	**-.049**	**.037**	**-1.31**	**.193**	**-.160**	**1.460**
N=80 F(7,72)=3.73 Pr>F=0.0017 R-square=.2662 Adj R-square=.1948						

VITA

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