

## RESOURCE ATTRIBUTES THAT CONTRIBUTE TO NONRESIDENT DIVER SATISFACTION IN THE FLORIDA KEYS, USA

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Scuba diving is a popular form of marine-based tourism contributing over \$1 billion annually to the tourism industry in the Florida Keys. This research explores diver characteristics, how segmentation into meaningful subgroups can be achieved, and how various factors affect satisfaction. Data were collected from nonresident divers and a 10-item index was created based on respondents' satisfaction. Discrepancy was calculated using the same items, and a specialization index was used to subgroup the respondents. Data were analyzed using step-wise regression. Results revealed that discrepancies for individual items contributed to satisfaction, which differed according to specialization level. This suggests that satisfaction is related to both discrepancies between expectations and experiences, and specialization level, providing avenues for strategic marketing and management.

Key words: Scuba diving; Satisfaction; Specialization; Florida Keys

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### Introduction

Scuba diving is a growing component of international and domestic tourism markets, with divers traveling extensively around the world to experience the marine environment in a variety of ways. The quantification of the economic values associated with diving is difficult due to the fact that both market and nonmarket values must be accounted for since the activity generates value for local businesses, as well as participants (Pendleton & Rooke, 2006). Nevertheless, it has been estimated that scuba diving contributes over \$1 billion annually to

the economy of Monroe County alone, of which the Florida Keys are a part (Leeworthy & Ehler, 2010; Leeworthy, Loomis, & Paterson, 2010; Leeworthy & Wiley, 2001). This substantial contribution to the economic well-being of the Florida Keys provides a strong incentive to understand the characteristics of visiting divers, in order to tailor experiences to maximize recreational opportunities and satisfaction as well as optimize market strategies.

A wide range of scuba diving experiences is promoted in the Florida Keys, including dives to shallow sea grass beds, reefs, coral gardens, wreck diving, drift diving, and cave and canyon diving, all

at a variety of depths and levels of difficulty depending on access, tides, currents, and visibility. Understanding visitors' expectations, whether their actual experience meets expectations, and what influences different divers' level of satisfaction are key components of market recognition and provide information that is critical when managing for quality experiences. Subgrouping the diving population by different tourism/recreational/experience requirements allows both resource managers (Dearden, Bennett, & Rollins, 2006, 2007) and the tourism industry (Dimmock, 2009) to be more targeted in their communications with this recreational audience. If differences do exist between subgroups of divers, then opportunities to improve the recreational experience achieved by tourists while enhancing conservation and economic interests can be examined.

A comprehensive body of literature exists regarding the biological impact of recreational scuba diving on coral reefs (Barker & Roberts, 2004; Hasler & Ott, 2008; J. P. Hawkins & Roberts, 1993; J. P. Hawkins et al., 1999; Roupheal & Inglis, 1997; Tratalos & Austin, 2001), contingent valuation methods to estimate revenues generated by the dive industry (Tapsuwan & Asafu-Adjaye, 2008), potential for diving fees to contribute to management costs (Asafu-Adjaye & Tapsuwan, 2008; Thur, 2010; Wielgus, Balmford, Lewis, Mora, & Gerber, 2010), and recreational carrying capacity for scuba divers (Davis & Tisdell, 1995; Di Franco, Marchini, Baiata, Milazzo, & Chemello, 2009). However, data on divers' experiences, preferences, and level of satisfaction regarding different dive opportunities are more limited (MacCarthy, O'Neill, & Williams, 2006; Musa, 2002; Musa, Kadir, & Lee, 2006; Sorice, Oh, & Ditton, 2007). The aim of this study is to investigate how physical and biological characteristics associated with diving in the marine environment of the Florida Keys, or resource attributes, contribute to diver satisfaction. Differences in nonresident/tourist diver expectations vs. the experience they obtain are also explored to better understand the levels of satisfaction reported. Understanding satisfaction levels and the drivers behind these levels can assist both resource managers and the tourism industry in being more effective over time. Three main social theories, satisfaction, expectancy/discrepancy, and

recreation specialization, will be discussed during this article to provide a conceptual context for the results and discussion.

## Literature Review

### *Tourism Experience*

One component of Leiper's (1990) framework demonstrates the concept that tourist destinations may have certain services with distinct attractive features that attract tourists. This can easily be applied to the marine destination region and the wide mixture of attractions for the adventure traveler. These include: a) species of wildlife (e.g., whales and sharks); b) scenery above or below the water surface, such as coral reefs and underwater formations; c) active participation involving skill and coordination, such as kayaking and scuba diving; and d) activity-based with short-term adrenalin boost as a spectator or participant (Buckley, 2010). Wildlife and scenery are examples of two destination attributes in the Florida Keys that are "pull" factors (Crompton, 1979), which encourage visitation by scuba divers (Jennings, 2003).

Conceptual models of the tourist experience advocate satisfaction as a key variable influencing destination choices (Ryan, 2002), personal and collective behavior (Bowen & Clarke, 2009), the travel experience (Cutler & Carmichael, 2010), and return visitation (Campo-Martínez, Garau-Vadell, & Martínez-Ruiz, 2010). Each potential marine destination encompasses a mix of attraction and supply attributes that are evaluated by tourists to determine their level of satisfaction with the destination visited (Alegre & Garau, 2010).

### *Satisfaction*

Satisfaction is a broad conceptual framework that has been defined in numerous ways throughout the recreation and tourism literature over time. Definitions that are now widely used include the concept of a consumer's fulfillment response, as well as a broad evaluation of an experience or service that is influenced by perceptions of experience quality, service quality, price, and other factors (Beard & Ragheb, 1980; Chipman & Helfrich, 1988; J. Lee, Graefe, & Burns, 2004; Manning, 1999; Ragheb, 1980). In the tourism arena, satisfaction

has been examined in travel agencies, accommodation, destinations, and tours (Baker & Crompton, 2000; Bigne, Sanchez, & Sanchez, 2001; del Bosque & Martin, 2008; Joppe, Martin, & Waalen, 2001; Kozak, 2001; C. Lee, Lee, & Lee, 2005) and has been shown to contribute to repeat visitation, destination loyalty, and increased recommendation (Alexandris, Kouthouris, & Meligdis, 2006; Oppermann, 2000; Yoon & Uysal, 2005).

Researchers commonly and routinely use the post hoc satisfaction model consisting of tourists' expectations as the dominate perspective in analyzing tourists' experiences (Mannell & Iso-Ahola, 1987). Satisfaction can also be understood as the difference between what is expected and what is actually experienced (Burns, Graefe, & Absher, 2003; Lawler, 1973), and it is this element of the overarching satisfaction concept that is utilized in this study

In terms of scuba diving specifically, tourists' satisfaction has mostly been derived from the dive itself, diver operator services, destination characteristics and the social interaction with other divers (MacCarthy et al., 2006). Divers have been shown to be more inclined to spend their money in areas with intact and rich marine environments (Moscardo, 1999; Pendleton, 1994; Rudd & Tupper, 2002). Over the last 20 years, many tropical countries have developed substantial dive industries as visitors have become aware of the beauty and ease of diving in tropical environments (Musa, 2002). Researchers have found that divers take into account a variety of resource attributes in their appraisal of satisfaction, such as water clarity, number and quality of underwater formations, and type, volume, and rarity of species (Fitzsimmons, 2008; Musa et al., 2006).

#### *Expectancy/Discrepancy*

Pizam, Neumann, and Reichel (1978) defined tourist satisfaction as the result of comparing tourists' experience at destination visited with their expectations about that destination. Expectancy/discrepancy theory suggests that satisfaction is a measure of how close a person's desired experiential outcome (expectation) is to that person's perceived reality when or after the activity takes place (Pizam & Milman, 1993; Porter & Lawler, 1968; Vroom, 1964). When visitor perceptions of reality

meet or exceed expectations, visitors tend to be more satisfied (Manning, 1999).

Expectancy-value theory also states that individuals may have a variety of motives for participating in an activity (Todd, Graefe, & Mann, 2002). Furthermore, individuals participating in a particular activity may seek totally different outcomes. Therefore, in order for resource managers to fully understand user satisfaction, it is important to include the contextual breadth that expectations and discrepancies offer. It is also important to recognize that the "average user" does not exist (Bryan, 1977; Shafer, 1969). Calculating or otherwise determining average satisfaction of all users is of limited utility since it would describe very few users. Segmenting the larger population of users into meaningful subgroups is, therefore, not only preferred but also necessary. One approach for doing this is recreation specialization.

#### *Recreation Specialization*

Recreation specialization theory was first proposed by Bryan (1977), later refined by Ditton, Loomis, and Choi (1992), and subsequently used as a framework to investigate a variety of natural resource conservation issues (Dearden et al., 2006; Mangun, Throgmorton, Carver, & Davenport, 2007; Oh & Ditton, 2006). Specialization theory postulates that participants in an outdoor recreation activity (e.g., anglers, scuba divers, boaters) can be placed on a continuum ranging from general interest and low involvement at one end, to expert interest and high involvement in a leisure social world at the other end. Each level of specialization involves a change in distinctive behaviors, skills, and directions. These include equipment preference, type of experiences sought (goals), desired settings for the activity, attitudes toward resource management, preferred social context, and vacation patterns. The concept of recreation specialization is important because it allows researchers to analyze subgroups of populations, rather than aggregate the attitudes and preferences of novice, medium, and advanced participants into one larger group (C. Hawkins, Loomis, & Salz, 2009; Salz, Loomis, & Finn, 2001). Specialization theory includes eight propositions (Ditton et al., 1992):

1. Persons participating in a given recreation activity are likely to become more specialized in that activity over time.
2. As level of specialization in a given recreation activity increases, the value of side bets will likely increase.
3. As level of specialization in a given recreation activity increases, the centrality of that activity in a person's life will likely increase.
4. As levels of specialization in a given recreation activity increase, acceptance and support for the rules, norms and procedures associated with the activity will likely increase.
5. As level of specialization in a given recreation activity increases, the importance attached to equipment and the skillful use of that equipment will likely increase.
6. As level of specialization in a given recreation activity increases, dependency on a specific resource will likely increase.
7. As level of specialization in a given recreation activity increases, level of mediated interaction relative to that activity will likely increase.
8. As level of specialization in a given recreation activity increases, the importance of activity-specific elements of the experience will decrease relative to non-activity-specific elements of the experience.

This study seeks to use both expectancy/discrepancy theory and recreational specialization to understand the broader concept of diver satisfaction. As a result, three research questions were developed and tested:

1. Do differences in discrepancy between expectations and experiences vary according to specialization level?
2. Do differences in satisfaction vary according to specialization level?
3. Will the resource attributes that are most important in explaining satisfaction vary according to specialization level?

## Methods

### *Sampling*

A sample of scuba divers in the Florida Keys was identified through in-person intercepts, designed to

collect names and addresses for a subsequent mail survey. To ensure the representativeness of the sample, names and addresses of individuals were collected through intercepting people participating in a diving activity. Intercepts began in June 2006 and took place during approximately 1 week of each month during a 13-month period. Two main approaches were employed to collect a large enough overall sample: 1) on water intercepts, and 2) on land intercepts where respondents were selected at random at each location. On water intercepts targeted private boat owners or visitors who had rented a boat for the day, and scuba dive on or around coral reefs. This involved being on the water and communicating with divers in situ. On-land intercepts were performed at commercial dive shop operations, where divers could be contacted just before or after dives. The approach used in this study ensured that private boats coming from canal-side docks, rental boat, divers trailering boats, and individual divers from charter boats all had the potential to be included in the sample.

### *Survey Development and Implementation*

The survey instrument was developed cooperatively with members of the Florida Reef Resilience Program working group, a process that yielded a 12-page instrument containing 171 variables. Questions were designed to cover a variety of social theories, but this study will focus on variables related to motivations, expectations, accomplishments, satisfaction, and recreation specialization. With the exception of recreation specialization, the variables selected have a conceptual basis in the literature (Driver, 1983) and were modified to fully represent the scenarios relevant to diving as a recreational activity. The recreation specialization items were modified from Salz et al. (2001) in the same way. Items on basic demographics, such as gender, age, race, ethnicity, income, and place of residence, that were included on the original survey instrument, were also examined for the purpose of this study.

### *Discrepancy Level*

Discrepancy level was calculated as the difference between respondents' expectations and their actual experience on ten 5-point Likert scale resource attribute items. Respondents were first

asked, "To what extent do you expect to be able to do each of the following on your most recent trip to a reef in the Florida Keys?" for each of the ten items. Then, they were asked later in the survey the "extent to which they were able to accomplish each of the following on their most recent trip to a reef in the Florida Keys?" The 10 items, conceptually derived from Driver (1983), were: a) seeing a healthy reef, b) experiencing easy diving conditions, c) experiencing good under water visibility, d) seeing undamaged reef sites, e) seeing marine life, f) seeing large fish, g) seeing unique underwater formations, h) seeing live coral, i) experiencing natural surroundings, and, j) relaxing. This discrepancy level provided context to the respondents' overall satisfaction level, with a negative score indicating expectations greater than achievement, and a positive score indicating achievement was greater than expectations.

#### *Satisfaction Index*

For each of the original 10 parent items listed above, respondents were also asked to indicate how satisfied they were with each on their most recent dive in the Florida Keys. Question response options were ordered from least satisfied (response option = 1) to most satisfied (response option = 5) along a 5-point Likert scale. The results for all 10 items were summed and then used to generate the satisfaction index and locate users on a satisfaction continuum. The index was tested for reliability using Cronbach's coefficient alpha (Cronbach, 1951).

#### *Diver Specialization Index*

The diver specialization index used was based on an index developed and validated by Salz et al. (2001), which allowed the categorization of divers into meaningful subgroups based on the four social world characteristics of: orientation, experiences, relationships, and commitment (Ditton, et al., 1992; Unruh, 1979). The Salz et al. index utilized theory and an a priori method to generate the index items. For each characteristic, Unruh (1979) described four subworld types of participants: strangers, tourists, regulars, and insiders. Based on these descriptions, Salz and colleagues developed four survey

questions that corresponded to Unruh's four characteristics. Each question contained four possible response options, with each option corresponding to one of the four recreation specialization levels (least, moderately, very, highly). Question response options consisted of statements describing a participant's connection to an activity relative to that particular characteristic and were ordered from least specialized (response option = 1) to most specialized (response option = 4). As designed, the least specialized participants would select option 1, and the most specialized participants would select option 4. The sum of the four responses (e.g., least specialized:  $1 + 1 + 1 + 1 = 4$ , highly specialized:  $4 + 4 + 4 + 4 = 16$ ) was used to locate recreationists along the recreation specialization continuum. Salz et al. (2001) used item analysis to examine the internal consistency of their composite index. Bivariate comparisons of the four social world items and Cronbach's alpha supported inclusion of all four items in their recreation specialization index. The nature of the interitem predictability also supported the internal validity of the specialization index.

#### *Survey Implementation*

To maximize response rates, the survey materials were distributed using the Dillman Total Design Method (Dillman, 1978; Dillman, Smyth, & Christian, 2009). Essentially this method involves personalization and repeat mailings. All outgoing envelopes were hand addressed in blue ink, and the cover letter was personalized to an individual person, and again hand signed in blue ink. Following an initial mailing having a normal postage stamp affixed (which includes the survey instrument, a cover letter, and a prepaid business return envelope to return the survey in), a postcard reminder/thank you was sent 1 week later to all persons who received the initial mailing. Three weeks after the initial mailing, a second mailing of materials was sent to all those who had not yet responded. The content of the second mailing was identical to the first, except for slight wording changes in the cover letter intended to encourage a response. Six weeks after the initial mailing, a third and final mailing was sent (again identical to the first) to those who had still not responded.

Table 1  
Mean Discrepancies Between Experience and Expectation on Resource Attributes  
According to Specialization Level

Resource Attribute Feature	Specialization Level			ANOVA	
	Moderate	High	Very High	<i>F</i>	Sig.
Experiencing easy diving conditions	-0.06	0.04	0.39	8.724	0.000
Experiencing good underwater visibility	-0.27	-0.27	0.06	5.997	0.003
Relaxing	-0.06	-0.11	0.04	1.833	0.161
Seeing unique underwater features	-0.03	-0.09	0.04	0.777	0.460
Experiencing natural surroundings	-0.09	-0.04	-0.01	0.384	0.681
Seeing large fish	-0.13	-0.20	-0.12	0.377	0.686
Seeing live coral	-0.14	-0.19	-0.14	0.245	0.782
Seeing a healthy reef	-0.16	-0.20	-0.22	0.145	0.865
Seeing undamaged reef sites	-0.15	-0.16	-0.19	0.058	0.943
Seeing marine life	0.09	0.11	0.11	0.051	0.950

Means underscored by the same line are not significantly different ( $p > 0.05$ ).

## Results

Survey efforts resulted in a total of 1,595 returned and useable surveys from an initial sample of 2,867, giving an overall response rate of 57.9%. For the purposes of this study, only data from self-selected nonresident/tourist divers ( $n = 869$ ) were included in the analysis since this was the population of interest.

Of all nonresident divers surveyed, 28% were between 15 and 35 years of age, with the majority being over 40 (mean = 43.0 years). The respondents were predominately male (73%), and only 3% of the sample self-identified as Hispanic/Spanish/Latino. Virtually all respondents (97.9%)

listed their race as white. Twenty-five percent of those surveyed reported their household income as \$150,000 or more, with 87% of respondents reporting a household income of greater than \$45,000.

The satisfaction index was created by first summing the satisfaction scores for all 10 items, with the sums ranging from a minimum of 10 to a maximum of 50. A three-level satisfaction index was then generated from this continuum with groups ranging from 10 to 26, 27 to 31, and 32 to 50. The utilization of three levels, low, medium, and high satisfaction, provided groupings that were roughly equal in size ( $n = 278, 232, \text{ and } 330$ , respectively) and were large enough to guarantee sufficient statistical power for further analysis. The 10-item

Table 2  
Mean Satisfaction Scores on Resource Attributes According to Specialization Level

Resource Attribute Feature	Specialization Level			ANOVA	
	Moderate	High	Very High	<i>F</i>	Sig.
Relaxing	3.82	4.19	4.40	20.433	0.000
Experiencing easy diving conditions	3.49	3.59	3.90	9.347	0.000
Experiencing good underwater visibility	3.47	3.40	3.60	2.405	0.091
Seeing undamaged reef sites	3.42	3.42	3.28	1.523	0.219
Experiencing natural surroundings	3.96	4.06	4.00	0.819	0.441
Seeing large fish	3.40	3.31	3.32	0.487	0.614
Seeing marine life	3.72	3.75	3.79	0.329	0.720
Seeing unique underwater features	3.43	3.42	3.47	0.173	0.841
Seeing a healthy reef	3.48	3.50	3.45	0.155	0.856
Seeing live coral	3.58	3.62	3.59	0.113	0.893

Means underscored by the same line are not significantly different ( $p > 0.05$ ).

Table 3  
Stepwise Regression Model for Full Sample  
of Nonresident Divers

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	SE of the Estimate
One <sup>a</sup>	0.401	0.161	0.160	0.76040
Two <sup>b</sup>	0.483	0.233	0.231	0.72723
Three <sup>c</sup>	0.513	0.263	0.260	0.71334
Four <sup>d</sup>	0.521	0.272	0.268	0.70959
Five <sup>e</sup>	0.528	0.278	0.274	0.70682

<sup>a</sup>Predictors: (Constant), seeing large fish.

<sup>b</sup>Predictors: (Constant), seeing large fish, experiencing good underwater visibility.

<sup>c</sup>Predictors: (Constant), seeing large fish, experiencing good underwater visibility, seeing a healthy reef.

<sup>d</sup>Predictors: (Constant), seeing large fish, experiencing good underwater visibility, seeing a healthy reef, experiencing easy diving conditions.

<sup>e</sup>Predictors: (Constant), seeing large fish, experiencing good underwater visibility, seeing a healthy reef, experiencing easy diving conditions, seeing undamaged reef sites.

index was then tested for index item reliability ( $\alpha = 0.921$ ). However, based upon interitem correlation results, the index was modified to include only eight items in order to eliminate the high correlations present in the original 10 parent index ( $\alpha = 0.891$ ). The items that were excluded were “seeing a healthy reef” and “seeing live coral.”

Initially, respondents were categorized into four levels of specialization, mirroring the method used by Salz et al. (2001). However, the sample size of nonresident divers in the least specialized category was considered to be too small for the purposes of statistical analysis. The small sample size in this category could potentially be attributed to the nature of scuba diving itself. Scuba divers are required to pass a comprehensive level of basic training before the activity can commence, which vastly reduced the number of people classified into the least specialized group. Therefore, respondents in the least and moderate categories were combined to yield three final specialization groups of “moderate” (specialization level 2 with an  $n$  of 248), “high”

Table 4  
Stepwise Regression Coefficients for Full Sample of Nonresident Divers

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	SE	B	t	
One					
(Constant)	2.153	0.027		79.935	0.000
Seeing large fish	0.240	0.019	0.401	12.402	0.000
Two					
(Constant)	2.177	0.026		84.034	0.000
Seeing large fish	0.178	0.020	0.297	8.952	0.000
Experiencing good underwater visibility	0.199	0.023	0.289	8.719	0.000
Three					
(Constant)	2.192	0.026		85.799	0.000
Seeing large fish	0.143	0.020	0.240	7.049	0.000
Experiencing good underwater visibility	0.159	0.023	0.231	6.773	0.000
Seeing a healthy reef	0.144	0.025	0.197	5.706	0.000
Four					
(Constant)	2.174	0.026		83.239	0.000
Seeing large fish	0.137	0.020	0.230	6.758	0.000
Experiencing good underwater visibility	0.112	0.028	0.163	4.017	0.000
Seeing a healthy reef	0.138	0.025	0.190	5.502	0.000
Experiencing easy diving conditions	0.077	0.025	0.120	3.083	0.002
Five					
(Constant)	2.173	0.026		83.544	0.000
Seeing large fish	0.131	0.020	0.219	6.433	0.000
Experiencing good underwater visibility	0.096	0.028	0.139	3.381	0.001
Seeing a healthy reef	0.101	0.029	0.138	3.504	0.000
Experiencing easy diving conditions	0.080	0.025	0.125	3.214	0.001
Seeing undamaged reef sites	0.072	0.026	0.106	2.701	0.007

Table 5  
Stepwise Regression Model for Nonresident Divers  
in the Moderate Specialization Group

Model	<i>R</i>	<i>R</i> <sup>2</sup>	Adjusted <i>R</i> <sup>2</sup>	SE of the Estimate
One <sup>a</sup>	0.467	0.218	0.214	0.74003
Two <sup>b</sup>	0.563	0.317	0.312	0.69278
Three <sup>c</sup>	0.603	0.364	0.356	0.67009
Four <sup>d</sup>	0.616	0.380	0.369	0.66319

<sup>a</sup>Predictors: (Constant), seeing live coral.

<sup>b</sup>Predictors: (Constant), seeing live coral, experiencing easy diving conditions.

<sup>c</sup>Predictors: (Constant), seeing live coral, experiencing easy diving conditions, seeing large fish.

<sup>d</sup>Predictors: (Constant), seeing live coral, experiencing easy diving conditions, seeing large fish, experiencing natural surroundings.

(specialization level 3 with an *n* of 371), and “very high” (specialization level 4 with an *n* of 238). The specialization index was also tested for index item reliability ( $\alpha = 0.824$ ).

In order to investigate the first research question (Do differences in discrepancy between expectations and experiences vary according to specialization level?), discrepancy means (the difference between expectations and actual experience) for the

10 resource attributes were calculated (Table 1). A one-way analysis of variance was used to test for differences between these levels, and the results showed significant differences for just two of the 10-parent items ( $p < 0.05$ ), “experiencing easy diving conditions” and “experiencing good underwater visibility” (Table 5). On both these items, the very highly specialized group was significantly higher than the other specialization levels.

To examine the second research question (Do differences in satisfaction vary according to specialization level?), differences between mean scores for the 10 satisfaction items were examined. Satisfaction means associated with each parent item were generated for each specialization level (Table 2). A one-way analysis of variance was then used to test for differences between these means according to specialization level. Significant differences were found for the items “relaxing” and “experiencing easy diving conditions.”

To address the third research question (Will the resource attributes that are most important in explaining satisfaction vary according to specialization level?), a stepwise regression was conducted using both the satisfaction index and the discrepancy scores. A stepwise regression generates

Table 6  
Stepwise Regression Coefficients for Nonresident Divers in the Moderate  
Specialization Group

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	SE	B	<i>t</i>	
One					
(Constant)	2.069	0.049		42.510	.000
Seeing live coral	0.353	0.044	0.467	8.020	0.000
Two					
(Constant)	2.079	0.046		45.596	0.000
Seeing live coral	0.267	0.044	0.353	6.091	0.000
Experiencing easy diving conditions	0.215	0.037	0.336	5.795	0.000
Three					
(Constant)	2.087	0.044		47.277	0.000
Seeing live coral	0.197	0.046	0.261	4.328	0.000
Experiencing easy diving conditions	0.185	0.037	0.288	5.035	0.000
Seeing large fish	0.137	0.033	0.246	4.104	0.000
Four					
(Constant)	2.088	0.044		47.780	0.000
Seeing live coral	0.144	0.050	0.190	2.858	0.005
Experiencing easy diving conditions	0.173	0.037	0.270	4.727	0.000
Seeing large fish	0.127	0.033	0.228	3.811	0.000
Experiencing natural surroundings	0.145	0.060	0.154	2.405	0.017

Table 7  
Stepwise Regression Model for Nonresident Divers  
in the High Specialization Group

Model	<i>R</i>	<i>R</i> <sup>2</sup>	Adjusted <i>R</i> <sup>2</sup>	SE of the Estimate
One <sup>a</sup>	0.473	0.224	0.221	0.71986
Two <sup>b</sup>	0.543	0.295	0.291	0.68703
Three <sup>c</sup>	0.574	0.329	0.323	0.67123

<sup>a</sup>Predictors: (Constant), experiencing good underwater visibility.

<sup>b</sup>Predictors: (Constant), experiencing good underwater visibility, seeing a healthy reef.

<sup>c</sup>Predictors: (Constant), experiencing good underwater visibility, seeing a healthy reef, seeing large fish.

a series of regression models in which the order of predictive variables (discrepancy scores) is based upon the amount of variance in the satisfaction index that is explained. New variables are continually loaded into the model until no significant contribution to variance explanation occurs. The overall regression model for all nonresident divers used 5 of the 10 parent items to explain over 27% of the variance ( $r^2 = 0.278$ ) (Table 3, Table 4).

Step-wise regression models were then generated for each specialization level in order to provide a greater level of detail regarding which items were specifically important to explaining satisfaction for each specialization level. Only one item, "seeing large fish," registered as a contributor to

satisfaction across all specialization levels, suggesting that this feature contributed significantly to overall diver satisfaction. However, the primary predictor for each specialization level was different.

For the moderate specialization level "seeing live coral" was the primary factor ( $r^2 = 0.218$ ) in a four-item model ( $r^2 = 0.380$ ) (Table 5, Table 6). The variance associated with the high specialization level model was explained in a three-item model ( $r^2 = 0.329$ ) with "experiencing good visibility" registering as the greatest contributor ( $r^2 = 0.224$ ) (Table 7, Table 8). Finally, the highest specialization level also generated a three-item model ( $r^2 = 0.159$ ) with "seeing a healthy reef" explaining the majority of the variance ( $r^2 = 0.106$ ) (Table 9, Table 10).

## Discussion

Discrepancy scores shown in Table 1 varied from  $-0.27$  to  $0.39$ . Of the individual discrepancies measured (10 items per specialization level), only eight were positive. This suggests that, in general, nonresident divers tended to expect slightly more than they achieved on their most recent dive. Only 2 of the 10 discrepancies were significant according to specialization level ("experiencing easy diving conditions" and "experiencing good underwater visibility"). However, no large discrepancies were recorded across specialization level for any of the items, which suggests that most divers have realistic

Table 8  
Stepwise Regression Coefficients for Nonresident Divers in the High  
Specialization Group

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	SE	B	<i>t</i>	
One					
(Constant)	2.212	0.040		55.205	0.000
Experiencing good underwater visibility	0.331	0.034	0.473	9.813	0.000
Two					
(Constant)	2.230	0.038		58.125	0.000
Experiencing good	0.234	0.036	0.334	6.450	0.000
Seeing a healthy reef	0.220	0.038	0.301	5.804	0.000
Three					
(Constant)	2.236	0.038		59.600	0.000
Experiencing good underwater visibility	0.189	0.037	0.270	5.096	0.000
Seeing a healthy reef	0.179	0.038	0.244	4.658	0.000
Seeing large fish	0.133	0.032	0.211	4.105	0.000

Table 9  
Stepwise Regression Model for Nonresident Divers  
in the Very High Specialization Group

Model	<i>R</i>	<i>R</i> <sup>2</sup>	Adjusted <i>R</i> <sup>2</sup>	SE of the Estimate
One <sup>a</sup>	0.325	0.106	0.101	0.79491
Two <sup>b</sup>	0.380	0.144	0.136	0.77929
Three <sup>c</sup>	0.399	0.159	0.148	0.77422

<sup>a</sup>Predictors: (Constant), seeing a healthy reef.

<sup>b</sup>Predictors: (Constant), seeing a healthy reef, seeing large fish.

<sup>c</sup>Predictors: (Constant), seeing a healthy reef, seeing large fish, seeing undamaged reef sites.

expectations when it comes to diving in the Florida Keys. Due to the fact that the size of the discrepancies is relatively small, and only two discrepancies were statistically significant according to specialization level, it would be expected that few differences on measures of satisfaction would be found (Table 2). Overall, it appears that nonresident divers are satisfied with their diving experience in the Florida Keys, with all measures being moderately satisfied or above (mean = 3).

The comparison of item-specific satisfaction according to specialization level revealed only two significant differences, “experiencing easy diving conditions” and “relaxing.” Interestingly, these two items are concerned with the actual process or experience of diving as opposed to specific natural biophysical features that may be encountered on a

dive. The item “experiencing good underwater visibility” approached statistical significance ( $p = 0.091$ ). The above results are of interest, in that these three significant or near significant variables (out of 10) are the same for both the discrepancy and satisfaction indicators. On the discrepancy scores, more positive scores were observed for more specialized divers, suggesting that these same divers would report higher levels of satisfaction on these same items. The satisfaction scores on these items confirm this, which is consistent with existing literature (del Bosque & Martin, 2008).

The above analysis suggests that across the items tested, nonresident divers in this study are relatively homogeneous in terms of their expectations, experiences, and satisfaction levels. In effect, there seems to be little difference in what they expected from the resource or experience, and what they achieved, or their satisfaction. This finding supports other studies in different geographical locations (Uyarra, Watkinson, & Cote, 2009) and reinforced the concept of a homogenous element within the dive population visiting the Florida Keys.

However, the stepwise regression analysis suggests that different items contributed to the satisfaction levels recorded (Tables 5–10). The regression analysis supports the argument that Todd et al. (2002) advanced suggesting that individuals participating in a particular activity may seek different

Table 10  
Stepwise Regression Coefficients for Nonresident Divers in the Very High  
Specialization Group

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	SE	B	<i>t</i>	
One					
(Constant)	2.234	0.054		41.411	0.000
Seeing a healthy reef	0.259	0.050	0.325	5.129	0.000
Two					
(Constant)	2.236	0.053		42.280	0.000
Seeing a healthy reef	0.201	0.053	0.252	3.810	0.000
Seeing large fish	0.125	0.039	0.210	3.166	0.002
Three					
(Constant)	2.244	0.053		42.591	0.000
Seeing a healthy reef	0.164	0.056	0.205	2.934	0.004
Seeing large fish	0.117	0.039	0.196	2.972	0.003
Seeing undamaged reef sites	0.091	0.046	0.133	1.980	0.049

outcomes and specific attributes that vary according to expectations (Asafu-Adjaye & Tapsuwan, 2008). For all specialization levels, the models generated explained a reasonable amount of the total variance, which suggests that diver satisfaction is related both to discrepancies between expectations and experience, and to specialization level. One item, "seeing large fish," was included in all the regression models generated irrespective of specialization level.

It may also follow that if satisfaction can be linked to such a specific resource, then dive experiences that focus on fish as a natural feature would contribute to satisfactory recreational experiences for divers of all specialization levels. This may be of particular interest to resource managers since the argument could potentially be made that fragile or pristine environments could be protected more easily without detracting from the recreational experience. For example, less specialized divers, who may have more difficulties in controlling buoyancy and so could potentially damage reefs, could have experiences provided for them away from key locations as long as the opportunity to view large fish remained.

The inventory of resource attributes, specifically in the case of coral reefs, cannot be stored or adjusted to changes in demand. As coral reefs form over hundreds of years, they can primarily be described as a static fixed reserve, one which varies slightly with regard to quality and associated features such as algal cover, fish abundance, or visibility (Pendleton & Rooke, 2006). This puts pressure on resource managers and tourism planners to effectively plan how to market and manage these discreet goods. In other words, determining where the balance between offering satisfying diving experiences and long term management of the resource can be struck (Tratalos & Austin, 2001). Understanding of the preferences and needs of different subgroups of divers can generate the opportunity to maximize benefits to both the tourist and the existing resources (Pendleton, 1994). However, failure to utilize the full range of existing measures to understand the population of interest can lead to the exclusion of important underlying variances. These variances provide more accurate information on which to assess and plan marketing and management strategies.

## Conclusion

Segmenting the nonresident diving population visiting the Florida Keys according to specialization level allowed a theoretical basis to underpin recommendations for both resource managers and the dive industry. The article demonstrated that nonresident recreational scuba divers in the Florida Keys could be successfully subdivided into different subgroups by specialization level, based on two measures of satisfaction. The "bundle" of resource attributes that contribute to a scuba divers satisfaction level is made up of different features for each diver specialization level. Just using satisfaction means, or just looking at discrepancy scores belies the complex differences between specialization groups, which only becomes apparent when compared with results from the regression model. Each subgroup had a different primary factor contributing to overall level of satisfaction. This study provided a conceptually grounded understanding of those group differences that could be usefully applied in a variety of management and tourism related contexts. Understanding the characteristics of current visitors can provide critical insight into how to maintain and potentially grow the current dive market share in the Florida Keys.

Although statistically significant differences were found between divers of the three specialization levels identified during this study, these differences are less functional in utilitarian terms for managers and the tourism market. This issue may be addressed by expanding the initial item pool to include a greater range of Driver (1983) motivations, including both resource attributes and non-activity-specific items that are common to a range of recreational activities, such as "spending time with family." This would allow proposition 8 of specialization theory to be more fully explored as a function of satisfaction. Gathering primary data on elements that specifically contributed to diver expectations may also assist with a broader understanding of the interplay between the three social science theories utilized during this study.

## Biographical Notes

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