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ABSTRACT

To develop financially viable, nature-based tourism, in protected areas, park managers need to make decisions as to what outdoor recreational activities should be offered. Using a discrete choice experiment (DCE), we estimate domestic prospective visitors' willingness to pay (WTP) for a range of recreational activities and identify those with the greatest potential to attract visitors to Vía Parque Isla de Salamanca, a protected area (PA) in the Barranquilla-Santa Marta region, Colombia. We considered five activities offered by the PA: birding, cultural exchange, nautical sports, walking tours on the beach, and a mangrove boat tour. Results revealed that respondents have strong preferences for cultural exchange activities, while the activities prioritized by PA managers, birding and mangrove boat tours, are the least preferred by respondents. These results suggest that bundling strategies for nature-based tourist products in the PA may be needed to compensate for these unexpected visitor preferences. These results illustrate the usefulness of DCE to inform the design of nature-based tourism strategies in protected areas.

Keywords: discrete choice experiment; nature-based tourism; outdoor activities; protected areas, bundling tourist products.

Introduction

The conservation and sustainable management of ecosystems has gained attention in public and private arenas, given the recognition of their importance for current and future human wellbeing (Guerry et al., 2015). Despite enthusiasm and political momentum, it has proven difficult to secure greater public financing for protected areas (PAs), due to the increasing expectation that they will-be self-funded. If anything, the funding provided by governments to sustain the increasing number of PAs is inadequate (Whitelaw et al., 2014). Consequently, alternative sources of long-term revenue for nature conservation have been called for. Among them, nature-based tourism has received special attention, as it can be considered a tool for achieving social and nature conservation objectives (Balmford et al., 2015). However, negative environmental and socioeconomic impacts from tourism may occur as it has been widely recognized that the relationship between tourism, conservation, and local people's wellbeing is complex (Jamal & Camargo, 2014; Liu et al., 2012).

Nature-based tourism could be understood as a category which encompasses all forms of tourism that use natural resources in a wild or underdeveloped form (Arnegger et al., 2010). Such a view recognizes the wide range of motivations that drive people to a natural landscape and the activities they engage in, from

independent expeditions aimed at protecting nature, to circuit organized tours seeking nature experiences. For Arnegger, Woltering, and Job (2010), nature-based tourism can be classified according to tourists´ travel motivations (e.g. experience nature, practice sports) and the service arrangements required to meet tourists´ consumption habits (e.g. customized, fully standardized). The combination of these two dimensions gives rise to tourism product types, such as birdwatching and scuba diving holiday packages, among others.

The challenge for PA managers is to find nature-based tourism opportunities that are in accordance with the PA principles and objectives, while being consistent with society's preferences. A better understanding of the expectations of different tourists can lead to more effective management, and improved marketing strategies. Therefore, it is necessary to identify which of the recreational activities that can be offered by a PA are more attractive to potential visitors, and thus, develop a plan on how to market them.

Failure to identify the right mix of recreational activities and the way to market them can have negative consequences for the achievement of tourism goals. The mismatch between activities offered by the PA and visitor demand would result in fewer visitors than expected, while not meeting tourist expectations could undermine visitor satisfaction, compromising the long-term success of the tourism

strategy. Likewise, an exclusive focus on maximizing visitation and revenues can also compromise conservation goals, for example, by drawing too many visitors to the PA. In this sense, this research is related to the literature that recognizes the importance of the tourism demand side for successful sustainable tourism management (Dolnicar et al., 2008; Veisten et al., 2015).

Therefore, the aim of this study is twofold. First, to identify which of the activities that can be offered by the PA are more attractive to potential visitors; and, second, to identify demographic, behavioral, and psychographic factors which could be useful for market segmentation strategies. To meet our research objectives, we use a discrete choice experiment (DCE). Although the DCE has been used for studying tourism management in PAs, most of the studies have been concerned with on-site services and facilities development (Carson et al., 2015; Lindberg & Veisten, 2012), but not with tourism activities. Based on the results, we discuss the possibility of bundling higher demand activities with lower demand activities. The study is carried out in the Isla de Salamanca[4], an important PA of estuarine and coastal ecosystems in the Colombian Caribbean. Taking into account the PA's management plan and the natural, social and scenic attributes of the area, five recreational

[4] See https://protectedplanet.net/150

activities were selected to examine visitor preferences: i) birdwatching, ii) cultural exchange tour, iii) nautical sports, iv) walking tour on the beach, and v) mangrove boat tour.

The paper is organized as follows. Section 1 provides a brief review of the use of the DCE method in the literature of tourism management in PAs. Section 2 presents the methodology and the data applied in the study. Section 3 presents the results, while Section 4 presents the discussion and is followed by some concluding remarks.

1. Related literature

Several studies have assessed the preferences and valuation that individuals have for natural parks, reserves, and forests as a source of conservation or recreation, using stated preference methods, such as contingent valuation, contingent behaviour, and discrete choice experiment (DCE). Studies using the contingent valuation and contingent behaviour methods have been used to value park amenities (Cahill et al., 2008; Chase et al., 1998; Chen & Jim, 2012; Christie, 1999). Since these methods value a single attribute or trade-off, they are used to estimate the willingness to pay (WTP) for the PA entry or its conservation (Baral et al., 2017).

Recently, the DCE method has gained popularity in the field of forest and tourism management (Carson et al., 2015; Christie et al., 2007; Lindberg & Veisten,

2012; Mäntymaa et al., 2018; Naidoo & Adamowicz, 2005; Steven et al., 2017). It overcomes a main limitation of contingent valuation models, which is their inability to simultaneously analyse multiple influences on a choice decision (Lee et al., 2010; Rolfe et al., 2000), thus offering more flexibility and allowing more complex models to be constructed. We use the DCE method since it allows us to treat the recreational activities as attributes of alternative tourism management plans, thus providing information to assist PA managers in designing a nature-based tourism strategy. The use of DCE is also consistent with the idea that tourism is a composite good, whose appeal depends on how well the mix of component characteristics is balanced (Brau, 2008).

The DCE method has recently been applied to examine different aspects of tourism management decisions in PAs, such as the provision of on-site services and facilities development (Carson et al., 2015; Lindberg & Veisten, 2012), and forest park design (Abildtrup et al., 2013; Jacobsen & Thorsen, 2010; Juutinen et al., 2011).

Our study builds on these previous tourism management studies by using DCE to focus exclusively on the set of recreational activities on which a tourism strategy could be designed. We also examine heterogeneity in visitor preferences, and explore the influence of respondent characteristics on WTP for recreational activities. Eliciting potential visitors' preferences and determining how much they

are willing to pay for securing the provision of different recreational activities may be particularly useful for the PA management since a successful nature-based tourism strategy will help to fund the conservation of biodiversity and ecosystem services.

2. Data and methods

2.1. Study site

The Vía Parque Isla de Salamanca is a 562 km^2 PA in the Colombian Caribbean region, officially established in 1964, to protect its estuarine and coastal ecosystems. It has a terrestrial and a marine zone. The PA is part of a greater area of wetlands known as Ciénaga Grande de Santa Marta, which was designated as a RAMSAR site in 1997, and a Biosphere Reserve in 2000. In 2001, the PA was recognized as an Important Bird and Biodiversity Area (IBBA).

The PA is characterized as an intricate web of channels and lagoons with large mangrove associations. Along the PA coastline, there are beaches, dunes, and temporary ponds with associated xerophytic and halophytic vegetation (Saldaña et al., 2016). This complex of habitats supports a high diversity of flora and fauna. For example, 199 resident and migratory bird species have been registered in the area (Ruíz-Guerra et al., 2012). In cultural terms, two features are worth noting. First, the existence of archeological sites along the coastline, in a place known as Kangarú

Beach, and second, two human settlements, in the buffer zone, of people engaged in fisheries, aquaculture, and horticulture.

Even though park managers consider tourism a priority, it is still underdeveloped. Past tourism strategies have been structured around two activities, boat tours through the channels of the mangrove forest, and short walking trails through the mangrove forest. The strategy failed to attract a significant number of visitors[5] and, consequently, was financially unsustainable (Saldaña et al., 2016). Moreover, the aforementioned cultural features were not taken into account when designing the other tourism products. As we describe below, we use these features to propose two tourism products which are compatible with the PA's conservation objectives.

2.2. *Survey*

We conducted an in-person survey in the cities of Santa Marta and Barranquilla during December 2016 and January 2017 (n = 388) at multiple tourist sites, such as museums, historical places, and malls. The questionnaires were administered by experienced enumerators to individual respondents. The survey covered domestic potential tourists, 73% were residents and the remainder were tourists from other

[5] 444 visitors during 2019, http://citur.gov.co/estadisticas/df_parques_naturales/detalle/18?t=1

Colombian cities. The survey was conducted in Spanish. Given that we used convenience sampling, for cost-effectiveness reasons, our results are not representative of the general population.

The questionnaire covered four sections. First, we examined the previous knowledge of the PA of each respondent, and presented a brief description of the ecosystems and natural services provided by the PA. The second section focused on the past nature-based recreational behavior of the respondents. The third section gathered information on the respondent's socioeconomic background and their attitudes towards the protection and perceptional importance of natural services.

Finally, in the valuation section we presented respondents with a scenario in which the PA managers plan to improve the attractiveness of the PA for visitors by offering the recreational activities most valued by. Respondents were informed that the PA is located within a one-hour drive, so that it would be for day-trips, not overnight trips. The payment vehicle for obtaining a monetary measure of prospective visitor's WTP for an enhanced supply of recreational activities is an entrance fee that would be paid at the site, which would cover the costs to guarantee visitors that the set of recreational activities is available.

It was found that, overall, domestic prospective tourists know little about this PA; 55% of the participants did not know of its existence, and only 6.7% had visited it.

About 44% had done a nature-based recreational activity in the past 12 months, with "going to the beach" the most popular nature-based activity for them (81% had gone in the past year). Of the 388 surveyed individuals, 55% were women. About 13% of the sample had completed high school, 83% had undergraduate degrees, and 4% had postgraduate degrees. About a third (31%) were younger than 30 years old, 24% had ages between 30 and 45, and 21% were older than 45 years old. In terms of environmental attitudes, just over 40% of the people surveyed considered themselves as environmentalists.

2.3. Choice settings and attributes

In the DCE study, the respondents chose their preferred alternative from a set of three alternatives: two different new PA configurations, and the option of indicating that respondents would not want to visit either of the configurations. Based on the PA's management plan and the natural, social and scenic attributes of the area, five recreational activities were selected for examining visitors' preferences: i) birdwatching, ii) cultural exchange tour, iii) nautical sports, iv) walking tour on the beach, and v) mangrove boat tour (Table 1). These variables are all binary.

Table 1. Attributes and attribute levels for proposed recreational activities

Attributes	Levels	Variable name
Fee	16, 20, 25, 30 (COP, thousand)	Fee
Guided Birding	Independent, Guided	Guided Birding
Cultural exchange tour	Yes, No	Cultural
Nautical sports	Yes, No	Nautical
Walking tour on the beach	Yes, No	Beach
Mangrove boat tour	Channels and lagoons / Channels, lagoons and beach	Boat to beach

The attribute *Guided Birding* takes the value of one when the activity is guided by an expert in birds of the area, and zero if the activity is not guided[6]. *Cultural* takes the value of one if the cultural exchange tour is available and zero otherwise. The cultural exchange tour was described as an activity that gives visitors the opportunity to approach members of the two communities living in the PA's buffer zone to observe demonstrations of their horticultural systems, and their adaptations to the conditions of the territory.

[6] The activity is not aimed at specialized birders

The *Nautical* variable takes the value of one if low impact aquatic sports, such as kayaking and small boat sailing, are available, and zero if they are not. If the Kangarú Beach is open for visitors to walk and visit the archeological sites found in the area, the *Beach* variable takes the value of one; if the beach is not open to visitors, the variable takes the value of zero. Finally, the *Boat to Beach* attribute has two levels, depending on the length of the mangrove tour circuit. It takes the value of zero if it is a short circuit through channels and lagoons, currently offered by the PA, and takes the value of one if it is a longer circuit including a stop at a beach (other than Kangarú). The last attribute is the entrance fee, which take one of four values (16, 20, 25, 30 thousand Colombian pesos)[7].

In the case of choosing "not visiting", the implied levels for all the attributes is zero. Since we have an unlabeled experiment with five two-level attributes and one attribute with four levels, we have 128 possible treatment combinations ($L^H = 4x2^5$). NGene 1.1.1 was used to generate an orthogonal fractional design, which finally led to eight choice tasks per respondent. An example of a choice card is presented in Figure 1.

[7] 2017 exchange rate USDCOP 2,951

Figure 1: Example of a choice situation presented to potential domestic visitors.

	Alternatives		
	A	**B**	**Not going**
Entry fee	$25,000	$16,000	
Birdwatching	Guided birdwatching	Autonomous birdwatching	
Cultural exchange tour	Yes	No	
Nautical sports	No	No	
Walking tour on the beach	No	No	
Mangrove boat tour	Channels, lagoons and beach	Channels and lagoons	
Which alternative do you prefer?			

Following the typology of Arnegger et al. (2010), birdwatching and mangrove boat tours fall into the nature experience category, which refers to tourists whose primary interest is the observation of landscapes, flora, wildlife, and habitats. Cultural exchange and walking tours on the beach fit better in the hedonistic motivation category, since for these activities, tourists are expected to be partially motivated by cultural features and elements of sun, sand and sea types of vacations. Finally, for nautical sports, the natural environment provides the setting and backdrop for nature-based tourists.

2.4. *Methods*

The DCE model relates the probability that a certain alternative is chosen to the characteristics of the alternative (e.g. levels of the recreational activities and price), competing alternatives, and characteristics of the individual. The model is derived from the random utility theory, where the utility function of each respondent is partitioned in two separated components, an observed component and a stochastic term, which captures the factors that affect utility, but are not measured within the observable component, and are not directly observable by the researcher (Hensher et al., 2015). Thus, the utility that an individual n derives from the alternative j in choice situation t, is expressed as:

$$U_{njt} = \alpha_j + \delta_n Fee_{njt} + \beta_n X_{njt} + \varepsilon_{njt} \quad (1)$$

Where X_{njt}, is a vector of alternative-specific attributes in choice situation t, and fee_{njt} is the cost associated with it. δ_n and β_n are individual-specific coefficients for the cost variable and the other attributes of the alternative. The term ε_{njt} is an unobserved component of utility. In addition, α_j is a constant variable specific to option j.

If the parameters are assumed to vary across individuals, the model to be estimated is the mixed logit model. By contrast, the conditional logit model assumes that the parameters do not vary across individuals. The former approach is used to

test for the presence of significant heterogeneity among respondents preferences (Carson et al., 2015). The mixed logit model was used under the assumption that attribute variables, i.e. recreational activities, are normally distributed while the *Fee* variable was assumed as a fixed parameter.

Train and Weeks (2005) suggest rewriting equation (1) as:

$$U_{njt} = \alpha_j + \delta_n[Fee_{njt} + \gamma_n X_{njt}] + \varepsilon_{njt} \quad (2)$$

where $\gamma_n = \beta_n/\delta_n$, which is the WTP for the attributes. The specification in (1) is known as the model in the preference space, whereas the (2) is the model in the WTP space. This latter model has been proposed because in the preference space model the WTP is calculated as the ratio of two normally distributed parameters models, which does not have defined moments.

3. Results

The first two columns of Table 2 show the results for the models in the preference space. Columns 3 and 4 show the results for the WTP space models. The model in column 1 is a conditional logit model (MNL) and the model in column 2 is a mixed logit, with random coefficients for all the attributes except *Fee* (MIXL)[8]. Results for the MNL model show that parameter estimates for the attributes *Cultural, Nautical*

[8] A model with the coefficient for *Fee* as random was also estimated but the standard deviation was not significant

and *Beach* are positive and significant ($p < 0.01$), while the price variable, *Fee,* is negative and significant ($p < 0.01$). In contrast, parameter estimates for *Guided Birding* and *Boat to Beach* are not significant, which is an unexpected, nonetheless important, result.

The MIXL model allows us to test for the presence of preference heterogeneity among respondents. This approach assumes that different respondents have different preference parameters, randomly distributed around a central tendency (Hensher et al., 2015). This model has a better fit than the conditional logit model (log-likelihood of -2294.8 versus -2869.3), due to the addition of the five standard deviation parameters, all of which are significant ($p < 0.01$) and provide evidence of preference heterogeneity. Results for this model are similar to those of the MNL model. All else being equal, respondents prefer a PA that offers cultural exchange tours, nautical sports, and walking tours on the beach.

All the standard deviations parameter estimates in the MIXL model are highly significant, suggesting substantial heterogeneity with respect to all the recreational activities, including *Guided Birding*. The insignificance of the mean parameter estimate for *Guided Birding* and its significant and large standard deviation estimate suggests that respondents care about the attribute, but that their differing preferences are balanced in the sample.

Even though the MIXL provides evidence of preference heterogeneity in the data, it does not give specific information regarding the characteristics of people having different preferences. One way to account for observed heterogeneity is to model interactions between the characteristics of respondents and attribute levels[9]. For instance, a positive coefficient for an interaction indicates that the characteristic affects the preference for the attribute and the WTP.

Table 2. Results from models in preference space and WTP space

	MNL 1	MIXL 2	WTP MNL 3	WTP MIXL 4
ASC1[/1] (opt-out)	-1.89***	-10.6***	-65.05***	-2.66***
	(0.141)	(1.39)	(7.96)	(59.16)
Fee	-0.03***	-0.04***	Fixed	-3.27
	(0.006)	(0.007)		(0.182)
Guided Birding	-0.02	-0.01	-0.65	-0.64
	(0.046)	(0.056)	(1.48)	(1.495)
Cultural	0.24***	0.33***	8.25***	7.89***
	(0.046)	(0.055)	(1.862)	(1.464)
Nautical	0.18***	0.30***	6.12***	7.20***
	(0.075)	(0.113)	(2.67)	(3.037)
Beach	0.20***	0.27***	6.97***	6.71***
	(0.049)	(0.06)	(2.030)	(1.787)

[9] Another way is to estimate the model for different subsamples and compute their WTP for each attribute, however, it is challenging to test if predefined groups have statistically significant different preferences (Poe et al., 2005)

Boat to Beach	0.05	0.11	1.82	2.04
	(0.059)	(0.079)	(1.883)	(1.491)
Standard deviations				
ASC1 (optout)		8.47***		
		(1.20)		
Fee				0.38**
				(0.194)
Guided Birding		-0.35***		5.03
		(0.130)		(4.455)
Cultural		-0.27***		6.33***
		(0.137)		(2.726)
Nautical		-1.05***		-24.96***
		(0.198)		(6.892)
Beach		-0.45***		-8.24***
		(0.102)		(3.40)
Boat to Beach		-0.71***		14.63***
		(0.117)		(3.56)
n	9312	9312	9312	9312
# individuals	388	388	388	388
Ll	-2869.3	-2294.8	-2895.1	-2295.70

*** significant at 0.01 level, ** significant at 0.05 level, *significant at 0.1 level. /1: ASC: Alternative Specific Constant.

Our selection of the variables for interaction was aimed at identifying relevant factors for market segmentation, such as demographics, behavior and psychographic identification (Veisten et al., 2015). Accordingly, we explored preference heterogeneity in regards to three aspects: i) whether the respondent

reports to be an environmentalist, ii) whether the individual had done a nature-based recreational activity (e.g. trekking, kayaking, scuba diving, etc.) in the past 12 months, and iii) age and sex. We defined the following variables for the interactions

- *Eco*: dummy variable that takes the value of 1 if the respondent self-identifies as an environmentalist. The following affirmation was used to measure self-identity: I see myself as an environmentally-friendly person. Respondents rated the item on a four-point scale, ranging from totally agree to totally disagree. We coded as environmentalists those who answer totally agree. A total of 41% of respondents are environmentalists. According to van der Werff et al. (2013), biospheric values are related to environmental self-identity, which in turn is related to preferences, intentions, and behavior.
- *Act*: dummy variable that takes the value of 1 if the respondent reported having done a nature-based recreational activity over the past 12 months, 43.6% of respondents had done a recreational activity.
- *Sex*: 1 if the person is a woman, 55% of respondents are women.
- *>35*: takes the value of 1 if the respondent is over 35 years old, 49% of respondents are over 35 years old.

The variable *Eco* is motivated by the idea that nature-based tourism activities can be classified according to the tourists underlying motivation with respect to the relevance of nature as the point of attraction (Arnegger et al., 2010). Thus, for birdwatching and mangrove boat tours the motivation for visitors is the observation of landscapes, flora, wildlife, and habitats without directly engaging in conservation. Individuals who consider themselves as environmentalists are expected to have a stronger preference for these two activities than non-environmentalists. We have no prior expectations for the other three variables.

We first estimated the MNL model with all the interaction terms. We retained the interaction terms that had an z-statistic of 1.28 (Carson et al., 2015). Results with the retained coefficients are presented in Table 3. The *Sex* and *Act* interactions are excluded from the final model since they are insignificant.

All main effects are significant and similar to the ones reported in the models without interactions. Turning to the interactions in the MNL model, it can be seen that the main source of observed heterogeneity appears to be the respondents environmental self-identity. Individuals who self-identify as environmentalists seem to have stronger preferences, and WTP, for all the attributes than non-environmentalists, in particular for *Birding* and *Boat*. This is an interesting result since it suggests that those attributes are attractive for a particular group of people.

Finally, the interaction between nautical and >35, Nautical>35, is negative and significant in the MNL model, suggesting that younger people are more interested in nautical and sport activities. In the MIXL model, these interactions are not significant.

3.1. Willingness to Pay estimates

Columns 3 and 4 of Table 2 show the results for the WTP space models, equation (2). The model in column 3, MNL WTP, is analogous to the model in column 1 in that all the attribute coefficients are assumed to be non-random. The MIXL WTP assumes that all coefficients are random, for *Fee* we assume a log-normal distribution. In the MNL WTP model, the WTP for moving from a situation where the cultural tour is not offered, *Cultural* equals zero, to a situation in which the cultural tour is available, *Cultural* equals one, is estimated at COP 8.25 thousand, while this value for the mixed logit is COP 7.89 thousand. Similarly, for the attribute *Nautical,* the corresponding values are COP 6.12 thousand and COP 7.2 thousand, respectively. The WTP for *Beach* is similar across models, COP 6.97 thousand and COP 6.71 thousand. The MIXL WTP model has a better fit than the less complex MNL WTP model (log-likelihood of -2295.17 versus -2895.1)

Table 3: Preference space models with interactions

	MNL		MIXL/1	
	Coeff.	Std. error	Coeff.	Std. error
ASC1(opt-out)	-1.93***	0.142	-10.59***	1.386
Fee	-0.03***	0..006	-0.04***	0.007
Guided Birding	-0.14***	0.059	-0.063	0.074
Cultural	0.15***	0.059	0.30***	0.070
Nautical	0.22**	0.11	0.51***	0.178
Beach	0.15***	0.06	0.22***	0.078
Boat to Beach	-0.09	0.072	0.06	0.102
Interactions				
BirdingEco	0.31***	0.087	0.114	0.111
CulturalEco	0.22***	0.085	0.089	0.099
NauticalEco	0.24*	0.129	-0.176	0.206
Nautical>35	-0.27**	0.12	-0,27	0.205
BeachAct	0.15*	0.082	0,113	0.111
BoatEco	0.36***	0.103	0,11	0.146
# individuals	388	388		
Ll	-2869.2		-2292.1	

*** significant at 0.01 level, ** significant at 0.05 level, *significant at 0.1 level

/1: Random parameters for ASC1, Birding, Cultural, Nautical, Beach and Boat. All standard deviations are significant.

4. Discussion

Protected areas are attractive for the development of nature-based tourism activities that can generate financial benefits for funding the conservation of biodiversity and ecosystem services. We used a DCE to identify and quantify the preferences of potential domestic tourists regarding the recreational activities that can be offered by a PA in the Colombian Caribbean, Isla de Salamanca. Estimates from the conditional and mixed models in the preference and WTP space reveal that for all but two of the park attributes, birdwatching and mangrove boat tours, there is an identifiable latent demand by potential visitors. In terms of importance, point estimates of the MIXL models suggest that respondents place a greater value on the *Nautical* attribute and a similar value on the *Cultural* and *Beach* attributes. The mixed logit models also indicate preference dispersion with respect to these attributes. The model results show: i) a mismatch between the recreational activities prioritized by the PA managers and potential visitors' preferences, and ii) the presence of heterogeneous preferences.

4.1. Supply and demand mismatch

Isla de Salamanca is a PA with widely acknowledged great potential for avitourism. Our results indicate that guided birding tours are attractive only for

those who self-identify as environmentalists. Since the attribute being evaluated was guided birdwatching, as opposed to birdwatching without a guide, it is possible that among respondents there may be persons interested in birding but not interested in having a guide. Because birding is an activity that has been prioritized by PA managers, there is a potential mismatch in that a highly developed birding product may not be appealing for the general public, thus failing to generate sufficient revenue.

That a significant portion of the sample does not seem to be interested in guided birding tours could be explained by insufficient relevant information on the demand side. Having a "tourist experience" in mind requires basic information about the travel plan, the type of site, the activity to be performed, and the proper gear required. Preference formation (or motivation) requires the individual, or group, to receive relevant information on tourism products for mentally "producing" a particular tourist experience. In other words, PA managers must develop a specific marketing strategy for promoting the activity among the general public, while pursuing a different strategy for specialized birders (Butzmann, 2014).

Results also revealed scant preference for mangrove boat tours, an activity which is currently being offered and prioritized by the PA. Given the presence of

low demand and high demand activities, a marketing strategy based on bundling may work to attract more visitors. Marketing nature-based tourism activities may be performed either by offering each item separately (i.e. unbundled), or by designing a price or quantity bundling strategy (i.e. pure bundling), or a mixed strategy in which the customer is presented with both the bundle and the separated products in a given travel plan.

Offering bundles of high expected demand activities (here sports-adventure and/or hedonistic) with birdwatching and mangrove boating (nature experience) may work as a pull motivation factor (attractiveness) for visitors, and increase visitation numbers (Huang et al., 2016). Enhancing birdwatching and mangrove tour preferences in this wetland-type PA may be possible through an appropriate bundling strategy. Following the classification of Guiltinan (1987), a "leading product" (chosen from a given travel plan) can be offered tied to one or more "target products", here, birding or mangrove boat tour or "birding while boating", the latter, a composed activity that is likely to be offered in this site. As the leading product keeps its regular price, the other product whose demand is to be strengthened, is priced at a discount.

4.2. Heterogeneous preferences and market segmentation

Self-identified environmentalists seem to exhibit a stronger preference for

birdwatching and mangrove boating. This result is consistent with the assumption that the driving motivation to engage in those activities is the observation of landscapes, flora, wildlife, and habitats. This is also in line with the literature that asserts that there is an association between activity and motivation (Arnegger et al., 2010; Tao et al., 2004). However, Mehmetoglu (2007) argues that this assumption does not hold and, consequently, the motivation and activity dimensions should be treated differently.

If environmentally aware tourists are more likely to display environmentally friendly behaviour, an assumption supported by results from the environmental psychology literature (van der Werff et al., 2013), then, the relationship between activity and motivation could be useful for designing measures for attracting tourists with a small ecological footprint (Dolnicar et al., 2008), helping to better balance the financial and conservation objectives of the PA.

In terms of age, there is some weak indication that younger people place a greater value on the nautical attribute, indicating that, for this group, nature is not the main point of attraction, rather it is the setting where the activity is realized. A result that coincides with other research showing that younger people are more attracted to riskier and challenging experiences (Tangeland & Aas, 2011).

Our results indicate that in our particular case, demographics and past trip behaviour have a limited role in discriminating between different types of tourists, and point to the importance of psychographic information for understanding tourist behaviour, and design market segmentation strategies (Mehmetoglu, 2007).

Conclusion

This study analyzed the preferences of prospective domestic tourists for a range of nature-based activities offered in an estuarine and coastal wetland PA in the Colombia Caribbean. Suitable activities in the site were defined as single products. By means of a discrete choice experiment, we found evidence of heterogeneous preferences, and a mismatch between the recreational activities prioritized by the PA managers and potential visitors' preferences. These research findings have practical implications. First, they underline the importance for PA managers of examining prospective tourists' characteristics as a mean for designing market segmentation strategies. Second, analysis of preferences is useful for developing a portfolio of nature-based tourism products aligned with the potential demand. From a theoretical point of view, our study adds to the evidence which underscores the importance of psychographic factors for market segmentation in the tourism industry.

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