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User fees across ecosystem boundaries: Are SCUBA divers willing to pay for terrestrial biodiversity conservation?

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Abstract

While ecological links between ecosystems have been long recognised, management rarely crosses ecosystem boundaries. Coral reefs are susceptible to damage through terrestrial run-off, and failing to account for this within management threatens reef protection. In order to quantify the extent to that coral reef users are willing to support management actions to improve ecosystem quality, we conducted a choice experiment with SCUBA divers on the island of Bonaire, Caribbean Netherlands. Specifically, we estimated their willingness to pay to reduce terrestrial overgrazing as a means to improve reef health. Willingness to pay was estimated using the multinomial, random parameter and latent class logit models. Willingness to pay for improvements to reef quality was positive for the majority of respondents. Estimates from the latent class model determined willingness to pay for reef improvements of between $31.17 - $413.18/year, dependent on class membership. This represents a significant source of funding for terrestrial conservation, and illustrates the potential for user fees to be applied across ecosystem boundaries. We argue that such across-ecosystem-boundary funding mechanisms are an important avenue for future investigation in many connected systems.

Keywords: choice experiment; user fee; coral reef; diving; sedimentation; Caribbean

1. Introduction

The application of user fees to fund environmental conservation is well established within National Parks, and when managed correctly can generate significant gains in environmental protection (Thur, 2010; Wielgus et al., 2010). Implementing user fees requires an understanding of how users value, and benefit from, ecosystem quality, to enable fees to reflect user preferences. However, an under-investigated issue is whether there is scope for implementing fees "across ecosystem boundaries" in order to finance environmental improvements. In this paper, a stated preference method is used to investigate the scope for such across-boundary financing mechanisms. Specifically, we identify fee levels consistent with users' stated maximum willingness to pay for well-defined environmental improvements that result from costly terrestrial conservation actions.

Stated preference methods are frequently used to estimate the willingness of users to fund environmental improvements. Among the set of stated preference methods, choice experiments allow valuation of ecosystem attributes, drawing direct links between willingness to pay and environmental change, and permitting comparisons of alternative management options. A number of options for modelling choice experiment data exist. While the multinomial logit model is the simplest approach, random parameter or latent class logit models enable incorporation of individual preference heterogeneity, that better reflects preferences across the population of users (Train, 2009).

Though user fees have seen some success in conservation funding, they remain limited by the small spatial scales of their application. Fees typically relate directly to the resource under use, despite ecosystem health depending on ecosystem functions and services supplied on a much larger spatial scale. This is well illustrated through fees charged to divers visiting coral reefs. Coral reef health is intrinsically linked to its terrestrial catchment, high sediment levels entering the marine system reduces light availability causing declines in coral growth rates (Fabricius,

2005; Pollock et al., 2014; Rogers, 1990). Coral mortality rises (Fabricius, 2005), while recruitment and fecundity fall (Edmunds and Gray, 2014; Rogers, 1990; Wenger et al., 2014). Small fish abundance, fish productivity (Rogers, 1990), and fish species richness (DeMartini et al., 2013), also decline. Increased nutrient loads compound coral reef degradation through increasing algae growth (Fabricius, 2005).

Though the link between ecosystem health in terrestrial and marine systems is well established (Álvarez-Romero et al., 2014; DeMartini et al., 2013; Edmunds and Gray, 2014; Fabricius, 2005; Pollock et al., 2014; Rogers, 1990), joint management and funding is rarely achieved in practise (for exception see Hawaii's 'ridge to reef' environmental program). The user base provided by divers, coupled with the tight connection between the terrestrial ecosystem and coral reefs, present the opportunity to investigate a user fee designated for protection of supporting systems, and provide an opportunity to investigate how much divers are willing to pay to fund terrestrial conservation actions that lead to improvements in reef health, as well as generating other benefits.

Choice experiments are widely employed to value coral reefs, with divers targeted due to the direct use values obtained from coral reefs. Choice experiments have been used to value reef attributes (Grafeld et al., 2015; Parsons and Thur, 2008; Rodrigues et al., 2015; Schuhmann et al., 2013; Wielgus et al., 2003), reef management options (Sorice et al., 2007; Yacob and Shuib, 2009), or a combination of the two (Christie et al., 2014; Gill et al., 2015; Schep et al., 2013). Throughout these studies, divers have been found to have a positive willingness to pay for reef attributes and management. Willingness to pay remained positive even where management increased requirements on divers, such as education courses (Sorice et al., 2007), or limiting site access (Sorice et al., 2007; Yacob and Shuib, 2009). These studies illustrate that divers not only recognise reef decline, but appreciate that as users they have a responsibility for funding reef protection activities. Previous studies on Bonaire (our case study system), found divers and

tourists to have positive willingness to pay to protect marine health (Parsons and Thur, 2008; Schep et al., 2013). Divers were found to have an estimated welfare loss of $45 to $192 (2002USD) per person per trip for "small" to "large" declines in reef health (Parsons and Thur, 2008).

In this paper, we estimate divers' willingness to pay for improvements to specific coral reef attributes, and link these payments to management options related to reducing terrestrial sediment run-off. This enables results to feed directly into a wider ecosystem service protection policy. As far as we are aware, our study represents the first attempt to estimate divers' willingness to pay for terrestrial conservation in the Caribbean region. We also show how choice experiments can be used to estimate the contribution that users can make to environmental conservation actions that cross ecosystem boundaries, in this case between the marine and the terrestrial.

2. Methods

2.1 Study system

Bonaire, Caribbean Netherlands, is situated in the Southern Caribbean (12° 10' N 68° 17' W). The island's economy is based on dive tourism to its coral reef. Stay-over tourists numbered over 126,000 in 2014, and direct tourist spending made up 16.4% of the island's GDP (Statistics Netherlands, 2015). Though Bonaire is well known for its marine biodiversity conservation, the island has a highly degraded terrestrial ecosystem (Freitas et al., 2005), which threatens the health of the island's coastal waters (Slijkerman et al., 2011; Wosten, 2013).

2.2 Survey development

Literature review (DeMartini et al., 2013; Fabricius, 2005; Pollock et al., 2014; Risk, 2014; Rogers et al., 2014; Rogers, 1990; Schep et al., 2013; Uyarra et al., 2009), discussions with Bonaire's dive operators and experience of diving on Bonaire, were used to identify choice

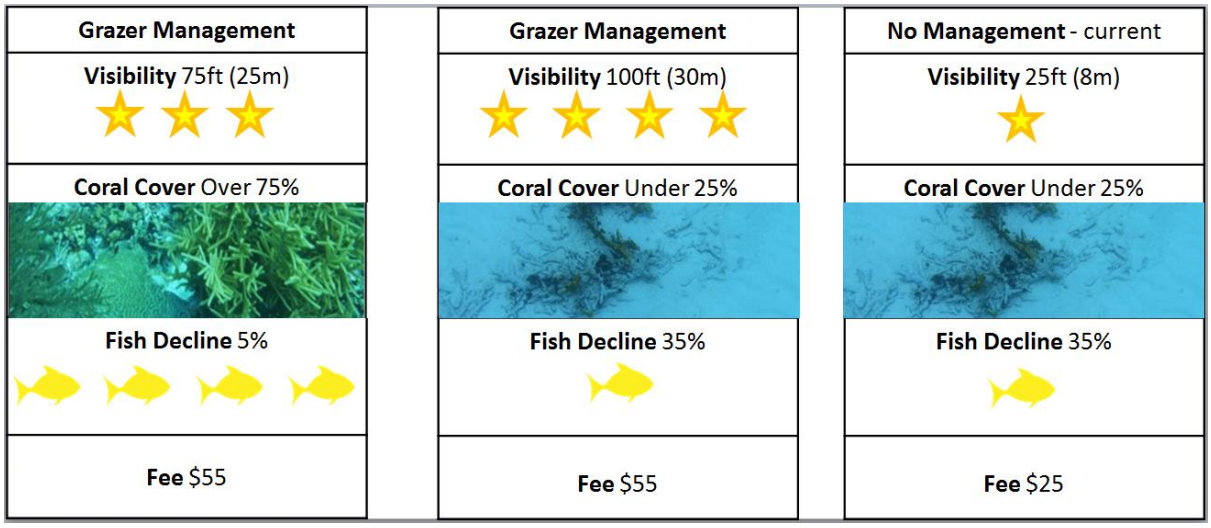
experiment attributes that described the condition of coral reef dive sites in Bonaire. These attributes were likely to be negatively impacted by sedimentation.

The attributes selected were horizontal visibility, percentage coral cover, and percentage fish decline. An annual user fee is already in place, therefore the fee mechanism was an increase in this fee (Table 1). Each choice task included a status quo (business-as-usual) option, with the current fee of $25 and the largest potential declines arising from increased sedimentation. To assist with comparison between choice alternatives, choice cards included photographs of the coral reef to illustrate percentage coral cover, with levels of visibility and fish decline indicated using numbers of stars (as a common icon to indicate rating, as no icon for visibility could be identified) or fish icons, respectively (Figure 1.). An opt-out option of taking no diving trip was not provided, as the number of divers continues to increase (PADI, 2010), despite reef health decline worldwide. It would therefore not be expected that Bonaire's divers would cease taking dive holidays in response to continued decline.

Table 1. Levels of attributes presented to divers during choice experiment on Bonaire. On each choice card (Figure 1) reef attributes could take one of four levels, while the fee attribute could take one of seven levels.

Attribute	Number of levels	Levels
Visibility	4	8m, 15m, 25m, 30m
Coral Cover	4	Under 25%, 26%-50%, 51%-75%, Over 75%
Fish Decline	4	35%, 25%, 15%, 5%
Fee	7	$25, $30, $40, $55, $75, $100, $125

Figure 1. Example choice cards. Respondents were presented with eight successive cards.



Choice cards were designed in Ngene, using the multinomial logit form and D optimisation. In the final design visibility included as a non-linear dummy-coded attribute, because results from the pilot study indicated a non-linear relationship between choice probability and visibility, with all other attributes treated as linear. Design restrictions confined the lowest fee level to the status quo option, and also prevented all reef attributes taking the lowest form within a single card. Two alternative choice experiments were presented during the pilot study, including either four blocks of six cards or three blocks of eight cards. The final study used three blocks of eight cards.

The survey instrument was refined following feedback from five dive instructors and ten divers. 47 pilot surveys were carried out between 11th July and 11th August 2015, at two dive centres, enabling further clarification of the questions and provision of information.

The survey used a combination of multiple choice and Likert style questions to collect sociodemographic and trip characteristic data. Respondents were also presented with information detailing proposed management options to reduce sedimentation prior to completing the choice experiment section of the survey (Appendix 1). We collected data on

certainty of answers and understanding of the survey. The final survey also assessed level of diving experience and familiarity with Bonaire, importance of reef attributes to choosing a site, reasons for choosing Bonaire as a destination, alternative activities undertaken on Bonaire, and demographic characteristics.

Surveys were conducted between 18th August and 24th September 2015. As no central record of visiting divers on Bonaire exists, random sampling was not possible. Instead a convenience sampling strategy was employed, approaching divers between dives at shore accessible dive sites, and when disembarking from boats. These locations were chosen to ensure the sample included both 'resort' divers, who are restricted by boat schedules to dictate location of dives, and 'independent' divers, who rent vehicles and have flexibility to visit dive sites at choice. We anticipate that there are slightly more 'independent' divers than 'resort' divers, based on Bonaire's reputation for providing this 'independent' option, communication with dive operators, and observations at dive locations. Dive centres were selected to represent the full range of services available on Bonaire.

For clarity in estimating willingness to pay for improving reef health 'fish decline' was reclassified during analysis as 'fish remaining' through subtracting percentage fish decline from 100. Coral cover was assigned as the midpoint for each range.

Parameters were estimated initially using the multinomial logit model. Following this heterogeneity across individuals was incorporated using the random parameter logit model, that enables variation across all individuals, and the latent class logit model, that categorises preferences into classes with similar preferences. Models were compared using Akaike Information Criterion (AIC) values (Burnham and Anderson, 1998). Multinomial and random parameter logit models were estimated in R (R Core Team, 2016), selected as this is open source, and therefore readily accessible, software, with the package 'mlogit'. 95% confidence

intervals were estimated using the delta method. As R does not have packages for latent class modelling, this model was estimated in STATA, using packages 'mixlogit', 'lclogit', 'gllamm', and 'fmlogit'.

3. Results

We conducted 299 surveys (72% success rate, 58% shore dive sites, 42% from boats). Respondent characteristics are reported in Table 2. Respondents reported high certainty about their choices, believed they have enough information to make a choice, and had high understanding of the choice task (Table 3). They reported all reef attributes as highly important and the annual fee of mid-level importance (Table 4).

Table 2. Choice experiment respondent characteristics. Population characteristics are also shown where known.

	Proportion	Median	SE	Min	Max	Population (Statistics Netherlands)
Age	-	49	12	18	73	50 – 54 (Mode)
Gender – female	41%	-	-	-	-	
Home country – North America	56%	-	-	-	-	19%
Home country - Netherlands	23%	-	-	-	-	58%
Home country – Europe (excl. Netherlands)	15%	-	-	-	-	10%
Home country – South America and Caribbean	7%	-	-	-	-	6%
Education – Bachelor degree or above	65%	-	-	-	-	
Monthly income	-	$9,000	$440.67	$999.5	$20,000	
Dive certification – PADI open water (or equivalent)	24%	-	-	-	-	
Diver certification – PADI advanced open water (or equivalent)	35%	-	-	-	-	
Diver certification – PADI rescue diver and above (or equivalent)	41%	-	-	-	-	
Number of years diving	-	11	0.65	<1	56	
Number of logged dives	-	200	18.19	10	1001	
First visit to Bonaire	44%	-	-	-	-	
Taken 5 or more dive holidays in the last 5 years	49%	-	-	-	-	
Anticipate returning to Bonaire	90%	-	-	-	-	

Table 3. Reported understanding of choice experiment. 1=strongly disagree, 2= disagree, 3=neutral, 4=agree, 5=strongly agree.

	Mean	Standard Error
I am certain of my answers	4.22	0.034
I had enough information to make a decision	4.09	0.042
I understood the questions	4.34	0.038

Table 4. Importance of choice experiment attributes in decision making. 1=very low, 2=low, 3=mid, 4=high, 5=very high.

	Mean	Standard Error
Visibility	4.11	0.04
Coral Cover	4.36	0.04
Fish Decline	4.39	0.04
Annual Fee	3.12	0.06

Protest bids were made by 38 participants (12%), with the most predominant reason provided being that they should not be responsible for payment (11 protests), or that the current fee is not used correctly (9 protests). These bids were removed from all further analysis.

The multinomial logit model showed that each attribute was statistically significant in terms of explaining choices, with positive coefficients for the reef attributes and status quo, and a negative cost coefficient (Table 5). Respondents who were more likely to not plan to return to Bonaire within the next five years, more likely to have be highly qualified, and have lower income were more likely to chose the status quo option (Table 5).

Table 5. Results summary of choice experiments with divers on Bonaire, analysed using multinomial logit, random parameter and latent class logit models. Attributes visibility, coral cover and reduced fish decline were treated as random with normal distribution. Sample size = 261 *** Indicates significant result at the 0.05 level.

	Multinomial Logit		Random Parameter Logit	
	Coef.	SE	Coef.	SE
Visibility	**0.012*** **	0.0014	**0.013*** **	0.0018
SD			**0.014*** **	0.0049
Coral cover	**0.014*** **	0.0019	**0.017*** **	0.0019
SD			**0.013*** **	0.0052
Reduced fish decline	**0.029*** **	0.0031	**0.037*** **	0.0052
SD			**0.033*** **	0.014
Cost	**-0.008*** **	0.0014	**-0.01*** **	0.0018
Status quo	**1.34*** **	0.17	**1.5*** **	0.02
Return within 5 years: SQ	**-1.31*** **	0.008	**-1.49*** **	0.19
Advanced certification: SQ	**0.40*** **	0.011	**0.47*** **	0.15
Income: SQ	**-0.00005*** **	0.000006	**-0.00002*** **	0.000009

	Latent Class Logit					
	Class 1		Class 2		Class 3	
	Coef.	SE	Coef.	SE	Coef.	SE
Visibility	**0.023*** **	0.003	**0.021*** **	0.005	0.032	0.034
Coral cover	**0.021*** **	0.002	**0.018*** **	0.004	0.040	0.028
Reduced fish decline	**0.027*** **	0.005	0.002	0.009	-0.063	0.056
Cost	**-0.007*** **	0.003	**-0.058*** **	0.005	-0.141	0.081
Status quo	**-3.04*** **	0.5	**-2.31*** **	0.30	**2.91*** **	0.81
Return within 5 years	**1.5*** **		**1.7*** **		-	
Advanced certification	-0.42		-0.57		-	
Income	0.00		0.00		-	
Class share	0.65		0.20		0.16	

The random parameter logit model identified all reef attributes as random, modelled with a normal distribution. The standard deviations of the cost and status quo were not significantly different from zero, and were thus treated as non-random. All attributes was significant, with positive coefficients for the reef attributes and status quo, and a negative cost coefficient. The significant standard deviation values indicate significant preference heterogeneity in the reef attributes (Table 5). In line with the multinomial logit model respondents that were less likely to plan a return trip to Bonaire within the next five years, had high diving qualifications, and had lower income were more likely to select the status quo option (Table 5).

For the latent class analysis, investigation of model errors, class share, and consideration of the data identified the appropriate number of latent classes as three. Though AIC values showed small improvement with increasing numbers of classes, classes added above the three selected had very small class shares, and were therefore not seen to add information to the model. Attributes in all classes show the expected sign, and negative cost coefficients (Table 5). Class one, with the highest class share (0.66), have a positive preference for all reef attributes, and a negative preference for the status quo. Respondents more likely to belong to Class two (class share: 0.20) show a positive preference for visibility and coral cover, no significant preference for reducing fish decline, and a negative preference for the status quo. Respondents more likely to belong to Class three (class share: 0.16) have no significant preference for any reef attribute, but a positive preference for the status quo. Classes one and two are characterised by being more likely to return to Bonaire within the next five years (Table 5).

Model fit was best for the latent class logit model, followed by the random parameter and multinomial logit, including individual variables, when considering AIC values (Table 6).

Table 6. AIC values for multinomial, random parameter, and latent class logit models

Model	AIC
Multinomial logit	3926
Multinomial logit: Including individual specific variables	3836
Random parameter logit	3919
Random parameter logit: Including individual specific variables	3828
Latent class logit	2501

Willingness to pay estimates were calculated for all models (Table 7). Willingness to pay was positive for each reef attribute in the multinomial logit and random parameter logit models, with higher estimates in the multinomial logit model. In the latent class model class one (class share: 0.66) were willing to pay for improvements for all reef attributes, with willingness to pay higher than in class two or estimated through the multinomial or random parameter logit models. Class two had a positive willingness to pay for improvements in coral cover and visibility only (class share: 0.20). Class three were not willing to pay for reef health improvements achieved through terrestrial conservation (class share: 0.16) (Table 7).

Table 7. Estimate of willingness to pay to reduce reef health decline through control of terrestrial overgrazing. 95% confidence intervals presented in brackets. 2015USD.

	Multinomial Logit	Random Parameter Logit	Latent Class Logit		
			Class One	Class Two	Class Three
Visibility increase (per m)	$1.50 (1.26-1.74)	$1.30 (1.09-1.51)	$3.29 (2.13-3.50)	$0.36 (0.20-0.50)	-
Coral cover increase (per % point)	$1.75 (1.31-1.99)	$1.70 (1.49-1.91)	$3.00 (2.13-3.13)	$0.31 (0.16-0.41)	-
Fish decline reduced (per % point)	$3.63 (2.78-4.48)	$3.70 (2.93-4.47)	$3.86 (2.13-4.63)	-	-

4. Discussion

Tourist divers on Bonaire have a positive willingness to pay for terrestrial conservation measures that reduce sedimentation, where this is expected to reduce reef health decline. Taking estimates from the most conservative latent class, divers would be willing to pay an

annual fee of up to $31.17 to maintain high marine quality (30m visibility, over 75% coral cover), that is $6.17 (24.6%) above the current $25 fee.

As noted above, a lack of recording of tourist divers on Bonaire prevented random sampling, meaning convenience sampling was used. We sampled divers at resorts and shore dive sites, to capture both 'boat' and 'independent' divers. Our final sample shows a larger proportion of independent than boat divers, as we anticipated from the expected proportions of each diver type. Our sample is male biased, however though no data on gender of Bonaire's divers was available, personal observation suggests this to be representative. Median age was 49, representative of divers on Bonaire (Statistics Netherlands, 2015). Our sample shows over representation of North America and non-Netherlands Europe, and under-representation for the Netherlands (Statistics Netherlands, 2015), likely due to the survey being presented in English. Due to the lack of representativeness of our sample for the total population of divers, we did not generate aggregate maximum willingness to pay estimates from the sample data.

All models estimated positive willingness to pay for improvements in reef condition, with variation between models. This variation arises partly from the way in which models account for individual heterogeneity. The multinomial logit presumes homogenous preferences, while the random parameter logit accounts for individual variation. The latent class logit model estimates preferences for classes of respondents, though preferences are presumed homogenous within classes. The latent class model provides the best fit of the presented models. This model is perhaps of most use to policy makers and environmental managers, as it enables tailoring of fees to preference variation in cases where latent class membership derives from observable visitor characteristics.

Planned return within five years was associated with positive willingness to pay in the multinomial, random parameter and latent class logit models. In the multinomial and random

parameter models anticipated return within five years decreased the likelihood of selecting the no-improvement status quo, and in the latent class model increased likelihood of membership of a class with a positive willingness to pay. This is to be expected, as repeat visitors will continue to gain utility from coral reef protection into the future. In the multinomial and random parameter logit models income was also negatively associated with selection of the status quo, as higher income is associated with lower economic constraints. Unexpectedly in both models, higher levels of dive qualification was associated with higher preference for the status quo. This may be a result of Bonaire's reputation for 'easy' diving, with little in the way of currents, and simple navigation. For divers with higher qualifications they may be less constrained to 'easy' locations, and therefore have more options for 'high quality' reef diving. Those divers with fewer qualifications may feel they have fewer substitutes, and therefore more to gain in protecting Bonaire's reef in particular.

Divers who are more likely to belong to latent classes one and two have a positive willingness to pay for maintaining reef health, with a larger willingness to pay in class one. Class two were not willing to pay to reduce fish decline. This may relate to the unfamiliarity of rating fish abundance, when compared to visibility and coral cover. Both visibility and coral cover are routinely included numerically in dive site reports, and divers will estimate visibility when logging dives. Fish abundance, however, is typically only included in reports when it differs from the average for the area. The largest decline presented (35%) may be an acceptable level of decline, with disutility not arising until larger declines are seen. Alternatively, the use of abundance as the attribute to represent fish populations may not capture what respondents value about fish, in that diversity, size or rarity may have been more highly valued (Uyarra et al., 2005).

Divers belonging to class three were not willing to pay to maintain reef health. Excluding protest bid 32 respondents stated they were not willing to pay for improved reef quality through

terrestrial conservation. Follow up questions illustrated that the most common reason was that they could not afford more than the current fee (18/32 respondents), and/or that they did not agree with the proposed conservation measures (19/32 respondents). This identification of groups with objections to proposed management options is important to enable early measures to manage conflict to be established (Estévez et al., 2014) .

Worldwide, we are aware of only two papers linking valuation of coral reefs to terrestrial conservation. Residents on the catchment of the Great Barrier Reef were found to have a positive willingness to pay for reef protection through changing agricultural practises (Rolfe and Windle, 2011), while divers in Guam were estimated to have a willingness to pay of $10 to reduce sedimentation onto coral reefs (Grafeld et al., 2015). Our study broadly agrees with these findings, though we estimate higher willingness to pay from divers. This difference likely arises through Guam offering a number of attractions beyond diving, and therefore attracting a more casual diver than those visiting Bonaire purely for the purpose of diving. It would be reasonable to expect therefore that these divers have reduced willingness to pay when compared to the committed divers visiting Bonaire.

5. Conclusions and policy implications

Divers are willing to pay for protection and improvement of Bonaire's coral reef through terrestrial conservation. In 2014 Bonaire saw over 126,000 tourists (Statistics Netherlands, 2015), with an average of 71% of tourists purchasing a dive tag annually (STINAPA Bonaire, 2010) this presents a significant source of revenue. A three year-long pig control program initiated in 2016 by local NGO, Echo, is estimated to cost $38,000, and $20,000 in annual running costs (S. Williams, pers. comm.). With an estimated 89,460 dive tags sold in 2014 funding the project would require only $0.42/diver for the first year, and $0.22/diver/year in subsequent years.

This positive willingness to pay for terrestrial conservation illustrates the potential to implement fees across ecosystem boundaries. Though the terrestrial and marine systems are intrinsically linked (Fabricius, 2005; Risk, 2014; Rogers, 1990), management rarely crosses these boundaries (Álvarez-Romero et al., 2011; Beger et al., 2010; Klein et al., 2014, 2012, 2010; Makino et al., 2013; Mateos-Molina et al., 2015), despite modelling of this link increasing in recent years (Álvarez-Romero et al., 2014; Klein et al., 2010; Maina et al., 2013). This study supports this research through illustrating a potential source of funding to bridge this gap. Joint management will improve conservation of the coral reef, as well as in the less charismatic dry-forest, while making explicit the link between ecosystems for users, policy makers and practitioners.

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7. Appendix One

Information cards presented to respondents prior to completing choice experiment.

Bonaire is internationally renowned as a high quality SCUBA dive destination (SCUBA Diving Magazine, 2015). However, like coral reefs worldwide, the health of Bonaire's reef is declining over the long-term.

Studies carried out on Bonaire's reef by the University of Maine (Steneck and colleagues 2003-2013) have shown the number of young corals is falling, and the diversity of fish species is changing. This will reduce the quality of the coral reef for diving.

Soil run-off from land is one cause of reef health decline. On Bonaire this is increased due to grazing by introduced goats, donkeys and pigs.

Goats, donkeys and pigs were introduced to Bonaire by Spanish settlers, they are not native to the island. Grazing by these animals reduces plant numbers, meaning that there are fewer roots to hold the soil, and it is washed onto the reef.

Increased soil on the reef reduces the number of young corals. In time this will lead to reduced coral cover and fish diversity. Increased soil in the water also reduces visibility for divers.

One way to maintain the health of Bonaire's coral reef is therefore to reduce grazing. This could be done by:

- Restricting movements of grazing animals;
- Reducing the number of grazing animals on Bonaire;
- Restricting where goat farmers can graze their goats.

To maintain the reef requires funding. You already pay an annual nature (dive tag) fee of $25 to STINAPA, which is used for the running of the Bonaire National Marine Park. This study is to find out if you would be willing to pay a higher fee in the future, to be used to reduce grazing. This fee would be collected at the same time as the current nature (dive tag) fee, but would be administered by a new non-governmental organisation. The fee would be guaranteed to be used for this purpose.

The following questions will present you with a choice of three dive sites under different management conditions:

- The first two dive sites show diving conditions where grazing has been reduced
- The final dive site shows diving conditions where grazing has been allowed to continue

In each round you will be asked to choose which of the three dive sites you would like to visit. You should assume that the sites are identical except in the ways presented on the card.

Each site has a different annual fee associated with it. Remember to pay close attention to the fee, and take into account the cost of your holiday, and other economic constraints before making a decision. If the prices of the dive sites with management are too high, choose the option with no management.