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Preferences for different flagship types in fundraising for nature conservation

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ABSTRACT

Environmental non-governmental organizations (ENGOs) appeal to private donors for conservation fundraising, often employing single species flagships as their fundraising strategy. Previous studies suggest that donor preferences vary, and can be divided into segments. Just as preferences towards species can vary, preferences towards different flagship types may also differ. Thus, opportunities may exist to enhance the use of other flagship types such as flagship fleets, ecosystems or biodiversity in fundraising. Although previous studies have found that aesthetic appeal, locality or threat status can explain the decision to donate, it is unclear how these attributes influence choices between flagship types. We conducted a discrete choice experiment on donor preferences towards different flagship types in the United Kingdom (n = 380) and the United States (n = 374), and explored how flagship attributes and socio-demographic variables affect potential donors' choices. Latent class modeling revealed seven donor segments in both countries that varied in their preferences of flagship types and attributes, as well as in their price-sensitivity. Some segments were similar for both countries, but the US segments were more polarized regarding price-sensitivity. Most respondents favored biodiversity targets in their choices, and ecosystems were more popular than species-based flagships. To enhance their fundraising capacity, ENGOs should extend their donation targets beyond flagship species, and develop more targeted marketing strategies for different audiences. Our research also demonstrates the need for further research to examine respondents' characteristics, such as personal values or environmental concern, which would allow more precisely targeted marketing to specific donor segments, e.g. through social media channels.

1. Introduction

The shortage of conservation funding (Evans et al., 2012; Waldron et al., 2013) requires environmental non-governmental organizations (ENGOs) to find ways to improve their fundraising strategies. Private donations to ENGOs are an important mechanism through which conservationists raise funds (Larsen and Brockington, 2018; Veríssimo et al., 2018). The knowledge of potential donors' preferences towards different donation targets can help the ENGOs to enhance their fundraising opportunities.

The most widely employed flagship type to attract conservation funds is to use a single species as a figurehead of a campaign (Leader-Williams and Dublin, 2000). Besides being used as fundraising tools, flagship species have alternative roles, such as to promote the ENGO itself (Caro and Girling, 2010; Jepson and Barua, 2015) or to promote behavioral changes in community-based conservation projects (Kanagavel et al., 2014; Veríssimo et al., 2014b). However, in this study we examined flagship species solely from the conservation fundraising perspective aiming to increase their efficiency in fundraising.

Despite its popularity, it is currently unclear whether the use of flagship species as a fundraising tool is the most effective way to seek funds for conservation. These flagship species are often chosen on the basis of characteristics known to resonate with the preferences of potential donors, such as species aesthetic appeal (Richardson and Loomis, 2009; Smith et al., 2012; Albert et al., 2018). However, recent studies suggest that the motivations driving environmental philanthropic behavior may be diverse and specific to certain audiences (Veríssimo et al., 2017, 2018; Lundberg et al., 2019a) highlighting the

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need to explore opportunities to widen the current selection of fundraising strategies and potentially reach a more diverse set of donors. One option is to enhance the use of other flagship types, such as flagship fleets (groups of flagship species), or even more holistic concepts such as ecosystems or biodiversity as flagships, but there is a need to better understand the cost-effectiveness of the other flagship types, as only few studies have made such comparisons (White et al., 1997; Senzaki et al., 2017; Shreedhar and Mourato, 2019).

Understanding the flagship preferences of potential donors would also, when combined with demographic variables such as age, gender or income, which are known to impact charitable giving in many instances (Bekkers and Wiepking, 2012; Wiepking and Bekkers, 2012), help to segment them into identifiable groups with similar preferences. These insights would in turn allow the ENGOs to increase their likelihood of success by targeting their fundraising appeals to specific donor profiles (Veríssimo et al., 2014b).

1.1. Flagship types

At least three other flagship types can be used to raise funds for conservation alongside single species: 1) flagship fleets, 2) ecosystems and 3) biodiversity. Flagship fleets consisting of several species would form another species-based approach (Veríssimo et al., 2014a). At a minimum, two species are needed to form a fleet (White et al., 1997), but even a fleet of 70 species representing different taxa have been proposed in the literature (Santarém et al., 2019). Thus far, comparisons between single species and flagship fleets in the fundraising context are scarce (White et al., 2001; Frontuto et al., 2017), but for instance, by using contingent valuation method and asking one respondent group to state their preferences towards Ibex and another respondent group towards four ungulate species (Ibex being one of them), Frontuto et al. (2017) found that the respondents were willing to pay larger amounts when Ibex was presented alone than as part of a fleet.

Using holistic concepts such as ecosystems or biodiversity as flagships would offer more flexibility to ENGOs in deciding how to spend the resources most effectively as species-based approaches carry an expectation that the conservation actions taken should influence the flagship species itself (Veríssimo et al., 2011). Although recent willingness to pay (WTP) studies suggest that potential donors are willing to support conservation of ecosystems such as wetlands (Kaffashi et al., 2013), coral reefs (Grafeld et al., 2016) or rainforests (Adams et al., 2008), Veríssimo et al. (2018) did not find this association between the use of coral reefs as a conservation flagship and increased donations when examining actual donations to an ENGO in Australia. Furthermore, biodiversity as a flagship type is an intangible conservation cause, whereas the flagship types based on species or ecosystems are more tangible, which may influence its popularity. Yet, there may be specific donor segments that prefer to support a flagship type that benefits biodiversity more broadly, who may choose not to donate (as much) if the only option is to donate to single species. Therefore, before increasing the use of holistic concepts, we need to test how they would perform in a fundraising context specifically when choosing between competing flagship types.

1.2. Flagship attributes

In addition to the flagship type, there are a variety of attributes, such as species aesthetic appeal, familiarity, locality (i.e. being native/non-native to respondents' homeland), as well as threat status that can be associated with the choice of a donation target. Many of these associations have been explored only from the single flagship species perspective. Previous research has shown that not even the importance of species aesthetic appeal is universal: while some authors have found aesthetic appeal explaining the WTP for conservation of the flagship species (Morse-Jones et al., 2012; Colléony et al., 2017; Veríssimo et al., 2009, 2017), others have not found a similar link (Home et al., 2009; Veríssimo et al., 2018; Lundberg et al., 2019a). The same applies to threat status (Colléony et al., 2017; Curtin and Papworth, 2018; Lundberg et al., 2019a). Previous studies have also found respondents to favor familiar (well-known) species (Garnett et al., 2018), or birds and ecosystems (Lundberg et al., 2019a) as well as habitats (Dallimer et al., 2015) native to the respondent's homeland. To increase the effectiveness of flagship campaigns, these attributes need to be studied also in the context of different flagship types. However, it is worth noting that aesthetic appeal is applicable only for species-based flagships, while threat and familiarity apply to ecosystems as well, and the locality aspect is relevant for all flagship types.

1.3. Aims of this study

To increase the effectiveness of flagship campaigns, our study explored whether above mentioned attributes are associated with the probability of eliciting a donation across different flagship types, aiming to identify potential donor segments that differ in this regard. Our research questions were: 1) Which of the flagship types will attract most support, and which attributes are associated with the choices in each potential donor segment? 2) What are the socio-economic differences between potential donor segments? and 3) Are there country-level differences in potential donor segments and their WTP for conservation of different flagship types? We implemented an online survey in two countries where donating is common: the United Kingdom (UK) and the United States (US) (CAF World Giving Index, 2018). In the US, about 62% of citizens donate money to charities, whereas in the UK this figure is 70% (CAF World Giving Index, 2018). However, environmental causes received only a minor share of all donations in both countries, 3% in the US (Giving USA, 2019) and 4% in the UK (CAF UK Giving, 2019). These are therefore locations where ENGOs could make important gains by improving their fundraising strategies, but also countries where the giving ethos is substantially different (Wright, 2001).

2. Material and methods

2.1. Discrete choice experiment survey design

People's preferences and WTP towards conservation targets have been studied using the stated preference methods such as the contingent valuation (Loomis et al., 2014) and the choice experiment (Subroy et al., 2019). We used a labelled discrete choice experiment (DCE) to test which attributes are associated with the choice of a target for a donation and to identify potential donor segments. In labelled DCE, the options in a choice set are named, (e.g. lion, savanna), as opposed to unlabeled DCE (e.g. option A, option B). By following the standard procedure of designing DCE, we first chose attributes based on previous WTP-studies on flagship species or ecosystems (Table 1). Then, we used the Ngene 1.0.2 to design the DCE, and used an orthogonal design and a roll-over method to generate a pilot DCE of 30 choice sets, divided into two blocks.

To select flagships for the choice sets, we created a pool of species and ecosystems that matched the attribute combinations in the DCE-design. Whenever possible, we used the same ecosystems or species in both countries. First, we chose single flagship species using a previous dataset (Veríssimo et al. 2017) that contained species appeal and familiarity scores for UK and US respondents. We categorized these 192 species into two categories based on their appeal and familiarity scores (Table A1 in Appendix A). We then used the global International Union for Conservation of Nature Red List status for non-native species and the local threat status for native species (i.e. UK Biodiversity Action Plan status or the Endangered Species Act status) to categorize species into two categories: threatened species (IUCN Red List status CR, EN, VU) into "higher extinction risk" and non-threatened (IUCN Red List status

Table 1
Attributes and attribute levels in the discrete choice experiment, of which all other than the first two "hidden attributes" were presented in the choice card.

Attributes	Single species	Flagship fleets	Ecosystems	Biodiversity
Aesthetic appeal[a]	Appealing Less appealing	Appealing Less appealing	–	–
Familiarity[b]	Familiar Less familiar	Familiar Less familiar	Familiar Less familiar	–
Threat[c]	Higher extinction risk Lower extinction risk	Higher extinction risk Lower extinction risk	Higher extinction risk Lower extinction risk	–
Location	Within UK/US Outside UK/US	Within UK/US Outside UK/US	Within UK/US Outside UK/US	Within UK/US Outside UK/US
Donation amount	£10 ($13) £40 ($52) £70 ($91) £100 ($130) £130 ($170)	£10 ($13) £40 ($52) £70 ($91) £100 ($130) £130 ($170)	£10 ($13) £40 ($52) £70 ($91) £100 ($130) £130 ($170)	£10 ($13) £40 ($52) £70 ($91) £100 ($130) £130 ($170)
None of these (=no-choice)	£0 ($0)	£0 ($0)	£0 ($0)	£0 ($0)
Strategy type	Single	Fleet	Ecosystem	Biodiversity

[a] Species aesthetic appeal: based on a dataset from a previous study of Veríssimo et al. (2017). "Hidden" attribute.
[b] Species familiarity: based on a dataset from a previous study of Veríssimo et al. (2017). Ecosystems: Using GoogleTrends (see Appendix A). "Hidden" attribute.
[c] Species: IUCN threat status for species. Threatened = higher extinction risk; non-threatened = lower extinction risk. Ecosystems: Based on Duraiappah et al. (2005, Fig. 1.2 p 32 and Fig. 4.3 p. 68), and Lead et al. (2005): Higher extinction risk ≥50% of the potential area of the habitat will be converted by 2050 (including also the area that has already been converted by 1990) and the impact of habitat loss is increasing. Lower extinction risk ≤50% of the potential area of the habitat will be converted by 2050 (including also the area that has already been converted by 1990) and/or the current trend of habitat loss shows continuous or decreasing impact.

NT, LC) species into "lower extinction risk". Finally, we categorized the species based on their geographic location into two groups "occurs within the UK/US" and "occurs outside the UK/US". The final list of species is in Appendix A. We used the same pool of species to form the flagship fleets, and included only two species into a fleet to reduce the cognitive burden of the respondents.

Then, we chose the ecosystems for the DCE. The same attributes, except aesthetic appeal, were used for ecosystems (Table 1). We assessed the familiarity of the ecosystems using Google Trends search patterns (see Appendix A) and categorized them into "familiar" and "less familiar" ecosystems. We defined a conservation status for each study ecosystem using literature (Duraiappah et al., 2005, p.32, 68; Lead et al., 2005) as the International Union for Conservation of Nature Red List of Ecosystems is currently not available for many ecosystems (IUCN, 2016) (see Table 1). For the choice sets, we chose specific ecosystems within the larger entities (e.g. "Amazon rainforest" within the "rainforest ecosystem"). The fourth flagship type, biodiversity, was also assigned the locality attribute, while appeal, familiarity, and threat were not applicable.

We used the Typeform survey platform (https://www.typeform.com/) to pilot the questionnaire. To recruit participants for the pilot study, we contacted people within our personal networks who reside in the UK or in the US and have no professional link to conservation or environmental organizations. Each respondent of the pilot study evaluated 15 choice sets, which included the following options: a single species, a flagship fleet, an ecosystem and biodiversity presented in random order to avoid order effects. Each option in a choice set included the name of the target, related attributes, and an image presenting the target (Table 1). The selection of images is described in Appendix A. We used a one-off-donation as a payment vehicle. The payment vehicle included five payment level options, and a separate "none of these" option that was always listed last (Table 1). The payment levels were chosen based on information from real-life conservation campaigns in ENGOs websites (Appendix A). After having completed the online questionnaire, the participants responded to questions concerning the length and clarity of the questionnaire itself.

We received 55 responses from the UK and 63 from the US. Using priors derived from the pilot studies, we used Ngene to obtain the final study designs of 60 choice sets that were divided into five blocks of 12 choice sets (12 choice sets per respondent) separately for both countries (see an example choice set in Fig. 1). We used d-efficient Bayesian designs with a mean d-error of 0.02 (UK) and 0.016 (US), both being the best performing out of 250,000 iterations considered (see description of DCE study design in Appendix A). We also modified the online questionnaire according to feedback from pilot study respondents (e.g. provided more specific attribute names and adjusted the layout of the choice cards).

The final DCE study design included altogether 16 different attribute combinations for species and fleets, eight attribute combinations for ecosystems and two attribute combinations for biodiversity. The final UK survey included 41 species, 46 fleets and 40 ecosystems, and the final US survey 38 species, 44 fleets and 40 ecosystems. Because we chose species among flagship species from real-life fundraising campaigns (Veríssimo et al. 2017), the majority of the species were mammals and there were only seven bird species. Altogether 24 species were native to the UK or the US. We measured basic sociodemographic variables in the last section of the questionnaire (Appendix D).

We then conducted the main survey via Amazon Mechanical Turk (MTurk, https://www.mturk.com/), a crowdsourcing data collection method used in recent studies on environmental philanthropic behavior (Sharma and Morwitz, 2016; Carrico et al., 2017; Goff et al., 2017). We followed the ethical guidelines of Ethical Review Board in the Humanities and Social and Behavioral Sciences at the University of Helsinki (https://www.helsinki.fi/en/research/ethical-review-board-in-the-humanities-and-social-and-behavioural-sciences) when conducting the survey. We collected the data between 9th November and 2nd December 2018 in the UK and between 22nd and 24th November 2018 in the US. All the participants were given a $1.50 reward after filling out the questionnaire.

2.2. Data analysis

We used the Latent Gold Choice 5.1 (Vermunt and Magidson, 2005, 2015) to analyze the data. Latent class (LC) analysis identifies different segments within a sample whose preferences are driven by different attributes. This study encompasses the DCE-section and basic sociodemographic variables from a broader dataset. Because the sample size was small and there were no substantial differences between the subgroups of respondents who had or had not donated within the past two years (Appendix B), we treated the MTurk sample as one sample in both countries.

Altogether, we included seven attributes and five covariates into the

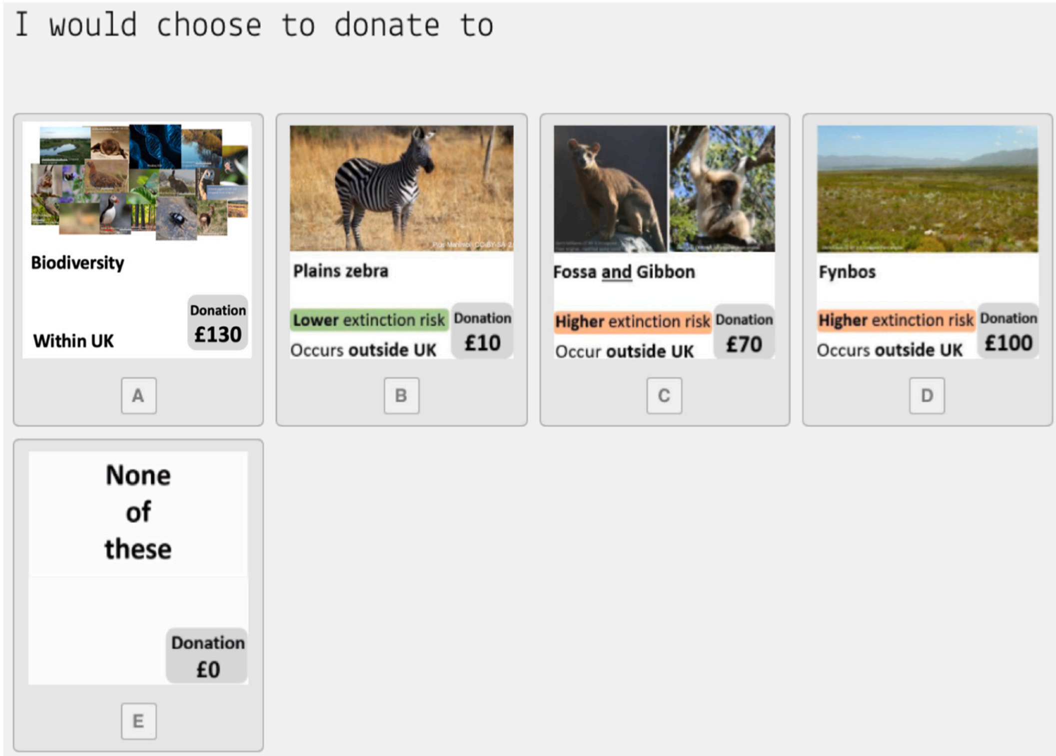

Fig. 1. Example of one of the 60 choice sets presented in our survey. The example choice set is from the UK version of the survey. One choice set included four alternative flagship types and the "none of these" option, and each respondent had altogether 12 choice sets. (Photo credits are listed in the Acknowledgements).

analysis (Table A5 in Appendix A). To have a meaningful number of respondents in each category for categorical variables, we re-classified some of the covariates before running the analysis (Table A5 in Appendix A). We defined the cost attribute as the "price" variable to obtain segment-specific WTP-parameters for the attributes (Vermunt and Magidson, 2015, p. 9). First, we ran 1–9 class LC Choice models. Then, we ran the models with scale adjustments, which helps reduce the effect of variation in scale of responses and classify similar preference patterns, regardless of uncertainty in responses, into the same segment. We ran both 2-sClass and 3-sClass models, meaning that the respondents are divided into 2 or 3 scale classes within each segment, representing their strength of preference (see list of all models in Appendix C).

We used the following model selection criteria: lowest BIC-, highest R^2 (Vermunt and Magidson, 2005), model parsimony and interpretability (i.e., that the results are coherent; Law and Harrington, 2016), segment sizes ≥5%, as well as usefulness from the fundraising viewpoint (for example, a small segment can be interesting if it donates particularly large sums, or has an exclusive preference for a target that is uncommon in other segments). In addition to the latent class model, the software runs a conditional logit model without segmentation that can be used to obtain mean WTP for each attribute. We calculated the mean WTP by dividing the negative of each attribute coefficient with the coefficient of the cost attribute (Langen, 2011).

3. Results

We received 395 responses from the UK and 390 from the US (Appendix A). The final numbers of responses in the analyses were 380 (UK sample) and 374 (US sample), as Latent Gold excludes cases with missing values. In both samples the majority of the respondents were male, over half of the respondents had an academic degree, the majority lived in suburban settings, and around one third reported having donated money to conservation within the last two years (Table A6 in Appendix A).

3.1. Latent class analysis

The best models were the 2-sClass 7-Class Choice models in both countries (Tables C1–C2 in Appendix C). The overall $R^2 = 0.35$ (UK) and $R^2 = 0.38$ (US) indicated a relatively good model fit (Tables 2–3). Based on Wald statistics, all attributes were associated with the choices in both countries (Wald *p*-values 0.000). However, because appeal and familiarity had non-significant Wald(=) p-values (appeal $p = .330$ (UK), $p = .200$ (US), familiarity $p = .140$ (UK) and $p = .530$ (US)) in both countries, these attributes could not be used to distinguish segments in our study.

3.2. UK respondents

Latent Gold Choice SALC-analysis identified seven potential donor segments (Table 2). The largest segment, (1) "Threat-conscious biodiversity donors" favored biodiversity in their choices, but when they chose species or ecosystems, threat was the dominant criterion. (2) "Native species donors" had the strongest orientation towards species and fleets of all donor segments. They were the only segment with a preference for native targets. Overall, their interest in donating was high, as there were only 5.6% no-choice responses in this segment. (3) "Price-sensitive donors" had a focus on biodiversity (altogether 76%) irrespective of the location. (4) "Ecosystem donors" preferring threatened targets formed the only price-insensitive segment within UK respondents. (5) "Non-donors" chose almost exclusively the none option (in scale class 2 only 8% of the respondents chose other than none option). (6) "Unmotivated donors" donated rarely and only small amounts, and none of the attributes (except cost) or targets were significant. (7) "Biodiversity donors" comprised the smallest segment, who were price-sensitive active donors with strongest biodiversity focus irrespective of location. None of the species attributes were significant

Table 2
Parameter estimates of the 2-sClass 7-Class Choice model for UK respondents (n = 380) and standard errors.

Model for choices	Segm1			Segm2			Segm3			Segm4			Segm5			Segm6			Segm7			Overall					
Segment size	0.36			0.21			0.11			0.10			0.08			0.07			0.06								
R^2																						0.35					
Attributes	Segm1	s.e.	p	Segm2	s.e.	p	Segm3	s.e.	p	Segm4	s.e.	p	Segm5	s.e.	p	Segm6	s.e.	p	Segm7	s.e.	p	Wald	p	Wald (=)	p	Mean	Std. Dev.
Appeal	1.36	0.41	0.001	1.11	0.28	0.000	1.07	0.42	0.010	1.57	0.56	0.005	3.08	0.90	0.001	0.51	1.02	0.619	0.29	0.82	0.718	23.06	0.002	6.93	0.330	1.30	0.62
Fam	1.22	0.37	0.001	1.05	0.31	0.001	0.61	0.36	0.086	0.82	0.36	0.023	2.85	0.88	0.001	−1.43	1.13	0.205	0.28	0.53	0.592	17.92	0.012	9.56	0.140	0.96	0.87
Threat	5.93	1.36	0.000	0.61	0.26	0.018	3.23	0.94	0.001	1.61	0.46	0.000	4.84	1.28	0.000	1.94	1.08	0.074	1.06	0.59	0.072	21.36	0.003	19.61	0.003	3.39	2.23
Location	−0.18	0.19	0.343	1.52	0.35	0.000	0.24	0.37	0.511	−0.08	0.37	0.826	1.19	0.72	0.101	2.14	1.41	0.128	0.06	0.34	0.864	21.14	0.004	17.47	0.008	0.52	0.82
Cost	−0.01	0.00	0.001	−0.01	0.00	0.001	−0.11	0.02	0.000	0.00	0.00	0.809	−0.02	0.01	0.009	−0.08	0.02	0.000	−0.01	0.01	0.033	22.38	0.002	21.08	0.002	−0.03	0.03
Strategy type																											
Single	−0.89	0.31	0.004	0.62	0.22	0.005	−0.56	0.29	0.051	−1.55	0.48	0.001	−1.21	0.49	0.013	−0.64	0.68	0.351	−1.73	0.56	0.002	38.06	0.013	35.16	0.009	−0.67	0.74
Fleet	0.02	0.17	0.906	0.71	0.22	0.001	0.04	0.29	0.891	−0.90	0.36	0.013	−0.89	0.44	0.040	−0.63	0.84	0.452	−2.24	0.63	0.000					−0.19	0.75
Ecosystem	−0.97	0.24	0.000	−0.68	0.26	0.009	−0.69	0.32	0.032	2.46	0.65	0.000	−0.32	0.42	0.446	0.53	0.71	0.459	0.43	0.40	0.291					−0.28	1.04
Biodiversity	1.84	0.54	0.001	−0.65	0.29	0.025	1.21	0.43	0.005	−0.01	0.45	0.977	2.42	0.84	0.004	0.75	0.72	0.299	3.54	0.66	0.000					1.13	1.23
None	−3.14	0.88	0.000	−6.41	1.61	0.000	−3.94	0.93	0.000	−2.13	1.04	0.040	5.91	1.89	0.002	3.90	1.30	0.003	−3.12	1.31	0.017	24.44	0.001	23.91	0.001	−2.60	3.47

Scale model sClass	Over-all	Wald	p
sClass1	0.00	28.6	0.00
sClass2	−0.89	0.17	0.000

Model for sClasses

Intercept	Segm1	s.e.	p	Segm2	s.e.	p	Segm3	s.e.	p	Segm4	s.e.	p	Segm5	s.e.	p	Segm6	s.e.	p	Segm7	s.e.	p	Wald	p
	1.17	0.32	0.000	0.96	0.33	0.004	0.05	0.39	0.901	−0.91	1.52	0.551	0.05	0.39	0.890	−0.84	0.47	0.074	−0.49	0.42	0.246	40.28	0.000
Covariates	**Segm1**	**s.e.**	**p**	**Segm2**	**s.e.**	**p**	**Segm3**	**s.e.**	**p**	**Segm4**	**s.e.**	**p**	**Segm5**	**s.e.**	**p**	**Segm6**	**s.e.**	**p**	**Segm7**	**s.e.**	**p**	**Wald**	**p**
Residential area																							
City center	0.16	0.17	0.373	−0.04	0.22	0.842	0.33	0.25	0.185	0.02	0.29	0.934	−0.18	0.40	0.651	−0.59	0.46	0.202	0.30	0.31	0.327	8.03	0.780
Suburb	0.02	0.15	0.912	−0.05	0.18	0.773	−0.34	0.23	0.136	0.05	0.24	0.838	0.07	0.27	0.805	0.55	0.30	0.063	−0.29	0.28	0.307		
Countryside	−0.17	0.19	0.378	0.10	0.23	0.677	0.01	0.28	0.968	−0.07	0.31	0.815	0.11	0.32	0.725	0.04	0.38	0.925	−0.01	0.36	0.973		
Gender																							
Male	0.04	0.12	0.710	−0.32	0.14	0.020	−0.27	0.18	0.131	0.44	0.24	0.065	−0.06	0.21	0.789	0.12	0.21	0.582	0.04	0.21	0.850	10.24	0.110
Female	−0.04	0.12	0.710	0.32	0.14	0.020	0.27	0.18	0.131	−0.44	0.24	0.065	0.06	0.21	0.789	−0.12	0.21	0.582	−0.04	0.21	0.850		
Education level																							
Non-acad.	0.02	0.12	0.844	0.29	0.15	0.047	0.08	0.18	0.652	−0.01	0.20	0.970	0.09	0.20	0.634	−0.13	0.20	0.497	−0.34	0.24	0.155	5.76	0.450
Academic	−0.02	0.12	0.844	−0.29	0.15	0.047	−0.08	0.18	0.652	0.01	0.20	0.970	−0.09	0.20	0.634	0.13	0.20	0.497	0.34	0.24	0.155		
Income																							
Lower	−0.15	0.20	0.440	−0.03	0.23	0.912	0.22	0.32	0.497	0.03	0.28	0.920	−0.20	0.33	0.536	0.30	0.34	0.374	−0.16	0.36	0.651	7.96	0.790
Middle	0.20	0.16	0.218	−0.12	0.20	0.553	0.34	0.28	0.225	−0.42	0.25	0.091	−0.09	0.26	0.722	0.12	0.29	0.683	−0.03	0.28	0.904		
Higher	−0.04	0.25	0.857	0.14	0.28	0.614	−0.56	0.46	0.227	0.39	0.33	0.240	0.30	0.34	0.389	−0.42	0.46	0.356	0.20	0.39	0.617		
Age																							
Under 25	0.25	0.32	0.438	−0.64	0.38	0.092	0.49	0.37	0.188	1.06	1.53	0.488	−0.38	0.41	0.356	−0.21	0.46	0.656	−0.57	0.53	0.283	27.69	0.067
25–34	−0.09	0.31	0.781	0.31	0.33	0.343	−0.52	0.39	0.185	0.50	1.52	0.741	−0.55	0.41	0.176	0.00	0.42	0.991	0.34	0.41	0.409		
35–44	−0.17	0.33	0.608	−0.30	0.37	0.415	−0.62	0.44	0.160	1.16	1.53	0.449	0.08	0.40	0.845	0.42	0.44	0.338	−0.56	0.51	0.277		
45 or over	0.01	0.82	0.994	0.63	0.83	0.445	0.65	0.86	0.450	−2.71	4.50	0.547	0.85	0.85	0.314	−0.22	1.01	0.830	0.79	0.91	0.389		

Model for sClasses

Intercept	sClass1	sClass2	Wald	p
	0.00	1.49	10.34	0.00

because species/fleet were almost never chosen, and possibly because of the small segment size.

Considering the attributes and covariates among the UK respondents, the coefficient for the threat attribute was positive in the first five segments, and location (being native) was positively related to the choices in one segment (Table 2). Six segments were cost-sensitive. None of the socio-demographic covariates had a significant *p*-value in the overall model. Gender and the level of education were the only covariates that were significant within a segment ("Native species donors").

For the price-sensitive segments WTP-estimates along with mean WTP for attributes are given in Table 4. The sums varied greatly from positive to negative values across the segments. For example, biodiversity received values from negative ("Native species donors") to $435 ("Biodiversity donors"), whereas for single species the pattern was reversed ($82 and negative, respectively, Table 4). In the context of donating behavior, negative WTP estimates simply mean strong avoidance of the target (Cosmina et al., 2016).

3.3. US respondents

Latent Gold Choice SALC-analysis revealed seven potential donor segments (Table 3). (1) "Threat-conscious biodiversity donors" formed a segment where threat was the dominant criterion and majority of those who chose to donate preferred biodiversity (67%). (2) "Price-insensitive active donors" preferred threatened and local donation targets. (3) "Price-sensitive inactive donors" rarely donated, but when they did, they had the highest preference of all segments for native targets, preferring threatened ecosystems. (4) "Price-insensitive biodiversity donors" had the highest preference for biodiversity, choosing local targets when possible. (5) "Price-insensitive holistic donors" preferred threatened and local ecosystems and biodiversity. (6) "Price-sensitive biodiversity donors" were keen donors, who preferred threatened and local targets, and chose mainly the smallest sum. (7) "Highly price-sensitive biodiversity donors" was a small segment of selective donors. It was the most price sensitive respondent segment, as almost all of those who donated chose the smallest possible sum.

Among US respondents, threat was positively associated with choices in almost all segments except in segments four and seven. Five segments preferred local targets. Four of the seven segments had some degree of cost-sensitivity. Income and the level of education were the only covariates with a significant p-value in the overall model and within a segment (i.e. in segments "Threat-conscious biodiversity donors", "Price-sensitive inactive donors" and "Highly price-sensitive biodiversity donors").

Similar to the UK respondents, the WTP-sums varied greatly between segments (Table 4). However, among flagship types, biodiversity never received negative values, and species-based flagship types received only negative values, which differs from the results of UK respondents.

4. Discussion

This was the first study to explore how different donation target attributes, such as species aesthetic appeal, familiarity, level of threat, locality, and cost, affected choices between different flagship types. By studying two countries that are major players in conservation through both ENGOs and international funding (CAF World Giving Index, 2018), our study improves upon the current DCE-literature that consists mostly of single country studies.

4.1. Attributes explaining environmental philanthropic behavior

Studies on the role of aesthetic appeal and familiarity in environmental philanthropic behavior has yielded mixed findings (Morse-Jones et al., 2012; Colléony et al., 2017; Veríssimo et al., 2017, 2018). In our

Table 3
Parameter estimates of the 2-sClass 7-Class Choice model for US respondents (n = 374) and standard errors.

Model for choices	Segm1			Segm2			Segm3			Segm4			Segm5			Segm6			Segm7			Overall					
	0.33			0.23			0.12			0.10			0.07			0.08			0.07								
R^2																						0.38					
Attributes	Segm1	s.e.	p	Segm2	s.e.	p	Segm3	s.e.	p	Segm4	s.e.	p	Segm5	s.e.	p	Segm6	s.e.	p	Segm7	s.e.	p	Wald	p	Wald (=)	p	Mean	Std. Dev.
Appeal	1.27	0.24	0.000	0.95	0.18	0.000	1.85	0.39	0.000	0.97	0.51	0.056	2.60	0.95	0.006	1.43	0.52	0.006	1.91	0.87	0.029	67.63	0.000	8.60	0.200	1.40	0.48
Fam	0.77	0.22	0.001	0.88	0.17	0.000	1.31	0.29	0.000	0.76	0.46	0.098	0.54	0.34	0.108	0.74	0.39	0.059	1.96	0.96	0.042	54.97	0.000	5.13	0.530	0.92	0.35
Threat	7.29	0.86	0.000	0.89	0.24	0.000	2.84	0.43	0.000	0.38	0.52	0.466	1.94	0.52	0.000	1.87	0.55	0.001	1.53	1.66	0.357	89.35	0.000	71.98	0.000	3.39	2.82
Location	0.13	0.18	0.496	1.22	0.20	0.000	1.83	0.32	0.000	1.15	0.37	0.002	0.85	0.34	0.013	0.81	0.34	0.017	0.52	0.84	0.535	70.48	0.000	26.77	0.000	0.81	0.58
Cost	−0.01	0.00	0.008	0.00	0.00	0.513	−0.01	0.00	0.000	0.00	0.00	0.275	0.00	0.00	0.332	−0.07	0.01	0.000	−0.14	0.03	0.000	55.96	0.000	47.94	0.000	−0.02	0.04
Strategy type																											
Single	−1.08	0.19	0.000	0.18	0.15	0.243	−0.93	0.28	0.001	−1.83	0.43	0.000	−2.24	0.69	0.001	−0.81	0.34	0.018	0.22	0.75	0.766	90.18	0.000	70.01	0.000	−0.82	0.77
Fleet	−0.35	0.14	0.011	0.14	0.17	0.405	−0.32	0.25	0.194	−0.94	0.34	0.006	−2.66	0.82	0.001	−0.72	0.27	0.008	0.00	0.68	0.999					−0.48	0.72
Ecosystem	−0.91	0.17	0.000	−0.37	0.17	0.031	0.64	0.26	0.015	−0.83	0.41	0.043	2.43	0.70	0.001	−0.01	0.28	0.973	−3.06	1.26	0.015					−0.42	1.18
Biodiversity	2.34	0.35	0.000	0.05	0.27	0.859	0.61	0.46	0.189	3.59	0.51	0.000	2.47	0.77	0.001	1.54	0.45	0.001	2.84	1.05	0.007					1.72	1.18
None	−0.55	0.50	0.274	−4.34	1.04	0.000	3.92	0.55	0.000	−2.75	0.91	0.002	−6.31	3.92	0.108	−4.19	0.72	0.000	2.99	1.00	0.003	81.75	0.000	81.01	0.000	−1.56	3.10

Scale model	Overall	Wald	p
sClass			
sClass1	0.00	107.21	0.000
sClass2	−0.82		

Model for classes

Intercept	Segm1	s.e.	p	Segm2	s.e.	p	Segm3	s.e.	p	Segm4	s.e.	p	Segm5	s.e.	p	Segm6	s.e.	p	Segm7	s.e.	p	Wald	p
	1.10	0.36	0.002	0.99	0.37	0.008	0.14	0.42	0.745	−0.06	0.43	0.895	−1.88	1.86	0.313	0.23	0.40	0.563	−0.53	0.46	0.254	29.24	0.000
Covariates	Segm1	s.e.	p	Segm2	s.e.	p	Segm3	s.e.	p	Segm4	s.e.	p	Segm5	s.e.	p	Segm6	s.e.	p	Segm7	s.e.	p	Wald	p
Residential area type																							
City center	−0.18	0.20	0.381	0.17	0.22	0.434	−0.28	0.30	0.355	0.51	0.29	0.079	−0.88	0.61	0.151	0.29	0.28	0.292	0.36	0.31	0.248	15.22	0.230
Suburb	0.19	0.15	0.221	−0.30	0.18	0.092	0.25	0.22	0.249	−0.04	0.27	0.871	0.55	0.36	0.132	−0.52	0.27	0.051	−0.13	0.27	0.623		
Countryside	−0.01	0.21	0.963	0.12	0.23	0.589	0.02	0.28	0.934	−0.47	0.39	0.233	0.33	0.43	0.441	0.23	0.32	0.465	−0.23	0.36	0.528		
Gender																							
Male	−0.04	0.11	0.726	0.01	0.13	0.945	0.01	0.16	0.938	0.09	0.18	0.608	−0.32	0.20	0.106	−0.12	0.19	0.538	0.37	0.20	0.066	5.53	0.480
Female	0.04	0.11	0.726	−0.01	0.13	0.945	−0.01	0.16	0.938	−0.09	0.18	0.608	0.32	0.20	0.106	0.12	0.19	0.538	−0.37	0.20	0.066		
Education level																							
Non-acad.	0.24	0.11	0.032	−0.09	0.14	0.525	0.42	0.17	0.010	−0.17	0.20	0.402	−0.19	0.21	0.370	0.07	0.20	0.735	−0.28	0.21	0.187	13.26	0.039
Academic	−0.24	0.11	0.032	0.09	0.14	0.525	−0.42	0.17	0.010	0.17	0.20	0.402	0.19	0.21	0.370	−0.07	0.20	0.735	0.28	0.21	0.187		
Income																							
Lower	−0.34	0.36	0.348	−0.47	0.39	0.223	−0.36	0.41	0.377	−0.61	0.44	0.168	1.33	1.84	0.471	−0.43	0.45	0.330	0.89	0.43	0.037	26.18	0.010
Middle	0.09	0.35	0.799	0.01	0.36	0.978	−0.14	0.38	0.712	−0.12	0.39	0.766	1.50	1.84	0.414	−0.44	0.40	0.273	−0.90	0.44	0.038		
Higher	0.25	0.66	0.701	0.46	0.67	0.489	0.50	0.70	0.474	0.72	0.69	0.296	−2.83	3.65	0.439	0.87	0.71	0.217	0.01	0.75	0.985		
Age																							
Under 25	−0.12	0.33	0.714	0.15	0.35	0.663	−0.46	0.62	0.457	−0.14	0.54	0.801	0.22	0.61	0.715	0.83	0.44	0.062	−0.49	0.69	0.482	15.94	0.600
25–34	0.27	0.18	0.131	0.04	0.21	0.857	−0.04	0.30	0.882	0.05	0.29	0.873	−0.63	0.37	0.086	0.20	0.29	0.501	0.13	0.34	0.712		

(continued on next page)

Table 3 (*continued*)

Model for classes																							
Intercept	Segm1	s.e.	p	Segm2	s.e.	p	Segm3	s.e.	p	Segm4	s.e.	p	Segm5	s.e.	p	Segm6	s.e.	p	Segm7	s.e.	p	Wald	p
	1.10	0.36	0.002	0.99	0.37	0.008	0.14	0.42	0.745	−0.06	0.43	0.895	−1.88	1.86	0.313	0.23	0.40	0.563	−0.53	0.46	0.254	29.24	0.000
Covariates	Segm1	s.e.	p	Segm2	s.e.	p	Segm3	s.e.	p	Segm4	s.e.	p	Segm5	s.e.	p	Segm6	s.e.	p	Segm7	s.e.	p	Wald	p
35–44	0.01	0.21	0.975	−0.28	0.25	0.276	0.13	0.32	0.684	−0.39	0.35	0.271	0.35	0.33	0.297	−0.18	0.36	0.620	0.36	0.37	0.332		
45 or over	−0.15	0.23	0.497	0.09	0.28	0.758	0.37	0.32	0.237	0.48	0.34	0.164	0.06	0.39	0.877	−0.84	0.44	0.056	0.00	0.41	0.997		

Model for sClasses				
Intercept	sClass1	sClass2	Wald	p
	0.00	0.62	3.672	0.06

Table 4
WTP-estimates for the UK and US. All WTP-values are converted into 2018 US$.

	Attribute	Segm1	s.e.	Segm2	s.e.	Segm3	s.e.	Segm4	s.e.	Segm5	s.e.	Segm6	s.e.	Segm7	s.e.	Mean-WTP
UK MTurk respondents	Appeal	134.87	35.60	145.79	40.24	13.33	4.87	Cost insignificant		207.36	89.16	Only cost significant				64.79
	Fam	121.21	32.95	138.25	39.57					191.92	76.71					47.57
	Threat	590.01	121.31	80.93	34.68	40.31	4.99			326.11	128.47					168.67
	Location			200.21	50.64											25.77
	Strategy type															
	Single	−88.63	27.96	81.51	30.03					−81.56	40.52			−212.77	109.01	−33.24
	Fleet			93.89	30.03					−60.27	34.80			−275.17	140.16	−9.49
	Ecosystem	−96.63	24.21	−89.20	32.17	−8.61	3.40									−13.71
	Biodiversity	183.31	47.32	−86.20	41.76	15.13	3.97			163.28	73.97			435.55	193.97	56.44
US MTurk respondents	Appeal	259.08	101.07	Cost insignificant		135.76	34.42	Cost insignificant		Cost insignificant		19.33	6.21	13.83	6.12	70.75
	Fam	157.59	71.22			96.03	30.49							14.19	6.94	46.68
	Threat	1489.88	547.67			208.37	43.79					25.30	5.83			171.01
	Location					134.65	37.87					10.89	4.18			41.08
	Strategy type															
	Single	−219.69	95.17			−68.57	22.14					−10.98	4.31			−41.47
	Fleet	−71.73	37.64									−9.70	3.40			−24.04
	Ecosystem	−185.76	66.18			47.29	21.98							−22.15	9.73	−21.20
	Biodiversity	477.17	183.97									20.81	4.62	20.55	7.19	86.72

study, these two attributes were statistically significant predictors, but as they had a similar effect on all segments in both countries, we did not find support for using them to distinguish potential donor segments. Threat status, instead, was the most important attribute in our study, especially for the largest respondent segment in both countries, but at the same time, there were segments that chose their targets based on other attributes. This variation among respondents could explain why previous studies have found both positive (Curtin and Papworth, 2018; Veríssimo et al., 2018; Lundberg et al., 2019a) and non-significant (Colléony et al., 2017) associations between threat status (or conservation need) and WTP. As latent class models produce more nuanced results by identifying segments with different preferences, this further supports the use of latent class analysis when studying potential donors' preferences.

Locality had the lowest mean WTP in our study in both countries, and it was more important in the US than in the UK. Rather similarly, local residents in three Northern European countries have been willing to pay more for conservation of habitats in their own home country compared to those abroad (Dallimer et al., 2015), and potential online donors have been found to be more willing to support local than foreign birds and ecosystems in Finland (Lundberg et al., 2019a). This suggests that location could be considered as one of the segmentation principles for potential donors, but more research is still needed to examine the role of nationalism/patriotism in relation to donating to environmental charities.

Price-sensitivity was another factor that varied among segments, and appeared more polarized in the US. Price sensitivity has been observed, for instance, among students (Grigolon et al., 2012) or participants of a WTP-study on green consuming (Liu et al., 2017). To reach these donors, it is important to include donation options also to lower end of the donation amounts in fundraising appeals. We also found one price-insensitive segment in the UK, and three in the US suggesting that our donation amount scale may have been too low for them, although we chose levels for the cost attribute using information derived from the ENGOs websites. Alternatively, these price-insensitive respondents were overly optimistic about how much they were willing to donate in a hypothetical situation (Schläpfer et al., 2001; Murphy et al., 2003).

4.2. Comparison of alternative flagship types

Each of the four flagship types attracted support, but to different degrees. Respondents tended to favor most biodiversity followed by ecosystems over species approaches: we found only one segment in the UK and none in the US with a preference towards the species approach. Previous meta-analyses have produced conflicting results when comparing WTP for conservation of species-based and holistic targets (Nijkamp et al., 2008; Jacobsen and Hanley, 2009; Lindhjem and Tuan, 2012), further supporting the idea of targeted marketing to different segments and highlighting the need of future research on this topic.

The fourth flagship type, biodiversity, differs most from the other flagship types. It is a complex concept, and flagship species have often been employed to represent it. Being an intangible cause, it may be hard to realize what donating to biodiversity actually means. Hence, the choice of biodiversity as a donation cause may require stronger trust towards the ENGO because the donor does not know exactly how the funds will be spent, and the donor must rely on the ENGOs' expertise in cost-effective conservation. Yet, there were four segments in both countries that preferred biodiversity. Indeed, within one segment in both countries almost all the choices were biodiversity. There are reasons why ENGOs may not want to focus on general concepts such as biodiversity for fundraising. One disadvantage of the widespread use of biodiversity as a flagship for fundraising may be the increase in direct competition between ENGOs: Efforts to stand out from other ENGOs could explain the focus in more specific flagships such as single species.

4.3. Methodological considerations and future prospects

There are some limitations that should be kept in mind when interpreting the results. Our surveys were not intended to be nationally representative. The samples represent MTurk workers, which have been shown to be subject to some biases as compared with national populations. For example, the educational level of the MTurk workers is higher, and their income level is lower than the average US population (Paolacci et al., 2010). However, MTurk workers have been found to be at least as representative of the national population as traditional internet-based subject pools (Paolacci et al., 2010). MTurk is also a cost-effective way to obtain survey responses from a socio-economically more diverse respondent pool compared with rather homogenous student samples often employed in similar studies (Mason and Suri, 2012). The MTurk survey data has been found to be equally reliable as the data collected using other methods (Buhrmester et al., 2011).

Furthermore, although WTP-estimates tend to be generally higher than actual behavior (List and Gallet, 2001), there is no reason to believe that the method would bias differences between attributes and flagship types, or between segments. In addition, the segment-specific WTP-estimates are more reliable than mean WTP-values, as the conditional logit model included all segments (also those that have non-significant cost-estimate). However, our attempt was not to derive absolute monetary value for each attribute or flagship type, but rather to compare one flagship type against others, and to study which attributes are associated with the choices.

As only some of the sociodemographic variables appeared to be associated with the choices, more information on the respondents' characteristics driving the choices is needed, such as personal values, environmental concern (Lundberg et al., 2019b), trust in ENGOs, as well as biodiversity knowledge. We also suggest that future studies should direct their focus more on behavioral experiments with actual donations. It is also important to investigate the preferences of donors in emerging economies such as China or India, as the weight of the countries in individual philanthropic donations will no doubt grow in the next decade, and their specific social and cultural context may mean that donor preference structures could differ substantially.

5. Conclusion

In conclusion, our study identified seven donor segments in both countries with different preferences, which further supports previous findings that potential donors consist of separate segments and should thus not be treated as a single group (Veríssimo et al., 2017, 2018). Our results suggest that ENGOs should take into account donor preferences and characteristics when designing their messages, and target those donor groups with which the messages are most likely to resonate. Overall our results suggest that there appears to be potential for the use of different types of flagships, beyond the traditional single charismatic species paradigm, that can allow for greater flexibility in addressing the ongoing biodiversity crisis. Given that socio-demographic variables were not particularly insightful in defining donor segments, we encourage future research to explore the role of psychographic variables, such as environmental attitudes and social norms, as well as past donation behavior. These characteristics are currently easy to include when reaching out to donors through tools such as social media advertising, which have already become an important part of the marketing strategy of many ENGOs.

CRediT authorship contribution statement

Piia Lundberg: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Data curation, Writing – original draft, Writing – review & editing, Visualization, Funding acquisition.

Diogo Veríssimo: Conceptualization, Methodology, Investigation, Formal analysis, Writing – original draft, Writing – review & editing.

Annukka Vainio: Conceptualization, Methodology, Writing – original draft, Writing – review & editing.

Anni Arponen: Conceptualization, Methodology, Writing – original draft, Writing – review & editing, Supervision.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Supplementary data

Appendix A. Background information on the choices of the attributes and details of the DCE design. Appendix B. The results of the conditional logit models. Appendix C. The detailed results of latent class analysis. Appendix D. The survey instrument (relevant sections). Supplementary data to this article can be found online at https://doi.org/10.1016/j.biocon.2020.108738.

References

Adams, C., Seroa da Motta, R., Ortiz, R.A., Reid, J., Ebersbach, Aznar C., de Almeida Sinisgalli, P.A., 2008. The use of contingent valuation for evaluating protected areas in the developing world: economic valuation of Morro do Diabo State Park, Atlantic Rainforest, São Paulo State (Brazil). Ecol. Econ. 66, 359–370.
Albert, C., Luque, G.M., Courchamp, F., 2018. The twenty most charismatic species. PLoS One 13, 1–12.
Bekkers, R., Wiepking, P., 2012. Who gives? A literature review of predictors of charitable giving. Part two: gender, family composition and income. Volunt. Sect. Rev. 3, 217–245.
Buhrmester, M., Kwang, T., Gosling, S.D., 2011. Amazon's Mechanical Turk: a new source of inexpensive, yet high-quality, data? Perspect. Psychol. Sci. 6, 3–5.
CAF UK Giving 2019, 2019. https://www.cafonline.org/about-us/publications/2019-publications/uk-giving-2019.
CAF World Giving Index 2018, 2018. Word giving. https://www.cafonline.org/docs/default-source/about-us-publications/caf_wgi2018_report_webnopw_2379a_261018.pdf.
Caro, T., Girling, S., 2010. Flagship species. In: Conservation by Proxy: Indicator, Umbrella, Keystone, Flagship, and Other Surrogate Species. Island Press, Washington DC, USA, pp. 245–262.
Carrico, A.R., Raimi, K.T., Truelove, H.B., Eby, B., 2017. Putting your money where your mouth is: an experimental test of pro-environmental spillover from reducing meat consumption to monetary donations. Environ. Behav. 50, 723–748.
Colléony, A., Clayton, S., Couvet, D., Saint, Jalme M., Prévot, A.C., 2017. Human preferences for species conservation: animal charisma trumps endangered status. Biol. Conserv. 206, 263–269.
Cosmina, M., Gallenti, G., Marangon, F., Troiano, S., 2016. Attitudes towards honey among Italian consumers: a choice experiment approach. Appetite 106, 110–116.
Curtin, P., Papworth, S., 2018. Increased information and marketing to specific individuals could shift conservation support to less popular species. Mar. Policy 88, 101–107.
Dallimer, M., Bredahl, J., Lundhede, T.H., Takkis, K., Giergiczny, M., Thorsen, B.J., 2015. Patriotic values for public goods: transnational trade-offs for biodiversity and ecosystem services? Bioscience 65, 33–42.
Duraiappah, A.K., et al., 2005. Ecosystems and human well-being. In: Synthesis. A Report of the Millenium Ecosystem Assessment, . https://www.millenniumassessment.org/en/Synthesis.html.
Evans, D.M., Barnard, P., Koh, L.P., Chapman, C.A., Altwegg, R., Garner, T.W.J., Gompper, M.E., Gordon, I.J., Katzner, T.E., Pettorelli, N., 2012. Funding nature conservation: who pays? Animal Conservation 15, 215–216.
Frontuto, V., Dalmazzone, S., Vallino, E., Giaccaria, S., 2017. Earmarking conservation: further inquiry on scope effects in stated preference methods applied to nature-based tourism. Tour. Manag. 60, 130–139.
Garnett, S.T., Ainsworth, G.B., Zander, K.K., 2018. Are we choosing the right flagships? The bird species and traits Australians find most attractive. PLoS One 13, 1–17.
Giving USA, 2019. The annual report on philanthropy for the year 2018. https://givingusa.org/giving-usa-2019-americans-gave-427-71-billion-to-charity-in-2018-amid-complex-year-for-charitable-giving/.
Goff, S.H., Waring, T.M., Noblet, C.L., 2017. Does pricing nature reduce monetary support for conservation? Evidence from donation behavior in an online experiment. Ecol. Econ. 141, 119–126.
Grafeld, S., Oleson, K., Barnes, M., Peng, M., Chan, C., Weijerman, M., 2016. Divers' willingness to pay for improved coral reef conditions in Guam: an untapped source of funding for management and conservation? Ecol. Econ. 128, 202–213.
Grigolon, A.B., Kemperman, A.D.A.M., Timmermans, H.J.P., 2012. The influence of low-fare airlines on vacation choices of students: results of a stated portfolio choice experiment. Tour. Manag. 33, 1174–1184.
Home, R., Keller, C., Nagel, P., Bauer, N., Hunziker, M., 2009. Selection criteria for flagship species by conservation organizations. Environ. Conserv. 36, 139.
IUCN, 2016. An Introduction to the IUCN Red List of Ecosystems: The Categories and Criteria for Assessing Risks to Ecosystems. IUCN, Gland, Switzerland (vi + 14pp.).
Jacobsen, J.B., Hanley, N., 2009. Are there income effects on global willingness to pay for biodiversity conservation? Environ. Resour. Econ. 43, 137–160.
Jepson, P., Barua, M., 2015. A theory of flagship species action. Conserv. Soc. 13, 95–104.
Kaffashi, S., Shamsudin, M.N., Radam, A., Rahim, K.A., Yacob, M.R., 2013. Non-users' trade-off between natural scenery, water quality, ecological functions and biodiversity conservation: a way to preserve wetlands. Environment Systems and Decisions 33, 251–260.
Kanagavel, A., Raghavan, R., Veríssimo, D., 2014. Beyond the "general public": implications of audience characteristics for promoting species conservation in the Western Ghats Hotspot, India. Ambio 43, 138–148.
Langen, N., 2011. Are ethical consumption and charitable giving substitutes or not? Insights into consumers' coffee choice. Food Qual. Prefer. 22, 412–421.
Larsen, P.B., Brockington, D., 2018. Introduction: rethinking the boundaries of conservation NGOs. In: Larsen, P.B., Brockington, D. (Eds.), The Anthropology of Conservation NGOs. Rethinking the Boundaries. Palgrave Macmillan, Cham, pp. 1–15.
Law, E.H., Harrington, R., 2016. Introduction to latent class analyses. Value & Outcomes Spotlight 18–19.
Lead, C., et al., 2005. Inland water systems. Millenium Ecosystem Assessment 553–583.
Leader-Williams, N., Dublin, H.T., 2000. Charismatic megafauna as "flagship species". In: Entwistle, A., Dunstone, N. (Eds.), Priorities for the Conservation of Mammalian Diversity: Has the Panda Had Its Day? Cambridge University Press, Cambridge, UK, pp. 53–82.
Lindhjem, H., Tuan, T.H., 2012. Valuation of species and nature conservation in Asia and Oceania: a meta-analysis. Environ. Econ. Policy Stud. 14, 1–22.
List, J.A., Gallet, C.A., 2001. What experimental protocol influence disparities between actual and hypothetical stated values? Environ. Resour. Econ. 20, 241–254.
Liu, Q., Yan, Z., Zhou, J., 2017. Consumer choices and motives for eco-labeled products in China: an empirical analysis based on the choice experiment. Sustainability 9, 331–342.
Loomis, J., Richardson, L., Edwards, A., 2014. Total Economic Valuation of Threatened and Endangered Species.
Lundberg, P., Vainio, A., MacMillan, D.C., Smith, R.J., Veríssimo, D., Arponen, A., 2019a. The effect of knowledge, species aesthetic appeal, familiarity and conservation need on willingness to donate. Anim. Conserv. 1–12.
Lundberg, Piia, Vainio, A., Ojala, A., Arponen, A., 2019b. Materialism, awareness of environmental consequences and environmental philanthropic behaviour among potential donors. Environ. Values 28, 741–762.
Mason, W., Suri, S., 2012. Conducting behavioral research on Amazon's Mechanical Turk. Behav. Res. Methods 44, 1–23.
Morse-Jones, S., Bateman, I.J., Kontoleon, A., Ferrini, S., Burgess, N.D., Turner, R.K., 2012. Stated preferences for tropical wildlife conservation amongst distant beneficiaries: charisma, endemism, scope and substitution effects. Ecol. Econ. 78, 9–18.
Murphy, J., Allen, P., Stevens, T., Weatherhead, D., 2003. A Meta-analysis of Hypothetical Bias in Stated Preference Valuation. Department of Resource Economics. University of Massachusetts.
Nijkamp, P., Vindigni, G., Nunes, P.a.L.D., 2008. Economic valuation of biodiversity: a comparative study. Ecol. Econ. 67, 217–231.
Paolacci, M., Chandler, Ipeirotis, P.G., 2010. Running experiments on Amazon Mechanical Turk. Judgm. Decis. Mak. 5, 411–419.
Richardson, L., Loomis, J., 2009. The total economic value of threatened, endangered and rare species: an updated meta-analysis. Ecol. Econ. 68, 1535–1548.

Santarém, F., Pereira, P., Saarinen, J., Carlos, J., 2019. New method to identify and map flagship fleets for promoting conservation and ecotourism. Biol. Conserv. 229, 113–124.
Schläpfer, F., Roschewitz, A., Hanley, N., 2001. Contingent valuation and real referendum behaviour. In: Working Papers 2001_8. Business School - Economics, University of Glasgow.
Senzaki, M., Yamaura, Y., Shoji, Y., Kubo, T., Nakamura, F., 2017. Citizens promote the conservation of flagship species more than ecosystem services in wetland restoration. Biol. Conserv. 214, 1–5.
Sharma, E., Morwitz, V.G., 2016. Saving the masses: the impact of perceived efficacy on charitable giving to single vs. multiple beneficiaries. Organ. Behav. Hum. Decis. Process. 135, 45–54.
Shreedhar, G., Mourato, S., 2019. Experimental evidence on the impact of biodiversity conservation videos on charitable donations. Ecol. Econ. 158, 180–193.
Smith, R.J., Veríssimo, D., Isaac, N.J.B., Jones, K.E., 2012. Identifying Cinderella species: uncovering mammals with conservation flagship appeal. Conserv. Lett. 5, 205–212.
Subroy, V., Gunawardena, A., Polyakov, M., Pandit, R., Pannell, D.J., 2019. The worth of wildlife: a meta-analysis of global non-market values of threatened species. Ecol. Econ. 164, 1–9.
Veríssimo, D., Fraser, I., Groombridge, J., Bristol, R., MacMillan, D.C., 2009. Birds as tourism flagship species: a case study of tropical islands. Anim. Conserv. 12, 549–558.
Veríssimo, D., MacMillan, D.C., Smith, R.J., 2011. Toward a systematic approach for identifying conservation flagships. Conserv. Lett. 4, 1–8.
Veríssimo, D., Fraser, I., Girão, W., Campos, A.A., Smith, R.J., Macmillan, D.C., 2014a. Evaluating conservation flagships and flagship fleets. Conserv. Lett. 7, 263–270.
Veríssimo, D., Pongiluppi, T., Santos, M.C.M., Develey, P.F., Fraser, I., Smith, R.J., MacMillan, D.C., 2014b. Using a systematic approach to select flagship species for bird conservation. Conserv. Biol. 28, 269–277.
Veríssimo, D., Vaughan, G., Ridout, M., Waterman, C., MacMillan, D., Smith, R.J., 2017. Increased conservation marketing effort has major fundraising benefits for even the least popular species. Biol. Conserv. 211, 95–101.
Veríssimo, D., Campbell, H.A., Tollington, S., Macmillan, D.C., Smith, R.J., 2018. Why do people donate to conservation? Insights from a “real world” campaign. PLoS One 1–15.
Vermunt, J.K., Magidson, J., 2005. Latent GOLD ® Choice 4.0 User's Manual. Statistical Innovations.
Vermunt, J.K., Magidson, J., 2015. Upgrade Manual for Latent GOLD Choice 5.0: Basic, Advanced, and Syntax 1.
Waldron, A., Mooers, A.O., Miller, D.C., Nibbelink, N., Redding, D., Kuhn, T.S., 2013. Targeting global conservation funding to limit immediate biodiversity declines. Proc. Natl. Acad. Sci. 110, 1–5.
White, P.C.L., Gregory, K.W., Lindley, P.J., Richards, G., 1997. Economic values of threatened mammals in Britain: a case study of the otter Lutra lutra and the water vole Arvicola terrestris. Biol. Conserv. 82, 345–354.
White, P., Bennett, A., Hayes, E., 2001. The use of willingness-to-pay approaches in mammal conservation. Mammal Rev. 151–167.
Wiepking, P., Bekkers, R., 2012. Who gives? A literature review of predictors of charitable giving. Part two: gender, family composition and income. Volunt. Sect. Rev. 3, 217–245.
Wright, K., 2001. Generosity vs. altruism: philanthropy and charity in the United States and United Kingdom. Voluntas 12, 399–416.