

Contrasting two methods, attitudinal and monetary, to assess support changes toward wildlife species by urban dwellers

Martín Espinosa-Molina  | Volker Beckmann 

General and Landscape Economics,
Faculty of Law and Economics & Institute
of Botany and Landscape Ecology,
University of Greifswald, Greifswald,
Germany

Correspondence

Martín Espinosa-Molina, General and
Landscape Economics, Faculty of Law
and Economics & Institute of Botany and
Landscape Ecology, University of
Greifswald, Soldmannstraße 15, 17489
Greifswald, Germany.
Email: mespinosams@gmail.com

Abstract

Monitoring the general public's support toward wildlife species is a strategy to identify whether a specific human-wildlife conflict (HWC) is escalating or de-escalating over time. The support can change due to multiple factors, such as mass media news of HWC or providing information about ecological traits of a species. Methods such as the rating scale (RS) and the allocation of a fixed amount of money (money allocation [MA]) have been used in the human-wildlife dimension as a proxy to measure support toward wildlife species. We compared these two methods' capacity to assess the general public's support changes toward wildlife species in an experimental design setting. Face-to-face interviews were applied among urban dwellers (n : 359) in Valdivia, Chile. In each interview, the support toward 12 wildlife species was elicited using an RS and MA methods, on two occasions, before and after disclosing ecological traits of the species. The results indicate that the MA grouped the wildlife species based on shared ecological traits, information disclosed to the participants, while the RS did not obtain the same results. Specifically, the MA identified an increase and decrease of support toward the wildlife species, and the RS only an increment of support. These results could be partly explained due to the conceptual foundation of each method. The MA was designed to elicit preferences in a constrained choice, while the RS measures attitudes. As a constrained choice, the MA does allow maximum support to be given to one species only if all other species are left unsupported, while in the RS, it is possible to provide maximum support for all species. The mentioned characteristics of the MA make it more suitable than the RS when the objective is to identify support changes.

KEYWORDS

Environmental and Conservation Psychology, Environmental Economics, money allocation, rating scale

This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2022 The Authors. *Conservation Science and Practice* published by Wiley Periodicals LLC on behalf of Society for Conservation Biology.

1 | INTRODUCTION

The intergovernmental response for the sixth mass extinction of wildlife species (Ceballos et al., 2020) has been a public spend of USD50 billion per year (Bishop & Hill, 2014). A percentage of this investment has been used to create and expand protected areas and large vertebrates' population's recovery strategies. Some of these strategies have been fruitful, and wildlife species populations are increasing in different regions worldwide (Deinet et al., 2013; Lees et al., 2021). Similarly, by 2030, the urban expansion will triple compared to 2000 (Seto et al., 2012). An increase in human-wildlife interactions could be expected under this scenario, probably raising human-wildlife conflict (HWC) situations (IUCN, 2020), if the interactions are not adequately managed and monitored (Soulsbury & White, 2019). The HWC has been defined as occurring "...when the needs and behavior of wildlife impact negatively on the goals of humans or when the goals of humans negatively impact the needs of wildlife" (Madden, 2004). One of the most significant challenges of researchers and conservation practitioners nowadays is to turn current HWC into human-wildlife coexistence (Frank & Glikman, 2019).

Several strategies will be needed to reach a state of human-wildlife coexistence. To this end, an instrument will be necessary to identify whether a specific human-wildlife interaction trends toward conflict or coexistence. For example, it has been described that the attitudes or preferences toward wildlife species can shift from negative to positive, or vice versa, in a conflict-to-coexistence continuum (Frank & Glikman, 2019). However, studies that have assessed human-wildlife interactions are usually conducted at one time-point using different methodologies, and long-term studies have been seldom to date (Dietsch et al., 2019; Dressel et al., 2015; Majić et al., 2011; Treves et al., 2013). Consequently, it is often difficult to assess whether a specific HWC increase or decrease over time (Dressel et al., 2015). Having mentioned this, a practical methodology to be replicated over time, which could identify support changes toward wildlife species by the general public in a specific socio-ecological context, will be helpful to assess how a human-wildlife interaction develops (IUCN, 2020). Furthermore, such a method could position and assess shifts of a specific human-wildlife interaction into this conflict-to-coexistence continuum.

The concept of support toward wildlife species can be defined by its measurement (Coolican, 2014). This measurement has been developed in the human-wildlife dimension in two main research fields (Figure 1, section research field). One corresponds to Environmental Economics, and the other is Environmental and Conservation Psychology (for an overview of each research field, refer to Bennett et al.,

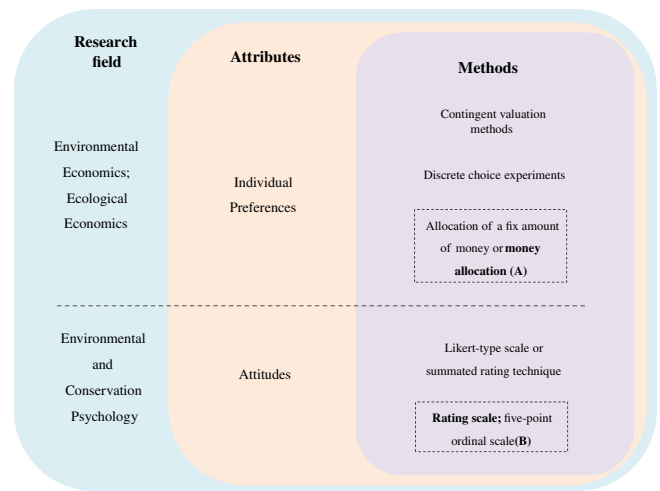


FIGURE 1 Conceptual framework for the two methods contrasted in their capacity to measure support changes toward wildlife species by urban dwellers (dotted squares, A and B)

2017). According to the field, authors have measured the support by eliciting two main attributes, individual preferences and attitudes (Figure 1, section attributes). In Environmental Economics, researchers have used methods to elicit the monetary value assigned by the participant to one or several wildlife species (Champ et al., 2017). These methods, for example, contingent valuation methods and discrete choice experiments, are usually used to value nonmarket goods (Figure 1, section methods) (Atkinson et al., 2018). For example, in the contingent valuation methods, the participants are required to indicate how much they would be willing to pay (WTP) or willing to accept to protect a specific wildlife population in an area and time (Martín-Lopez et al., 2008; Richardson & Loomis, 2009; Sorg & Loomis, 1985). Alternatively, some authors have used the "Allocation of a fixed amount of money" or money allocation (MA) to value several wildlife species through one question (Figure 1, dotted method A) (DeKay & McClelland, 1996; Espinosa-Molina et al., 2021; Gunnthorsdottir, 2001; Meuser et al., 2009; Samples et al., 1986; Tisdell & Wilson, 2004, 2006). In this method, the participants are asked to allocate, for example, USD 1000, to a specific number of wildlife species. Contrastingly, in Environmental and Conservation Psychology, researchers have measured the support toward wildlife species as an attitude through a Likert-type scale, also named summated ranking technique (Figure 1, section methods) (Coolican, 2014; Whitehouse-Tedd et al., 2021). As the WTP, usually, this technique measures supports toward one species at a time. Participants have to rate statements or items through, for example, a five-point ordinal rating scale (RS), with opposite alternatives between "strongly disagree" to "strongly agree" (Coolican, 2014; Likert, 1932). For example, Hermann et al. (2013) measured the support toward

the European bison (*Bison bonasus*) and Eurasian wolf (*Canis lupus*) using three statements to rate each species. A variation has been used to measure the support or likeability toward several wildlife species of different taxa in one question, Figure 1, dotted method B (Knight, 2008; Liordos et al., 2017; Liordos et al., 2020). In this variation, each wildlife species corresponds to a “statement,” and participants need to rate the species using the same RS as in the Likert-type scale method. Afterward, the species are grouped based on the value received, for example, conservation support, likeability, and desirability of encountering the species. While these two methods, MA and RS, have been used to measure the same attribute on certain occasions, that is, support toward wildlife species, their differences have not been contrasted empirically, being the objective of this study. For a common understanding, independently of the research field and through which technique the support was measured, we propose the definition of support toward wildlife species as preferences or attitudes that directly or indirectly reflect a person's desire for a wildlife species population to maintain or increase over time in a specific area.

The support toward wildlife species by the general public can change due to multiple factors. For example, providing additional knowledge of the wildlife species, as ecological traits, can increase the support (Arbieu et al., 2019; Espinosa-Molina et al., 2021). Conversely, HWC mass media coverage, casual encounters, and wildlife species impacting livestock are factors that could decrease the support (Arbieu et al., 2019; Ballejo et al., 2021; Houston et al., 2010; Majić et al., 2011; Treves et al., 2013). Therefore, a methodology aiming to measure support changes between specific wildlife species and the general public should identify the impact of the factors mentioned above on human–wildlife interactions.

Based on the evidence presented above, we wanted to contrast two widespread methods used to measure public support toward wildlife species, MA and RS. Additionally, we compared them under their capacity to assess support changes by disclosing wildlife species information. Specifically, we set the following research questions:

1. What are the differences between MA and RS methods to elicit support toward wildlife species with urban dwellers, providing colorful pictures and common and scientific names?
2. What are the differences between MA and RS methods to assess support changes toward the species when information is disclosed to the participant?

To our knowledge, this is the first research that compares two methods to elicit the support and its influence under information disclosure toward wildlife species by the general public in an experimental setting. Furthermore, to

increase the external validity of our results, our sample is represented by urban dwellers addressed in public areas, selected by a random sampling method. Additionally, all the species included have current distribution in the study area, and their threatened and endemic status were updated before the data collection from official sources.

2 | METHODOLOGY

The research presented here is part of a broader investigation. Other investigation results have already been published (Espinosa-Molina et al., 2021). References to this preceding publication will be given whenever appropriate.

2.1 | Study area

The study was carried out in the city of Valdivia, south of Chile. Valdivia has a population of 166,080 inhabitants (INE, 2017) and is located in the biodiversity hotspot “Chilean Winter Rainfall and Valdivian Forest” (Mittermeier et al., 2011). The city is surrounded by a wetland system formed by rivers such as the “Calle-Calle” and the “Cruces.”

2.2 | Survey design

To answer the proposed research questions, a survey was developed. In the survey, a quantitative questionnaire was conducted through a face-to-face interview. The interview was applied with urban dwellers in public places, for example, main public square, shopping malls, and busy streets. The questionnaire consisted of a series of questions and exercises divided into three sections. In sections 1 and 2, the support toward wildlife species was elicited. Information about the species was disclosed in three different treatments in between elicitations. In the final section, demographic characteristics of the sample were asked (an English translation of the complete questionnaire is provided, Supporting Information S1).

2.3 | Comparison between methods to measure support and effect on information disclosure

The methods of MA and RS were assessed in the survey. For the first, 12 simulated bills were given to the participants (each bill with a value of 1000 CLP) and requested to be distributed among 12 wildlife species (Gunthorsdottir, 2001; Meuser et al., 2009; Samples et al., 1986; Tisdell & Wilson, 2004). It was indicated to the participant that the

money would be used to develop activities to protect/ conserve the selected wildlife species. Therefore, a higher amount of money would mean more activities, thus a higher chance to protect/ conserve a wildlife species. For the RS, the participant was asked, “How strongly do you support or oppose governmental protection of each animal?” (Knight, 2008; Liordos et al., 2017). The answer was measured using a five-point ordinal RS. The participants could choose between five options, ranging from strongly opposing (−2) to strongly supporting (+2). The elicitation of the support was conducted in two rounds. On round 1, colorful pictures, common and scientific names of all the wildlife species were presented to the participant. Afterward, the participant should indicate their support through the two methods, being registered by the interviewer (Supporting Information S1 questions 1.1–1.2).

In round 2, to obtain a balanced sample size in each treatment, the participants were assigned in consecutive order to the threatened, endemic, and taxonomic group treatment. Using written labels, it was indicated to the participant which species were threatened or endemic and which were not. For the taxonomic treatment, as a control group, it was stated which species were amphibians, fish, and invertebrates, using the same types of labels. The questionnaire was the same for each treatment, but different questions were answered in function of the treatment (Supporting Information S1 questions 2.1–2.6). The values again were registered for the MA and RS. The specific definitions of threatened and endemic status mentioned to the participants are available in the questionnaire (Supporting Information S1). We used these ecological traits, as they have been identified as main support drivers, over charisma, esthetic beauty, or phylogenetic resemblance (Colléony et al., 2017; Gunnthorsdottir, 2001; Tisdell et al., 2007); therefore, we expected a shift in the support.

2.4 | Wildlife species

The 12 wildlife species included in the survey have current distribution in the study area. The species' threatened status was based on the IUCN Red List of Threatened Species™ (IUCN, 2021). The endemic status of the species was determined through the revision of related scientific literature. All mammals and bird species were not threatened or endemic, and the opposite for the other six species. For simplicity, it was told to the participant that a species was in a threatened status, independently if it were vulnerable, endangered, or critically endangered. The selected wildlife are presented with their Common name, ABBREVIATION, Taxa—*Scientific name*, respectively: South American Sea Lion, SASL

(Mammal—*Otaria flavescens*); Coypu, CYO (Mammal—*Myocastor coypus*); Many-colored Rush-Tyrant, MCRT (Bird—*Tachuris rubrigastra*); Spot-flanked Gallinule, SFG (Bird—*Gallinula melanops*); Cooi Heron, CH (Bird—*Ardea cocoi*); Chiloe Wigeon, CW (Bird—*Mareca sibilatrix*); Barrio's Frog, BF (Amphibian—*Calyptocephalella gayi*); Freshwater Crayfish, FWCF (Crustacean—*Virilastacus araucanius*); Freshwater Pancora Crab, FWPC (crustacean—*Aegla manni*); Freshwater Fish, FWF (Osteichthyes—*Cheirodon* spp.); and Common Garden Spider, CGSP (Arachnida—*Dolichomalus* spp.).

2.5 | Sampling protocol

The participants were urban dwellers, and the minimum age to be included in the survey was 16 years old. The first author pretested the survey by applying the questionnaire to 30 dwellers to highlight pitfalls and possible misinterpretations. The survey was conducted during March and April 2019 by three trained university students (interviewers) with the supervision of the first author. Each interviewer had an identification badge with their name on it, the responsible institution conducting the survey, and a phone number where the interviewee could solve doubts (post-interview). A simple random method was applied to obtain a representative sample of the population of Valdivia. Every fifth potential participant to be included in the data set was asked whether they would be interested in an interview with an average duration of 20 min. To increase the response rate, each person was told that after completing the questionnaire, a lottery ticket would be given for participation in a voucher of CLP 50,000 (approximately 55€) to be used at a local grocery store. After receiving consent from the participant, ethical clearance was provided, explaining the study's context, purpose, and possible outcomes and ensuring that their anonymity was guaranteed.

2.6 | Data analysis

The data set collected for the MA and RS did not fulfill the requirements for normal distribution. Thus, it was necessary to use nonparametric tests to answer our research questions. To compare the support values elicited by both methods, descriptive statistics were derived as the average and standard deviation. A rank based on the average values was developed for the wildlife species. Additionally, to identify support differences among the wildlife species, a Friedman's ANOVA (analysis of variance) test was conducted (Akaichi et al., 2019). The dependent variable for this test can be measured at an ordinal level (Friedman,

1937), allowing us to use it for the data obtained with the MA and RS methods (Field, 2017). Subsequently, to generate groups (subsets) among the wildlife species in function of the elicitation values obtained, a pairwise comparison was conducted using a Dunn-Bonferroni test (Dunn, 1964). The generated subsets will allow us to assess similarities and differences among the methods before and after information disclosure. To assess the changes of support toward the wildlife species, from round 1 to round 2 for both methods, a sign test was conducted. Although it is recommended to use the Wilcoxon matched-pair signed-rank test over the sign test (Field, 2017), the first was left aside because overall, the distribution of the support difference for the wildlife species from round 1 to round 2 were not symmetrical. All analyses were conducted using the software IBM SPSS® 27 for Windows®.

3 | RESULTS

3.1 | Questionnaire response and sociodemographic characteristics

A total of 359 questionnaires were completed with 211 refusals, yielding a response rate of 59%. In Table 1, the results from the sample and the last national census (INE, 2017) are presented for the variables of gender, age, and education level, and their categories. The aim was to assess the representativeness of our sample. For the variable age, different ranges are presented due to the availability of the data from the last national census. As indicated, middle-aged and highly educated respondents are slightly overrepresented in the sample.

3.2 | Support elicited by two methods, MA and RS, providing colorful pictures and scientific and common names

In round 1, the ranking of the average values for the MA and RS methods have a concordance for 9 of the 12 species, MCRT, SFG, CH, CW, CYO, CT, BF, FWPC, and CGSP (Table 2 round 1 columns). The results of Friedman's ANOVA test indicate a significant difference in the support among the wildlife species elicited by the MA and RS, $X^2(11) = 1559.842, p < .001$, and $X^2(11) = 908.715, p < .001$, respectively, in round 1. Furthermore, the pairwise comparison, that is, Dunn-Bonferroni post hoc tests, between the wildlife species for MA and RS indicates differences based on the subset's integration and arrangement (Figure 2, round 1). Each pairwise comparison (block) corresponds to the MA or RS support elicitation of the 12 wildlife species. The blocks are integrated by several columns, from now on subsets. The specific number of subsets per block is based on the pairwise comparison results. At the same time, each subset is integrated by wildlife species without a statistically significant difference ($p < .05$) in the support received. As a pairwise comparison, the same species may be included in several subsets in the same block. Finally, in each block, the subsets are arranged according to the received support, from the right to the left border, indicating high or low support, respectively. For round 1 (elicitation of support providing colorful pictures, scientific and common names of the wildlife species), the blocks of MA and RS vary on the number and arrangement of the subsets (Figure 2, round 1). The MA and RS blocks are conformed by eight and seven subsets, respectively. Regarding differences in the blocks' integration between

TABLE 1 Sociodemographic characteristics of participants surveyed conducting interviews with the citizens of Valdivia, Chile, during March and April 2019 (*n*: 359)

Gender			Age				Education level			
Categories	Study area ^a		Study area ^a		Sample ^b		Categories	Study area ^a		
	Percentage	Sample ^b	Ranges	Percentage	Ranges	Percentage		Percentage	Sample ^b	
Female	50.93%	50.14%	15–19	7.85%	16–20	5.29%	Primary school	25.32%	0.28%	
Male	49.07%	47.91%	20–29	18.40%	21–30	35.93%		Higher school	24.12%	20.61%
			30–39	13.60%	31–40	20.06%	University or Technical		41.88%	75.21%
			40–49	12.68%	41–50	18.38%			Postgraduate	2.19%
			50–59	12.72%	51–60	13.37%				
			60–69	8.58%	61–70	5.57%				

^aValues obtained from the last national census conducted in Chile (INE, 2017). Ranges do not sum up 100% due to not included categories (except gender).

^bPercentages for the sample data do not sum up 100% due to missing values.

TABLE 2 Descriptive statistics, average (between brackets rank), and standard deviation value (x and SD, respectively), for the elicitation of support through two methods, MA and RS, toward 12 wildlife species in two consecutive rounds for each participant

Wildlife species ^a	Round 1: Providing colorful pictures and scientific of the wildlife species (n: 359)						Round 2: Disclosing ecological traits of the wildlife species																		
	MA ^b			RS ^c			Threatened status (n: 138)				Endemic status (n: 123)				Taxonomic group (n: 94)										
	x	SD	X	x	SD	X	MA ^b	SD	x	SD	X	RS ^c	MA ^b	SD	x	SD	X	MA ^b	SD	x	SD	X	RS ^c		
MRCT	2181.56 (1)	903.15	1.0780 (1)	0.4602	1115.94 (6)	936.47	1.0725 (2)	0.3113	1089.43 (6)	896.33	1.1382 (3)	0.4239	1978.72 (1)	927.23	1.1277 (1)	0.3661									
SFG	1667.60 (2)	776.84	0.9944 (2)	0.5138	553.96 (9)	781.79	0.9416 (7)	0.4815	560.98 (8)	769.78	1.0164 (6)	0.5140	1404.26 (3)	833.69	1.0538 (3)	0.4002									
CH	1620.11 (3)	730.17	0.9666 (3)	0.5275	586.96 (8)	789.79	0.9783 (6)	0.4266	642.28 (9)	831.06	1.0163 (7)	0.5119	1414.89 (2)	709.53	1.0638 (2)	0.40998									
CW	1416.20 (4)	818.19	0.9053 (4)	0.6136	456.52 (11)	674.02	0.8188 (10)	0.6070	528.46 (10)	771.68	0.9512 (9)	0.6121	1170.21 (4)	837.79	0.9468 (4)	0.5558									
CYO	1195.53 (5)	774.80	0.7346 (5)	0.7368	536.23 (10)	746.37	0.8551 (9)	0.5609	463.41 (11)	604.53	0.9187 (10)	0.5950	989.36 (7)	740.45	0.7742 (7)	0.7091									
BF	790.50 (6)	704.70	0.7075 (6)	0.7442	1586.96 (2)	691.22	1.0863 (1)	0.5314	1634.15 (2)	715.96	1.1707 (1)	0.4564	1117.02 (5)	745.69	0.9149 (5)	0.5615									
CT	768.16 (7)	770.17	0.6462 (7)	0.7587	1659.42 (1)	749.66	1.0719 (4–3)	0.5728	1650.41 (1)	746.40	1.1382 (2)	0.4674	1010.64 (6)	822.99	0.8404 (6)	0.6274									
SASL	715.08 (8)	800.80	0.4819 (10)	0.9360	318.84 (12)	579.27	0.5290 (12)	0.7941	292.68 (12)	568.74	0.5203 (12)	0.8622	606.38 (10)	750.89	0.3936 (12)	0.9752									
FWCF	533.52 (9)	667.57	0.5738 (8)	0.7655	1492.75 (3)	747.22	1.0719 (3–4)	0.5056	1512.20 (3)	803.33	1.0976 (4)	0.5027	680.85 (8)	736.35	0.7447 (9)	0.6868									
FWF	458.10 (10)	586.67	0.5487 (9)	0.8100	1485.51 (4)	1172.90	1.0507 (5)	0.5172	1317.07 (4)	760.90	1.0650 (5)	0.5543	638.30 (9)	701.01	0.7527 (8)	0.6861									
FWPC	351.96 (11)	523.01	0.4262 (11)	0.8387	1159.42 (5)	747.22	0.8705 (8)	0.6898	1211.38 (5)	770.91	1.0000 (8)	0.6005	489.36 (11)	617.74	0.6277 (10)	0.7182									
CGSP	287.71 (12)	548.40	0.1616 (12)	0.9897	1065.22 (7)	727.02	0.7338 (11)	0.8390	1065.04 (7)	743.72	0.8699 (11)	0.7238	457.45 (12)	633.56	0.4681 (11)	0.8639									

Note: First (round 1) providing color pictures and scientific and common names (left), and afterward (round 2) disclosing different ecological traits of the wildlife species. According to the treatment, it was indicated which species are threatened (second columns), endemic (thirds columns) and which species are amphibians, fish, and invertebrates (last columns). The last six species fall under these three traits (CT to CGSP). Abbreviations: MA, money allocation; RS, rating scale.

^aMRCT, many-colored Rush-tyrant (*Tachuris rubrigastra*); SFG, spot-flanked Gallinule (*Gallinula melanops*); CH, cocoi heron (*Ardea cocoi*); CW, Chiloe wigeon (*Mareca sibilatrix*); CYO, coypu (*Myocastor coypus*); SASL, South American sea lion; CT, Chilean toad (*Calyptocephala gayi*); BF, Barrios frog (*Insuetophrynus acarpicus*); FWCF, freshwater crayfish (*Virilastacus araucanicus*); FWPC, freshwater pancora crab (*Aegla marni*); FWF, freshwater fish (*Cheirodon* spp.); CGSP, common garden spider (*Dolotomalus* spp.).

^bValues ranging from 1000 to 12,000 CLP. It must be noticed that usually, the maximum amount received for the most supported wildlife species was around 3000 CLP, by each participant.

^cValues ranging from -2 to +2. "strongly oppose for governmental protection" and "strongly support governmental protection," respectively.

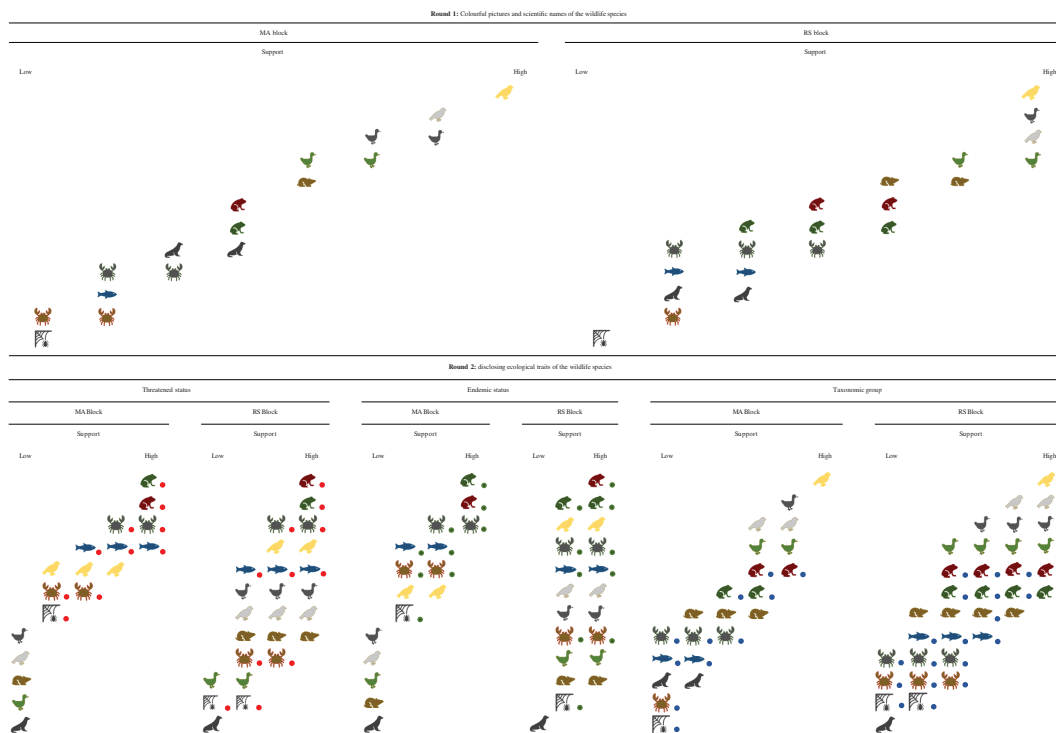


FIGURE 2 Groups of wildlife species based on the received support elicited by two methods, money allocation (MA) and rating scale (RS), in two consecutive rounds for each, as assessed by a pairwise post hoc Dunn-Bonferroni test after significant Friedman's ANOVA ($p < .05$). First (round 1) providing color pictures and scientific and common names (above), and afterward (round 2) disclosing different ecological traits of the wildlife. For the threatened and endemic status (below, left, and middle columns), it was mentioned which species were in the corresponding status (red and green dots, respectively), and for the taxonomic group (right columns), it was indicated which species were amphibians, fish, and invertebrates (blue dots). Each block corresponds to a pairwise comparison. The blocks have a different number of columns, being this represents the subsets. Each subset is integrated by wildlife species without a statistically significant difference ($p < .05$) in the support received. In each block, the subsets are arranged in function of the received support, from the right border to left border, from high to low support, respectively. The figures of the wildlife species are as follows: MCRT, Many-colored Rush-tyrant (*Tachuris rubrigastra*); SFG, Spot-flanked Gallinule (*Gallinula melanops*); CH, Cooi Heron (*Ardea coicoides*); CW, Chiloe Wigeon (*Mareca sibilatrix*); CYO, Coypu (*Myocastor coypus*); SASL, South American Sea Lion (*Otaria flavescens*); CT, Chilean Toad (*Calyptocephalella gayi*); BF, Barrios Frog (*Insuetophrynus acaipicus*); FWCF, Freshwater Crayfish (*Virilastacus araucanus*); FWPC, Freshwater Pancora Crab (*Aegla manni*); FWF, Freshwater Fish (*Cheirodon* spp.); CGSP, Common Garden Spider (*Doliomalus* spp.)

MA and RS, an example is the highest supported block from both methods. The MA block is integrated by one species, MCRT (bird), while the RS is integrated by the MCRT, CH, SFG, and CH (birds). The arrangement of the subsets and the wildlife species that integrate them are visible in Figure 2.

3.3 | Differences in the support elicited toward wildlife species by two methods, MA and RS, after information disclosing

After information disclosure of the wildlife species threatened and endemic status and which species are amphibians, fish, and invertebrates (last six species in Table 3), the change in the support, from round 1 to round 2, was different based on the method used. Generally, for the three

treatments, in the MA, there is a significant increment for the last six listed species and a decrease of support for the first six species (positive and negative value, respectively, of the Standardized Test Statistic, Table 3, MA columns). On the other hand, overall, in the RS, there was only a significant increment of support for the last six wildlife species, while for the first six, the support did not have a significant change (Table 3, RS columns). Exceptions to this last are the CYO in the RS for the threatened treatment and the CYO and SASL for the taxonomic treatment in the MA. At a more specific level, it is also possible to identify how the participants changed their support after disclosing the information, based on the positive, negative, and ties values presented under the Standardized Test Statistics, right, left, and middle, respectively (Table 3). For example, for the SASL (not threatened species), after disclosing the threatened status, 43 participants took one or more bills, 89 did

TABLE 3 Differences of the support elicited by two methods, MA and RS, before and after disclosing ecological traits of 12 wildlife species in three different treatments

Wildlife species ^a	Threatened status						Endemic status						Taxonomic group					
	MA		RS				MA		RS				MA		RS			
MCRT	-9.166***		1.206				-7.918***		0.000				-3.175***		0.000			
	86	52	0	3	127	8	66	56	1	4	115	4	12	82	0	6	82	6
SFG	-8.918***		0.000				-8.374***		-0.873				-2.750*		0.459			
	90	46	3	10	117	9	75	47	1	13	101	8	14	78	2	8	73	11
CH	-9.333***		1.367				-7.086***		0.000				-3.098**		1.336			
	92	45	1	6	119	13	63	56	4	13	96	14	14	79	1	4	80	10
CW	-8.806***		-1.919				-7.945***		0.359				-2.910**		1.033			
	88	47	3	16	116	6	68	54	1	14	92	17	15	77	2	5	79	10
CYO	-6.515***		2.688**				-6.813***		1.886				-1.871		0.834			
	71	56	11	11	98	29	64	53	6	11	88	23	11	80	3	9	70	14
SASL	-5.143***		0.658				-5.709***		0.000				-1.155		-0.436			
	43	89	6	16	101	21	40	81	2	17	88	18	3	91	0	12	73	9
CT	8.386***		7.551***				7.390***		5.515***				2.460*		4.199***			
	5	47	86	0	80	50	5	48	70	5	73	45	4	74	16	3	64	27
BF	8.401***		7.291***				7.789***		5.835***				4.400***		2.919**			
	3	54	81	1	80	58	3	49	71	3	76	44	1	69	24	4	71	19
FWCF	8.529***		8.070***				7.685***		6.326***				0.630		3.200**			
	6	41	91	1	68	7	4	47	72	5	63	55	4	83	7	4	69	21
FWPC	9.180***		7.442***				8.125***		6.044***				2.000*		3.469***			
	2	44	92	2	74	63	0	55	68	4	70	49	1	85	8	5	64	25
FWF	9.125***		7.938***				7.257***		6.068***				3.015***		2.345*			
	2	45	91	0	73	65	5	50	68	6	63	54	0	83	11	5	71	17
CGSP	9.116***		7.660***				8.008***		6.803***				2.041*		3.834***			
	1	49	88	3	67	69	1	53	69	4	60	59	0	88	6	4	64	26

Note: According to the treatment, it was indicated which species are threatened (first columns), endemic (second columns), and which species are amphibians, fish, and invertebrates (last columns). The last six species fall under these three traits (CT to CGSP). For each wildlife species, treatment, and method, the standardized test statistic (bold), negative differences, ties, and positive differences are presented (left, middle, and right, respectively).

Abbreviations: MA, money allocation; RS, rating scale.

^aMCRT, Many-colored Rush-tyrant (*Tachuris rubrigastra*); SFG, Spot-flanked Gallinule (*Gallinula melanops*); CH, Cocoi Heron (*Ardea coicoides*); CW, Chiloe Wigeon (*Mareca sibilatrix*); CYO, Coypu (*Myocastor coypus*); SASL, South American Sea Lion; CT, Chilean Toad (*Calyptocephalella gayi*); BF, Barrios Frog (*Insuetophrynus acarpicus*); FWCF, Freshwater Crayfish (*Virilastacus araucanus*); FWPC, Freshwater Pancora Crab (*Aegla manni*); FWF, Freshwater Fish (*Cheirodon* spp.); CGSP, Common Garden Spider (*Doliomalus* spp.). These last six species are in a threatened and endemic status.

* $p < .05$, $p < .01$, *** $p < .001$.

not change the initially allocated bills, and 6 increased in at least one bill.

3.4 | Support elicited by two methods, MA and RS, after disclosing ecological traits of the wildlife species

Based on the ranking of the average values, two species, SASL and FWCF, for the threatened status, and one species, SASL, for the endemic treatment, have a rank

concordance between MA and RS methods, Table 2, threatened and endemic status column. For the taxonomic group (control group), seven species, MCRT, SFG, CH, CW, CYO, CT, and BF, presented a concordance in the rank, Table 2, taxonomic group column. The results of the Friedman's ANOVA indicate a significant difference in the support received among the wildlife species for the three treatments in MA and RS methods, after information disclosure, threatened status: MA: $X^2(11) = 421.074$, $p < .001$ /RS: $X^2(11) = 207.443$, $p < .001$; endemic status: MA: $X^2(11) = 362.861$, $p < .001$ /RS: X^2

(11) = 204.894, $p < .001$; and taxonomic group: MA: $X^2(11) = 257.427$, $p < .001$ /RS: $X^2(11) = 206.852$, $p < .001$. Furthermore, the pairwise post hoc comparison indicates a different arrangement and integration of the subsets from round 1 to round 2 (Figure 2, round 2). In the MA, the species where the threatened and endemic status was indicated (red and green dots, respectively) were grouped in the same subsets (Figure 2, threatened and endemic treatments). Additionally, these subsets were grouped in the high supported border of the block (right). An exception for the aforementioned is the MCRT, the only species in the same subsets as the threatened or endemic species. Finally, the species not in a threatened or endemic status (without red or green dots) were grouped in one subset. In the case of the RS, the species highlighted for threatened and endemic status were not exclusively integrated into subsets. Contrarily, the subsets were conformed with wildlife species being threatened or endemic or not. In the taxonomic group treatment (Figure 2, round 2), for both blocks, MA and RS, the integration and arrangements of the subsets are more similar to round 1 (Figure 2, round 1). This last could be because the information disclosed in the control group was not relevant enough to increase the support. It must be noted that the sign test (Table 3) assessed a statistically significant difference for the taxonomic group. However, the positive differences were not higher than the ties (Table 3, taxonomic group columns).

4 | DISCUSSION

Based on the research questions, similarities and differences were found between the MA and RS methods to elicit the support toward wildlife species and identify support changes before and after disclosing ecological traits of the species. Providing colorful pictures, scientific and common names, the wildlife species had almost a complete concordance of rank between the MA and RS (Table 2, round 1). Based on the pairwise comparison (Figure 2, round 1), the species presented differences in the integration and arrangements of the subsets. After disclosing the ecological traits and eliciting the support again, the wildlife species, overall, showed discordance in the rank between the methods (Table 2, round 2 columns). Furthermore, the sign test (Table 3) identified a significant increase and decrease of support toward the species based on the MA. At the same time, the RS only assessed a support increment for most species. Finally, according to the pairwise comparison, in the MA, the species were overall grouped based on the threatened and endemic status (information disclosed to the participants), while in the RS were not (Figure 2, round 2).

4.1 | Support elicited by two methods, MA and RS, providing colorful pictures and scientific and common names

A difference in our results between the MA and RS is the number of wildlife species integrating each subset. Generally, the MA present fewer wildlife species in each subset, while more in the RS. This last is evidenced clearly in the first subset. For the MA, only one species integrated the first subset, MCRT, and in the RS, it was integrated by four species, MCRT, SFG, CH, and CW. The aforementioned could be explained by the differences in the participant's answers between MA and RS. It was not rare that a participant gave the same response for all wildlife species in the RS; "strongly support governmental protection for the wildlife species" (+1). In contrast, in the MA, the same participants did not equal the bills among the species. Oppositely, while some species received more than one bill, others did not receive any. Related to which wildlife species integrate which subsets, based on Figure 2, it is possible to evidence a tendency to support wildlife species based on a hierarchical phylogenetic order (Gunnthorsdottir, 2001; Knight, 2008; Liordos et al., 2017, 2020). For example, in a cross-countries study, a correlation was identified between support and species phylogenetically close to humans (Albert et al., 2018), but in a local context, an exception to this rule is not rare (Liordos et al., 2017; Liordos et al., 2020). Our results illustrate this exception in the subsets integrated by the SASL. In the MA, the SASL shares subsets with amphibians and crustaceans, while in the RS, it shares subsets with the CT, FWCF, FWPC, and FWF. Overall, the MA has fewer wildlife species integrating each subset than the RS, making it clearer to distinguish support differences among the species.

4.2 | Support elicited by two methods, MA and RS, after disclosing ecological traits of the wildlife species

After disclosing the corresponding information in each treatment, a support change was identified both for MA and RS. We will not deepen this topic, as it is not the scope of the study and has been widely assessed (Tisdell, 2006; Tisdell & Wilson, 2004, 2006; Tisdell et al., 2007). The control group was also statistically significantly different. Still, based on the positive and negative ties (Table 3, taxonomic group table), these differences were less than the threatened or endemic treatment (for statistically significant results, please refer to Espinosa-Molina et al., 2021). Few studies have assessed the general public's effect of information disclosure toward wildlife species, even less comparing different methods to elicit support. One was conducted by

Tisdell and Wilson (2004) among Australian urban dwellers. They used five methods to assess the effect of information provision on the support among tree Kangaroos. The methods were two dichotomic answers (yes or no), two contingent valuation methods, and allocating a fixed amount of conservation funds, or MA. The only method that spotted a significant difference was the MA, congruent with our findings.

An advantage of the pairwise comparison (Figure 2, round 2) is the detailed information of the support changes toward the wildlife species, allowing an accurate interpretation of the results. Based on the integration and arrangement of the wildlife species subsets, threatened and endemic treatment, it is possible to identify differences in the effect of information disclosure on the support between the MA and RS (Figure 2, round 2). In the MA, the subsets were mostly integrated by species in a threatened or endemic status. In contrast, in the RS, the subsets were integrated by both wildlife species, threatened and endemic and not (Figure 2, round 2). The difference between the wildlife species subsets integration could be due to the following fact. If the participant wanted to support a threatened or endemic wildlife species, in the MA method, the bills (support) must be taken from another species. Oppositely, in the RS method, there is no need to decrease the support of a wildlife species to increase to another. If the objective of a project aims to elicit preferences of specific wildlife species over others or assess support changes, the MA would be a more accurate method than the RS. Additionally, the MA is a suitable alternative to avoid the participants giving support to species due to the social desirability bias (where the participants try to answer what they think is expected by the interviewer). Generally, people provide more positive answers in the RS, particularly in face-to-face interviews (Coolican, 2014).

4.3 | Methodological approach

Both methods presented a practical application, that is, understandable and easy to follow, among the urban dwellers in face-to-face interviews. In the following paragraphs, the main characteristics of the MA and RS to assess support changes toward wildlife species will be mentioned.

After information disclosure, the arrangement and integration of the subsets respond to the characteristics of the methods. The MA is a constraint choice, meaning that the method obligates the participants to choose which wildlife species to support (Champ et al., 2017), not been the case for the RS. If a participant wants to give maximum support to one wildlife species in the MA, the only possibility

would be to allocate 12 bills to one and none to the other species. Oppositely, in the RS, the participants can give maximum support to all the wildlife species. These differences are based on the objective of each method. The MA is subject to budget constrain, revealing more easily the participant preferences from one wildlife species to another (Champ et al., 2017). The RS aims to measure attitudes (Coolican, 2014; Likert, 1932), and it has been used in the human-wildlife dimension to correlate the support toward wildlife species with explanatory variables (Hermann et al., 2013; Liordos et al., 2017, 2020). This characteristic of the MA, forcing the participants to choose, accentuates the participant's preferences, that is, support, over the RS.

To conclude, the MA and RS methodologies could elicit urban dwellers' support toward wildlife species. Additionally, it is possible to assess the support for several wildlife species through one question. Our results, specifically Figure 2, could illustrate the conflict-to-coexistence continuum (Frank & Glikman, 2019). Furthermore, the support of a specific human-wildlife interaction can be elicited over time to identify its evolution and, for example, assessing a conservation strategy's effectiveness to transform an HWC into a human-wildlife coexistence (independent of the drivers of the conflict). Based on our findings, the MA presented a better capacity to assess support changes after information disclosure, making it a more appropriate method over the RS. In addition, the desirability bias could be less in the MA, as participants are forced to decide which species to support, compared to the RS, where it is possible to give maximum support to all wildlife species.

4.4 | Open research question

Generally, the effect of information disclosure on the support toward wildlife species has been tested, providing the same attribute and assuming the same outcome. An example is disclosing ecological traits of wildlife species, expecting an increment of support to the species being in a threatened status (Samples et al., 1986; Tisdell & Wilson, 2004, 2006; Tisdell et al., 2007). Under the assumption that information can change general public support toward wildlife species, it is possible to ask, could it also be affected by, for example, mass media news about a species impacting humans directly or indirectly? or due to changes in governmental wildlife management policies? There is evidence of a correlation between support and the before-mentioned cases (Bombieri et al., 2018; Knight, 2008), but no studies have measured the support before and after an HWC event. In need of a strategy to measure human-wildlife interactions in the long term (Dressel et al., 2015; IUCN, 2020), a next step would be to identify

the real-world effect, for example, HWC mass media news, on the support toward the species involved in the conflict. Our results suggest that the MA might provide a better and more sensitive measurement of such changes than the RS.

ACKNOWLEDGMENTS

The authors thank all direct and indirect people involved in this project. Without their valuable contribution, this study would not have been possible. Special thanks to Pablo Galaz Rebolledo for hosting one of the authors (Martín Espinosa-Molina) during the data collection stage. They appreciate the support of the “Rio Cruces” Research Center (www.cehum.org) and their staff: Daniela Contreras L, Patricia Möller D, Jorge Tomasevic V, and Ignacio Rodriguez J, for their support during the data collection stage. Also, they thank the interviewers: Victor Bahamonde, Guisella Paredes, and Marcelo Echeverria. The authors also appreciate Elisabeth Knops and Regina Neudert for their comments on earlier versions of the manuscript.

Open access funding enabled and organized by Projekt DEAL.

CONFLICT OF INTEREST

The authors declare neither current nor potential source of conflict of interest, financial or otherwise.

AUTHOR CONTRIBUTIONS

Conceptualization: Martín Espinosa-Molina and Volker Beckmann. *Data curation:* Martín Espinosa-Molina. *Formal analysis:* Martín Espinosa-Molina and Volker Beckmann. *Funding acquisition:* Martín Espinosa-Molina and Volker Beckmann. *Investigation:* Martín Espinosa-Molina. *Methodology:* Martín Espinosa-Molina and Volker Beckmann. *Project administrator:* Martín Espinosa-Molina. *Resources:* Martín Espinosa-Molina and Volker Beckmann. *Supervision:* Volker Beckmann. *Validation:* Martín Espinosa-Molina and Volker Beckmann. *Visualization:* Martín Espinosa-Molina. *Writing—original draft:* Martín Espinosa-Molina. *Writing—review & editing:* Martín Espinosa-Molina and Volker Beckmann.

DATA AVAILABILITY STATEMENT

Because the data set is still being analyzed for further publications, it will not be available when this article is published. Don't hesitate to get in touch with the authors to know the availability of the data.

ORCID

Martín Espinosa-Molina  <https://orcid.org/0000-0003-1460-9346>

Volker Beckmann  <https://orcid.org/0000-0001-6595-7995>

REFERENCES

- Akaichi, F., Glenk, K., & Revoredo-Giha, C. (2019). Could animal welfare claims and nutritional information boost the demand for organic meat? Evidence from non-hypothetical experimental auctions. *Journal of Cleaner Production*, *207*, 961–970.
- Albert, C., Luque, G. M., & Courchamp, F. (2018). The twenty most charismatic species. *PLoS One*, *13*, e0199149.
- Arbieu, U., Mehring, M., Bunnefeld, N., Kaczynsky, P., Reinhardt, I., Ansorge, H., Böhning-Gaese, K., Glikman, J. A., Kluth, G., & Nowak, C. (2019). Attitudes towards returning wolves (*Canis lupus*) in Germany: Exposure, information sources and trust matter. *Biological Conservation*, *234*, 202–210.
- Atkinson, G., Braathen, N. A., Groom, B., & Mourato, S. (2018). *Cost-benefit analysis and the environment: Further developments and policy use*. OECD.
- Ballejo, F., Plaza, P. I., & Lambertucci, S. A. (2021). Framing of visual content shown on popular social media may affect viewers' attitudes to threatened species. *Scientific Reports*, *11*, 13512.
- Bennett, N. J., Roth, R., Klain, S. C., Chan, K., Christie, P., Clark, D. A., Cullman, G., Curran, D., Durbin, T. J., & Epstein, G. (2017). Conservation social science: Understanding and integrating human dimensions to improve conservation. *Biological Conservation*, *205*, 93–108.
- Bishop, J., & Hill, C. (2014). *Global biodiversity finance: The case for international payments for ecosystem services*. Edward Elgar.Eds.
- Bombieri, G., Nanni, V., Del Delgado, M. M., Fedriani, J. M., López-Bao, J. V., Pedrini, P., & Penteriani, V. (2018). Content analysis of media reports on predator attacks on humans: Toward an understanding of human risk perception and predator acceptance. *BioScience*, *68*, 577–584.
- Ceballos, G., Ehrlich, P. R., & Raven, P. H. (2020). Vertebrates on the brink as indicators of biological annihilation and the sixth mass extinction. *Proceedings of the National Academy of Sciences*, *117*, 13596–13602.
- Champ, P. A., Boyle, K. J., Brown, T. C., & Peterson, L. G. (2017). *A primer on nonmarket valuation*. Springer.
- Colléony, A., Clayton, S., Couvet, D., Saint Jalme, M., & Prévot, A.-C. (2017). Human preferences for species conservation: Animal charisma trumps endangered status. *Biological Conservation*, *206*, 263–269.
- Coolican, H. (2014). *Research methods and statistics in psychology* (6th ed.). Routledge.
- Deinet, S., Ieronymidou, C., McRae, L., Burfield, I. J., Foppen, R. P. B., Collen, B., & Böhm, M. (2013). *Wildlife comeback in Europe: The recovery of selected mammal and bird species*. The Zoological Society of London.
- DeKay, M. L., & McClelland, G. H. (1996). Probability and utility of endangered species preservation programs. *Journal of Experimental Psychology: Applied*, *2*, 60–83.
- Dietsch, A. M., Manfredo, M. J., Sullivan, L., Bruskotter, J. T., & Teel, T. L. (2019). A multilevel, systems view of values can inform a move towards human–wildlife coexistence. In B. Frank, J. A. Glikman & S. Marchini (Eds.), *Human–wildlife interactions* (Vol. 13, pp. 20–44). Cambridge University Press.
- Dressel, S., Sandström, C., & Ericsson, G. (2015). A meta-analysis of studies on attitudes toward bears and wolves across Europe 1976–2012. *Conservation Biology*, *29*, 565–574.

- Dunn, O. J. (1964). Multiple comparisons using rank sums. *Technometrics*, 6, 241–252.
- Espinosa-Molina, M., Rodriguez-Jorquera, I. A., & Beckmann, V. (2021). Effect and difference between the threatened and endemic status on the general public support towards wildlife species in a biodiversity hotspot. *Biodiversity and Conservation*, 30, 3219–3241.
- Field, A. (2017). *Discovering statistics using IBM SPSS statistics* (5th ed.). Sage Publications.
- Frank, B., & Glikman, J. A. (2019). Human-wildlife conflicts and the need to include coexistence. In B. Frank, J. A. Glikman & S. Marchini (Eds.), *Human-wildlife interactions: Turning conflict into coexistence*. (pp. 1–19). Cambridge University Press.
- Friedman, M. (1937). The use of ranks to avoid the assumption of normality implicit in the analysis of variance. *Journal of the American Statistical Association*, 32, 675–701.
- Gunthorsdottir, A. (2001). Physical attractiveness of an animal species as a decision factor for its preservation. *Anthrozoös*, 14, 204–215.
- Hermann, N., Voß, C., & Menzel, S. (2013). Wildlife value orientations as predicting factors in support of reintroducing bison and of wolves migrating to Germany. *Journal for Nature Conservation*, 21, 125–132.
- Houston, M. J., Bruskotter, J. T., & Fan, D. (2010). Attitudes toward wolves in the United States and Canada: A content analysis of the print news media, 1999–2008. *Human Dimensions of Wildlife*, 15, 389–403.
- INE. (2017). *Results by district national census 2017*. INE. <http://resultados.censo2017.cl/Region?R=R14>
- IUCN. (2020). *IUCN SSC position statement on the Management of Human-Wildlife Conflict*. IUCN Species Survival Commission (SSC) Human-Wildlife Conflict Task Force.
- IUCN. (2021). *IUCN red list of threatened species. Version 2021-1*. IUCN. <https://www.iucnredlist.org>
- Knight, A. J. (2008). “Bats, snakes and spiders, oh my!” how aesthetic and negativistic attitudes, and other concepts predict support for species protection. *Journal of Environmental Psychology*, 28, 94–103.
- Lees, C. M., Rutschmann, A., Santure, A. W., & Beggs, J. R. (2021). Science-based, stakeholder-inclusive and participatory conservation planning helps reverse the decline of threatened species. *Biological Conservation*, 260, 109194.
- Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology*, 22(140), 1–55.
- Liordos, V., Foutsas, E., & Kontsiotis, V. J. (2020). Differences in encounters, likeability and desirability of wildlife species among residents of a Greek city. *Science of the Total Environment*, 739, 139892.
- Liordos, V., Kontsiotis, V. J., Anastasiadou, M., & Karavasiyas, E. (2017). Effects of attitudes and demography on public support for endangered species conservation. *Science of the Total Environment*, 595, 25–34.
- Madden, F. (2004). Creating coexistence between humans and wildlife: Global perspectives on local efforts to address human-wildlife conflict. *Human Dimensions of Wildlife*, 9, 247–257.
- Majić, A., Taussig, M., de Bodonia, A., Huber, D., & Bunnefeld, N. (2011). Dynamics of public attitudes toward bears and the role of bear hunting in Croatia. *Biological Conservation*, 144, 3018–3027.
- Martín-Lopez, B., Montes, C., & Benayas, J. (2008). Economic valuation of biodiversity conservation: The meaning of numbers. *Conservation Biology*, 22, 624–635.
- Meuser, E., Harshaw, H. W., & Mooers, A. Ø. (2009). Public preference for endemism over other conservation-related species attributes. *Conservation Biology*, 23, 1041–1046.
- Mittermeier, R. A., Turner, W. R., Larsen, F. W., Brooks, T. M., & Gascon, C. (2011). Global biodiversity conservation: The critical role of hotspots. In F. E. Zachos & J. C. Habel (Eds.), *Biodiversity hotspots* (pp. 3–22). Springer.
- Richardson, L., & Loomis, J. (2009). The total economic value of threatened, endangered and rare species: An updated meta-analysis. *Ecological Economics*, 68, 1535–1548.
- Samples, K. C., Dixon, J. A., & Gowen, M. M. (1986). Information disclosure and endangered species valuation. *Land Economics*, 62, 306–312.
- Seto, K. C., Güneralp, B., & Hutyrá, L. R. (2012). Global forecasts of urban expansion to 2030 and direct impacts on biodiversity and carbon pools. *Proceedings of the National Academy of Sciences*, 109, 16083–16088.
- Sorg, C. F., & Loomis, J. (1985). An introduction to wildlife valuation techniques. *Wildlife Society Bulletin (1973-2006)*, 13, 38–46.
- Soulsbury, C. D., & White, P. C. L. (2019). A framework for assessing and quantifying human-wildlife interactions in urban areas. In B. Frank, J. A. Glikmann & S. Marchini (Eds.), *Human-wildlife interactions: Turning conflict into coexistence* (pp. 107–128). Cambridge University Press.
- Tisdell, C. (2006). Knowledge about a species' conservation status and funding for its preservation: Analysis. *Ecological Modelling*, 198, 515–519.
- Tisdell, C., Nantha, H. S., & Wilson, C. (2007). Endangerment and likeability of wildlife species: How important are they for payments proposed for conservation? *Ecological Economics*, 60, 627–633.
- Tisdell, C., & Wilson, C. (2004). The public's knowledge of and support for conservation of Australia's tree-kangaroos and other animals. *Biodiversity and Conservation*, 13, 2339–2359.
- Tisdell, C., & Wilson, C. (2006). Information, wildlife valuation, conservation: Experiments and policy. *Contemporary Economic Policy*, 24, 144–159.
- Treves, A., Naughton-Treves, L., & Shelley, V. (2013). Longitudinal analysis of attitudes toward wolves. *Conservation Biology*, 27, 315–323.
- Whitehouse-Tedd, K., Abell, J., & Dunn, A. K. (2021). Evaluation of the use of psychometric scales in human-wildlife interaction research to determine attitudes and tolerance toward wildlife. *Conservation Biology*, 35, 533–547.

SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

How to cite this article: Espinosa-Molina, M., & Beckmann, V. (2022). Contrasting two methods, attitudinal and monetary, to assess support changes toward wildlife species by urban dwellers. *Conservation Science and Practice*, 4(4), e12661. <https://doi.org/10.1111/csp2.12661>