Intention to Pay for the Protection of Threatened and Endangered Marine Species: Implications for Conservation Program Design

ABSTRACT:

We investigate motivations for people's intention to contribute towards increased protection of eight threatened and endangered marine species in the United States, using factor analysis and ordered response analysis applied to data from 7,425 respondents to a national household survey conducted in 2010. We find that the strength of individuals' intention to contribute towards species conservation depends on how conservation programs are funded, which species are being targeted for conservation, individuals' knowledge of and prior interaction with these species, awareness of need, awareness of responsibility, altruism, environmental concern, and contextual forces. We argue that individuals who are predisposed to contribute to conservation are likely to be incentivized by messages that focus on charismatic species and reinforce altruistic motives, and ethical beliefs. Individuals with more fiscally conservative viewpoints are more likely to respond to messages about how conservation complements their political beliefs and improves economic conditions or their quality of life.

INTRODUCTION

Determining what motivates individual members of the public to agree to pay towards species conservation is crucial for developing effective conservation programs. Although there is considerable literature on the dollar *amount* that people will pay for conservation programs (see Lew 2015 for an overview of stated preference valuation studies focused on marine species), less focus has been placed on *why* individuals agree to pay towards conservation, and how this intention to contribute varies with the conservation objective and payment method (taxes versus direct cash contributions).

The decision to agree to pay towards conservation programs can be modeled as a two-part process: first, the individual decides whether or not they are inclined to contribute funds towards a conservation program (which we refer to as their *intention* to pay); and second, they decide what dollar amount they are willing to contribute (which is referred to as *willingness* to pay, WTP). We argue that the former decision is not a monetary decision. Rather, it is an assessment by the individual as to whether they should contribute towards the conservation program. It is an expression of the individual's attitudes and beliefs, and can be modeled as influenced by psychological, social, and institutional factors. The latter decision deals with the *amount of money* the individual is willing to contribute towards the conservation program, and is principally economically driven. Intention to pay is a necessary precursor to willingness to pay – if an individual is not supportive of a conservation program they will not make a monetary contribution to the program. In this paper, we focus only on the first part of this two-part decision process, i.e. how and why an individual decides they should (not) contribute towards a conservation program. We use a nationally-implemented household survey to determine what motivates people to agree that they would pay towards the conservation of eight different

41 threatened and endangered (T&E) marine species in the United States. This information may be
42 used to improve the effectiveness of marine species conservation programs.

43 Investigating people's intention to contribute to conservation is critical to conservation
44 program design (Spash et al. 2009; Liebe et al. 2011). By focusing on how psychological, social
45 and institutional factors impact people's behavior, the environmental sociology and psychology
46 literatures offer considerable insights that are often lacking from economic studies (e.g., Ajzen &
47 Driver 1992; Pouta & Rekola 2001; Bernath & Roschewitz 2008; Liebe et al. 2011).
48 Accordingly, it has been argued that economic models should be augmented by social
49 psychology theories to identify the pluralistic attitudes and values that underpin individuals'
50 intention to pay towards conservation (e.g., Ajzen et al. 1996; Martín-López et al. 2007; Liebe et
51 al. 2011). Understanding the determinants of people's intention to contribute to conservation
52 programs is necessary to improve conservation policy design (Spash et al. 2009),
53 communication, and outreach strategies (Pouta & Rekola 2001). Incorporating social
54 psychology theories into economic models also provides insights into whether individuals'
55 behavioral intentions (i.e., whether or not they intend to pay towards species conservation) will
56 result in actual behavioral change (i.e., actual conservation payments in practice).

57 In this paper we analyze individuals' level of agreement (on a five-point scale) with
58 whether or not they intend to pay towards marine species conservation (*without presenting them*
59 *with a dollar amount that they would be expected to pay*). We posited that this decision (or level
60 of agreement) is akin to 'behavioral intentions', as defined by the Theory of Planned Behavior
61 (TPB) (e.g., Luzar and Cossé 1998; Martín-López et al. 2007; Bernath & Roschewitz 2008). The
62 TPB posits that people's intention to perform a given behavior ('behavioral intentions') can be
63 predicted from their attitudes toward the behavior (whether the individual values the behavior

64 positively or negatively) and subjective norms (perceived social pressure to engage in that
65 behavior) (Ajzen 1991).

66 In the case of species conservation, the existing literature suggests that people's attitudes
67 depend on their basic values towards nature, the behavioral and physical characteristics of
68 species, and past and present interactions with species (Martín-López et al. 2007). There is some
69 evidence that people favor the conservation of vertebrate species over invertebrate and plant
70 species, regardless of taxonomic uniqueness, rareness in terms of its distribution, or the role that
71 the species plays in ecosystem functioning (Martín-López et al. 2007). The exception is people
72 with higher levels of environmental knowledge or environmental concern, who are more likely to
73 contribute to species conservation based on scientific considerations (Martín-López et al. 2007;
74 Kotchen & Reiling 2000). Behavioral intentions, as they relate to species conservation, likely
75 depend on the species to be conserved and people's environmental knowledge and concern.

76 We also posited that perceived behavioral control is a significant determinant of
77 individuals' intention to contribute to species conservation (Ajzen 1991). Perceived behavioral
78 control refers to the ease with which people can perform a behavior (whether they have the time,
79 money, or skills to complete a task), as well as the perceived probability of successfully
80 completing a task and external factors that are beyond the individual's control (see also Atkinson
81 1964; Bandura 1977, 1982). In the case of species conservation, we posited that perceived
82 behavioral control may encompass the perceived effectiveness of proposed conservation actions
83 and whether individuals have the finances to contribute to conservation programs.

84 Further, we used dilemma concern and trust in other people's cooperation (from the
85 theory of public goods), theories of altruistic behavior, norm-activation models, and external or
86 contextual forces to inform our analysis. Dilemma concern measures "the degree to which

87 people perceive environmental protection as a social dilemma and follow strategies of
88 conditional cooperation" (Liebe et al., 2011: 109). Trust in other people's cooperation posits that
89 people are more likely to contribute to species conservation if they believe that others will also
90 contribute (Liebe et al. 2011).

91 Theories of altruistic behavior suggest that people's intention to contribute towards
92 species conservation will depend on their subjective obligation to pay for conservation (Andreoni
93 1990). Similarly, Schwartz's (1977) norm-activation model suggests that awareness of need and
94 awareness of responsibility generate a moral obligation to contribute to conservation. Awareness
95 of need describes an individual's recognition that action must be taken to conserve the species.
96 Awareness of responsibility refers to the individual's recognition that they are responsible for
97 providing funds needed for species conservation. Finally, external or contextual forces (Stern
98 2000) deal with the broad social, economic, and political context in which conservation behavior
99 occurs, for example: monetary incentives or costs, the relative level of government spending on
100 different public programs, and the availability of public policies that support conservation
101 behavior (see also Cardenas & Lew 2016).

102 Based on the above theories, we hypothesized that individuals' intention to contribute
103 towards T&E marine species conservation would depend on a variety of factors: norms, beliefs,
104 values, past experiences, levels of environmental knowledge and concern, which T&E species
105 would be conserved, personal capabilities (including available resources), political opinions, and
106 economic conditions. Only a few studies have directly addressed conservation of species –
107 typically non-marine species (e.g., Martín-López et al. 2007; Ojea & Loureiro 2007; Tisdell et al.
108 2007; Cardenas and Lew 2016). We extend the existing literature by investigating individuals'
109 intention to contribute towards increased protection of eight T&E marine species: the black

abalone (*Haliotis cracherodii*); the Central California Coast Coho salmon (*Oncorhynchus kisutch*); elkhorn coral (*Acropora palmata*); the hawksbill sea turtle (*Eretmochelys imbricata*); the humpback whale (*Megaptera novaeangliae*); Johnson's seagrass (*Halophila johnsonii*); the Southern California steelhead (*Oncorhynchus mykiss*); and the Southern Resident killer whale (*Orcinus orca*).

We further hypothesized that individuals' intention to contribute to species conservation would depend on various socio-demographic characteristics (e.g., gender, age, education level, ethnicity, marital status), which have been found to be significant determinants of environmental behavior (e.g. Tarrant & Cordell 1997; Poortinga et al. 2004). Finally, we posited that the strength of individuals' intention to contribute to species conservation would be mediated by the payment method (or "payment vehicle") – higher taxes versus higher prices for certain goods. To the best of our knowledge, by focusing on a single payment mechanism, other studies have not tested whether the payment vehicle significantly impacts the likelihood that people intend to contribute towards species conservation.

MATERIALS AND METHODS

Survey

Web-based surveys were carefully developed over the course of several years (2005 to 2010) using input derived from scientists, focus groups, and cognitive interviews. They were designed to collect respondents' attitudes and preferences towards the protection of the black abalone, the Central California Coast Coho salmon, elkhorn coral, the hawksbill sea turtle, the humpback whale, Johnson's seagrass, the Southern California steelhead, and the Southern Resident killer whale, all of which are listed under the Endangered Species Act (ESA). Care was

taken to include both charismatic species and species that were unlikely to trigger an emotive reaction in respondents. In Fall 2010, the survey was administered online to a random sample of 16,359 U.S. households belonging to a nationally-representative panel recruited and maintained by Knowledge Networks (now GfK). Randomly selected panel members were initially sent an invitation by e-mail with a link to the web survey, then reminded by e-mail and then by telephone if no response was obtained. The completion rate for the survey was 65 percent. (For more information on the web-enabled panel, KnowledgePanel and panel recruitment methods see http://www.gfk.com. Reference to trade names does not imply endorsement by the National Marine Fisheries Service, NOAA.)

The survey was composed of 27 versions, which included different combinations of species (an average of three species per survey; see Pienaar et al., 2015; Wallmo & Lew, 2015). Respondents were presented with detailed information about each species included on the survey, specifically: the species' current ESA status; a description of the species (physical characteristics, diet, breeding habits); the species' range and current population; anthropogenic threats to the survival of the species; and the projected ESA listing status of the species if no additional conservation actions are implemented.

With the exception of which species were included on the survey, each survey version was identical in content and format. A mix of binary variables and Likert scale items were used to elicit respondents' attitudes towards government spending, environmental knowledge (including whether they are aware that the ESA allows for listing of distinct population groups), environmental concern, species knowledge, and species concern (see Appendix 1 for a list of survey questions and response options). In order to elicit respondents' level of environmental concern, the New Ecological Paradigm (NEP) scale (Dunlap et al. 2000) was included in the

156 survey. Sociodemographic data were also collected for each respondent, and were used as a
157 proxy for personal capabilities (e.g., how income constrains behavioral intention).

158 We measured respondents' behavioral intentions by asking them how strongly they
159 agreed (disagreed) that they would pay higher product prices or taxes for additional protection of
160 the species included on the survey – using a 5-point Likert-scale response format (rather than a
161 simple binary 'yes-no' response format). These two questions did not present respondents with a
162 dollar amount to be paid. They focused only on the strength of an individual's intention to
163 contribute to species conservation. Respondents were asked the reasons why they agreed or
164 refused to contribute towards additional species protection. Possible response options were
165 consistent with: perceived behavioral control (e.g., the 'annual costs of the protection program
166 are too expensive', 'I don't think the programs will be effective'); theories of altruistic behavior
167 and public goods (e.g., 'I think it is important to do something to protect the environment', 'I am
168 willing to contribute to causes I believe are worthy whenever I can afford it'); norm-activation
169 models (e.g., 'It is not my responsibility to pay for protecting these species'); and external forces
170 (e.g., additional conservation places 'too many restrictions on industries or private landowners',
171 'I don't trust government to run the program').

172

173 **Models**

174 Our investigation of respondents' intention to contribute towards increased conservation
175 of T&E marine species was composed of two distinct steps. First, we analyzed patterns of
176 correlation between variables related to environmental concern, species concern, and opinions
177 about government spending using factor analysis (or latent variable analysis). The purpose of
178 this analysis was to identify respondents' attitudes, values, or beliefs that underpin their survey

responses, and to reduce the number of explanatory variables that were included in subsequent regression analysis. Second, we used ordered probit regression models to ascertain how the strength of respondents' intentions to contribute towards marine species conservation was affected by attitudes, beliefs, species information, environmental knowledge, dilemma concern, altruism, awareness of need, awareness of responsibility, personal capabilities (e.g., income), and payment vehicle.

Factor Analysis and Cronbach's Alpha

We conducted two tests for Likert-scale questions that were answered by all survey respondents (e.g., the NEP scale). First, we conducted principal factor analysis (PFA) to determine the dimensionality of survey items that were intended to measure a single construct (e.g., environmental concern; see Giri 2004; Afifi et al. 2012). In the cases where the PFA generated factors with an eigenvalue of one or higher, we concluded that these items could be used to generate one (or more) constructs. For example, if the PFA generated a single factor with an eigenvalue of one or higher then we concluded that the items measured a single construct, which could be entered into the regression analysis as a single explanatory variable (Appendix 2 shows that in all cases only a single factor was generated during factor analysis, i.e. constructs were unidimensional). To generate this explanatory variable, we summed the individual Likert-scale items (after reverse coding items with negative factor loadings) to generate an overall score (e.g., the NEP Scale items could be summed to generate a single measure of environmental concern).

Second, we used Cronbach's alpha to measure the inter-item reliability of items used to generate summated measures (scores) of attitudes or beliefs (Cronbach 1951). We assumed that a score measured a single latent construct if Cronbach's alpha was 0.7 or higher (Gliem and

Gliem, 2003). However, in some cases we retained factors with an alpha below 0.7 to avoid removing constructs that the literature suggests are important for explaining conservation behavior.

Ordered Probit Model

We used an ordered probit regression to model survey respondents' intentions to contribute towards species conservation programs. The use of the ordered probit model was necessitated by the fact that responses to the questions about whether individuals intended to pay higher prices or taxes towards species conservation were ordinal, ranging from 'strongly disagree' to 'strongly agree' (see Afifi et al. 2012 and Agresti 2002 for a discussion of ordered probit models).

The model compared the probability of belonging to outcome category *k* (or a lower category) with the probability of belonging to a category higher than *k*, such that the possible odds to be modeled were $\frac{\Pr(Y \le k)}{\Pr(Y > k)}$. For our model, *k* took the value of 1 ('strongly disagree'), 2 ('somewhat disagree'), 3 ('neither agree nor disagree'), 4 ('somewhat agree'), and 5 ('strongly agree'). Coefficients on the explanatory variables are held constant across all odds but the intercepts vary for each of the odds. We used Stata oprobit to estimate the models included in this paper, which means that the coefficients were parameterized as:

$$\ln\left(\frac{\Pr(Y \le k)}{\Pr(Y > k)}\right) = \alpha_k + \boldsymbol{\beta} \cdot \mathbf{X} \text{ for } k = 1, \ldots, 5,$$

where **X** is a matrix of explanatory variables (type of payment vehicle, environmental attitudes, environmental concern, attitudes towards government, species included on the survey, reasons for agreeing or refusing to contribute towards species conservation, and sociodemographic

variables) and **β** is a vector of parameters to be estimated. We used likelihood ratio tests to determine whether coefficients were individually or jointly zero, and the corrected Akaike information criterion (AIC_c) to determine whether removal of variables from the estimated models improved model fit.

RESULTS

Survey Data

In general, respondents disagreed that, or were undecided whether, they intended to contribute towards additional protection of T&E marine species (Figure 1). The mean level of agreement with the statement 'I am willing to pay higher prices for products for additional protection for these species' was 2.91 ('somewhat disagree' = 2; 'neither agree nor disagree' = 3). The mean level of agreement with the statement 'I am willing to pay higher taxes for additional protection for these species' was even lower (2.58), suggesting that people are more likely to contribute to species conservation through the payment of higher product prices than through the imposition of a tax.

The left skew in the distribution of responses to these questions may be partly attributable to the fact that respondents were generally unfamiliar with the species included in the surveys. Mean measures of prior familiarity with the species ranged from 1.4 for Johnson's seagrass (~ 'not at all familiar') to 2.3 for the southern resident killer whale (~ 'not very familiar'; Table 1). In contrast, mean familiarity with the charismatic humpback whale was 2.9 (~ 'somewhat familiar'). Most respondents had not personally observed these species in nature. Less than five percent of respondents had seen the southern California steelhead, Johnson's seagrass, black abalone, or the Central California Coast Coho salmon in nature (Table 1).

To measure both species concern and species information effects, respondents were asked to indicate their level of concern about species' continued survival after reading species information that was included in the survey. On average, respondents stated that they were 'somewhat concerned' about species (Table 1).

To test for respondents' awareness of need, they were asked to indicate their level of agreement with the statement, "based on your knowledge and your own personal preferences, please indicate how important you believe it is to undertake additional protection actions for this species if additional funding was available". Across species the median response was 'somewhat important' (Table 1).

Respondents who did not intend to contribute towards additional species protection were most likely to argue that the costs of additional protection actions were too high, which is consistent with personal capabilities and perceived behavioral control (Table 1). Other common reasons for not intending to contribute towards protection programs were a lack of trust in the government (contextual forces) and the argument that the individual should not have to pay more taxes for any reason (awareness of responsibility). Respondents who intended to contribute towards increased protection were most likely to agree that it is important to do something to protect the environment or that they were willing to contribute to causes they believe are worthy whenever they can afford it (average response of 'somewhat agree', consistent with altruism and dilemma concern; Table 2).

Respondents tended towards pro-environmental attitudes. The mean score for the NEP was 51.35 (standard deviation of 10.45; Table 2). Responses to questions about government spending on different social programs were consistent with the NEP score, and provided additional information on contextual forces and respondents' attitudes (Figure 2). The majority

of respondents indicated that the government spends too little on education (64.3%), the environment (52.4%), and health (52.9%).

Finally, 6,181 respondents (83.2%) had heard of the Endangered Species Act prior to taking the survey. A total of 3,499 respondents (47.1%) understood that the ESA protects either the entire species, or one or more distinct population groups within a species, and knew about distinct population groups.

In total, 52.7 percent of respondents were male. The average age of respondents was 49.9 years old (standard deviation of 15.7 years). The average annual income for respondents was $67,400. Further socio-demographic results are presented in Table 3.

Principal Factor Analysis and Tests for Internal Consistency

Based on the results of the factor analysis, we concluded that the NEP scale could be treated as a unidimensional construct of environmental concern (one retained factor with an eigenvalue of 4.84; Cronbach's alpha = 0.87; see Appendix 2). Accordingly, we entered the NEP score into the regression analysis as a measure of respondents' environmental concern (mean=51.35, SD=10.45). We also determined that respondents' opinions about government spending could be treated as a single construct (single retained factor with an eigenvalue of 1.62; Cronbach's alpha = 0.64). We coded responses to these individual items as effects variables (too little spending = -1, too much spending = 1), prior to generating the score for opinions about government spending (mean=-1.45, SD=2.76). Factor analysis of the importance that respondents placed on protecting endangered and threatened species confirmed that these two items were highly correlated (Cronbach's alpha = 0.95). We coded the responses to these two

293 statements as effects variables (strongly disagree = -2, strongly agree = 2) prior to generating a
294 single score (referred to as the 'importance of protecting T&E species', mean=1.85, SD= 2.14).

295 A total of 74 percent of respondents provided a dollar amount that they would pay
296 towards species protection during the second part of the payment decision process, i.e. the
297 willingness to pay decision (Lew & Wallmo, 2015, present an analysis of this latter decision and
298 the monetary amount that individuals were willing to pay). The Cronbach's alpha associated
299 with the statements why these individuals agreed to pay for conservation was 0.97. Based on the
300 Cronbach's alpha and the high correlation between the individual items (ranging from 0.81 to
301 0.92), we determined that these items should be entered into the regression analysis as a single
302 score (ranging from 5 to 25 for respondents whose intention to pay had resulted in a positive
303 willingness to pay towards species conservation, and 0 for respondents whose lack of intention to
304 pay translated into refusal to pay towards species conservation). We interpreted this score as a
305 measure of 'moral obligation to protect T&E species' (mean=14.23, SD=8.99).

306

307 **Ordered Probit Regression Results**

308 In order to generate a single regression model, we vertically stacked responses to the
309 Likert-scale questions about respondents' intention to contribute to species conservation, such
310 that the dependent variable (*Y*) was intention to pay higher prices or taxes (measured from
311 strongly disagree, k = 1, to strongly agree, k = 5):

312 $$\ln\left(\frac{\Pr(Y \le k)}{\Pr(Y > k)}\right) = \alpha_k + \beta_0 \cdot PV + \boldsymbol{\beta} \cdot \mathbf{A} + \boldsymbol{\beta} \cdot \mathbf{A} \cdot PV$$

313 where $\mathbf{A} = \mathbf{X}^{\mathbf{species}} + \mathbf{X}^{\mathbf{nature}} + \mathbf{X}^{\mathbf{familiar}} + \mathbf{X}^{\mathbf{concern}} + \mathbf{X}^{\mathbf{protect}} + X^{T\&E} + X^{moral} + \mathbf{X}^{\mathbf{reject}} + X^{ESA} + X^{NEP} + X^{gvmt} + \mathbf{X}^{\mathbf{socio}}$

We included a binary payment vehicle variable (*PV*) in the model (0 = 'higher product prices', 1 = 'higher taxes') to test for whether the payment vehicle affected responses to the behavioral intention question. In addition to entering the payment vehicle in the model, we initially estimated a model that included: binary variables that captured which species were included in the survey ($\mathbf{X}^{\mathbf{species}}$); binary variables that captured whether people had seen these species in nature ($\mathbf{X}^{\mathbf{nature}}$; 0 = 'no' or 'I don't know', 1 = 'yes'); respondents' level of familiarity with the species ($\mathbf{X}^{\mathbf{familiar}}$); respondents' level of concern about each species ($\mathbf{X}^{\mathbf{concern}}$); the importance respondents placed on undertaking additional protection actions for each species ($\mathbf{X}^{\mathbf{protect}}$); scores that measured environmental concern (X^{NEP}), attitudes towards government spending (X^{gvmt}), the importance of protecting T&E species ($X^{T\&E}$), and respondents' moral obligation to contribute to increased protection of species (X^{moral}); binary variables that captured reasons that respondents were unwilling to contribute to increased protection of the species ($\mathbf{X}^{\mathbf{reject}}$); binary variables that captured respondents' prior knowledge of the ESA and distinct population groups (X^{ESA}); and demographic variables ($\mathbf{X}^{\mathbf{socio}}$; gender, age, ethnicity, region of residence, income, and education level), which served as proxies for personal capabilities. We further incorporated interaction terms, whereby we interacted the binary variable for whether a tax would be used to collect conservation funds with the other variables included in the model. This model is available on request.

We conducted likelihood ratio tests to determine whether the exclusion of specific explanatory variables improved model fit. We further used likelihood ratio tests to ensure that variables that were jointly significant (but not necessarily individually significant) were retained in the final models. The final model specification presented in Table 4 provided the best fit of the data (minimum AIC*c*).

We found that the odds that people intended to contribute towards species conservation were lower if taxes are used to fund conservation programs (p value < 0.01). Respondents who agreed that government spending on social programs is too high (proxy measure of contextual forces) had lower odds of intending to pay higher taxes to fund species conservation ($p<0.01$). We also found some evidence that respondents had less or no intention to contribute towards species conservation if they agreed that the annual costs of protecting T&E species were too high, it wasn't their responsibility to pay for T&E species conservation, the government couldn't be trusted to implement species conservation, the conservation programs would not be effective, and that no additional taxes should be levied on them for any reason (proxy measures of perceived behavioral control, awareness of responsibility, and contextual forces). The significance of these effects varied across species included on the survey, and did not apply to the humpback whale or the hawksbill sea turtle.

In contrast, respondents who demonstrated a higher level of environmental concern (higher NEP score) and respondents who placed greater importance on protecting T&E species (proxy measures of dilemma concern and altruistic behavior) had stronger intentions of contributing towards species conservation ($p<0.01$). Respondents who agreed that they have a moral obligation to help conserve species (a proxy measure of awareness of need and altruistic behavior) more strongly intended to contribute towards conservation, although this effect was weaker if funding were collected through taxes ($p<0.05$). Prior knowledge of the ESA and distinct population groups (proxy measure of environmental knowledge) did not affect the likelihood that respondents intended to contribute towards T&E species conservation ($\chi^2=3.97$, $p=0.41$, $df=4$).

Interestingly, we found that respondents who required more information about species or argued that more research on species should be conducted before they would commit to paying a specific dollar value towards species conservation (proxy measures of environmental knowledge and awareness of need) nonetheless demonstrated stronger intentions to contribute to species conservation, although the effects varied by species included on the survey. We also found some evidence that individuals who stated that they were unsure how they feel about species (proxy measures of species concern and awareness of responsibility) did not demonstrate lower odds of intending to contribute towards conservation. Our results suggest that respondent uncertainty did not reduce the likelihood that respondents intended to contribute towards species conservation, although it may reduce the dollar amount that they would pay.

The species included on the surveys affected the likelihood that respondents intended to contribute towards conservation programs ($p<0.01$), although the magnitude of this effect depended on whether respondents were concerned about the continued survival of the species, agreed that protecting the species was important, and had prior familiarity with the species. Observing the species in nature did not affect the likelihood that respondents intended to contribute towards species conservation ($\chi^2=13.74$, $p=0.62$, $df=16$).

Finally, our regression results showed that the likelihood that respondents intended to contribute towards conservation depended on perceived behavioral control, measured using sociodemographic variables. Age and higher education increased the likelihood that respondents intended to contribute. Higher income individuals had higher probability of intending to contribute towards species conservation, provided that the funds were elicited through the payment of higher product prices, rather than higher taxes. Female respondents had lower probability of intending to contribute, although this effect was even stronger if conservation

programs would be funded through higher taxes ($p<0.05$). African American and Hispanic respondents, and respondents who were married or divorced, also demonstrated lower odds of intending to contribute to species conservation.

DISCUSSION

Our results suggest that the odds that people intend to contribute towards species conservation depend on which species are being targeted for conservation, awareness of need, awareness of responsibility, altruism, environmental concern, contextual forces, and personal capabilities (or perceived behavioral control). In the first instance, we found that behavioral intention was affected by which species appeared on surveys, which is consistent with findings by Martín-López et al. (2007). However, prior familiarity with the species included on the survey and observation of the species in nature had minimal, if any, effect on people's intentions. Rather, concern for the species' continued survival and the importance that people placed on protecting the species included on the survey increased the likelihood that respondents intended to contribute to species conservation, regardless of payment mechanism.

Similarly, the greater the importance that respondents placed on protecting threatened and endangered species in general, and the greater their sense of moral obligation to protect these species, the higher the odds that they intended to contribute to conservation, even if funds would be collected through the imposition of higher taxes. These findings are consistent with Schwartz's (1977) argument that awareness of need generates a moral obligation that incentivizes people to contribute to public good provision. They also reinforce the argument that people's subjective obligation to pay for species conservation results in altruistic behavior, in particular payment towards species conservation (Liebe et al. 2011). Environmental concern

405 provided additional motivation for respondents' intention to contribute towards species
406 conservation (see also Kotchen & Reiling 2000).

407 However, environmental knowledge (which we measured based on prior knowledge of
408 the ESA and distinct population groups) did not affect respondents' intention to contribute
409 towards increased species conservation. Our findings are contrary to Martín-López et al.'s
410 (2007) and Kotchen and Reiling's (2000) argument that people with higher levels of
411 environmental knowledge are more likely to contribute to species conservation.

412 Respondents who argued that government spending on social programs is too high
413 demonstrated lower intention to contribute towards species conservation if conservation was
414 funded through the imposition of additional taxes. Further, respondents who argued that
415 additional species conservation was not their responsibility, the government cannot be trusted to
416 run conservation programs, they should not have to pay more taxes for any reason, and the costs
417 of additional species protection were too high had lower odds of intending to contribute towards
418 species conservation, although these effects were not uniform across species. Our findings are
419 consistent with the argument that people's intention to support a conservation program depends
420 on attitudes towards contributing money to public goods, including how conservation programs
421 are structured, implemented, and funded (Ajzen & Driver 1992; Luzar & Cossé 1998; Poutka &
422 Rekola 2001; Bernath & Roschewitz 2008). Our results also support the argument that people's
423 intention to contribute to species conservation depends on awareness of responsibility (Liebe et
424 al. 2011), external or contextual forces (Stern 2000), and perceived behavioral control (Ajzen
425 1991).

426 Our results reinforced the importance of the payment vehicle for funding species
427 conservation. Controlling for other variables, the imposition of taxes reduced the likelihood that

respondents intended to contribute towards species conservation. This has important implications for both how programs are funded, and how tax-funded programs are presented to the public, in order to attain public support for the programs.

CONCLUSIONS AND MANAGEMENT IMPLICATIONS

Our analysis demonstrated the importance of funding mechanisms for eliciting public support for species conservation, and provided further support for the argument that social psychology theories provide key insights into people's motivations to contribute to species conservation. Our results suggest that prior attitudes, beliefs, and norms, combined with an awareness of need, an awareness of responsibility, and contextual forces, are important in determining people's intention to contribute to conservation programs. Although it might reasonably be assumed that additional information about species will encourage people to support conservation programs, our results suggest that the opposite may hold true. Rather, support for conservation programs may rest on the type of programs to be implemented (including their perceived effectiveness and how they constrain individuals' or industries' actions), how these programs will be funded, and the organization that is responsible for implementing conservation programs (including the level of trust that people place in these organizations). Based on our findings, efforts to increase funding for conservation of T&E marine species are less likely to elicit public support if funds are secured through taxes. However, targeting individuals who have pro-environmental or altruistic attitudes, or feel a moral obligation to protect T&E species, may increase conservation funding.

Our results suggest that for conservation programs to be effective, they should use a twofold messaging strategy. Individuals who are predisposed to contribute to conservation are

likely to be incentivized by messages that reinforce altruistic motives and ethical beliefs. Individuals with more fiscally conservative viewpoints are less likely to feel an awareness of need or responsibility for species conservation. Rather, these individuals may respond to messages about how conservation complements their political beliefs and contributes to the economy or their quality of life (e.g., by providing them with recreational opportunities or securing valuable ecosystem services), especially if funds are raised through higher prices rather than higher taxes.

LITERATURE CITED

Afifi A, May S, Clark VA. 2012. Practical multivariate analysis. 5th edition. Taylor & Francis Group, Boca Raton, FL.

Agresti A. 2002. Categorical data analysis. 2nd edition. John Wiley & Sons, Hoboken, NJ.

Ajzen I. 1991. The theory of planned behavior. Organizational Behavior and Human Decision Processes **50**: 179-211.

Ajzen I, Driver BL. 1992. Contingent value measurement: on the nature and meaning of willingness to pay. Journal of Consumer Psychology **1**(4): 297-316.

Ajzen I, Brown TC, Rosenthal LH. 1996. Information bias in contingent valuation: effects of personal relevance, quality of information and motivational orientation. Journal of Environmental Economics and Management **30**(1): 43-57.

Andreoni J. 1990. Impure altruism and donations to public goods: a theory of warm-glow giving. Economic Journal **100**: 464-477.

Atkinson JW. 1964. An introduction to motivation. Van Nostrand, Princeton, NJ.

473 Bandura A. 1977. Self-efficacy: toward a unifying theory of behavioral change. Psychological
474 Review **84**: 191-215.
475 Bandura A. 1982. Self-efficacy mechanism in human agency. American Psychologist **37**:122-
476 147.
477 Bernath K, Roschewitz A. 2008. Recreational benefits of urban forests: explaining visitors'
478 willingness to pay in the context of the theory of planned behavior. Journal of Environmental
479 Management **89**: 155-166.
480 Cardenas SA, Lew DK. 2016. Factors influencing willingness to donate to marine endangered
481 species recovery in the Galapagos National Park, Ecuador. Frontiers in Marine Science **3**:60.
482 http://dx.doi.org/10.3389/fmars.2016.00060
483 Cronbach LJ. 1951. Coefficient alpha and the internal structure of tests. Psychometrika **16**(3):
484 297-334.
485 Dunlap RE, Van Liere KD, Mertig AG, Jones RE. 2000. Measuring endorsement of the new
486 ecological paradigm: a revised NEP scale. Journal of Social Issues **56**: 425-442.
487 Giri NC. 2004. Multivariate statistical analysis. 2nd edition, revised and expanded. Marcel
488 Dekker, New York, NY.
489 Gliem RR, GliemJA. 2003. Calculating, interpreting, and reporting Cronbach's alpha reliability
490 coefficient for Likert-type scales. Midwest Research-to-Practice Conference in Adult,
491 Continuing, and Community Education.
492 Gorusch RL. 1983. Factor analysis. 2nd edition. Psychology Press, New York.
493 Kotchen MJ, Reiling SD. 2000. Environmental attitudes, motivations, and contingent valuation
494 of nonuse values: a case study involving endangered species. Ecological Economics **32**: 93-
495 107.

Lew DK. 2015. Willingness to pay for threatened and endangered marine species: a review of the literature and prospects for policy use. Frontiers in Marine Science **2**: 96.

Liebe U, Preisendörfer P, Meyerhoff J. 2011. To pay or not to pay: competing theories to explain individulas' willingness to pay for public environmental goods. Environment and Behavior **43**(1): 106-130.

Luzar EJ, Cossé KJ. 1998. Willingness to pay or intention to pay: the attitude-behavior relationship in contingent valuation. Journal of Socio-Economics **27**(3): 427-444.

Martín-López B, Montes C, Benayas J. 2007. The non-economic motives behind the willingness to pay for biodiversity conservation. Biological Conservation **139**: 67-82.

Ojea E, Loureiro ML. 2007. Altruistic, egoistic and biospheric values in willingness to pay (WTP) for wildlife. Ecological Economics **63**(4): 807-814.

Pienaar EF, Lew DK, Wallmo K. 2015. The importance of survey content: Testing for the context dependency of the New Ecological Paradigm Scale. *Social Science Research* **51**: 338-349.

Poortinga W, Steg L, Vlek C. 2004. Values, environmental concern, and environmental behavior a study into household energy use. Environment and Behavior **36**(1): 70-93.

Pouta E, Rekola M. 2001. The theory of planned behavior in predicting willingness to pay for abatement of forest regeneration. Society & Natural Resources: An International Journal **14**(2): 93-106.

Schwartz SH. 1977. Normative influences on altruism. Advances in Experimental Social Psychology **10**: 221-279.

517 Spash CL, Urama K, Burton R, Kenyon W, Shannon P, Hill G. 2009. Motives behind
518 willingness to pay for improving biodiversity in a water ecosystem: economics, ethics and
519 social psychology. Ecological Economics **68**: 955-964.
520 Stern PC. 2000. Toward a coherent theory of environmentally significant behavior. Journal of
521 Social Issues **56**(3): 407-424.
522 Tarrant MA, Cordell HK. 1997. The effect of respondent characteristics on general
523 environmental attitude-behavior correspondence. Environment and Behavior **29**(5): 618-637.
524 Tisdell C, Nantha HS, Wilson C. 2007. Endangerment and likeability of wildlife species: How
525 important are they for payments proposed for conservation? Ecological Economics **60**(3):
526 627-633.
527 Wallmo K, Lew DK. 2015. Public preferences for endangered species recovery: An
528 examination of geospatial scale and non-market values. Frontiers in Marine Science **2**:55.

Table 1

Table 1. Survey respondents' knowledge of and attitudes towards species and additional protection of species

	Black abalone		Central California coast coho salmon		Elkhorn coral		Hawksbill sea turtle		Humpback whale		Johnson's seagrass		Southern California steelhead		Southern resident killer whale	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Survey includes species	2,475	33	3,677	50	3,394	46	1,840	25	1,842	25	2,788	38	2,806	38	3,425	46
Prior familiarity with species:																
Not at all familiar	1,201	49	1,714	47	1,933	57	783	43	120	7	1,865	67	1,513	54	874	26
Not very familiar	866	35	1,003	27	937	28	581	32	316	17	720	26	813	29	1,064	31
Somewhat familiar	348	14	807	22	460	14	380	21	978	53	183	7	414	15	1,156	34
Very familiar	60	2	153	4	64	2	96	5	428	23	20	1	66	2	331	10
Have you personally observed the species in nature (outside of zoos and aquariums)?																
Yes	112	5	178	5	299	9	158	9	407	22	96	3	86	3	290	8
No	2,126	86	3,207	87	2,615	77	1,468	80	1,335	72	2,263	81	2,521	90	2,942	86
I don't know	237	10	292	8	480	14	214	12	100	5	429	15	199	7	193	6
After reading this information, how concerned are you, if at all, about the species?																
Not concerned at all	252	10	395	11	412	12	137	7	144	8	445	16	320	11	269	8
A little concerned	437	18	658	18	730	22	300	16	329	18	656	24	537	19	580	17
Somewhat concerned	836	34	1,142	31	1,089	32	599	33	626	34	938	34	943	34	1,104	32
Very concerned	655	26	979	27	811	24	525	29	503	27	557	20	707	25	939	27
Extremely concerned	295	12	503	14	352	10	279	15	240	13	192	7	299	11	533	16
Importance of undertaking additional protection actions for species subject to availability of additional funding																
Not important at all	256	10	365	10	386	11	147	8	158	9	370	13	302	11	338	10
A little important	446	18	654	18	647	19	287	16	282	15	597	21	501	18	549	16
Somewhat important	705	28	1,009	27	986	29	505	27	478	26	826	30	816	29	933	27
Very important	724	29	1,038	28	919	27	582	32	608	33	701	25	810	29	1,048	31
Extremely important	344	14	611	17	456	13	319	17	316	17	294	11	377	13	557	16
Reasons that respondents were unwilling to contribute to increased protection of species																
Annual costs of protection program	461	19	736	20	673	20	339	18	336	18	591	21	534	19	635	19

are too expensive																
Don't trust government to run the program	307	12	476	13	435	13	225	12	249	14	414	15	343	12	424	12
Shouldn't have to pay more taxes for any reason	252	10	378	10	341	10	173	9	197	11	303	11	263	9	338	10
Not my responsibility to pay for protecting these species	223	9	351	10	327	10	156	8	177	10	291	10	245	9	285	8
Don't think programs will be effective	212	9	316	9	278	8	160	9	151	8	251	9	210	7	264	8
Too many restrictions on industries or private landowners	174	7	327	9	276	8	144	8	138	7	253	9	233	8	260	8
Need more information to make a choice	100	4	180	5	184	5	89	5	90	5	168	6	133	5	126	4
Unsure about how I feel about T&E species	125	5	160	4	144	4	76	4	80	4	144	5	128	5	145	4
More research needed before I would pay for more protection	97	4	155	4	152	4	69	4	78	4	139	5	113	4	128	4

Table 2

Table 2. Survey respondents' species concern and environmental concern

	Mean	S.D.	Strongly disagree		Somewhat disagree		Neither agree nor disagree		Somewhat agree		Strongly agree	
			No.	%	No.	%	No.	%	No.	%	No.	%
Importance that respondents place on protecting T&E species												
Protecting endangered species is important to me	4.00	1.08	340	5	473	6	903	12	2,854	38	2,855	38
Protecting threatened species is important to me	3.86	1.11	374	5	574	8	1,187	16	2,904	39	2,386	32
Reasons that respondents were willing to contribute to increased protection of species:												
I would be willing to pay the same amount of money to protect any 3 T&E species	3.56	1.06	252	3	671	9	1,308	18	2,258	30	989	13
I am willing to contribute to causes I believe are worthy whenever I can afford it	4.05	0.91	133	2	212	3	679	9	2,658	36	1,802	24
The added cost I was willing to pay was to protect the environment in general and not just to protect these species	3.66	1.07	263	4	521	7	1,257	17	2,229	30	1,216	16
I think it is important to do something to protect the environment	4.11	0.90	115	2	187	3	704	9	2,453	33	2,030	27
The added cost I was willing to pay will protect other species in addition to those on the survey	3.89	0.98	164	2	276	4	1,152	16	2,325	31	1,567	21
New Ecological Paradigm (NEP) Scale:												
We are approaching the limit of the number of people the earth can support	3.17	1.28	1,045	14	1,239	17	1,716	23	2,281	31	1,144	15
Humans have the right to modify the natural environment to suit their needs	2.61	1.18	1,407	19	2,517	34	1,436	19	1,678	23	387	5
When humans interfere with nature it often produces disastrous consequences	3.82	1.10	330	4	735	10	1,065	14	3,077	41	2,218	30
Human ingenuity will insure that we do not make the earth unlivable	2.94	1.14	870	12	1,862	25	2,113	28	2,005	27	575	8
Humans are severely abusing the environment	3.78	1.19	487	7	751	10	1,067	14	2,698	36	2,422	33

The earth has plenty of natural resources if we just learn how to develop them	3.51	1.18	514	7	1,156	16	1,340	18	2,851	38	1,564	21
Plants and animals have as much right as humans to exist	3.75	1.22	504	7	760	10	1,342	18	2,272	31	2,547	34
The balance of nature is strong enough to cope with the impacts of modern industrial nations	2.45	1.15	1,712	23	2,540	34	1,642	22	1,154	16	377	5
Despite our special abilities, humans are still subject to the laws of nature	4.22	0.84	92	1	191	3	837	11	3,157	43	3,148	42
The so-called ecological crisis facing humankind has been greatly exaggerated	2.76	1.30	1,599	22	1,734	23	1,783	24	1,467	20	842	11
The earth is like a spaceship with very limited room and resources	3.26	1.17	660	9	1,333	18	1,902	26	2,455	33	1,075	14
Humans were meant to rule over the rest of nature	2.79	1.34	1,706	23	1,550	21	1,751	24	1,445	19	973	13
The balance of nature is very delicate and easily upset	3.55	1.10	342	5	1,092	15	1,627	22	2,870	39	1,494	20
Humans will eventually learn enough about how nature works to be able to control it	2.56	1.09	1,454	20	2,164	29	2,254	30	1,319	18	234	3
If things continue on their present course we will soon experience a major ecological catastrophe	3.41	1.22	725	10	923	12	1,946	26	2,258	30	1,573	21

Table 3

Table 3. Socio-demographic characteristics of survey respondents

	No.	%		No.	%
Gender:			Region:		
Male	3,911	52.7	Northeast	1,280	17.2
Female	3,514	47.3	Midwest	2,016	27.2
Race/ethnicity:			South	2,285	30.8
Caucasian/white	5,603	75.5	West	1,844	24.8
African American/black	735	9.9	Marital status:		
Hispanic	606	8.2	Married	4,534	61.1
Other	481	6.5	Widowed	254	3.4
Education level:			Divorced	801	10.8
Less than high school	501	6.8	Separated	107	1.4
High school	1,439	19.4	Single	1,230	16.6
Some college	2,381	32.1	Living with partner	499	6.7
Bachelor’s degree or higher	3,104	41.8			

Table 4

Table 4. Results of the ordered probit analysis of survey respondents' willingness to contribute towards species protection

	Coeff.	S.E.	Z	p	95% C.I.	
Pay higher taxes	-0.272	0.067	-4.090	0.000	-0.403	-0.142
Environmental knowledge and concern:						
NEP score	0.023	0.001	18.800	0.000	0.021	0.026
Importance of protecting T&E species	0.055	0.006	9.690	0.000	0.044	0.066
Moral obligation to contribute to increased protection of species	0.042	0.002	19.610	0.000	0.038	0.046
Moral obligation to contribute to increased protection of species × tax	-0.006	0.003	-2.090	0.036	-0.011	0.000
Opinion about government spending	-0.010	0.006	-1.780	0.075	-0.021	0.001
Opinion about government spending × tax	-0.046	0.008	-5.800	0.000	-0.062	-0.030
Species included on survey:						
Black abalone	-0.679	0.115	-5.920	0.000	-0.903	-0.454
Central California coast coho salmon	-0.805	0.108	-7.470	0.000	-1.017	-0.594
Elkhorn coral	-0.437	0.076	-5.750	0.000	-0.585	-0.288
Hawksbill sea turtle	-0.261	0.090	-2.910	0.004	-0.436	-0.085
Humpback whale	-0.327	0.093	-3.530	0.000	-0.509	-0.145
Johnson's seagrass	-0.622	0.092	-6.800	0.000	-0.801	-0.443
Southern California steelhead	-0.725	0.090	-8.030	0.000	-0.902	-0.548
Southern resident killer whale	-0.849	0.092	-9.200	0.000	-1.030	-0.668
Species × prior familiarity:						
Central California coast coho salmon	0.048	0.017	2.860	0.004	0.015	0.081
Elkhorn coral	-0.032	0.021	-1.560	0.120	-0.072	0.008
Johnson's seagrass	0.058	0.026	2.200	0.028	0.006	0.110
Species × personal observation of the species in nature						
Southern California steelhead (yes = 1)	-0.170	0.088	-1.940	0.052	-0.342	0.002
Species × concern about the species						
Black abalone	0.141	0.026	5.400	0.000	0.090	0.192
Central California coast coho salmon	0.112	0.022	5.070	0.000	0.069	0.155
Elkhorn coral	0.065	0.023	2.850	0.004	0.020	0.110
Humpback whale	0.057	0.029	1.950	0.051	0.000	0.114
Southern California steelhead	0.120	0.024	4.990	0.000	0.073	0.167
Southern resident killer whale	0.053	0.023	2.300	0.021	0.008	0.098
Species × importance of undertaking additional protection actions for species:						
Black abalone	0.075	0.026	2.840	0.004	0.023	0.126
Central California coast coho salmon	0.121	0.023	5.260	0.000	0.076	0.166
Elkhorn coral	0.072	0.024	3.010	0.003	0.025	0.118
Hawksbill sea turtle	0.083	0.023	3.580	0.000	0.037	0.128
Humpback whale	0.066	0.029	2.220	0.026	0.008	0.123
Johnson's seagrass	0.146	0.018	8.280	0.000	0.112	0.181
Southern California steelhead	0.093	0.025	3.690	0.000	0.044	0.143
Southern resident killer whale	0.186	0.023	8.060	0.000	0.140	0.231
Species × annual costs of protection program are too expensive						
Central California coast coho salmon	-0.100	0.047	-2.140	0.032	-0.192	-0.008
Southern California steelhead	0.071	0.053	1.350	0.178	-0.033	0.175
Southern resident killer whale	-0.225	0.067	-3.370	0.001	-0.355	-0.094
Southern resident killer whale × tax	-0.167	0.097	-1.720	0.086	-0.357	0.023
Species × don't trust government to run the program:						

Central California coast coho salmon	-0.099	0.077	-1.280	0.200	-0.250	0.052
Central California coast coho salmon × tax	-0.176	0.108	-1.620	0.104	-0.388	0.036
Johnson's seagrass	-0.136	0.062	-2.190	0.028	-0.258	-0.014
Southern resident killer whale	0.236	0.087	2.720	0.007	0.066	0.406
Southern resident killer whale × tax	-0.280	0.126	-2.220	0.027	-0.527	-0.032
Species × shouldn't have to pay more taxes for any reason:						
Black abalone	-0.260	0.084	-3.100	0.002	-0.425	-0.095
Elkhorn coral	-0.189	0.084	-2.260	0.024	-0.353	-0.025
Elkhorn coral × tax	-0.266	0.123	-2.150	0.031	-0.508	-0.024
Southern California steelhead	-0.423	0.078	-5.420	0.000	-0.575	-0.270
Southern resident killer whale	-0.255	0.097	-2.640	0.008	-0.445	-0.066
Southern resident killer whale × tax	-0.306	0.144	-2.130	0.033	-0.588	-0.024
Species × not my responsibility to pay for protecting these species:						
Central California coast coho salmon	-0.285	0.067	-4.250	0.000	-0.416	-0.154
Species × don't think programs will be effective:						
Humpback whale	0.185	0.097	1.910	0.056	-0.005	0.375
Southern California steelhead	-0.056	0.100	-0.560	0.575	-0.252	0.140
Southern California steelhead × tax	-0.223	0.149	-1.500	0.134	-0.515	0.069
Southern resident killer whale	-0.254	0.083	-3.050	0.002	-0.416	-0.091
Species × too many restrictions on industries or private landowners:						
Humpback whale	-0.143	0.102	-1.400	0.160	-0.342	0.057
Species × need more information to make a choice:						
Humpback whale	0.300	0.095	3.170	0.002	0.115	0.486
Johnson's seagrass	0.162	0.070	2.320	0.020	0.025	0.299
Southern resident killer whale	0.334	0.083	4.000	0.000	0.170	0.497
Species × unsure about how I feel about T&E species:						
Central California coast coho salmon	0.042	0.106	0.400	0.689	-0.165	0.249
Central California coast coho salmon × tax	0.225	0.140	1.600	0.109	-0.050	0.499
Elkhorn coral	0.350	0.083	4.220	0.000	0.187	0.513
Hawksbill sea turtle	-0.144	0.112	-1.280	0.201	-0.364	0.077
Southern resident killer whale	-0.055	0.112	-0.500	0.620	-0.274	0.163
Southern resident killer whale × tax	0.460	0.163	2.830	0.005	0.142	0.779
Species × more research needed before I would pay for more protection:						
Black abalone	0.266	0.089	2.990	0.003	0.092	0.440
Hawksbill sea turtle	-0.173	0.114	-1.520	0.128	-0.395	0.050
Southern California steelhead	0.257	0.090	2.860	0.004	0.081	0.433
Sociodemographic characteristics:						
Gender	-0.084	0.028	-2.960	0.003	-0.139	-0.028
Gender × tax	-0.088	0.040	-2.240	0.025	-0.166	-0.011
Age	0.002	0.001	2.850	0.004	0.001	0.003
Income	0.002	0.000	6.370	0.000	0.001	0.003
Income × tax	-0.002	0.000	-3.280	0.001	-0.002	-0.001
African American/black	-0.201	0.046	-4.350	0.000	-0.292	-0.111
African American/black × tax	0.152	0.065	2.350	0.019	0.025	0.279
Hispanic	-0.141	0.048	-2.930	0.003	-0.236	-0.047
Hispanic × tax	0.111	0.068	1.640	0.102	-0.022	0.244
Other race/ethnicity (not Caucasian/white)	-0.076	0.039	-1.950	0.051	-0.153	0.000
Marital status:						
Married	-0.098	0.023	-4.150	0.000	-0.144	-0.052
Divorced	-0.150	0.034	-4.360	0.000	-0.217	-0.083
Education level:						

Less than high school	-0.277	0.054	-5.100	0.000	-0.384	-0.171
Less than high school × tax	0.114	0.075	1.520	0.127	-0.032	0.260
High school	-0.279	0.037	-7.540	0.000	-0.352	-0.207
High school × tax	0.076	0.050	1.530	0.126	-0.021	0.174
Some college	-0.185	0.023	-8.020	0.000	-0.230	-0.140
Cut 1	0.520	0.170			0.188	0.853
Cut 2	1.353	0.170			1.021	1.686
Cut 3	2.190	0.170			1.857	2.523
Cut 4	3.505	0.171			3.169	3.841
LL	-17127.6					
Degrees of freedom	87					
Number of surveys	7,425					
AIC	34,429.14					
AICc	34,430.18					
BIC	35,090.84					
Pseudo R^2	0.2636					

Figures 1 and 2

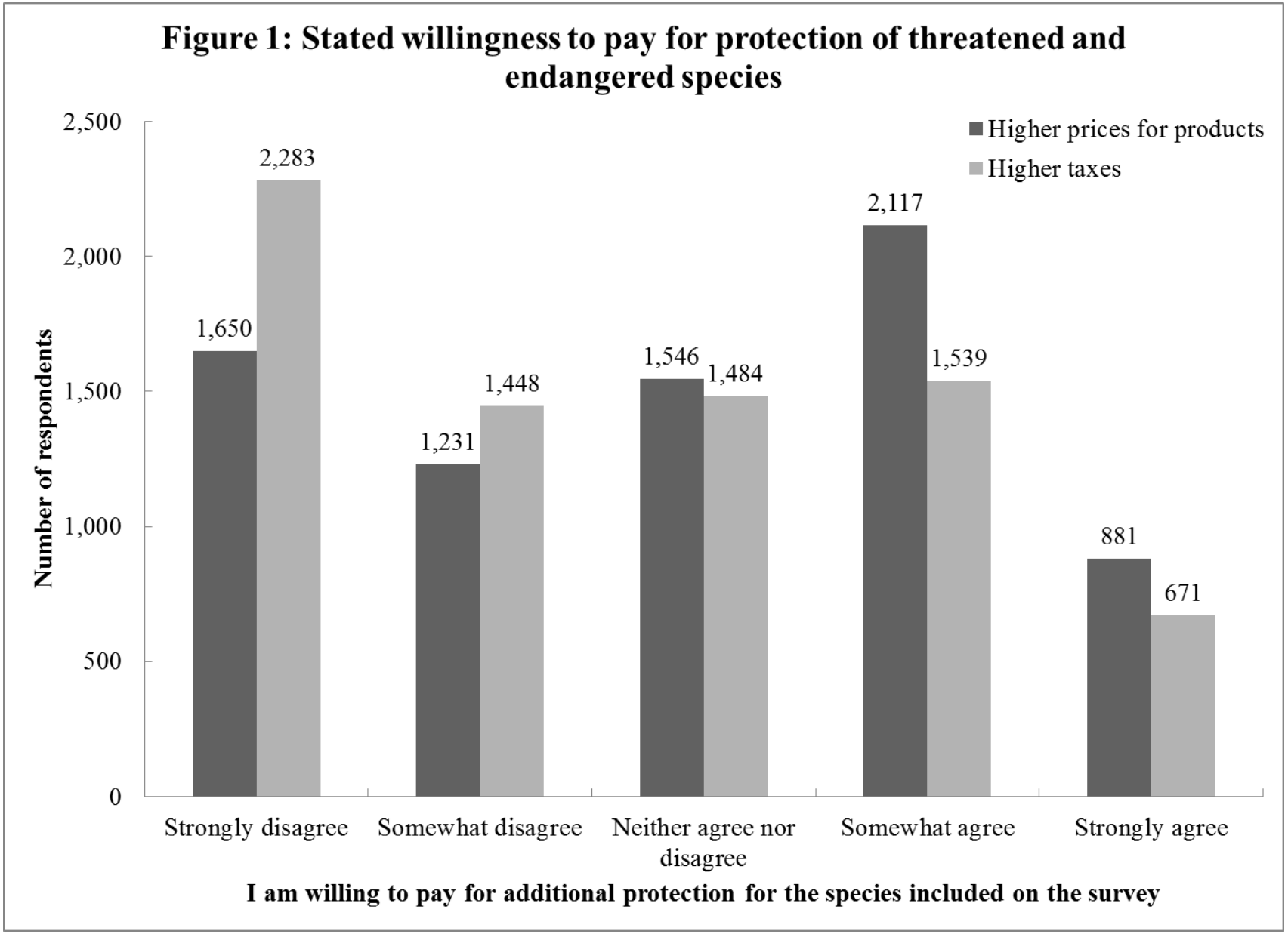

Figure 2: Respondents' opinions about government spending