

Drivers of Support: The Case of Species Reintroductions with an Ill-Informed Public

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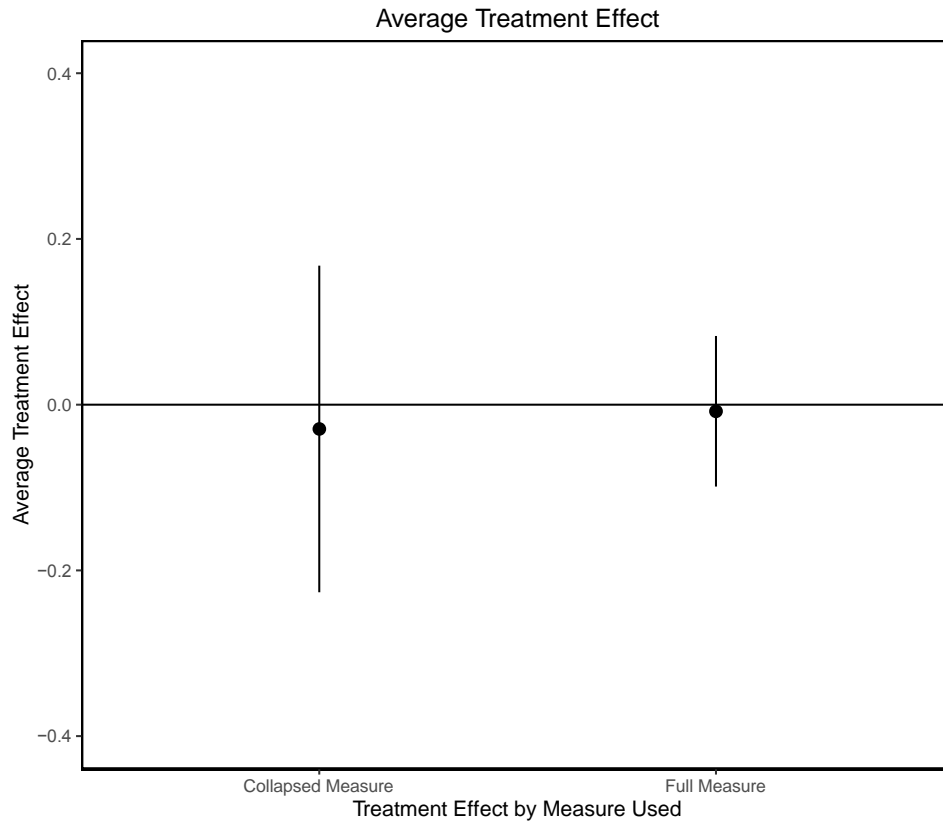
Supplemental Material

Supplement 1: *Qualtrics Panel Sampling Methodology*

The participants were a non-probability sample of Californian adults aged 18 or older with sampling stratified on household income and party identification to help ensure respondents representative of the California population. Participants were drawn from commercial online panels aggregated by Qualtrics from third-parties. The panels include people living in all U.S. states, but our sample includes only Californians. Qualtrics or its partners invite the participants and pay the participant incentives for completing a questionnaire. These panels consist of convenience samples of individuals who have elected to opt-in to participate in surveys in exchange for points, which they may exchange for gift cards from retail merchants, for cash, to enter raffles, for gift cards, or for products. Participants in the Qualtrics panel receive an incentive based in part on the length of the survey. Participants are invited with an email, which does not include details about the survey. The panel partners maintain profiles of the panelists that are used for stratification. These panelists must submit an initial registration form and use a double opt-in requirement. To avoid duplication, Qualtrics checks IP addresses. For more information, please visit:
<http://success.qualtrics.com/rs/qualtrics/images/ESOMAR%2028%202014.pdf>

Supplemental Figures

Figure S1:



Note. 95% confidence intervals denoted by error bars. Collapsed measure merges the seven-point scale for support for reintroduction into a three-point scale indicating no support, neither support or support, or support. Full measure uses seven-point scale. N = 980.

Supplemental Tables

Table S1: *Representativeness (Survey and California)*

Variable	Survey	California
Age (Median)	40***	36
Female over 18 (Percent)	62.1%***	50.3%
College (Percent with Bachelor’s degree or higher)	45%***	32%
White Only (Percent)	68%***	61.3%
Household Income (Median, in thousands)	40 – 60	63.8
Republican (Percent)	28%	26%
Democrat (Percent)	48%	45%
Independent (Percent)	21%*	25%

Note: California demographic statistics taken from 2016 US Census American Community Survey. The measure of household income is ordinal, with each level corresponding to an income bracket, rather than a specific amount, and income brackets used in the US Census do not overlap with ours. Chi-square tests check sample representativeness for Female, College, and White only, and a two-sided Wilcoxon signed rank tests for representativeness of Age. We compare the median household income bracket in our sample to the median household income of Californians as a whole, but do not test for representativeness. In each test, the null hypothesis is that there is no difference between the sample and California as a whole. Party identification information taken from the Public Policy Institute of California’s January 2017 survey of Californians. We do not weight by age because age categories in the sample do not overlap correctly with US Census age estimates.
 * $p < .05$; ** $p < .01$; *** $p < .001$.

Table S2: Means for Urban and Rural Residents

Variable	Urban Mean	Rural Mean	T-statistic
Awareness Score	2.43	2.77	-4.15***
Altruism	4.23	4.14	1.69
Biospherism	4.05	4.00	0.72
Egoism	3.28	3.04	3.42***
Recreation	2.42	2.44	-0.18
Safety	2.83	2.84	0.90
Livelihood	2.44	2.11	3.22***
Ideology	3.32	4.02	-4.69***
<p>Note. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$. Note. For each variable a difference in means test is performed.</p>			

Table S3: *Analysis of Deviance (Model 3 Type II tests)*

Variable	Degrees of Freedom	Chi Square	P-value
General Awareness	1	0.00	.98
Grizzly Awareness	2	12.79	.002**
Benefit Component	1	181.12	<.001***
Cost Component	1	29.13	<.001***
Altruism	1	2.96	.09*
Biospherism	1	2.73	.10*
Egoism	1	1.22	.27
Recreation	1	42.77	<.001***
Threat to Safety	1	0.76	.38
Threat to Livelihood	1	6.84	.01***
Ideology	1	0.39	.53
College Graduate	1	0.72	.40
Rural	1	0.10	.76
Female	1	0.09	.77
Age	1	0.75	.39
Income	1	0.60	.44
White	1	0.76	.38
Received Treatment	1	0.12	.73
Note. *$p < .1$; **$p < .05$; ***$p < .01$			

Table S4: Awareness of Grizzly Presence by Urbanicity

Urbanicity	Grizzly Bear Presence in California		
	No	Yes	Don't Know
Urban	18%	58%	25%
Suburban	24%	53%	22%
Rural	38%	37%	25%

Note. Rows are rounded and may not sum to 100%. A chi-square test rejects the null of no dependence between awareness of grizzly bear presence and urbanicity ($\chi^2 = 37.2, df = 4, p < .001$).

Table S5: Predicting Awareness of Grizzly Bear Presence (Logit)

Variable	<i>B</i>	<i>SE B</i>	<i>Odds Ratio</i>
Constant	-2.88***	0.50	0.06
Age	0.02***	0.01	1.02
Female	-0.19	0.18	0.83
College Graduate	0.23	0.19	1.26
Income	0.05	0.04	1.05
Rural	0.56***	0.12	1.74
Ideology	0.03	0.05	1.03
Awareness Score	-0.14	0.12	0.87
<i>Pseudo R²</i>	.05		
<i>N</i>	769		

Note. * $p < 0.1$; ** $p < 0.05$; * $p < 0.01$**
Note. Dependent variable is grizzly-specific awareness indicator variable coded as 1 if respondent answered *no* and 0 they responded either *yes* or *don't know*. Awareness Score is a composite measure with eagles and black bears only; it does not include wolves and bison.

Table S6: Average Treatment Effect for National Parks Experiment

Variable	<i>B</i>	<i>SE B</i>
Treatment	-0.03	0.10

Note. **p* < 0.1; ***p* < 0.05; ****p* < 0.01.
 Note. The intercept is 5.05***, *N* = 980, and *R*² < .00. Dependent variable is seven-point scale for support of grizzly bear reintroduction in California.

Table S7: Heterogeneous Treatment Effects by Party

Variable	Democrats		Republicans		Independents	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Treatment	-0.11	0.17	-0.13	0.23	0.18	0.24

Note. **p* < 0.1; ***p* < 0.05; ****p* < 0.01.
 Note. Party identification is interacted with treatment status and treatment effects are reported. The intercept is 5.08***, *N* = 980, and *R*² < .00. Dependent variable is seven-point scale for support of grizzly bear reintroduction in California.

Table S8: Heterogeneous Treatment Effects by Urbanicity

Variable	Urban		Suburban		Rural	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Treatment	-0.08	0.18	-0.08	0.18	0.02	0.25

Note. **p* < 0.1; ***p* < 0.05; ****p* < 0.01.
 Note. Urbanicity is interacted with treatment status and treatment effects are reported. The intercept is 5.32***, *N* = 980, and *R*² < .00. Dependent variable is seven-point scale for support of grizzly bear reintroduction in California.

Table S9: Heterogeneous Treatment Effects by Grizzly Awareness

Variable	Yes		No		Don't Know	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Treatment	-0.08	0.15	0.14	0.29	-0.23	0.30

Note. **p* < 0.1; ***p* < 0.05; ****p* < 0.01.
 Note. Grizzly awareness is interacted with treatment status and treatment effects are reported. The intercept is 5.49***, *N* = 980, and *R*² < .00. Dependent variable is seven-point scale for support of grizzly bear reintroduction in California.

Table S10: Average Treatment Effect for Survey Experiment with Collapsed Dependent Variable Scale (OLS)

Variable	B	SE B
Treatment	-0.01	0.05
Note. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$. Note. The intercept is 2.49***, $N = 980$, and $R^2 < .00$. Dependent variable is three-point scale for support of grizzly bear reintroduction in California.		

Table S11: *Measuring Support for Reintroduction (Ordered Logit)*

Variable	<i>B</i>	<i>SE B</i>	<i>Odds Ratio</i>
Species Awareness	0.02	0.09	1.02
Grizzly Existence (No)	-0.68***	0.23	0.50
Grizzly Existence (Don't Know)	-0.25	0.22	0.78
Benefits Component	1.78***	0.17	5.90
Costs Component	-0.61***	0.13	0.54
Altruism	0.35*	0.19	1.42
Biospherism	-0.18	0.15	0.84
Egosim	0.16	0.13	1.18
Recreation	-0.44***	0.08	0.64
Threat to Safety	0.15	0.101	1.16
Threat to Livelihood	-0.28***	0.10	0.75
Ideology	0.02	0.056	1.02
College Graduate	-0.22	0.18	0.80
Rural	0.10	0.12	1.10
Female	-0.27	0.21	0.76
Age	0.00	0.00	1.00
Income	0.04	0.05	1.04
White	0.11	0.19	1.12
Received Treatment	-0.11	0.17	0.90
<i>AIC</i>	1944.45		
<i>N</i>	754		
Intercepts:			
	<i>Value</i>	<i>SE</i>	<i>T-value</i>
1 2	-5.89	0.83	-7.12

2 3	-4.76	0.80	-5.95
3 4	-3.35	0.78	-4.29
4 5	-1.11	0.76	-1.45
5 6	0.07	0.76	0.09
6 7	2.15	0.77	2.79
Note. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.			
Note. Dependent variable is seven-point scale for support of grizzly bear reintroduction in California.			

Table S12: *Collinearity Check (Model 3)*

Variable	B	SE B
Constant	6.12***	0.26
Species Awareness	0.00	0.04
Grizzly Existence (No)	-0.32***	0.11
Grizzly Existence (Don't Know)	-0.15	0.10
Benefit Component	0.85***	0.06
Cost Component	-0.29***	0.06
Recreation	-0.26***	0.04
Threat to Safety	0.06	0.05
Threat to Livelihood	-0.16***	0.05
College Graduate	-0.06	0.09
Rural	-0.11	0.10
Female	0.00	0.09
Age	0.00	0.00
Income	0.02	0.02
White	0.13	0.09
Received Treatment	-0.05	0.08
R²	.59	
N	761	
<p>Note. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$. Note. Dependent variable is seven-point scale for support of Grizzly bear reintroduction in California.</p>		

Table S13: *Environmentalism Model (OLS)*

Variable	<i>B</i>	<i>SE B</i>
Constant	6.33***	0.35
Species Awareness	0.01	0.04
Grizzly Existence (No)	-0.35***	0.11
Grizzly Existence (Don't Know)	-0.156	0.101
Benefit Component	0.87***	0.06
Cost Component	-0.32***	0.06
Environmentalism	-0.10*	0.05
Recreation	-0.26***	0.04
Threat to Safety	0.06	0.05
Threat to Livelihood	-0.13***	0.05
Ideology	-0.01	0.03
College Graduate	-0.08	0.09
Rural	0.01	0.06
Female	0.02	0.09
Age	-0.00	0.00
Income	0.02	0.02
White	0.10	0.10
Received Treatment	-0.02	0.09
<i>R</i>²	.59	
<i>N</i>	761	
<p>Note. *<i>p</i> < 0.1; **<i>p</i> < 0.05; ***<i>p</i> < 0.01. Note. Ordinary least squares regression. Dependent variable is seven-point scale for support of grizzly bear reintroduction in California.</p>		

Table S14: *Measuring Support for Reintroduction (Cost Index)*

Variable	B	SE B
Constant	5.41***	0.64
Species Awareness	-0.00	0.04
Grizzly Existence (No)	-0.34***	0.11
Grizzly Existence (Don't Know)	-0.17	0.11
Benefit Component	0.92***	0.06
Cost Component	-0.23***	0.06
Altruism	0.21	0.13
Biospherism	-0.14	0.09
Egosim	0.08	0.06
Cost index	-0.11***	0.02
Ideology	0.01	0.03
College Graduate	-0.07	0.09
Rural	0.02	0.06
Female	-0.07	0.10
Age	-0.00	0.00
Income	0.02	0.02
White	0.08	0.10
Treatment	-0.02	0.09
R²	.58	
N	764	
Note. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$. Note. This is the same specification as Model 3, but with an index for cost statements.		