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Attitudes toward the continued protection of gray wolves under the Endangered Species Act

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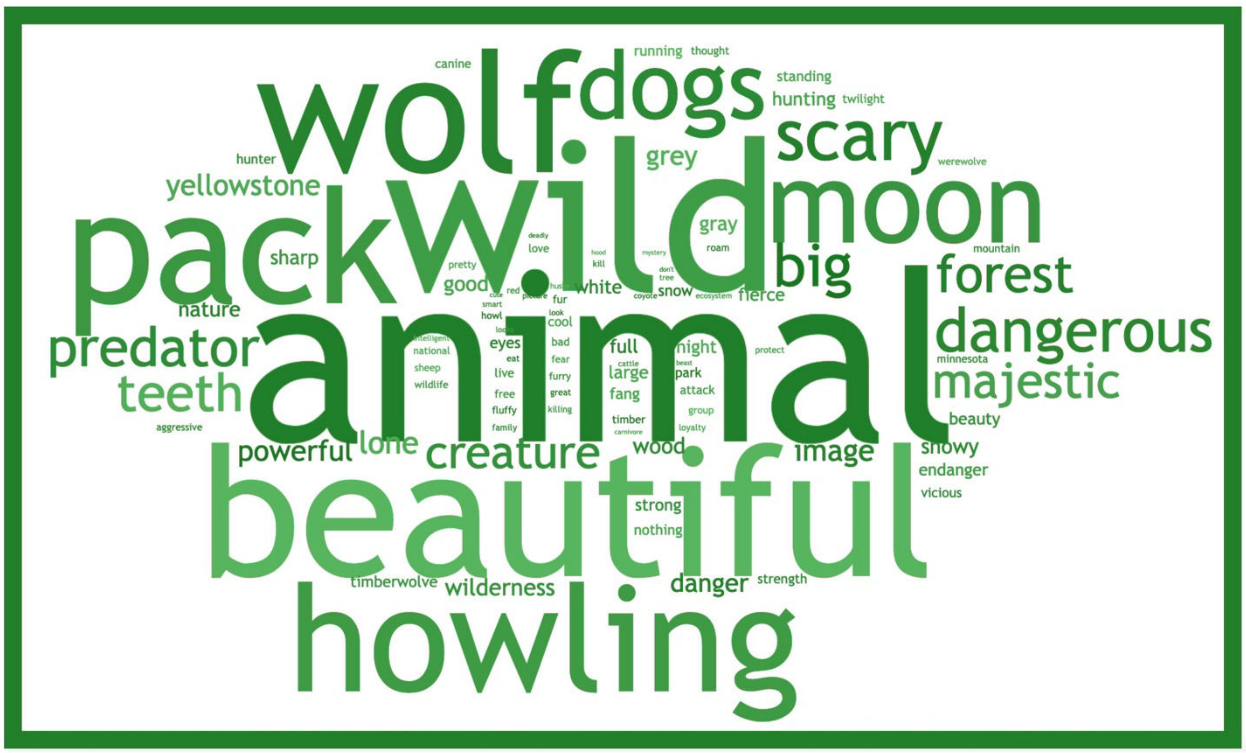

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COVER IMAGE

Word cloud produced from survey participant responses to free association when they think of gray wolves.

RECOMMENDED CITATION

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1. SUMMARY

In February 2024, the U.S. Fish & Wildlife Service announced their intention to develop – for the first time – a National Recovery Plan under the Endangered Species Act (ESA) for gray wolves in the lower 48 states.

In August 2025, a federal judge vacated the U.S. Fish and Wildlife Service's (FWS) decision denying ESA protections for gray wolves in the Western U.S. The judge found the FWS failed to consider the best available science, the species' historical range, and how wolves would be affected by state management, which includes aggressive harvesting.

Those events represent key context for this report, which describes the results of a web-based survey implemented in July and August of 2025 and designed to assess the attitudes of residents of the contiguous United States, as they pertain to the appropriateness of continuing protection of gray wolves under the ESA. A large body of prior research indicates that individuals' attitudes toward species protections can be affected by a variety of factors. As such, a key feature of this survey was understanding how attitudes about continued protections are affected by different kinds of information about wolves and their protection.

The survey participants (n=1079) were provided by the market research company, *Qualtrics*. The sample included people with a wide range of socio-demographic properties (e.g., with respect to age, income, education, etc.) for the purpose of providing a reliable impression of the support that residents of the contiguous United States.

Key findings include: The survey indicates strong support for continuing protection among all examined socio-demographic groups. Statistics that exemplify this support include:

- Across the entire sample, 78% ± 2.5% (95% CI) expressed support for continued protection of gray wolves under the Endangered Species Act.
- For every person who strongly opposes continued protection, there more than nine people who strongly support continued protection.
- Support for continued protection was also strong among socio-demographic groups that one might not expect to be supportive, including
    - *rural residents* of states inhabited by gray wolves (MI, WI, MN, WA, OR, ID, MT, WY), among whom 75% (±4.2%) support continued protection of gray wolves.
    - people who identify as *politically conservative*: for every conservative who opposes continued protection, there are three conservatives who support continued protection.
    - people who self-identify (strongly or very strongly) as *farmers/ranchers*, among whom 79% (±9.6%) support continued protection of gray wolves.

Overall, the data indicate that there is strong public support for continuing to protect gray wolves under the U. S. Endangered Species Act.

Finally, a note to readers: We recognize that the sciences are replete with jargon that often impedes understanding by lay-readers. The science pertaining to the assessment of human attitudes is no different. The authors of this report have worked to remove such jargon, for the purpose of making this report accessible to the lay-reader. This report will also have a companion article to be submitted for publication in a scientific, peer-reviewed journal.

2. THE INFLUENCE OF INFORMATION

Scientists interested in attitudes have long posited that attitudes toward a particular entity – like gray wolves – are constructed from the beliefs they hold about that entity, which implies that information is critical to attitude formation. To test how people respond to different types of information, early in the survey, all survey participants were provided with basic information about gray wolf conservation in the United States. Specifically, participants were provided the following text:

> Some officials within the federal government are working to remove protections of the Endangered Species Act for gray wolves in the contiguous United States. Removing protections would:
>
> - increase places where wolves can be hunted and
> - greatly limit the ability to recover wolves to more of the places where they once lived and where good habitat still remains.

Then participants were presented with this response item:

> What is your reaction to this statement, **wolves should continue to receive the protections of the Endangered Species Act.**
>
> - Strongly disagree
> - Disagree
> - Somewhat disagree
> - Neither agree nor disagree
> - Somewhat agree
> - Agree
> - Strongly agree

The distribution of responses to that survey question is given below in Figure 1. Those results indicate that a very large majority (78%± 2.5%, 95% CI) of residents supported continued ESA protection for gray wolves in the contiguous United States.

Another important observation to make from Figure 1 is the lack of any indication of polarized views about continued protection. That is, the distribution of responses is not bimodal (with a peak at strong support and strong opposition). Rather, the results indicate that for every person who strongly opposes continued protection, there are 9.2 persons who strongly support continued protection.

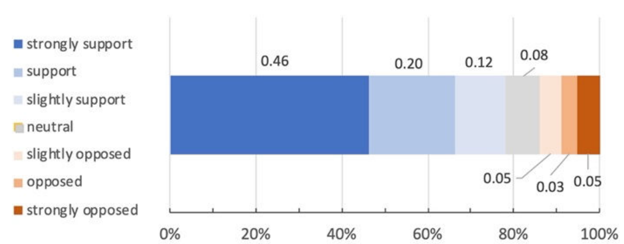

Fig. 1. Distribution of 1079 responses to the question, What is your reaction to this statement, wolves should continue to receive the protections of the Endangered Species Act.

After responding to that question about wolf protection, survey participants were told, "We'd like to give you some more information, and then ask you again what you think about wolves. Please advance to the next part of the survey." Each participant was then randomly assigned to received one of several blocks of information about gray wolf conservation. Those blocks of information are summarized as:

A. *Democracy – expressing concern of some that efforts to weaken the ESA is contrary to what most people want.*
B. *Righting past wrongs – expressing the view of some that humans had been wrong to extirpate wolves and continued protection is an opportunity to right that wrong.*
C. *Most are unaffected – expressing the view of some that the vast majority of humans are unaffected by healthy wolf populations.*
D. *Hunters and livestock – expressing the concern that some hunters and livestock owners oppose the protection of wolves*
E. *Benefits – expressing the view that healthy wolf populations provide several benefits, including ecosystem health*

The exact language presented to participants for the other blocks of information is given in the Appendix. Participants' attitudes about continued protection, following the presentation of each block of information is presented in Figure 2.

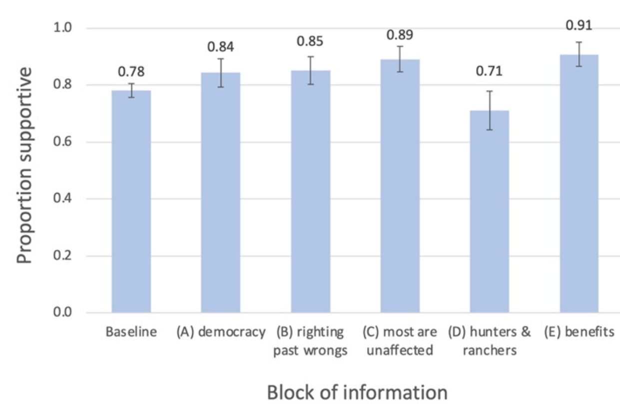

Fig. 2. Proportion of participants who are supportive of continued protection for gray wolves, given different blocks of information. The blocks of information are described in the main text and Appendix. The y-axis represents the proportion of participants that indicated "strongly agree," "agree," or "somewhat agree" to the survey item, "What is your reaction to this statement: gray wolves should continue to receive protections of the Endangered Species Act." The black vertical lines at the top of each blue box are 95% confidence intervals. The sample size for the "Baseline" is 1079. Sample sizes for each of the other blocks of information ranges from 169 to 205.

Levels of agreement for continued protection ranged from 70% to 91%. The block of information pertaining to hunters and livestock led to a significantly lower level of support, compared to the baseline (p=0.04). Otherwise, each block of information led to significantly higher levels of support for continued protection, in relationship to the baseline block of information (p-values <0.04).

3. THE INFLUENCE OF GEOGRAPHY

We sampled residents from eight regions of the contiguous United States:

- rural areas of MT, ID, WY (n=134)
- rural areas of MI, WI, MN (n=136)
- rural areas of OR and WA (n=135)
- rural areas of other states (n=121)
- non-rural areas of MT, ID, WY (n=134)
- rural areas of MI, WI, MN (n=137)
- rural areas of OR and WA (n=146)
- rural areas of other states (n=136)

Participants' residence was determined by asking participants what best described where they live and the provided the set of choices listed above.

Because we sampled equally across those eight regions, the sample overrepresents rural residents and residents of those eight states (MT, ID, WY, MI, WI, MN, OR, WA). (For context rural residents make up about 20% of U.S. residents, and residents of those eight states represent about 10% of the U.S. population.) The advantage of sampling those areas equally is to favor more precise estimates of attitude (smaller confidence intervals) for states and regions within the geographic range of wolves.

For all eight regions, a large majority supported continued protections for gray wolves (Figure 3).

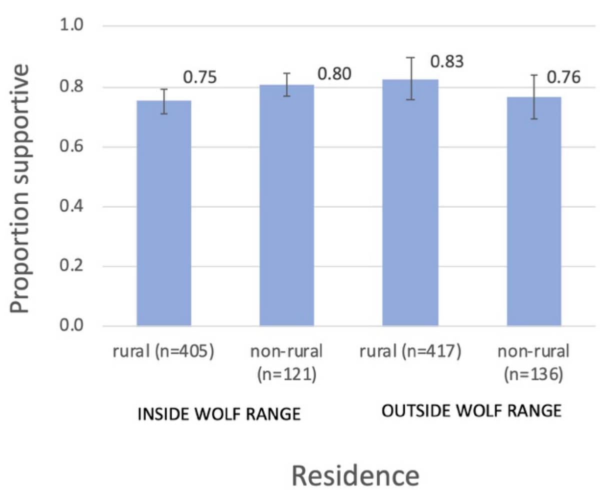

Figure 3. Proportion of participants from four regions of the United States who are supportive of continued protection for gray wolves, given basic information about gray wolf conservation. Other details are as indicated by the legends of Figures 1 and 2.

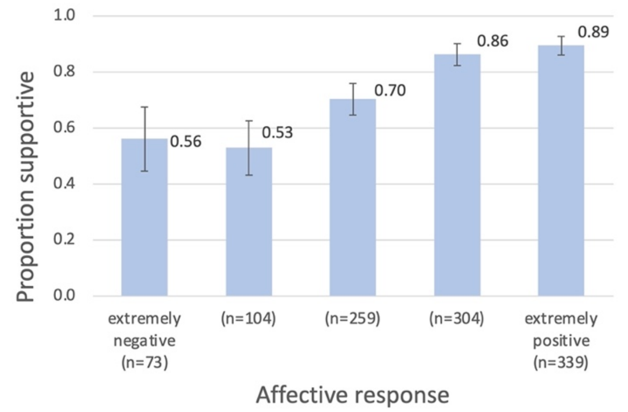

Figure 4. Proportion of participants who are supportive of continued protection for gray wolves, given basic information about gray wolf conservation and given their feelings about gray wolf (x-axis). Other details are as indicated by the legends of Figures 1 and 2.

4. ASSOCIATION WITH AFFECTIVE RESPONSE

Before eliciting participants' attitudes about continued protection for gray wolves, we asked:

In a few words, what is the first thought or image that comes to mind when you think about gray wolves?

Participants wrote words like, beautiful, dangerous, majestic, and scary. Then we asked participants:

How positive or negative do you feel about that thought or image?

The response set for this question was a 5-pt scale from "extremely negative" to "extremely positive."

Participants' affective response was associated with level of support for continued gray wolf protection (Fig. 4). Support for continued protection was strong among those whose affective response was neutral or positive (>70%). Support for continued protection was slightly more than 50% among those whose affective response was negative. Those people represent about 16% of the sample.

5. ASSOCIATION WITH MORAL INCLUSION

Before eliciting participants' attitudes about continued protection for gray wolves, we asked them to respond to this survey item:

Humans should treat gray wolves:

However humans want ○ ○ ○ ○ ○ With care and compassion

Responding toward the left side may be reasonably interpreted as (*i*) being increasingly anthropocentric and (*ii*) increasingly denying that gray wolves have intrinsic value or deserve direct moral consideration. Responses to this item might also be indicative of the relative weight people give to human interests when those interests conflict with the interests of wolves. In any case, we refer – as a matter of shorthand – to this item as indicating the *degree of moral inclusion*.

There is a strong tendency for support for continued protection to increase with degree of moral inclusion (Fig 5). This is the strongest relationship that we observed across the entire survey. While the relationship is strong, it is important to observe that very few people (5% of the sample) are represented by the two left-most categories of response for this survey item.

7. ASSOCIATION WITH POLITICAL IDEOLOGY

After eliciting participants' attitudes about continued protection for gray wolves, we asked them to indicate their political orientation on a 9-pt scale from extremely liberal to extremely conservative. Among self-identified liberals, support for continued protection outweighed opposition by a ratio of 10.1 to 1 (Fig. 6). And, for every conservative who opposed continued protection, there were 3.4 conservatives who supported continued protection (Fig. 6).

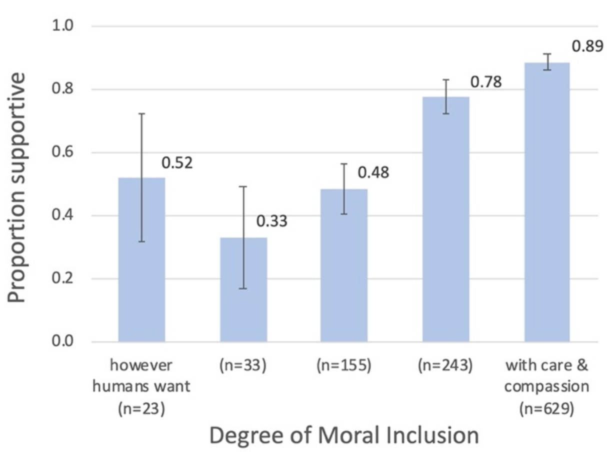

Figure 5. Proportion of participants who are supportive of continued protection for gray wolves, given basic information about gray wolf conservation and given one's degree of moral inclusion of gray wolves (x-axis). Other details are as indicated by the legend of Figure 1. It seems important to note that the two left-most categories represent only 5% of the entire sample, and the three left-most categories represent only 19% of the entire sample.

8. ASSOCIATIONS WITH INDENTIES

After eliciting participants' attitudes about continued protection for gray wolves, we asked each participant to indicate the degree to which they identified with each four identities:

- HUNTER
- RANCHER or FARMER
- ENVIRONMENTALIST
- ANIMAL RIGHTS ADVOCATE

The response set for each identity was a 5-pt set ranging from "not at all" to "very strongly."

Support for continued protection tended to decline as one increasingly identified as a hunter (Fig. 7, next page). Among those who self-identified (strongly or very strongly) as hunters, 61% (±10.5%) were supportive of continued protection. That level of support is better understood by highlighting some important context. Specifically, of the 1079 people surveyed, 7.7% self-identified (strongly or very strongly) as hunters. That rate of self-identification is likely an overrepresentation of residents in the contiguous U.S., because (i) hunting is more common in rural communities, (ii) rural residents represent about 20% of the U.S. population, but (iii) comprised 49% of our sample. We over sampled rural communities to gain sufficiently large sample of rural resident for the purpose of having satisfying precise estimates of their attitudes (i.e., smaller 95% CIs).

Somewhat surprisingly, there was little or no discernable trend in support for continued protection as one increasingly identified as a rancher or farmer (Fig. 7, next page).

Support tended to increase as one more strongly identified as an environmentalist or animal rights advocate. For context, the proportion of people who "strongly" or "very strongly" identify as an Animal Rights Advocate (29%) is significantly greater than those identifying as an Environmentalist (20%, $p<10^{-4}$).

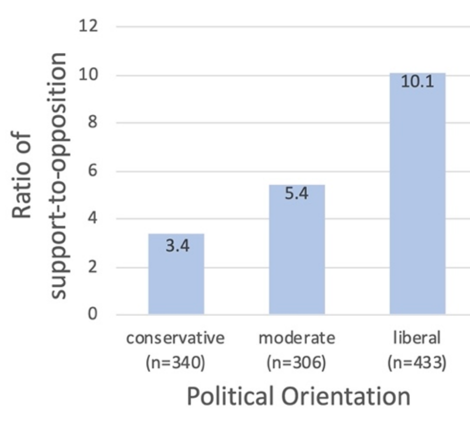

Figure 6. Ratio of support-to-opposition with respect to continued protection for gray wolves, given basic information about gray wolf conservation and given one's political orientation (x-axis). Other details are as indicated by the legends of Figures 1 and 2.

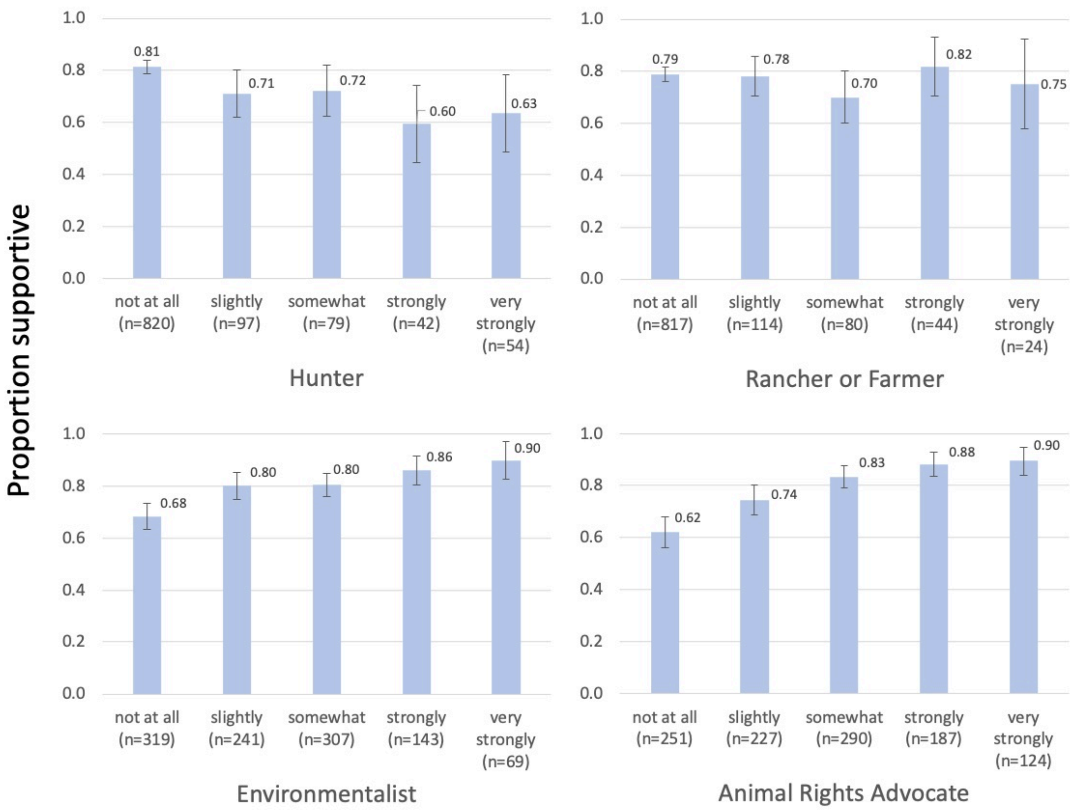

Figure 7. Proportion of participants who are supportive of continued protection for gray wolves (blue bars), given basic information about gray wolf conservation and given the degree to which one identifies with each of four identities. (x-axis). Other details are as indicated by the legends of Figures 1 and 2.

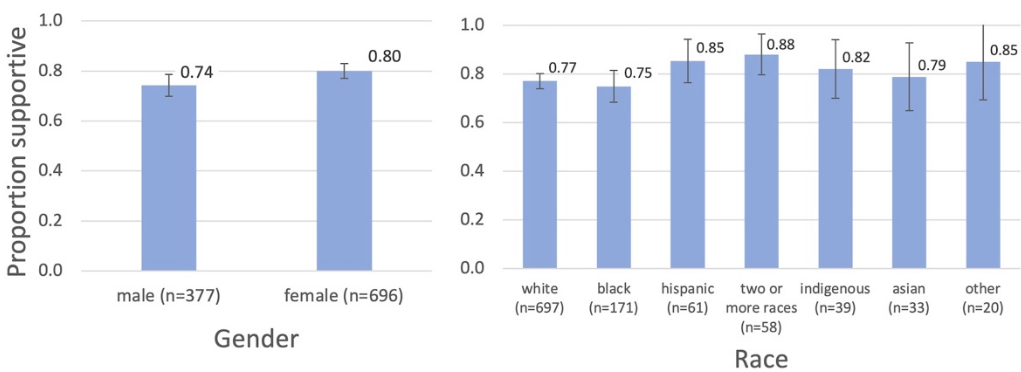

Figure 8. Proportion of participants who are supportive of continued protection for gray wolves (blue bars), given basic information about gray wolf conservation and given one's gender and race. Other details are as indicated by the legends of Figures 1 and 2.

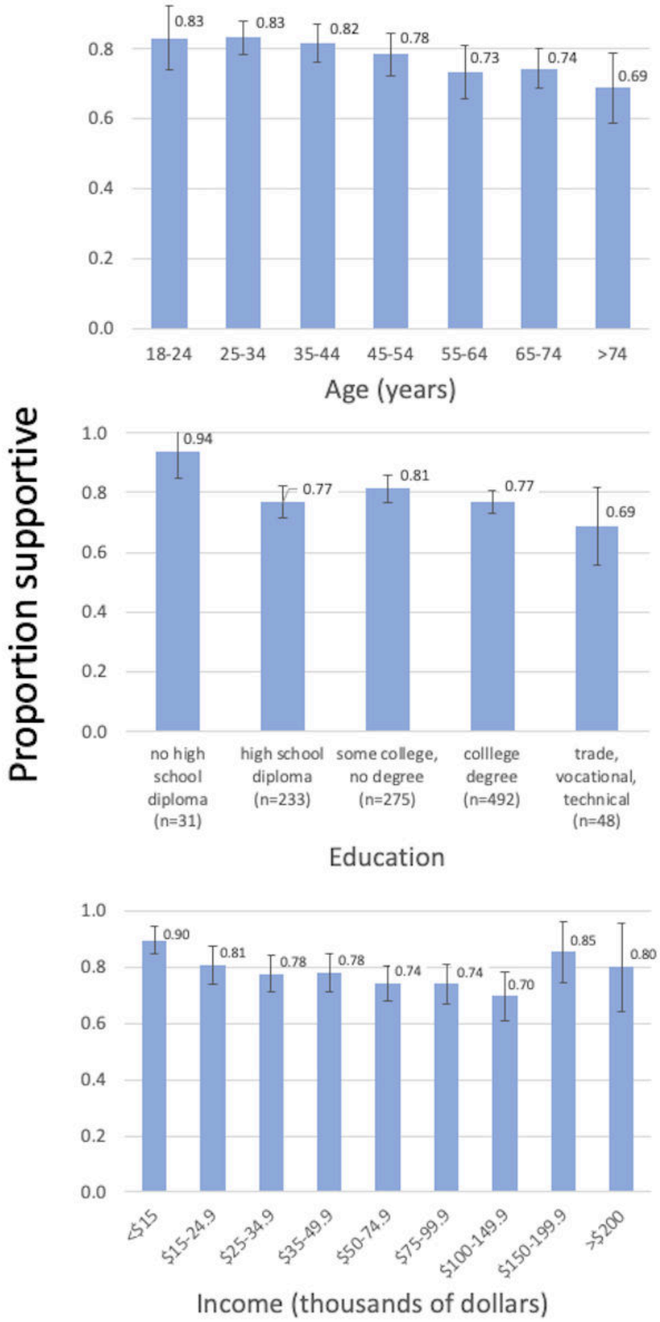

Figure 9. Proportion of participants who are supportive of continued protection for gray wolves (blue bars), given basic information about gray wolf conservation and given one's age, education, and income. Other details are as indicated by the legends of Figures 1 and 2.

9. ASSOCIATIONS WITH OTHER DEMOGRAPHICS

After eliciting participants' attitudes about continued protection for gray wolves, we asked each participant to indicate their gender, race, age, education, and income. A majority of people expressed support for the continued protection of gray wolves across every demographic group observed in Figures 8 and 9 (preceding pages).

10. HUNTING AND LETHAL CONTROL

After eliciting attitudes about continued protection for gray wolves, we also asked participants to respond to this question, "How do you rate the following reasons for hunting wolves?" The list of reasons is shown in Figure 10 and the possible response were "acceptable," "unacceptable," and "uncertain." A large majority of the sample believed that all the reasons provided were unacceptable (Fig. 10).

We also asked participants to respond to this question, "Separate from hunting, how do you rate the following reasons for killing a wolf?" The list of reasons is shown in Figure 11 and the possible response were "acceptable," "unacceptable," and "uncertain." A large majority of the sample believed that all the reasons provided were unacceptable (Fig. 11). Most participants believed it was acceptable to kill a wolf when it is the only way to prevent depredation (62%), necessary to protect a pet (70%), or necessary to protect a human life (84%).

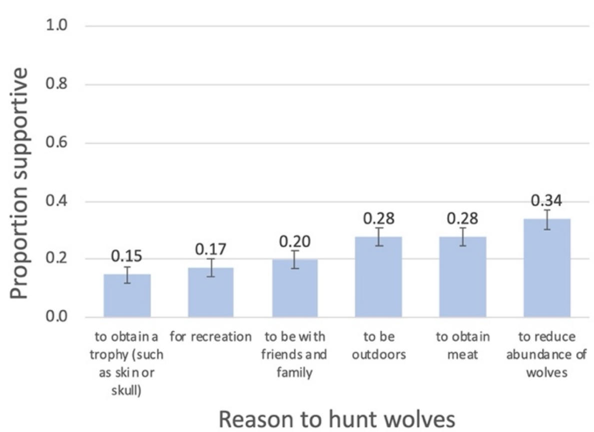

Figure 10. Proportion of participants who are supportive of hunting wolves for each given reason (x-axis). The sample size is 1079.

11. NOTES & ACKNOWLEDGMENTS

A) All error bars in the graphs and all ± values given in parentheses are 95% confidence intervals calculated as the normal approximation to the binomial formula for confidence intervals:

$$mean \pm Z_\alpha \left(\sqrt{x(N-x)/N^3}\right)$$

where mean equals x/N, x is the number of cases expressing agreement, N is the sample size, and Z_α is the standard normal deviate for a 95% CI (i.e., 1.96).

B) The research protocol for this project was reviewed and approved by the Institutional Review Board of Michigan Technological University (protocol IRB-2025-28).

C) This project was supported, in part, by Humane World for Animals and the U.S. Department of Agriculture's McIntire-Stennis program. Neither institution was involved with the design of this survey or the analyses or interpretations presented here in this report.

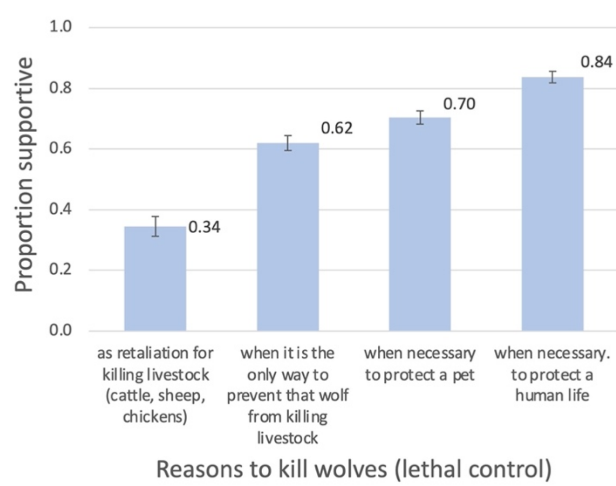

Figure 11. Proportion of participants who are supportive of killing wolves for each given reason (x-axis). The sample size is 1079.

APPENDIX

The text below are blocks of information given to survey participants. After each block of information, participants were asked about the degree to which they agreed or disagreed that continued protection of gray wolves under the ESA is appropriate. The results are presented in Figure 2.

(A) DEMOCRACY

- According to reliable survey research, most people (84%) support the Endangered Species Act (ESA), and most people (58%) think the ESA should be more protective of species.
- Even groups sometimes portrayed as opposing the ESA express strong support for the ESA. For example, 79% of those who identify as extremely conservative support the ESA.
- Despite widespread support, some government officials work to weaken the ESA. Research shows that the politicians most likely to work against environmental protections are those who receive campaign donations from wealthy elites with extremely narrow interests who stand to benefit from less protection for the environment.

(B) RIGHTING PAST WRONGS

- Wolves once inhabited most of the contiguous United States. Early European settlers feared and hated wolves and killed them with guns, traps, and poison. By the mid 1900s, Americans had driven wolves to extinction from nearly all their historic range in the contiguous U.S.
- Wolves are faring better today, but they still inhabit only about 15% of their former range in the contiguous U.S.
- Today, we have **the opportunity to right those past wrongs** by welcoming wolves home to some more places within their former range.
    - Plenty of good habitat exists.
    - The prospect for coexistence with wolves is already demonstrated by the Americans in at least 11 states – from coast to coast – who currently share the land with wolves.
    - Conservationists have a long history of reestablishing lost wildlife – from white-tailed deer and wild turkeys to the bald eagle and American alligator. Righting past wrongs through restoration is key to America's conservation tradition.
- If ESA protections for wolves are removed, state governments will execute trophy hunts that would prevent further restoration, mainly by limiting wolf dispersal into new and suitable habitats. Further restoration of wolves depends on continued ESA protection.

(C) THE VAST MAJORITY ARE UNAFFECTED BY WOLVES

- Wolves sometimes lead to noticeable changes to ecosystems, but often not.
- In any case, the vast majority of people are not affected – positively or negatively – by wolf restoration.
- Rather, the reasons to restore wolves, where feasible, are
    - Wolves are valuable in their own right and humans have an obligation to share the land with wolves, where feasible.
    - Ecosystem are valuable in their own right
    - American ecosystems tend to be healthier when wolves are present because wolves were there before humans drove them to extinction.

(D) HUNTERS AND LIVESTOCK OWNERS

- Some hunters think that wolves should no longer be protected by the Endangered Species Act. These hunters say that wolves ruin opportunities to hunt.

- Some livestock owners think the same. Their concern is that wolves kill livestock – sheep and cattle.

(D - alt) HUNTERS AND LIVESTOCK OWNERS

- Some hunters think that wolves should no longer be protected by the Endangered Species Act (ESA). These hunters say that wolves ruin opportunities to hunt. Yet, hunting thrives on all the lands that humans and wolves share.
- Some livestock owners also think wolves should no longer be protected by the ESA. Their concern is that wolves kill livestock – sheep and cattle.
    - Yet, livestock die for many reasons, and records indicate that wolves are responsible for <1% of all losses. Furthermore, dogs, poison and theft are each responsible for more livestock losses than wolves.
    - In very rare instances, livestock losses due to wolves can be impactful to an individual livestock owner. But they can typically be financially compensated for livestock killed by wolves.

Note about (D) and (D-alt): Both blocks of text are on the same topic. They differ in that one block contains more detail. 169 survey participants were presented with (D) and 125 participants were presented with (D-alt). In response to these blocks of information, the level of support for continued protection was nearly identical: 71.0%± 6.8% (for D) and 70.4%± 8.0%. For simplicity, Figure 2 presents only the results for people responding to block (D).

(E) WOLVES ARE VALUABLE

- Wolves are a keystone species who are essential for ecosystem health. They contribute to reducing overabundant deer and elk, who diminish the land's vegetation, which is harmful to all the other creatures who depend on that vegetation for food and shelter.
- Wolves keep populations of deer and elk healthy by preying on the weak and diseased.
- By contributing to the reduction of overabundant elk, wolves benefit livestock owners whose livestock compete for forage with elk.
- By indirectly benefiting vegetation, wolves benefit loggers who depend on forest regeneration.
- Wolves can also generate tourism dollars, because people like to visit natural areas where wolves live.