



February 28, 2023

To: Wisconsin Department of Natural Resources

Wolf Management Plan Comments

101 S. Webster Street PO Box 7921

Madison, WI 53707-7921

Re: Wisconsin 2022 Draft Wolf Management Plan

Via: DNRWildlifeSwitchboard@wisconsin.gov

Esteemed WDNR staff,

On behalf of Project Coyote, The Rewilding Institute and our Wisconsin supporters, we submit the following public comments on the 2022 Wisconsin Draft Wolf Management Plan. Our comments express grave concerns over: (1) the substantial amount of high-quality scientific literature that is arbitrarily omitted from the plan, (2) the arbitrary and contradictory prioritization of consumptive uses and, along with it, (3) unscientific biases promoting the instrumentalization of wolves for any human benefit, despite public values that strive for increased consideration of wolves and peaceful coexistence.

We expand on each point of concern in our detailed comments below and include a list of crucial academic literature. We encourage the department to not only consider but integrate the below comments, scientific literature and their ecological, social, ethical and policy implications if the objective is to truly strive for a plan that is guided by public values that strive for coexistence and informed by the best-available science.

Sincerely,

Francisco J. Santiago-Ávila, PhD
Science and Conservation Manager
Project Coyote & The Rewilding Institute

Michelle L. Lute, PhD
Carnivore Conservation Director
Project Coyote

General comments

We appreciate the efforts of all WDNR staff involved in updating the state's wolf management plan. Although we believe the current plan needs significant updating (see next section), we recognize the efforts and improvements made to the previous plan, including:

- Wolves in WI will no longer be managed by reference to the old numerical goal of 350 wolves.
- There is much greater recognition of the ecological role of wolves.
- The inclusion of a social survey, which notes increased positive views of wolves, knowledge of their ecological roles and increased opposition to the motives and methods for killing wolves.
- The adoption of proposed buffer zones around tribal reservations (i.e., previously no buffer zones existed).

However, as explained in our detailed comments below, the current draft does not reflect the best available science, and is missing a substantial amount of scientific literature on (see reference list below):

- wolf ethology, sentience, sapience, sociability, agency and wellbeing
- effectiveness of non-lethal interventions, especially relative to lethal ones
- the impact of widespread killing on wolves' physiology, behavior, wellbeing, social dynamics, [ecological relationships and evolution](#).

The above scientific omissions, combined with the emphasis on and promotion of 'sustainable' recreational killing and consumptive users as a main management strategy, results in a biased plan that runs contrary to scientific evidence despite much of this omitted science being more recent, numerous and of stronger inference.

Instead, **the plan should strictly curtail any lethal management of wolves except in extremely rare circumstances of immediate defense of life.** A substantial body of research documenting human-caused mortality in North American wolves, including [Wisconsin wolves](#), has found that policies allowing liberalized killing of wolves result in a direct increase in the hazard and incidence of illegal killings. Moreover, hounding or hound training, which are akin to allowing legalized dogfighting, should be illegal or severely restricted as this practice is extremely cruel to wolves and hounds alike and is not supported by the majority of hunters or the broad public.

The plan should prioritize wolf protections and concentrate solely on non-lethal management of wolves in response to conflict with domesticated animals to ensure ethical coexistence. We remind the WDNR that despite [Act 169](#), which mandates a wolf hunting season, the department can still restrict the implementation of lethal methods by setting minimal quotas, including a quota of '0' wolves, and restricting timing and methods. Such measures are consistent with the scientific literature, as [several studies](#) have proven a proactive non-lethal approach leads to better conflict mitigation. There is plenty of evidence suggesting lethal management often fails to provide a long-term solution to wolf predation and has the [least consistent success rates](#) when compared to non-lethal practices. In addition, there is significant evidence showing that [lethal wolf management may be less functionally effective at mitigating subsequent livestock losses than non-lethal deterrents](#). Given such substantial evidence, the plan

should *require* the implementation of abatement measures as well as the use of non-lethal conflict minimization techniques by domestic animal guardians for the latter to receive compensation for confirmed predation.

The plan also runs contrary to [public values towards wolves](#) (and omits mention of such majority values from the plan), despite department surveys evidencing that the broad public cares about wolves as individuals (and not just for the viability of the population). Especially given the recent liberalization of killing wolves by the state, it would be incredibly informative to note majority support of the following reasons for opposing a regulated wolf hunting/trapping season (which are all omitted from the plan): opposition to specific methods of harvest like hounds (64%) or traps (70%), feelings that hunting wolves is unnecessary (62%) or culturally offensive to Native American tribes (57%). All such reasons convey majority disagreement with practices currently promoted and endorsed by the legislature and the WDNR, and such a conflict between managers and the public should not only be acknowledged, but foregrounded and carefully considered in policy (instead of dismissed). Such decisions to omit literature or downplay evidence (e.g., such as majority opposition to killing wolves and their reasons) are contrary to principles of scientific integrity (e.g., present all relevant scientific evidence to the public) as well as ethics (e.g., disguising ethical decisions, such as recreational wolf killing, as robustly supported by science). More pragmatically, ignoring evidence and public values leads to inconsistent and litigious plans and policy, leading to ineffective, expensive and contentious public policy.

It is also incredibly concerning that **conflicting agency objectives (e.g., optimizing public hunting and conflict mitigation) are not only not acknowledged, but even misunderstood as harmonious, against the body of scientific evidence.** That culminates in the prioritization of consumptive values and policies; e.g., according to the body of scientific literature, use of lethal methods, and especially public hunts, are contrary to most objectives relevant to: harm mitigation, the wellbeing of wolves, their ecological roles, and wolves' non-exploitative enjoyment by humans (i.e., Objectives A, B, D and F).

Additionally, **the plan is clearly biased against the interests of wolves and their advocates, despite broad public, tribal and scientific support.** There is a stark [lack of consideration for individual wolves](#), wolf population health (including wellbeing), and measurable indicators for assessing any harms barring disease prevalence (e.g., [accounting for cortisol levels or other stress hormones](#), [measures of pair/pack persistence](#)).

Similarly, **there is an [inappropriate understanding and consideration of tribal worldviews about wolves](#).** Tribal worldviews of wolves are misconstrued as 'cultural benefits' tribes receive from the existence of a wolf population, when in fact tribal worldviews consider *each individual wolf* as a *person* and *relative*. Cultural respect and sensitivity towards such views, shared by many non-tribal members, demand the strict mitigation of lethal measures, especially recreational killing, as opposed to their current promotion in the plan.

Lastly, **we point to a recent [critique](#) of the state's new 'SOM' wolf estimation methodology to highlight the substantial scientific concerns over its adequacy and reliability:** "The new methods sacrifice precision, but are believed to retain adequate accuracy and sensitivity to

changing conditions for reliable decision-making. We review evidence for the accuracy, precision, and sensitivity of the new ‘scaled occupancy model’ (SOM) applied in Wisconsin. We conclude that the Wisconsin method would systematically overestimate wolf abundance by large (but currently incalculable) margins. Because Wisconsin, similar to other states, not only changed to unverified methods but also implemented widespread wolf killing, shortcomings in their estimates of wolf abundance may have far-reaching consequences for population viability and confidence in state wildlife managers. We discuss findings from Wisconsin alongside similar findings for other states’ occupancy models being insensitive to human causes of mortality that have recently increased. Overall, Wisconsin’s proposed method for estimating wolf abundance shows significant departures from best practices in scientific measurement. Verification will require independent replication and unbiased tests at multiple scales in multiple habitats under different human-induced mortality rates, and peer review before the new methods are considered reliable.” (Treves & Santiago-Ávila, 2023)

In general, all omissions of scientific literature, the arbitrary prioritization of policy objectives, the rhetoric of the plan and the dismissal of public values and concerns *for wolves* point towards a biased, unscientific and instrumental view of wolves that promotes values contrary to broad public perspectives on wolves. We expand on each of these points and many more in our detailed comments below.

Detailed comments

Section 1: Gray wolf biology, ecology and population dynamics

Such a review of gray wolf literature is not scientifically comprehensive. A comprehensive and holistic understanding of wolves, rather than a purely instrumental one, should include scientific information relevant to wolf sentience, consciousness/awareness, internal capabilities (cognition), social dynamics, and culture, of which there is substantial literature (see references below). Otherwise, the suggestion is that these animals are merely biological machines, which is an unscientific in addition to prejudiced view of wolves.

Social system

This information, and especially that specific to pack structure, should be updated to convey a more appropriate understanding of the pack as a family instead of a ‘dominance hierarchy’, which reflects a misunderstanding about wolf families in the wild which are mostly composed of parents and their offspring (according to the departments own research), hence the ‘leading’ of the breeding pair (based on natural deference/submissiveness to parents).

Communication

This section is missing holistic understanding and exposition. Wolves are sentient, self-aware beings (Birch et al. 2020, Low et al. 2012, Safina 2015). Wolves communicate *due to* their high sentience, consciousness and cognition, and a holistic exposition of wolf science should include the latest science on this understanding. As an example, consider Mazzini et al’s (2013) study on how *relationship quality* mediates wolf howling:

*While considerable research has addressed the function of animal vocalizations, the proximate mechanisms driving call production remain surprisingly unclear. Vocalizations may be **driven by emotions** and the physiological state evoked by changes in the social-ecological environment [1, 2], or animals may have more control over their*

vocalizations, using them in flexible ways mediated by the animal's understanding of its surrounding social world [3, 4]. While both explanations are plausible and neither excludes the other, to date no study has attempted to experimentally investigate the influence of both emotional and cognitive factors on animal vocal usage. We aimed to disentangle the relative contribution of both mechanisms by examining howling in captive wolves. Using a separation experiment and by measuring cortisol levels, we specifically investigated whether howling is a physiological stress response to group fragmentation [5] and whether it is driven by social factors, particularly relationship quality [6, 7]. Results showed that relationship quality between the howler and the leaving individual better predicted howling than did the current physiological state. Our findings shed important light on the degree to which animal vocal production can be considered as voluntary.

See also Palacios et al. 2015 & Kershenbaum et al. 2016 on how canid communication is mediated by emotional, cognitive and social processes integral to population dynamics in a cooperative species.

Mortality

“Gray wolves have high reproductive potential and populations in general are resilient in the face of severe disruptions or population declines, with the ability to rebound quickly if the disruption is reduced after an event (USFWS 2012, 2020, Fuller 2003, Hayes and Harestad 2000b).” (p. 12-13) This is the first of multiple instances of a statement that conveys an instrumental understanding of wolves and suggests that wolves can sustain substantial human-caused mortality. Repeated in the document (see other instances below), and in a context where evidence of the internal, emotional, cognitive and social capabilities and dynamics of wolves are omitted, such statement(s) promote a particular ethical view of wolves as expendable, and are insensitive to those who consider wolves beings worthy of care and respect by dismissing such ethically relevant qualities.

Selective Predation and Chronic Wasting Disease

This section is missing the following important literature relevant to positive effects of wolves in mitigating disease transmission in prey species: Tanner et al. (2019) and Hoy et al. (2022). Both studies provide evidence for wolves providing unaccounted for ecosystem services in the form of reduced levels of indirect transmission of diseases (e.g., tuberculosis in wild boar, Tanner et al. 2019) and as a selective pressure (through predation) against genes associated with developing diseases (e.g., severe osteoarthritis in Hoy et al. 2022). Importantly, both studies point to increased benefits of allowing predators to naturally regulate their prey populations, with beneficial effects on prey populations. As stated by Hoy et al (2022): “The evidence we present for predation’s influence on the health of prey populations is also relevant for policy-related arguments about refraining from intensively hunting wolf populations.” given their results were obtained from a system unaffected by anthropogenic wolf mortality (Isle Royale National Park). Such studies suggest hunting would mitigate such benefits, but the current plan does not explicitly acknowledge the tradeoff of such broad ecosystem benefits for the sake of providing a minority of individuals the opportunity to kill hundreds of wolves annually through public hunts.

Predator-Prey Dynamics

This section is missing the substantial and recent scientific literature relevant to concerns over reduced wild ungulate populations, suggesting that killing wolves may not be favorable to hunting of wild ungulates. A recent meta-analysis of predator-prey studies exploring the overall effect of predator removal on ungulate populations found predator removal had low and variable effectiveness for increasing wild ungulate populations (Clark and Hebblewhite 2021). In Alberta, a recent study shows that “increasing large-predator populations do not necessarily reduce hunter harvest of elk” and that sustainable hunting of elk has continued, and populations have increased with increasing large predator populations (Trump et al. 2022). In Alaska, a recent study analyzing 4 decades of efforts to reduce abundance of large predators, including gray wolves and brown/black bears found: (1) no positive correlations between harvests of bears and subsequent moose harvests, (2) moose harvest was negatively correlated with the prior year’s wolf harvests (weak relationship) and (3) no differences in mean moose harvests during periods of recent liberalized killing relative to prior periods (Miller et al. 2022). Such evidence at the population level is consistent with prior and recent research documenting how wolves have primarily compensatory and weak additive effects on population dynamics (Vucetich et al. 2005, Christianson & Creel 2014, Griffin et al. 2011, Brodie et al. 2013) of wild ungulates, given their focus on calves and older females with low reproductive value (Eberhardt et al. 2007; see also Wilmers et al. 2020).

Gray Wolf Population Dynamics

“Due to an adaptable and redundant life-history strategy, research across the world and spanning decades has consistently shown wolf populations to be resilient and persistent, so long as these two factors [prey availability and cumulative mortality] remain adequate.” (p.18) This is the second instance of a statement that conveys an instrumental understanding of wolves and suggests that wolves can sustain substantial human-caused mortality. Repeated in the document (see other instances below), and in a context where evidence of the internal, emotional, cognitive and social capabilities and dynamics of wolves are omitted, such statements promote a particular ethical view of wolves as expendable and are insensitive to those who consider wolves beings worthy of care and respect by dismissing such ethically relevant qualities.

Additionally, considering the whole scientific literature, the statement above is also inaccurate because it fails to distinguish the effects of distinct causes of mortality, such as human-caused mortality, on the resiliency and persistence of *healthy* wolf populations. As an analogy, we could also say that human populations are incredibly resilient and persistent if there is food and low mortality, but this would not be very informative for the *state of health* of the human population or the wellbeing of individual humans.

Impacts of Regulated Harvest on Wolf Dynamics

We find this section omits important work on the biological, ecological, evolutionary and ethical implications of killing wolves, in particular how killing negatively impacts wolves’ physiology and behavior (Almberg et al. 2015, Bryan et al. 2015, Pereira et al. 2022;) which build up to negative impacts on wolf dynamics (Adams et al. 2008, Ausband et al. 2015, Ausband et al. 2017, Brainerd et al. 2008, Borg et al. 2015, Cassidy et al. 2023, Creel & Rotella 2010, Creel et al. 2015, Fuller et al. 2003, Haber 1996, Milleret et al. 2017, Mitchell et al. 2008, Murray et al.

2010, Rich et al. 2012, Rutledge et al. 2010, Sparkman et al. 2011, Vucetich 2012) including wellbeing, fitness, ecological relationships (e.g., “human actions will often attenuate the ecological effects of large carnivores”, Kuijper et al. 2016; see also Ordiz et al. 2013) and evolution (Wallach et al. 2009, Wallach et al. 2015). As many such studies have noted (see Wallach et al. 2009 and Ordiz et al. 2013), killing large carnivores reduces the quality of traits that define them as apex predators. In the case of wolves, the cooperative behaviors that underlie their ecology and dynamics are hindered through the social break-up of the family group, and such social instability highly constrains their ecological effects because “the pack is the apex predator, not the single individuals” (Wallach et al. 2009). We note that none of this literature relevant to harms to wolves as individuals, social units and population(s) is included in the plan, with the outcome that such trade-offs seem non-existent or inconsequential for wolf policy. Such omissions provide further evidence of bias within the plan and department in favor of the use of lethal methods and the instrumentalization of wolves, as the resulting harms are neither acknowledged nor highlighted as concerns for future research.

Moreover, the plan states that “These findings highlight the importance of considering factors outside of abundance that contribute to wolves’ long-term fitness and persistence of populations (Rutledge et al. 2010).” (p.21) However, except for abundance, no other factors inherent to wolves’ wellbeing, physiology (barring disease) or social dynamics (see list above and reference list) seem to be adequately considered anywhere in the plan, and especially for allowing public hunts, despite the ample literature documenting negative ecological and evolutionary implications of exploitation. For example, Rutledge et al. (2010) (cited by the department in the quote above) point to the importance of maintaining stable social structures for long-term fitness, and lists evidence of its importance for various ecological processes such as resource use (Sand et al. 2006; Stahler et al. 2006) and pup survival (Brainerd et al., 2008; Schmidt et al., 2008). Yet, such evidence is dismissed when it comes to setting policy, including the sanctioning and promotion of liberalized killing.

The concerns over the omitted literature and its resulting bias are exacerbated by yet another statement seeking to inspire confidence on the *alleged, not evidenced*, reliability of wolf populations to exploitation: “Nevertheless, numerous wolf populations exposed to harvest and other sources of human-caused mortality have been studied over the last several decades and collectively have suggested that wolf populations are *remarkably resilient* to human-caused mortality, including regulated harvest.” (p. 21) This is the third instance of such a statement (see above) attempting to normalize the killing of wolves for recreation and suggesting wolves can sustain substantial human-caused mortality seemingly without any consequences to be considered for wolf dynamics, ecology or evolution. Repeated in the document (see other instances below), and in a context where evidence of the internal, emotional, cognitive and social capabilities and dynamics of wolves are omitted, such statements promote a particular ethical view of wolves as expendable and are insensitive to those who consider wolves as beings worthy of care and respect. As stated previously, the bias towards lethal interventions and dismissal of wolves is made even starker when considering the amount of science relevant to negative impacts of killing on wolves that has been dismissed with the glib acknowledgment that other factors besides abundance should be considered.

Lastly, the reference list is missing the ‘Bassing et al. 2019, 2020’ studies cited in this section, which actually further add to the arguments above (see reference list).

Section 2: Human Dimensions and Cultural Significance

Although it is true that “...lethal control options (e.g., damage tags) may empower local residents and provide a *sense* of security.” (p. 27), the scientific evidence against the functional effectiveness of lethal methods suggests it is a false sense of security given it notes the ineffectiveness and counterproductive effects of lethal interventions for conflict mitigation (e.g., Bruns et al. 2020, Eklund et al. 2017, Khorozyan and Waltert 2019, Lennox et al. 2018, Miller et al. 2016, Treves et al. 2016, van Eeden et al. 2018a,b; see Santiago-Ávila et al. 2018a,b for a comparative study from the Great Lakes region). According to the scientific literature on the (in)effectiveness of lethal methods, such a ‘false’ empowerment and sense of security comes at the cost of not only actually preventing, but also exacerbating conflicts; i.e., the cost of this sense of empowerment is the *actual* security of individuals and domesticated animals (e.g., Haber 1996, Santiago-Ávila et al. 2018a,b, Treves et al. 2016, van Eeden et al. 2018b). Moreover, research from the Great Lakes has also documented the effectiveness of non-lethal methods in conflict prevention and mitigation (Davidson-Nelson & Gehring 2010, Gehring et al. 2010). This scientific evidence has yet to be added to the plan, hence the tradeoffs are not acknowledged, the public is misinformed and policy is not only ineffective, but increases harms to wolves, domesticated animals and their guardians. The relevant scientific evidence easily fits into the discussion on page 28 as well as any sections on conflict mitigation.

This section also blatantly and cursorily misinterprets important peer-reviewed studies challenging the ‘killing for tolerance’ hypothesis, misinforming the public in the process. Referring to Chapron & Treves (2016) and Santiago-Ávila et al. (2020a), the plan states: “The disappearance of collared wolves from data may also be due to mechanical failure of the collar or from the wolf emigrating out of radio-telemetry range.” (p. 27) As the lead author of one of those studies, I would like to note the biased nature of this statement, which glibly disputes and dismisses the lengthy discussion in the articles on this very point without mentioning the studies challenge such a cursory interpretation. Scientific integrity demands that the department omit such a statement or, alternatively, the inclusion of an explicit and lengthy engagement with the relevant arguments in Santiago-Ávila et al. (2020a).

“The top two priorities for lethal control of wolves among survey respondents were to respond to cases involving threats to public safety and to eliminate wolves from areas where they were attacking livestock.” (p. 33) These priorities speak to a lack of public understanding on the lack of effectiveness and negative impacts of lethal methods on wolves, which exacerbate conflicts and increase risk of harm to domesticated animals and humans. This should be taken as an indicator that the agency should do a better job of educating on these issues, so as to increase proper understanding of wolf dynamics and reduce such harmful misperceptions.

“3. Most people would worry for the safety of their pets and children when recreating in areas where wolves live.” (p.34-35) Likewise, this statement suggests the agency should increase the provision of appropriate information on the low level of conflicts related to humans and pets, and how to prevent them, given many conflicts are due to lack of education or lack of appropriate human behavior and precaution.

“...the top reason for opposition in 2022 was concern that wolves would become endangered again. The least selected reason for opposing a regulated wolf hunting and trapping season in

both 2014 and 2022 surveys was ‘I oppose all forms of hunting’.” (p. 36) What is included and excluded from this section speaks loudly. For example, even more striking than the quote above is that most of the public opposes wolf hunting for a variety of reasons. Given the recent liberalization of killing wolves by the state, it would be incredibly informative to note majority support for the following reasons for opposing a regulated wolf hunting/trapping season: opposition to specific methods of harvest like hounds (64%) or traps (70%), and feelings that hunting wolves is unnecessary (62%) or culturally offensive to Native American tribes (57%). All such reasons convey majority disagreement with practices currently sanctioned and promoted by the legislature and the WDNR, and such a conflict between managers and the public should be not only acknowledged, but foregrounded and carefully considered in policy. At the very least, such objections of the broad public should be noted somewhere in the plan, yet are not, arguably given the stated opposition to agency policies.

Part Three: Wisconsin Tribal Perspectives and Cultural Significance

We argue the plan enshrines and promotes the instrumentalization of wolves as opposed to their inherent value, lives and wellbeing, given the plan's focus on benefits for humans, especially consumptive benefits (e.g., killing wolves). Despite the agency invitation to First Nations to state their cultural worldviews and values, the inherent value of wolves championed by some tribes, most notably the Ojibwe, is unreflectively misinterpreted as a social/cultural ‘benefit’ wolves provide tribal members, which is completely contrary to the definition of inherent value as individual beings valuable for themselves, rather than what they can provide to humans. Wolves have intrinsic value for tribal members and many other humans because *each wolf* is considered a person or relative (David 2009). This is not a ‘social/cultural benefit’ of their existence (i.e., ‘existence value’), but rather a worldview that extends respect and protection to all *individual* wolves, not just the population. The denial and misinterpretation of intrinsic value is insensitive and disrespectful to tribes and all others who consider wolves relatives and persons. Those individuals are harmed each time an individual wolf is killed, rather than consider the ‘benefit’ of a wolf population. In addition, such misinterpretation does a disservice to respectful intercultural dialogue and understanding. The state should also note that the view of wolves and the wolf policies advocated by the Ojibwe (e.g., self-regulation of wolf populations for ecological purposes, no lethal management) are far more holistic and aligned with current scientific understanding than those promoted by the state (Gilbert et al. 2022).

Section 3: Gray Wolves in Wisconsin

Population Mortality Patterns (in Historical Overview of Wolves in Wisconsin)

This section is missing two notable references analyzing wolf mortality patterns in Wisconsin, as they relate to lethal management methods, seasonality and other environmental and policy factors: Santiago-Ávila et al 2020a, 2022b). Other relevant studies from other wolf populations include Louchouart et al. 2021 and Santiago-Ávila et al. 2022a.

Wolf Harvest Management

Quota Setting Process — Despite mention of the “numerous factors” the department allegedly considers when developing quotas, there is only explicit mention and discussion of quota effects on wolf population *size*. There is absolutely no discussion of how the following factors are considered into the quota process: projected impacts of wolf harvest quotas on wolf physiology, dynamics, social structure, wellbeing, conflicts, disease, illegal killing, ecological relationships

or evolution (see comments on ‘Impact of Regulated Harvest on Wolf Dynamics’, Section 1, and reference list, e.g.,: Haber et al. 1995, Almborg et al. 2015, Bryan et al. 2015, Wallach et al. 2015, Kuijper et al. 2016, Santiago-Ávila et al. 2018, Pereira et al. 2022).

“Upon determination of a suitable quota, the total quota is allocated among the six wolf harvest zones (Figure 20). The application of harvest pressure geographically may further be informed by different philosophical and management objectives.” (p. 68) Other than vaguely describing factors to consider, the plan does not explain the process for “determination of a suitable quota”, despite acknowledging that substantial agreement on this and other matters has proven elusive. Given this substantial disagreement in perspectives about wolf killing, any process and criteria for determining a quota should be explicitly described, to ensure equitable consideration of wolves, nature and the broad public. This description should explicitly include which matters, objectives or criteria were prioritized in such a process. For example, what priority is given to hunter/trapper opportunity and allowed methods relative to conflict mitigation and ecological benefits, and how is that represented in the current plan. This is particularly important given the broad majority of the public feels that killing wolves is unnecessary and culturally offensive, and does not agree with many methods (see comments on omitted information in Section 2).

Wolf Harvesting License Issuance – Please explain the process, criteria and discretion relevant to establishing a specific hunter/trapper success rate for issuing licenses. This is a critical part of the process and it seems to have fluctuated enormously in a discretionary and obscure fashion (10:1 to 20:1 ratio).

Wolf Harvest Registration and Hunter/Trapper Surveys – Please consider limiting registration time to 6-12 hours, given it can be done via website or phone and season closures depend on accurate, timely registration and updating of season quotas.

“The department has also surveyed successful license applicants following the completion of each wolf season to collect more data on hunter/trapper activities. This data provides more information on hunter effort and success, use and timing of various legal methods, hunter/trapper experiences and preferences, and applicant motivations. These surveys provide data to paint a fuller picture of the social parameters surrounding the wolf harvest season.” (p. 71) The social parameters surrounding the season are not limited to those who want to kill wolves. This type of overemphasis on hunters/trappers biases the department’s perspective towards promoting killing. To correct this bias, the department should also develop and promote an informed questionnaire for the non-consumptive public to gather more information on their perceptions of use/timing of various methods and motivations used for killing wolves. That will certainly provide a broader, clearer social context surrounding the season. That certainly forms the broader social parameter under which the wolf harvest season is held, and can initially be informed by the omitted statements for why the majority of individuals do not support wolf killing (see comments on Section 2).

As for licenses, it should be noted in the plan that State Licenses Purchased were always much lower than those awarded, and purchased licenses have always totaled <1,600. This provides a glimpse into the narrow group of individuals actually invested in hunting and trapping of wolves, as opposed to, for example, the majority of individuals that disagree with hunting them (62% of

8,750 = 5,452 only within the survey sample, a blatant underestimate) and with the methods used for doing so (70%, 6,125; see survey section above). Hence, the interests of hunters/trappers seem to be disproportionately prioritized relative to those of others, including not only wolf advocates and tribes, but also ranchers that are actually interested in science-based conflict reduction (which hunting/trapping may exacerbate).

Wolf-related conflict

“...the costs to individual livestock producers can be high, particularly in areas of chronic depredation activity.” – The department should have data on the costs to individual livestock producers given their compensation program. This data should be provided to the public like any other data in this section, to evidence such a statement. How many farms experience chronic depredations, and what’s the economic cost?

Non-depredation Impacts on Livestock – Although the thoroughness of this section is commendable, it provides a blatant contrast to the magnitude of missing scientific literature on wolf ethology, including sentient and cognitive capabilities, and the impacts of lethal methods on wolves, their physiology, psychology and social dynamics, despite the plan being about wolves (not ‘livestock’) and such science being of comparable or more important to the majority of the public who is not a domestic animal guardian and is favorable to wolf protections.

Abatement options – Alteration of animal husbandry practices (if more adequate ones exist) should be required prior to implementation of any other non-lethal methods given their potential to mitigate conflicts effectively, feasibly and economically, and especially given non-lethal methods may require particular changes in husbandry to be effective. Additionally, non-lethal methods should be required and exhausted prior to the consideration of lethal methods to mitigate the risk of subsequent conflicts. Non-lethal methods have been proven more effective, while lethal methods have been characterized as ineffectiveness and counterproductive for conflict mitigation (e.g., Bruns et al. 2020, Eklund et al. 2017, Khorozyan and Waltert 2019, Miller et al. 2016, Lennox et al. 2018, Treves et al. 2016, van Eeden et al. 2018a,b; see Davidson-Nelson & Gehring 2010, Gehring et al. 2010 and Santiago-Ávila et al. 2018a,b for the Great Lakes region). This scientific evidence has yet to be added to the plan, hence the tradeoffs are not acknowledged, the public is misinformed and policy is not only ineffective, but increases harms to wolves, domesticated animals and their guardians. The relevant scientific evidence easily fits into the discussion on page 28 as well as any sections on conflict mitigation. In addition, this section should include an explanation of the decision-making process, criteria and discretion involved in determining when to implement lethal methods in response to verified conflicts.

“However, rendering facilities rarely service areas in northern Wisconsin where most depredations occur, and burial can be impractical and pose groundwater contamination and bio-security hazard risks. Composting is often recommended, but can be costly and requires proper site selection, a facility and equipment.” (p.77) – That is beside the point if it is required, and it should also be a requirement prior to implementation of any interventions given it predisposes farms to predation.

Hunting Dog and Pet Conflicts – “Lethal controls may also be considered in response to verified pet conflicts” (p. 81) As with any other type of conflict, lethal interventions should be considered only after verification and exhaustion of non-lethal alternatives, including: responsible guardianship (not increasing chances of conflict, pets on leashes, pets indoors at night, not roaming, reducing attractants, etc.). Such measures should be required prior to any intervention, especially lethal(s). Conflict mitigation should also begin with implementing the appropriate non-lethal interventions *after* modifying human behavior to effectively reduce hazards of conflict.

Human Safety and Risk Perceptions – As with any other conflict(s), lethal control should follow similar requirements as predation on domesticated animals regarding not only verification, but also non-lethal abatement requirements on the part of the individual(s) reporting the conflict. Such measures should be required prior to any intervention, especially lethal(s).

- Please clarify the following missing but crucial information:
 - How is a concern for human safety verified/determined (given the mentioned criteria)? What evidence or documentation is presented? Where does this discretion lie?
 - What’s the criteria for implementing lethal methods in such cases?
 - Why is there no standardized evaluation of risk?
 - The documentation of evidence of risk in such cases, especially prior to the implementation of lethal methods, is essential given the uneducated public may misperceive normal wolf behavior as threatening and may exacerbate the risk through their behavior.

Integrated Wolf Conflict Management

“In determining a conflict management strategy, preference is typically given to nonlethal methods when they are deemed practical and effective. However, non-lethal methods may not always be applied as a first response to each conflict. The most appropriate initial response to a wolf conflict could be a combination of nonlethal and lethal methods.” (p.84) – Please substantiate the claim that the best initial response is a combination of methods. Such a statement is not supported by the scientific evidence, especially when considering the additional harms of lethal methods to wolves, their dynamics, and conflicts. Moreover, this statement should clarify the criteria for determining that a non-lethal method is “practical” and “effective” and if/how those considerations are weighed against the killing of a wolf.

“Other times, such as a farm experiencing chronic depredation by wolves which have been conditioned to non-lethal techniques, the most appropriate strategy may be application of lethal methods alone.” (p. 84) – Please present data to substantiate such a statement, perhaps on chronic farms and their husbandry practices, including carcass disposal and other abatement measures prior to any implementation of lethal methods.

“Regardless, it is important to note that no abatement measure, whether lethal, non-lethal, or a combination thereof, has been proven to be 100% effective in eliminating wolf conflict. Decades of experience in addressing depredation conflict Wisconsin have shown that using both lethal and non-lethal abatement techniques is more effective in reducing livestock conflicts than a solely non-lethal approach. Therefore, a fully integrated approach which allows the broadest

range of options to be tailored to each conflict scenario typically offers the most practical and effective conflict reduction program.” (p. 84) Our recommendations above regarding requirements of abatement measures, changes in husbandry practices and a combination of non-lethal methods will likely mitigate instances of use of lethal methods, are based on the most recent scientific literature, and have yet to be implemented. Hence, we propose such requirements be incorporated if striving for the most practical and effective conflict mitigation program. Given it goes against the established body of scientific evidence cited above, the department should also present data of those decades of work to substantiate the claim above that a combination of methods, rather than non-lethal methods implemented first and foremost, works best for conflict mitigation.

‘The highly selective lethal removal of individual wolves or wolf packs by governmental agencies is considered by many professional biologists to be an important part of recovery and conservation programs for wolves (Boitani 2003, Breck and Meier 2004). David Mech wrote, “lethal control will remain the ultimate means of curbing wolf damage to livestock and pets,” and, “direct lethal control is still usually the only practical course under most conditions” (1995). The Wildlife Society stated in their technical review of the restoration of wolves in western North America that, “control of wolves preying on livestock and pets is imperative and should be prompt and efficient if illegal killing is to be prevented and human tolerance of the presence of wolves is to be maintained” (Peek et al. 1991). A more recent review of large carnivore management by The Wildlife Society in 2012 stated, “... a large share of the North American public tolerates their presence (large predators) and realizes that management (harvest/agency control) at some level is at times necessary” (Peek et al. 2012).’ (P. 84) – These statements present outdated scientific evidence, now >20 years old, that has been debunked by the best available and most recent science on the effectiveness of non-lethals over lethal methods as well as evidence suggesting lethal methods do not increase tolerance, with evidence from WI and beyond (e.g., Hogberg et al. 2015, Louchouart et al. 2021, Santiago-Ávila et al. 2020a, 2022a). It does not inspire trust in the department’s scientific expertise or lack of bias towards wolves that such evidence promoting stronger protections and against lethal methods is omitted, while contrary, older and less robust evidence is foregrounded and presented as evidence for basing policy on.

Wolf Population Health and Captive Wolf Management

This section promotes a cursory and unscientific and reductionist understanding of wolf ‘health’ as only concerning disease prevalence and transmission. This understanding of ‘health’ runs contrary to most interpretations that include other physical, mental and social aspects relevant to sentient, conscious and social beings such as humans and wolves. For example, the World Health Organization defines ‘health’ as “a state of *complete physical, mental and social wellbeing* and not merely the absence of disease or infirmity”. We see no reason why such a definition would not apply to wolves given their similar internal and social capabilities (see evidence presented above and reference list). We advance that such an understanding would be grounded in better and stronger inference science, and would certainly consider the harmful effects of lethal methods on wolves as individuals and as a population.

Section 4: Wolf Management in Wisconsin: From Recovery to Sustainable Management

“The following section strives to formalize a path forward which supports a healthy wolf population and the benefits therein while minimizing wolf-related conflicts.” (p. 98) – Given the evidence presented above, we believe the plan fails to support a “healthy” wolf population (their ‘wellbeing’ as individuals and population), although arguably a sustainable one, or to promote policies that will minimize wolf-related conflicts, given the emphasis placed on recreational killing opportunities (used for conflict mitigation, which runs contrary to the scientific literature) as well as the lack of requirements for abatement and non-lethal measures that are more effective and considerate of wolf wellbeing.

Wolf Harvesting Zones

The department should explain the justification and science relevant to this type of density ‘zone’ management. The department seems to assume that lower zonal densities of wolves will lead to less conflicts (Zones 3 and 4, and 1A and 4A) without providing scientific evidence on the matter. Moreover, the approach ignores the large body of scientific evidence indicating that lethal methods and especially indiscriminate killing are ineffective and potentially counterproductive at mitigating conflicts (see prior comments and reference list below). There is some superficial mention of such literature and conclusions in the plan (which should be improved), but such science is never applied to conflict policies. This also contributes to the erroneous perception that objectives A (‘Ensure a healthy and sustainable wolf population to fulfill its ecological role’) and B (‘Address and reduce wolf-related conflict’) are in conflict, when in fact ample literature has documented how non-lethal methods preserve wolf dynamics while being more efficient at mitigating conflicts (than lethal methods; see above comments and references). Likewise, there is also a lack of justification for managing Zone 6 “at very low wolf densities” (which will already be the case given the mentioned suboptimal habitat) through killing rather than ensuring that *healthy* wolves (see discussion above on the impact of lethal methods on wolf dynamics) are able to persist in these zones (Objective A) while mitigating conflicts (Objective B) through non-lethal abatement measures (see above discussion and reference list). Hence, we find the department crafted a wolf zoning policy without much regard to the weight of scientific evidence and inference relevant to its stated objectives, or without explicitly conveying the trade-offs involved between objectives or user groups (e.g.; see Borg et al. 2016 on how killing affects viewing opportunities), and in a way that will likely increase harms to wolves, domesticated animals and their guardians. Given the clear contradiction of policies with the scientific evidence, such actions by the department could very well be interpreted as placing the *consumptive* interests within Objective C (which are not *all* public interests) above a healthy and sustainable population (A) and conflict-mitigation concerns (B), while erroneously using the latter (B) as justification. In that process, the department is also misinforming the public and failing Objective D (‘Increase public understanding of wolves in Wisconsin’). We recommend the department follow the weight of scientific evidence in aligning objectives A and B through mitigating the exploitative component of Objective C, which will also increase benefits beyond ecological ones to a broader public throughout Wisconsin wolf range.

- Subzones 1A and 4A, “However, if livestock conflict becomes reduced over time to lower levels deemed more tolerable, one or both subzones could be deactivated such that it would effectively function as part of the greater zone. Their use may also be restricted if public harvest pressure interferes with site-specific conflict abatement efforts (e.g., wolves becoming ‘educated’ to trapping efforts and reducing abatement trapping

effectiveness).” (p. 104) Please define the criteria to reach such “lower levels” of conflict for deactivating such zones. It should be noted that indiscriminate killing has been proven to increase the risk of conflicts (see discussion above and reference below), and therefore increasing licenses is not an appropriate means of realizing Objective B.

- Subzones 1B and 2B, “Their use would be intended to respect tribal interests in these areas while also continuing to allow reasonable wolf harvest opportunity.” (p.106) It is discouraging and disrespectful to see this type of ‘respect’ for tribal interests: limiting the killing of their brother and relative to those that live on reservations, while not only allowing, but promoting and attempting to optimize killing opportunities through most of the state. Did the department consider closing such areas entirely to indiscriminate killing? This seems yet another example of the clear and exaggerated priority given in all segments of the plan to providing opportunities for indiscriminate wolf killing throughout the state. Even more evidence of this type of bias is how any reduction in killing opportunity is noted explicitly, e.g., “...initiating an anticipatory subzone closure prior to fully meeting the subzone limit may result in *significant reductions (up to 50%) of reasonable harvest opportunity* in these areas”, when in fact such reductions equal 4-2 wolves. Meanwhile, the plan remains silent on any reductions in ecological benefits or other “values-based” enjoyment given the killing of hundreds of wolves annually through hunts and ineffective lethal methods (e.g., how does harvest affect wolf-viewing opportunities and positive interactions?).

Objective A: Ensure a healthy and sustainable wolf population to fulfill its ecological role

It remains to be seen if this plan ensures a sustainable population, given the many concerns over the new SOM wolf population methodology (see Treves & Santiago-Ávila 2023) and decisions over public killing (hunting/trapping/hounding). What is clear is that it cannot in any way be said to ensure either a ‘healthy’ wolf population or that population fulfilling its ecological role. The plan does not consider a more appropriate scientific understanding of health for conscious, social beings (see comments on wolf ‘health’ in Section 3 and referenced scientific literature on wolf capabilities). Moreover, the plan ignores scientific evidence suggesting that exploited wolf populations will be unable to fulfill their ecological role (e.g., Wallach et al. 2009, Ordiz et al. 2013, Kuijper et al. 2016) or how much value in terms of ecological and “value-based” benefits the public will be sacrificing to the desire for a minority to kill wolves (e.g.; Borg et al. 2016) despite the majority of the public also opposing most reasons to kill wolves.

- Strategy A1, Product A1a and Strategy A2 – the department should include measures of health, such as various cortisol levels (e.g. Bryan et al. 2015, Pereira et al 2022), pair/pack persistence (e.g., Brainerd et al. 2008, Cassidy et al. 2023) and impact of management on such measures (see references in ‘Impact of Regulated Harvest on Wolf Dynamics’, Section 1, above).

Objective B: Address and reduce wolf-related conflict

This objective lacks clear and measurable benchmarks for its stated metrics. For example, what number of farms (suffering predation issues) constitutes “few” when only less than 50 farms are affected annually (of thousands)? Moreover, downward to stable trends in number and distribution of conflicts with hunting dogs seems to rely more in regulating and restricting hounding and hound training than any possible intervention in wolf policy. There should be some acknowledgment that the burden for addressing and reducing conflict with hunting dogs is

primarily on hunting dog guardians, while the state should mitigate such conflicts in the least harmful way rather than killing more wolves in response.

The department also assumes conflict between Objectives A and B given its omission of the scientific literature relevant to how unexploited wolf populations are healthier and are involved in less conflict with domesticated animals (see Section 1 comments and reference list); e.g., stable wolf families deterred by non-lethal methods engage in less conflict than disrupted families (see e.g., Haber et al. 1996; Santiago-Ávila 2018a,b). Such an apparent conflict between objectives A and B is non-existent, given wolves' ecological role as apex predators is optimized along with their wellbeing as individuals and families (see comments on Objective A above), which would suggest mitigating lethal methods to the extent possible, and precluding indiscriminate killing. In dismissing this conclusion, the department falls short in its ability to interpret the scientific literature for purposes of harmonizing and optimizing objectives and, most importantly, for mitigating harm for all involved.

Strategy B1 – Given the body of scientific evidence, all implementation of abatement measures should begin with *required* (rather than “encouraged”) changes to husbandry practices (if necessary), followed by required implementation of non-lethal interventions prior to any consideration of lethal methods, so as to optimize objective B (and A).

- Please make available the document ‘Guidelines for Conducting Wolf Conflict Management in Wisconsin’, which seems unavailable to the public. In addition to making it public, it should also be subject to public comment as part of the planning process.
- Product B1f – see comments above on wolf zoning and how indiscriminate killing is not only not effective, but potentially counterproductive to conflict mitigation. Hence, such a product suggests once again lack of reliance on scientific evidence along with a prioritization of indiscriminate killing. At the very least, certain areas should be maintained free of lethal methods for the purpose of researching the effectiveness of non-lethal interventions in their absence (which may be higher; see Santiago-Ávila et al. 2018a,b; van Eeden et al. 2018a,b).
- Product B1h – any mitigation plan should require first and foremost, rather than “focus on”, non-lethal abatement by producers

Strategy B3, Product B3a: Continue to work cooperatively with USDA WS to fulfill wolf conflict management in Wisconsin – We recommend the department provide the agreement with USDA APHIS-WS and seek public comment on it as part of the planning process.

Strategy B5: Continue to research conflict mitigation, prevention measures and develop new techniques for addressing conflicts – Please note the prior recommendation of focusing such research on non-lethal interventions (which are preventive and more effective and reliable than lethals). Moreover, such research should set aside areas where wolf killing is prohibited to successfully evaluate the effectiveness of non-lethal methods in preventing conflicts (e.g., lethal methods focused on conflict areas will confound evaluations in addition to potentially exacerbating conflicts).

Strategy B6: Increase public awareness of wolf conflict program and abatement techniques – Much work is required here given the plan fails to include much scientific evidence, especially in areas related to wolf ethology, wellbeing, effect of management on mortality, and effect of lethal

methods on conflicts which should be resolved to be comprehensive. Without correcting such omissions, the information used by the department cannot be considered accurate, current or comprehensive, and will certainly misinform the public.

Objective C: Provide multiple benefits associated with the wolf population

This objective should include a quantification of the ecosystem benefits of wolves given it does not explicitly and transparently acknowledge or consider the potential lost value of ecological services provided due to wolf killing (e.g., Ordiz et al. 2013). Furthermore, the objective includes indices of satisfaction for hunters/trappers, but not for non-consumptive users whose chance of enjoying wolves is being reduced by consumptive users (e.g., Borg et al. 2016). Such a conflict is not even acknowledged, and it is assumed throughout the plan that an exploited yet sustainable wolf population provides the same ecological benefits and the same levels of non-consumptive experiences (for a broader public) without any supporting scientific evidence, and contrary to some omitted evidence (e.g., Borg et al. 2016, Kuijper et al. 2016, Ordiz et al. 2013, Wallach et al. 2009). Such omission of evidence and trade-offs added to the emphasis on the satisfaction of consumptive groups suggests this objective is meant to optimize the recreational killing of wolves, rather than all values, without an explicit accounting of tradeoffs and opportunity loss with other “user” groups.

- In its discussion of reasons for opposing a wolf season, the department mentions concerns over sustainability and harvest methods. However, it dismisses similarly majoritarian perspectives that convey agreement with the lack of necessity for hunting wolves and grave concerns over cultural insensitivity. Such concerns are not explicitly acknowledged in Strategy C1.

Strategy C1: Provide a well-regulated wolf harvest season consistent with public preferences and management plan objectives

- Product C1a: Utilize public harvest to help manage wolf populations consistent with zone specific objectives – See above comments (e.g., Objective A) on the misguided use of harvest zoning to manage populations and conflicts and the scientific literature that suggests this is not efficient management for ecological benefits (A), reducing conflicts (B) or even providing for broad benefits (C). The department suggests that legal harvest will “provide the primary mechanism to manage wolf abundance and distribution at the landscape scale” without providing adequate and comprehensive scientific evidence for that type of management. For example, why do wolf abundance/distribution need to be managed if the body of scientific evidence suggests they self-regulate and lethal methods are inefficient or counterproductive to conflicts? Where is the scientific evidence supporting this type of management? Again, such prioritization of killing without adequate evidence conveys bias in the plan towards the use of lethal methods, and in particular optimizing hunter/trapper opportunities at the expense of all other objectives or public perspectives. Moreover, it immediately betrays the statement: “Department research scientists should ensure these methods remain based upon the most appropriate and science-based information (see Strategy A2).” (p. 124).
- Product C1c: Develop wolf educational materials and provide such materials to all wolf harvesting license holders – All educational materials should be comprehensive and provide an unbiased and holistic perspective of wolves as conscious, sentient, self-aware, autonomous agents with families.

Strategy C2, Product C2g: Determine the number of licenses to be issued for each zone based upon evaluation of zone-specific harvest rates, method-specific estimated success rates, zone-specific quotas, and timing of past zone closures – First, the department should not be promoting such a harmful activity for domestic animals and wolves, especially given broad public opposition to the practice. If constrained by statute to do so, the department can strive to minimize the quota. To paraphrase a judge in a recent decision on the matter: a quota of ‘0’ is still a number. The department can also severely restrict methods, and limit timing to only the period the zone in question is open.

Strategy C3, Product C3b: Recognize the existence, cultural and bequest values of wolves – Please acknowledge that tribal and non-tribal individuals connect with wolves because they consider them persons and relatives, rather than as a population or types of a species (see comments above). Such views are not reducible to ‘spiritual’ or ‘cultural’ values and should be acknowledged and considered. Moreover, please explain how you believe you are giving due consideration to those values when lethal management is explicitly signaled as the tool to ‘manage’ or ‘control’ wolves.

Objective D: Increase public understanding of wolves in Wisconsin

Such a goal should incorporate all the included scientific literature on wolf ethology (emotional, cognitive and social capabilities) and agency (Edelblutte et al. 2022), as well as how such capabilities and wellbeing is greatly harmed by killing them. Unfortunately, almost all such scientific literature is missing from the plan, which thoroughly betrays this objective. Moreover, given the emphasis on lethal methods throughout the plan and the various reminders that exploitation can be done sustainably, such omission of scientific evidence suggests a biased plan favoring a particular, instrumental view of wolves *that is ethical rather than scientific, but that is nevertheless presented as comprehensive science* (Treves & Santiago-Ávila 2020; Santiago-Ávila et al. 2018c, Santiago-Ávila & Treves, 2021). Given the above, the plan contains grave ethical and scientific misunderstandings and inadequacies that betray its ability to increase appropriate and holistic public understanding of wolves. More importantly, the department should clarify what it means to “foster public support for wolves” given such glaring omissions of science from the plan. Such omitted evidence would only allow for promoting the narrow, instrumentalized understanding and support of wolves promoted by the plan, which is a biased and unscientific perspective, and contrary to that of the broad public according to the department’s latest survey. We urge the department to correct the omission of science relevant to wolves in the plan prior to doing any type of educational outreach.

Strategy D1, Product D1f: Share scientific information and research results via popular media outlets and in-person presentations – To promote transparency, independent review, replication, trust and accountability, scientific information including data, methods and statistical code for all analyses and scientific, peer-reviewed publications from the department should be made available to the public free of charge through the department’s website.

Strategy D2: Ensure educational materials are reflective of the latest science and accumulated management experience – We recommend the department include the scientific literature and

topics we have identified as missing from the plan so that its educational materials actually fulfill this criteria (see reference list below).

- Product D2b: Continue to provide Wolf Ecology Courses – Given the scientific deficiencies identified in the plan and department documents, currently the department presents a view of wolf ecology limited to information relevant to instrumental enjoyment, such as ecological and recreational benefits (which a focus on killing), while dismissing relevant science germane to viewing them holistically. To correct such harmful biases, we recommend any course of wolves or wolf ecology begin with an exploration of wolf sentience, sapience and sociability, and address how ecology is mediated through those internal qualities and interests of individual wolves. Moreover, such courses should also include an introduction to the scientific evidence on how lethal methods impact wolf ecology.
- Product D2c: Foster relationships with partner groups to deliver science-based educational materials to the public. – Such a ‘product’ should include partnering with wolf advocacy groups and tribes for preparing educational materials, given such groups present a more comprehensive view of wolves grounded in ethology, more robust science, and generally include information dismissed by the department or consumptive users (e.g., see comments on Product D2b above).

Objective E: Conduct Scientific Research to Inform Wolf Management and Stewardship

In general for this objective, we recommend the department focus its research on the science we have identified as missing from the plan, such as researching holistic wolf health and wellbeing (beyond disease), how management and interventions affect such health at the individual (e.g., cortisol levels and reproductive hormones) and population scales (e.g., pack persistence, survival, distribution, size), and how to improve humans’ views of wolves as individuals from a holistic, rather than instrumental, perspective. Moreover, given how the risk of anthropogenic mortality will permeate the landscape, including deep into core wolf range, if further hunts are held, it seems essential to also research the effect of indiscriminate killing on territory size and population model estimates. We are disappointed with the omission of any research on the impact of lethal methods on population dynamics and size, especially when the current SOM methodology was developed and validated with data from years during which wolves were under full Endangered Species Act protections (see Treves & Santiago-Ávila 2023 for a critique). Nor this section concerns itself with research on how widespread killing will affect ecological influences (research on this topic is not included either). We are deeply concerned about such omissions, especially given lethal management seems the preferred alternative by the department, which give the impression of strong, unscientific bias in favor of such methods to such extent that ecological and evolutionary consequences of such policies are not even considered for research.

Strategy E1: Continue to evaluate and improve methods used to monitor wolf population size and abundance. – Please see the attached critique of the SOM methodology, which discusses several concerns that limit the model’s reliability, especially in the context of liberalized killing (Treves & Santiago-Ávila 2023).

- Product E1b: Evaluate the potential effects of variability in territory size on population model estimates – Given how the risk of anthropogenic mortality will permeate the landscape if hunts are held, it seems essential to also evaluate the effect of lethal

interventions on core range, territory size, pack size, and population model estimates. Dismissal of this pervasive and widespread effect suggests bias by the agency on what scientific questions are prioritized, namely those that do not question the use of lethal methods.

- Product E1c: Develop a wolf population estimate independent of the scaled occupancy model to enable comparisons – This should have been done prior to establishing the SOM as the only model, given concerns over estimation in addition to lack of precision of the estimates (Treves & Santiago-Ávila, 2023). Additionally, we recommend that any methods developed strive first and foremost for least harm and be non-invasive.

Strategy E3, Product E3a: Continue to cooperate with universities, USDA WS's National Wildlife Research Center, and the department's Office of Applied Sciences to evaluate and develop new techniques for wolf conflict management – The first step in this path is to update the scientific evidence you and most (if not all) the above organizations are basing wolf policy on, so as to provide unbiased scientific guidance to what is an ethical.

Strategy E6, Product E6a: Publish research findings in peer-reviewed scientific research journals. – To make the science as transparent, replicable and reliable as possible, we recommend all peer-reviewed science from the department be published as open access, with the aforementioned data, methods and relevant statistical code included free of charge, following the hallmarks of strong, reproducible science (Artelle et al. 2018).

Objective F: Provide Leadership in Collaborative and Science-Based Wolf Management in Wisconsin

We have identified a number of shortcomings and concerns, both scientific and ethical, with the current draft that if not appropriately addressed will inevitably degrade trust in the department and hurt its ability to provide either leadership or science-based education and policy. We recommend revising this plan and incorporating the relevant literature and our comments as the first step to providing trustworthy leadership.

Strategy F1, Product F1a: Establish and maintain a department Wolf Advisory Committee that is inclusive of the views of all stakeholders, tribes and partners – Currently, the stakeholder group definitions bias the composition of the WAC in favor of the instrumental concerns of narrow interest groups, which hold views that are opposed to those of the majority of Wisconsin residents who support wolf protections and consider it wrong to kill them recreationally. To correct for this bias in perspective of the WAC, we recommend the department modify the group definitions to separately include 'environmental/conservation organizations' whose mission includes conservation of wildlife and natural landscapes (e.g., The Rewilding Institute, Sierra Club) and 'wolf/animal advocacy organizations' (e.g., Project Coyote, Friends of the Wisconsin Wolf, Alliance for Animals).

Strategy F2, Product F2d: Continue fostering alliances with conservation organizations – We would like to note that the inclusion of Wisconsin Trappers Association (WTA) as a 'conservation organization' conveys an ethical bias in the plan. The WTA is explicitly an interest group invested in promoting a consumptive activity, regardless of their feelings towards conservation. Consumptive use of wildlife does not imply a conservation mission.

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