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February 14, 2021

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Secretary Preston Cole
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Submitted via e-mail

Dear Secretary Cole, Chairman Prehn and Natural Resources Board members,

On behalf of the Humane Society of the United States and our supporters in Wisconsin, I am writing to urge the Natural Resources Board (NRB) to reject the Department of Natural Resource's (DNR) quota of 200 wolves and set a quota of zero for the February 2021 wolf hunting and trapping season.

Opening a February trophy hunting season is also scientifically unsupportable. Allowing wolf trophy hunting and trapping at *any* level could have dire consequences, and experts (including former DNR staff) warn that allowing hunting at the excessive level contemplated by the state's current Management Plan will prove indefensible and likely catastrophic. Holding a season in February will only magnify these impacts.

The proposed quota is arbitrary and scientifically unsupported. Unlike prior wolf quota proposals, the February 2021 proposal does not give adequate reasoning for their quota, nor does the proposal include any management zones. Given just a few short days to act, the DNR was unable to gather public input or engage in necessary tribal consultation and surely did not have enough time to review new scientific literature. As such, setting a quota other than zero is irresponsible and will cause the agency to lose the public's trust.

The DNR should not set any wolf quota based off its fatally outdated Wisconsin Wolf Management Plan. As discussed in a letter that the Humane Society of the United States submitted to the DNR and the NRB on November 19, 2020 ("November 19 Letter," attached to these comments), the Plan's management goal of 350 wolves is based on science that even the Plan's drafters admit is no longer valid.¹ Additionally, DNR staff has admitted that the Plan's method of estimating the wolf population is no longer accurate, and the DNR has failed to adjust its management goal to account for its new methods for estimating the population.² If the DNR intends to move forward with its new methodology, which DNR staff has



stated will necessarily create population numbers higher than its old methodology, it must recalibrate its management goals accordingly.³

If the State of Wisconsin wishes to establish any credibility in its ability to manage its wolf population, DNR must not rush the process of opening a premature and unsupported wolf hunt. We accordingly urge the DNR and the NRB to set a quota of zero so that the necessary time may be taken to make informed and transparent decisions based on sound science, meaningful tribal consultation, and with the input of diverse stakeholders.

I. DNR Must Adhere to Its Commitments of a Transparent, Deliberative, and Inclusive Process and Must Not Rush a Wolf Hunt

On January 13, 2021, the DNR submitted written testimony to the Senate Committee on Sporting Heritage, Small Business and Rural Issues and the Assembly Committee on Sporting Heritage. In that testimony, DNR correctly identified that statute allows only for a single annual season beginning in November, and said that it was “committed to providing a transparent, deliberative and inclusive process” to implement a season in beginning in November 2021.⁴ While the Humane Society of the United States does not support any wolf hunt, we support the DNR’s stated commitment to a transparent, deliberative, and inclusive process. Rushing into a wolf hunt following a severely truncated public comment period, no stakeholder outreach, and minimal time to develop quotas would unquestionably abandon this commitment, and send a clear signal that political pressure trumps science and public input.

Indeed, on December 4, 2020, when the DNR first announced that it would not be holding an early 2021 wolf season, it stated that “[a]ll wolf management, including hunting and trapping, will be conducted in a transparent and deliberative process, in which public and tribal participation is encouraged,” that it would “work collaboratively and transparently to create a new wolf management plan to reflect our increased understanding of the biological and social issues relevant to wolf management.”⁵ The DNR stated:

implementing a wolf season requires adequate time not only to develop a science-based harvest quota but also to engage the public and tribal partners in the development of a season plan that adequately reflects the interests of diverse stakeholders throughout Wisconsin.⁶

Involving all relevant stakeholders and developing a science-based quota and wolf management scheme does take time, and it would be unwise for the DNR to rush this process. As the DNR recognized in its January 13 testimony, the necessary process takes many months.⁷ It would be unprecedented, irresponsible, and shortsighted to set a quota other than zero without convening and conferring with the Wolf Committee, in addition to tribes and other interested stakeholders.

II. Wisconsin’s current management goal of 350 wolves is inadequate and not supported by sound science

The 1999 Wisconsin Wolf Management Plan (hereafter “Wisconsin Plan”), containing a 2007 addendum, is woefully out of date. Fundamental aspects of the Wisconsin Plan do not, and indeed cannot, reflect major scientific developments in the intervening years. These developments carry significant implications for sound, science-based wolf management. Nearly every core component of the Wisconsin Plan reflects an outdated understanding of biology and wildlife management science.

This obsolescence is particularly highlighted by the Wisconsin Plan’s stated wolf population target of 350 individuals.⁸ This goal was not based on sound science, but was instead selected by reference to the U.S. Fish and Wildlife Service’s 1992 Recovery Plan for the Eastern Timber Wolf (hereafter “Recovery Plan”) criterion

for the state.⁹ However, the population recovery criteria set by the Service in 1992 is indefensible in the face of subsequent developments in the understanding of wolf population dynamics and genetics. The best available science now shows that these criteria substantially underestimate the population size necessary to sustain a genetically healthy population.

The Wisconsin Plan set a management goal of 350 wolves based on its assumption that “500 wolves occurring on about 6000 mi² of suitable habitat seemed to be a reasonable estimate of the potential carrying capacity of wolves in Wisconsin” in 1999.¹⁰ In stark contrast, the DNR’s 2020 Wisconsin Gray Wolf Monitoring Report included a minimum population count of more than 1,000 wolves, with contiguous wolf pack range estimated at 23,313 mi²—indicating on its face that the assumptions underpinning the 350 goal are invalid.¹¹ It is now clear that wolves occupy significant areas of the state that the Plan deemed to be “unsuitable, with less than 10% chance of supporting a wolf pack.”¹²

At the legislative hearings leading to the passage of Wisconsin’s wolf management statute, long-time DNR biologist and co-drafter of the Wisconsin Plan, Richard Thiel, testified as to the impropriety of continuing to use the 350 number.¹³ He stated that to suggest culling wolves down to 350 based on the current population size “is ludicrous,” and that “at this point in time 350 is unreasonable.”¹⁴ Representative Chris Danou explained that the 350 number was based primarily on a particular study’s assumptions about the relationship between wolf distribution and road density that was “not being proven that accurate.”¹⁵ He reiterated that the data was 20 years old, and stated “it’s been very clear” since then “that wolves can obviously colonize and live in areas with greater road densities than they expected.”¹⁶ Professor Tim Van Deelan, a harvest management expert who co-authored the Plan and served on the Wolf Advisory Committee for approximately 10 years, explained that the carrying capacity for wolves in Wisconsin is “dramatically higher” than previously understood, and that the “350 number was derived when we thought the carrying capacity for wolves in Wisconsin was dramatically lower than it’s turning out to be.”¹⁷ Therefore, he continued, “if you set 350 as a goal and then choose to manage by setting quotas that would get to that number, pretty elementary harvest management theory would suggest that you run the risk of destabilizing the population.”¹⁸

Wisconsin’s target has separately been criticized by recent scholarship examining regional population trends:

Wisconsin’s management goal of 350 wolves . . . was established before there was empirical data on how the recovering wolf population would respond to the unique ecological and human sociological landscapes of the . . . region. Hence, re-evaluation or re-validation of state goals with respect to population growth and estimates of carrying capacity of wolves, as well as the management effort needed to stabilize a wolf population below carrying capacity, may be needed.¹⁹

Wisconsin plans to achieve the state’s population target of 350 wolves by eliminating more than 66% of the current minimum population.²⁰ But recent studies, all of which post-date the Wisconsin Plan, demonstrate that even under otherwise optimally stable conditions, wolf mortality rates must be kept below 30% in order to remain sustainable.²¹ These build on population genetics and effective population size studies detailing the genetic risks of legal trophy hunting and trapping that were published since the adoption of the Wisconsin Plan.

Evaluating Wisconsin’s population target using the best available science on effective population size demonstrates that such drastic killing will drive the wolf population below the level required for both short- and long-term viability. Rick *et al.* (2017) quantified the genetic consequences of state management in Minnesota during the short period that wolves were delisted there from 2012-2014.²² They estimated

genetic effective population size (N_e) of wolves in Minnesota at approximately 600 individuals. At the time those data were collected (2012-2014), the estimated census population size (N_c) of wolves on the ground in Minnesota was around 2,900 individuals. Thus, the estimated genetic to census population size ratio was $(N_e/N_c) = 600/2900 = 0.21$. Assuming that wolf population vital rates are the same in all Western Great Lakes States, and assuming those rates do not change from what they were during 2012-2014 when Rick *et al.* (2017) collected their data, then applying the N_e/N_c ratio to Wisconsin's population target produces an estimate of corresponding genetic effective population size:

$$\text{Wisconsin: } 350 \text{ wolves} \times 0.21 = \mathbf{Ne \text{ of } 74}$$

This target census population size (N_c) will likely result in an effective population size (N_e) decrease to a level that is below the required N_e for both short- and long-term population viability in Wisconsin.²³ The short-term consequences in Wisconsin could quickly prove catastrophic: an effective population size under the state's population goal will be small enough for damaging genetic effects to develop, particularly if hunting and trapping regimes reduce gene flow among the various subpopulations in the Western Great Lakes, as found by Rick *et al.* (2017) during the last period of state-regulated trophy hunt/trapping seasons.²⁴ Even assessing all Western Great Lakes wolves as a single entity following the U.S. Fish and Wildlife Service's assumption that wolves in the Western Great Lakes states constitute a single interbreeding metapopulation, the projected N_e is insufficient.

Even assuming for the sake of argument that 350 wolves in Wisconsin is sufficient to provide long-term stability, the current Wisconsin Plan provides woefully inadequate assurance that these goals will be reliably met and maintained. The Wisconsin Plan declares the state's commitment to maintaining this population level, yet lacks even the basic elements detailing how this will be achieved and overlooks critically important science that must inform sound state management.

III. Establishing wolf hunting and trapping seasons is reckless and goes against the best available science

The 2007 addendum to the 1999 Wisconsin Wolf Management Plan defines Wisconsin's post-delisting regulatory system. Management under the Wisconsin Plan drastically liberalizes allowable human killing of wolves. The Wisconsin Plan contemplates a deliberate reduction in the wolf population to a target set well below half of the current minimum population. State statute further guarantees massive population reduction by mandating the state Department of Natural Resources establish a single annual open season for wolf hunting and trapping that begins on the first Saturday in November of each year and ends on the last day of February the following year when wolves are delisted.²⁵

a. What is trophy hunting?

Hunting wolves is commonly described as "trophy hunting," not only by other state agencies but also by a myriad of scholars.²⁶ Trophy hunters' primary motivation is to kill sentient wolves for photo opportunities and to obtain and display wolf parts, including heads and hides.²⁷ Trophy hunters *primarily* kill animals for bragging rights, but not for food. Hunting large carnivores for food is unsustainable.²⁸ Darimont et al. (2017) write:

First, inedible species, like carnivores [e.g., black bears, mountain lions, wolves] commonly targeted by trophy hunters, make nutritional and sharing hypotheses implausible. Second, evidence for show-off behaviour appears clear. Trophy

hunters commonly pose for photographs with their prey, with the heads, hides and ornamentation prepared for display”²⁹

Batavia et al. (2018) write that animals hunted as trophies “have sophisticated levels of intelligence, emotion and sociality” which is “profoundly disrupted” by trophy hunting³⁰ In other words, the trophy hunting of such intelligent, familial animals is profoundly cruel.

Recent surveys demonstrate that Americans greatly appreciate and value wildlife, even “scary” wildlife.³¹ A study by Manfredo et al. (2018) found that even if a wolf kills livestock (a rare event, as described in Section IV), only 42% of Wisconsin residents favor killing it.³²

The National Shooting Sports Foundation and Responsive Management’s 2019 study of Americans’ values towards hunting found that 71 percent of Americans disapprove of trophy hunting.³³ Furthermore, a 2014 DNR survey found that state residents hold attitudes that are more favorable than unfavorable, both within areas where wolves currently live and across the whole state.³⁴ Two-thirds of respondents within areas that wolves live agreed that wolves are “important members of the ecological community.”³⁵ Finally, a 2013 poll of Wisconsin residents showed that a supermajority opposes the trophy hunting and trapping of wolves for sport (81% opposed) and 87% oppose the use of traps, bait, and packs of dogs to kill wolves for sport.³⁶

Trophy hunters are economically unimportant. Nationally, hunter numbers are in decline relative to other outdoor wildlife recreation.³⁷ Just 12% of Wisconsin residents are paid hunting license holders, and a mere fraction of them are interested trophy hunting and trapping. A new economic study of trophy hunting in the U.S. suggests that trophy hunters benefit largely from the public and private lands largely maintained by non-hunters and that federal taxes from all Americans contribute to the funding of state wildlife management agencies.³⁸

b. Wolf trophy hunting and trapping is super-additive

Scientific research demonstrates that trophy hunting and trapping wolves causes a cascade of harms resulting in death and disruption beyond that individual.³⁹ The best available science describes this as “additive” and “super-additive” mortality.⁴⁰ Killing single adult wolves can result in the loss of *entire packs*, by causing the loss of dependent offspring and disrupting the pack’s social structure.⁴¹ Killing wolves through trophy hunting and trapping to meet Wisconsin’s goal of 350 individuals would immensely damage the state’s wolf population.

Studies show that killing wolves causes especially severe additive-mortality effects, since their complex pack structure makes them particularly susceptible to social disruption.⁴² The human-caused death of individual wolves harms their family group cohesion.⁴³ Wolves exposed to heavy hunting also experience increased stress and reproductive hormone imbalance.⁴⁴ The human-caused loss of breeding females has been shown to cause complete dissolution of social groups and abandonment of territory.⁴⁵

Trophy hunting also causes artificial selection pressure on the hunted population, adversely altering a population’s genetic fitness.⁴⁶ Trophy hunters choose prime-age, trophy-size individuals, which influences species’ evolution. Studies show that trophy hunting forces rapid evolutionary shifts in both the behavior and body size of mammalian populations,⁴⁷ and this response may change a species’ ability to adapt, particularly when added to the burdens of habitat loss and climate change.⁴⁸

As discussed in Section II, numerous studies have detailed the realized and potential effects of severely slashing wildlife populations through legal trophy hunting and predator control on population genetics.⁴⁹ Population genetics, particularly genetic diversity and genetic effective population size, play a critical role in

both short-term and long-term population viability.⁵⁰ As a result, the genetic changes caused by trophy hunting and predator control can have harmful consequences that ultimately elevate extinction risks and impede recovery.⁵¹ These changes include reduced gene flow and elevated structuring among populations, loss of genetic diversity and reduced fitness, and overrepresentation of heritable and sometimes maladaptive phenotypes due to exploitative selection.⁵²

Indeed, the genetic consequences of sport hunting and trapping were documented in Minnesota wolves just one year after a trophy-hunting season was implemented in 2012.⁵³ The observed effects included a significant increase in structuring and differentiation among subpopulations, decreased dispersal and gene flow among subpopulations, and elevated mortality of dispersing wolves.⁵⁴ These results are corroborated by similar findings in a lightly to moderately persecuted wolf population in Alaska.⁵⁵ It is clear that even low to moderate rates of legal wolf killing are not genetically neutral and invoke harmful population-wide genetic and demographic changes that can dramatically reduce population viability, elevate extinction risk, and require multiple generations for wolf populations to recover from.⁵⁶

c. Unsustainable levels of killing

Wolves already face a myriad of threats due to habitat loss, climate change, and other factors, as outlined by the many scientists who urged the U.S. Fish and Wildlife Service to maintain federal protections for wolves, and adding trophy hunting and trapping to this list would prove catastrophic.⁵⁷ Recent studies investigating tolerable levels of human-caused mortality in wolf populations conclude that, even under conditions of high pack social stability, wolf populations cannot be sustained if mortality rates from all sources (not only human-caused mortality) exceed 30 percent.⁵⁸ In the real-world conditions that will exist once the delisting decision goes into effect, this threshold will be even lower because, as described above, the best available science shows that trophy hunting wolves severely disrupts packs' social structures.

Despite this evidence, Wisconsin's Plan not only allows for, but *actively plans* to allow both human-caused and total mortality exceeding 30% annually. In order to reach their target of 350 wolves, Wisconsin plans to reduce its population by 66%. The Plan does not commit to a gradual reduction to this level; rather, all evidence points to an extremely aggressive population reduction swiftly upon delisting. State management during the brief period when wolves were last delisted in the Western Great Lakes demonstrates the high likelihood Wisconsin allowing massive mortality in a very brief period of time in pursuit of this reckless population target.

During Wisconsin's 2013-14 hunting season, for instance, the DNR set a hunting and trapping quota amounting to one-third of the state's total wolf population. Hunters and trappers proceeded to actually kill 31.3% of the minimum population (257 out of 822 wolves⁵⁹) in a single season.⁶⁰ This extreme trophy hunting season single-handedly exceeded the 30% threshold, before even accounting for other sources of human-caused mortality including killing wolves in response to conflicts with livestock, illegal poaching, and wolves killed by vehicle collisions (which together totaled 12.3% of the minimum population that year). In total, Wisconsin permitted an unsustainable 43.6% of the state's entire wolf population to be killed by humans in a single year (a figure that does not include the additive and super-additive mortality caused by hunter kills, poaching that was successfully hidden from authorities, or wolf deaths by natural causes).⁶¹

While the next year, Wisconsin did significantly reduce its quota and 154 wolves were killed by hunters and trappers, it is clear that this reduction was not a shift toward a more conservative approach, but rather a consequence of the suddenly decimated wolf population. During the 2014-15 season, 80% of the wolf quota for the entire season had been reached just two weeks into the hunt.⁶² The 2014-15 season was also marred

by quota overruns, and Zones 1 and 2 were closed less than a week into the season after their quotas were exceeded by 12.5% and 93%, respectively. 80% of the wolves killed during the 2014-15 season were first captured in cruel traps.⁶³ Wisconsin's "reduced" 2014-15 hunting quota still represented 24% of the statewide population that year.⁶⁴ This quota was approved after considering DNR's own estimate that non-hunting human-caused mortality would claim 14% of the statewide population that same year.⁶⁵ The DNR itself confirmed that these extreme quotas were initially recommended by a biased advisory committee that had expelled all wolf-hunting critics from its membership.⁶⁶

Moreover, trophy hunters and trappers use especially cruel and egregious methods to kill wolves. Most Wisconsin wolves who were killed in the period between 2012 and the end of 2014 were killed by trappers, a method that is both cruel, and even amongst professional wildlife managers is highly unpopular.⁶⁷ Additionally, Wisconsin is the only state in the Western Great Lakes that allows the trophy hunting of wolves using packs of GPS-collared hounds to chase down and corner wolves for an easy kill. This is not only dangerous for wolves, but also for the hunting hounds, who can be injured or killed when cornered wolves try to defend themselves and their families.

d. February is an especially vulnerable time for wolves

As thoroughly discussed in our attached November 19 Letter, holding a wolf season now would be unwise and would undermine the DNR's credibility, as it would undercut the Department's ability to properly manage and monitor its wolf population. When the Legislature passed 2011 Wisconsin Act 169, there was significant debate over whether to allow hunting of wolves in January and February at all, due to concerns about wolf breeding season and the DNR's inability to get an accurate late winter count during a wolf hunt.⁶⁸

Holding a season exclusively in February, while the agency is administering its annual population estimate, would undercut the DNR's ability to properly count and estimate (and therefore properly manage) its wolf population. As explained in the November 19 Letter, DNR's own wolf experts and a census wolf tracker expressed concerns with allowing *any* hunting in January or February.⁶⁹ Ultimately, the law allows (in an otherwise lawful season) for a season to *continue through* those months. However, the Legislature never contemplated that a hunt would be held for *only* those months. In any ordinary season beginning the previous fall, the DNR would have the ability to end a season prior to January or February if quotas were filled. But a hunt *beginning* in those months would not allow for this safeguard.

e. Establishing hunting and trapping seasons will not increase social tolerance for wolves and could increase wolf poaching

Scientific studies demonstrate that killing wolves does not increase social tolerance for them. Hogberg et al. (2015) measured attitudes before and after a wolf hunting and trapping season in Wisconsin.⁷⁰ Their results indicated a negative trend in attitudes toward wolves among male respondents and hunters living in wolf range both before and after the state's first legal wolf hunt, suggesting that hunting was not associated with an increase in social tolerance for the species after one year. The authors state, "There is no clear indication as of yet that hunters newly permitted to hunt wolves will hold more positive attitudes toward wolves, much less feel a sense of stewardship for the species."⁷¹

More recently, a study published this year suggests that reducing protections for wolves in the form of allowing them to be trophy hunted in Wisconsin may have led to an increase in cryptic poaching (poaching that is successfully hidden from authorities).⁷² The authors concluded, "[W]hen considering all the evidence, we infer that the policy of liberalizing wolf killing in Wisconsin from 2003 onward resulted in more cryptic poaching."⁷³ Other studies have similarly suggested that poaching increases during periods when wolf killing

is liberalized in the form of allowing trophy hunting and trapping.⁷⁴ It has been suggested that would-be poachers respond to such policy changes as an indication to increase their activities, possibly due to a decline in the perceived value of wolves, a perceived increase in the acceptability of poaching, or a perception that they are helping authorities by killing wolves.⁷⁵

IV. Killing wolves will not reduce already rare conflicts with livestock

Livestock losses to wolves are already rare in Wisconsin and in every jurisdiction in which they live.⁷⁶ According to data from the U.S. Department of Agriculture (USDA), livestock producers in Wisconsin lose 135 times more cattle to maladies such as disease, respiratory problems, and bad weather than to wolves.⁷⁷ Furthermore, in calendar year 2019, USDA-Wildlife Services confirmed just 33 incidents of wolf predation on livestock.⁷⁸ Those 33 incidents involved 59 livestock deaths, 15 livestock injuries, and 25 missing lambs.⁷⁹ To put that into perspective, at the start of 2019 there were a total of 3.45 million cattle and calves, 75,000 sheep and lambs, and 72,000 goats in Wisconsin.⁸⁰

Not only are livestock losses to wolves rare and far less lethal to livestock than health, weather and birthing problems,⁸¹ but many studies have called into question the efficacy of lethal predator control programs to reduce conflicts between wolves and livestock.⁸² Non-lethal methods to protect livestock and *prevent* conflicts are more effective, economical, and humane than killing wolves. New studies show that the best remedies for protecting cattle, sheep and other domestic animals come from non-lethal measures, such as sanitary carcass removal, fladry and or turbo fladry, synchronizing birthing seasons with native ungulates, changing livestock types or breeds, spot lights, airhorns, guard animals, range riders, electric fencing and Foxlights™.⁸³

Studies demonstrate that killing wolves does not improve livestock safety. For example, wildlife biologists reviewed a 17-year data set that involved Michigan wolves and livestock losses. They discovered that the lethal removal of wolves for livestock protection reasons on one farm increased future wolf predation on their neighbors' livestock.⁸⁴ Studies show that the random killing of wolves (predator control) by government officials or individuals does little to protect livestock.⁸⁵ Similarly, a 2018 Montana study also indicated that the trophy hunting of wolves does little-to-nothing to protect livestock.⁸⁶ Most predator control kills wolves randomly and fails to prevent livestock losses but is overly lethal to wolves.⁸⁷

Killing wolves can actually exacerbate conflicts with livestock by disrupting the stable social structures that wolves rely on. For instance, Bryan et al. (2014) write: "Hunting can decrease pack size, which results in altered predation patterns, increased time spent defending kill sites from scavengers, and may lead to increased conflict with humans and livestock."⁸⁸ Several additional scientific reviews have questioned the scientific merit and efficacy of lethal predator control.⁸⁹

Despite this evidence, Wisconsin plans to grant permits allowing private citizens to kill wolves in areas where wolf depredation had previously occurred, regardless of whether or not those wolves had themselves caused any harm to livestock.⁹⁰ This scattershot predator control will result in a number of human-caused mortalities far out of proportion to the modest effect that wolves have on livestock, and is unlikely to meaningfully ameliorate the (real or perceived) underlying problem. Because wolf killing does not effectively stop livestock losses, and because wolf killing under the terms of Wisconsin's Plan will often not even target the allegedly depredating animal, predator control threatens to become an unlimited source of mortality.

When rare conflicts do occur, livestock owners are compensated at fair market value for cases of confirmed or probable depredations, as well as for missing calves that meet certain criteria. In addition to livestock, the DNR also compensates bear hunters who lose hunting dogs to wolves. In Wisconsin, bear hunters frequently



run packs of GPS-collared dogs through known wolf territory in an effort to tree or corner a bear for an easy shot. To reduce the risk of bear hounds and wolves coming into conflict, the DNR establishes wolf caution areas where conflicts have occurred.⁹¹ Although the risks of running their hounds in known wolf areas are well known, compensation for injured or killed bear hounds could encourage hunters to engage in more risky behavior and run their dogs in known wolf conflict areas.⁹² Hunters that do have hounds killed or injured by wolves are reimbursed up to \$2,500 per hound. In 2019 alone, the DNR paid over \$61,000 to bear hunters. Since 1985, the state has paid over \$908,435 in compensation for injured or killed hunting hounds, accounting for a third of all wolf damage payments combined.⁹³ Compensation for hunting hounds is typically the most costly in terms of compensation per individual animal.⁹⁴ This compensation scheme encourages reckless behavior and scapegoats wolves.

V. Wolves benefit ungulate species

Recent research suggests that while native carnivores can accelerate declines in prey populations and dampen increases, predation alone does not cause these cycles in populations. Weather, disease, and habitat play a much greater role in determining deer and other ungulate population sizes. Killing native carnivores like wolves fails to address the underlying environmental issues—such as habitat loss, loss of migration corridors and inadequate nutrition—that harm prey populations.

Studies show that wolves are actually beneficial to herds of native ungulates because they remove the least viable members, leaving forage for the strongest; they rarely prey upon the prime-age breeding animals favored by hunters.⁹⁵ Even the DNR’s website states:

Generally, winter weather and human harvest, especially antlerless harvest, have greater impacts on deer populations than predation over the long term. Deer herds in northern Wisconsin have increased significantly in recent years, even with an established wolf population, suggesting that wolves do not limit deer population growth....Wolves are skilled at identifying vulnerable prey, and tend to target individuals that are old, young, sick or otherwise weakened. Hence deer removed by wolves are less likely to survive and less likely to produce offspring than the deer that remain.⁹⁶

Wolves and other native carnivores also play a critical role in suppressing and limiting the prevalence of disease in prey species, including chronic wasting disease (CWD), an epidemic plaguing cervids that continues to spread across North America, including in Wisconsin.⁹⁷ Wolf predation can limit or even prevent transmission of CWD and other diseases by reducing host densities and contact rates or by lowering the total number of infected individuals in a host population.⁹⁸ Additionally, research indicates that coursing predators like wolves and coyotes select prey disproportionately if they appear impaired by malnutrition, age or disease.⁹⁹ Although much of this “selection” may be attributed to infected ungulates being less vigilant or fit and thus relatively vulnerable to “attack” of one kind or another, carnivores may also learn to recognize and more actively target diseased deer.¹⁰⁰ Furthermore, wolves help eliminate CWD as an environmental contaminant by scavenging on infected carcasses, preventing disease spread through soils and other means of dispersal.¹⁰¹

Wolf predation could even prevent the emergence of CWD in new locations.¹⁰² Wild et al. (2011) state that the loss of large carnivores, in combination with human-assisted movement of infected cervids and land use alterations, over much of their native range has likely contributed to the distribution and prevalence of CWD across much of the U.S.



Furthermore, killing wolves can actually harm ungulate and other prey populations. Top carnivores regulate ecosystem stability by regulating the abundance and behaviors of herbivores and mesopredators. Apex carnivores suppress mesopredators in their core areas, leaving mesopredators to survive at the margins.¹⁰³ For instance, Great Lakes wolves contain coyotes, indirectly benefitting foxes and snowshoe hares.¹⁰⁴ Without wolves, mesopredators such as coyotes, are released.¹⁰⁵ And uncontrolled numbers of mesopredators can deleteriously alter ecosystem structures and further contribute to the loss of biological diversity, which is accelerated by climate change.¹⁰⁶ (In some systems, coyotes are the apex predator, who suppress skunks, raccoons, domestic cats and others to the benefit of songbirds, ground-nesting birds and a variety of microfauna.)¹⁰⁷

For example, Alaska researchers, Prugh and Arthur (2015), found that wolf control in their Alaska study area led to the decline of Dall's sheep. With the loss of wolves, coyote numbers increased, and they more readily preyed upon young Dall's sheep.¹⁰⁸ This phenomenon has been documented many times in several ecosystems. Top carnivores limit the population size of smaller carnivores, which reduces overall predation pressures,¹⁰⁹ and this natural regulation is especially important for survival of neonate ungulates.¹¹⁰

Another Alaska study, Mitchell et al. (2015), found that heavy persecution of both wolves *and* coyotes initially increased the number of Dall's sheep in their study area, but when the sheep population approached or exceeded the carrying capacity, which is a maximum population size set by the amount of forage available or "K", a severe winter (with deep snows and heavy crusting) counteracted population increases.¹¹¹ Meanwhile in the reference area (where no predator control measures were implemented), the Dall's sheep population remained constant.¹¹² In other words, natural predation on Dall's sheep was "compensatory," meaning it merely replaced mortality from weather and starvation. These biologists caution against predator control policies as a means of increasing prey herds.

Mitchell et al. (2015) warn:

We note that [Alaska Department of Fish and Game] biologists have previously attempted to manipulate moose and caribou population in central Alaska using harvest and predator control (Boertje et al. 1996, 2009), without considering *K* [carrying capacity] (Bowyer et al. 2005). This strategy had negative results, not only for moose populations and [hunter] harvest, but also for agency credibility (Young and Boertje 2011). Managers now realize that carrying capacity (Seaton et al. 2011) is an integral component of effective management of moose populations....Management decisions regarding carnivore harvest should consider both the positive ecological roles of predators and the potential negative effects on both the carnivores populations, community ecology, and consideration (Roemer et al. 2009; Ordiz et al. 2013). This should help wildlife managers avoid the unintended consequences in various management actions.¹¹³

The scientific consensus for the last several decades has generally concluded that carnivores modulate prey populations and make them more vigorous,¹¹⁴ including removing the sick and weak animals which would die of other natural causes anyway.¹¹⁵ Additionally, large carnivores like wolves provide an immense socioeconomic service by reducing vehicle collisions, saving lives and reducing injuries at a great cost savings to society.¹¹⁶

For these reasons, killing native carnivores like wolves is an unreliable way to increase the abundance of ungulates.¹¹⁷ Ironically, human hunters are responsible for the decline of large-bodied mammals.¹¹⁸ The DNR must not assume that by killing wolves, ungulate numbers will grow.

VI. Climate change threatens wolves

The current Wisconsin Plan fails to address the threats posed by a warming climate that accelerates habitat loss and fragmentation, diminishes prey availability, and exposes wolves to novel and deadly parasites and diseases.

Large- and small-bodied mammals, integral members of the web of life, are fast disappearing from our world, say groups of alarmed biologists. The extinction and global warming threats are here now.¹¹⁹ The loss of Earth's megafauna has so concerned preeminent biologists that dozens of them convened, and in 2011, produced a seminal and alarming paper, *Trophic Downgrading of Planet Earth*.¹²⁰ In it, the biologists, James Estes et al. (2011), warn that the loss of top carnivores and other megafauna will increase pandemics, make ecosystems dysfunctional and accelerate the effects of climate change.¹²¹

Particularly, in the U.S. large-bodied carnivores like wolves and grizzly bears face an unprecedented extinction crisis, called the *Anthropocene*.¹²² In 2014, another assemblage of international biologists, Ripple et al. (2014), again voiced urgency about the loss of top carnivores and the implications for the planet.¹²³ Ripple et al. (2014), write:

Large carnivores face enormous threats that have caused massive declines in their populations and geographic ranges, including habitat loss and degradation, persecution, utilization, and depletion of prey....Additionally, the future of increasing human resource demands and changing climate will affect biodiversity and ecosystem resiliency. These facts, combined with the importance of resilient ecosystems, indicate that large carnivores and their habitats should be maintained and restored wherever possible.¹²⁴

Climate change will affect wolves indirectly. It affects temperatures and moisture, affecting precipitation amounts and thus plant growth.¹²⁵ Changes in vegetation will cause shifts in the herbivore community and these changes probably have the largest effects wolves. Wolves are affected by changes in the trophic structure (plants-> herbivores-> wolves), but most of the effects on wolves are associated with herbivore dynamics.¹²⁶

In northern climates, winter creates challenges for animals by making their foods scarcer while simultaneously making locomotion and staying warm costlier. For both ungulates and wolves, movement in deep snow is costs them precious resources as they sink.¹²⁷

Climate change with its warmer winters and extended fall and springs season will drive the expansion of ticks and tick-borne diseases to more northern latitudes and to higher altitudes.¹²⁸ Increases in temperature facilitate the proliferation of parasitic organisms.¹²⁹ Climate warming will change trophic effects that include the profusion of parasites and disease.¹³⁰ For instance, Lyme disease has tracked to northern climes including into Canada as a result of climate change.¹³¹ The acceleration of a warming climate threatens ecosystems' integrity, biological diversity and will influence patterns of disease.

- a. *Wolves can also help mitigate the effects of climate change*



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By curbing deer over-browsing in the Great Lakes region, wolves have re-enlivened the understory of plant communities, increasing flora and fauna biological diversity including bird life.¹³² Wolf presence in the Great Lakes region affects soil nutrients, soil microbes, and plant quality because decomposing prey carcasses enrich soils.¹³³ Elevated Great Lakes deer populations not only destroy forest ecosystems, they are involved in numerous vehicle collisions and they carry Lyme disease, a zoonotic disease.¹³⁴ In more populace areas, one could argue that wolf recovery is even more essential to human health—they literally keep people alive by mitigating vehicle-deer crashes and keeping Lyme disease in check.

Great Lakes wolves, now studied *en masse* by wildlife biologists, have also brought new opportunities to study their profound influences on ecosystems. In Great Lakes forest communities, wolves have increased biological diversity, reduced vehicle-deer collisions and Lyme disease. They too have constrained their mesopredators, increasing biological diversity. Wolves of the Great Lakes region may be buffering climate change and for that reason should not be trophy hunted or trapped.

VII. Conclusion

Thank you for the opportunity to submit comments regarding a February wolf trophy hunting and trapping season in Wisconsin. We strongly urge the DNR and NRB to set a quota of zero.

Sincerely,

Megan Nicholson
Wisconsin State Director
The Humane Society of the United States
mnicholson@humanesociety.org

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