

Ojibwe Perspectives Toward Proper Wolf Stewardship and Wisconsin's February 2021 Wolf Hunting Season

Jonathan H. Gilbert1**, Peter David1*, Michael W. Price1 and Jenny Oren2

¹ Biological Services Division, Great Lakes Indian Fish and Wildlife Commission, Odanah, WI, United States, ² Nelson Institute for Environmental Studies, University of Wisconsin–Madison, Madison, WI, United States

OPEN ACCESS

Edited by:

Joseph K. Bump, University of Minnesota Twin Cities, United States

Reviewed by:

Brent Patterson, Ontario Ministry of Natural Resources and Forestry, Canada Fraser John Combe, Kansas State University, United States

> *Correspondence: Jonathan H. Gilbert jgilbert@glifwc.org

[†] These authors have contributed equally to this work and share first authorship

Specialty section:

This article was submitted to Conservation and Restoration Ecology, a section of the journal Frontiers in Ecology and Evolution

Received: 24 September 2021 Accepted: 04 March 2022 Published: 14 April 2022

Citation:

Gilbert JH, David P, Price MW and Oren J (2022) Ojibwe Perspectives Toward Proper Wolf Stewardship and Wisconsin's February 2021 Wolf Hunting Season. Front. Ecol. Evol. 10:782840. doi: 10.3389/fevo.2022.782840 In February 2021, the Wisconsin DNR implemented a wolf season in which > 20% of the population was killed in 63 h. Wisconsin's Ojibwe tribes had a visceral reaction to this killing. This paper provides a perspective for this reaction by reviewing the Ojibwe relationship with Ma'iingan. This relationship maintains that Ma'iingan and Ojibwe are to be considered relatives whose fates are intertwined. Ma'iingan and Ojibwe have lived parallel histories, suffering from the effects of colonization, the decimation of wolf populations and decline of tribal culture. The Ojibwe tribes ceded vast territories in treaties with the United States while retaining common use rights, including the right to hunt and fish. These rights were reaffirmed just as wolves were reestablishing themselves in Wisconsin. The tribes continue to strengthen their culture, while wolf populations continue to recover. By examining these comparative histories, it becomes apparent that "whatever happens to one happens to the other." Unfortunately, Ma'iingan were not adjudicated during the Wisconsin treaty case, creating uncertainty over how the relationship between the Ojibwe and Ma'iingan is to be respected by the state. The tribes believe their treaty right includes protection for wolves, so that wolves can fulfill their cultural and ecological purposes. Tribes maintain that Ma'iingan should determine their own population levels, in order to provide ecological and cultural benefits. A respectful and appreciative relationship with Ma'iingan should be maintained so that the future well-being of both Ma'iingan and the Ojibwe will be assured.

Keywords: Ma'iingan, Ojibwe, stewardship, treaty rights, wolves, Wisconsin

INTRODUCTION

At 12:00 AM, February 22, 2021, just 50 days after wolves (*Canis lupus*) were removed from the protections of the Untied States Endangered Species Act, Wisconsin's first hunting season in over 6 years began. It ended just 63 h later. The Ojibwe tribes in the upper Midwest, including all 11 member tribes of the Great Lakes Indian Fish and Wildlife Commission (GLIFWC, **Figure 1**) had a visceral reaction to this killing. We explain the reasons for this reaction and provide some insights on the perspectives of the Ojibwe toward *Ma'iingan*, (the wolf) in hopes of increasing cross-cultural understanding and improving the human/wolf relationship.

With more permits sold (1,548 Johnson and Schneider, 2021) than wolves in the woods (1,091 Price Tack et al., 2021), the slaughter (a word intentionally selected to reflect the Ojibwe perspective) was swift - with a wolf being killed, on average, every 17 min, day and night. With hunters equipped with firearms and replaceable packs of dogs, (86% of the wolves were killed with the aid of hounds), the state's quota of 119 animals was rapidly achieved. The tribes' effort to protect their portion of the quota (81 animals) so they could provide ecological and cultural benefits critical to the tribal community, was fruitless. Before the season could be closed, 99 additional animals were killed. The reported harvest of 218 animals (Johnson and Schneider, 2021) equaled 20% of the state's wolf population; the number of unrecovered crippling loss or animals intentionally left unretrieved is unknown. Only later was it discovered that a computing error existed in the application of the harvest model (Adams et al., 2008) that the Wisconsin Department of Natural Resources (WDNR) used to inform the quota setting process (D. MacFarland per. com). GLIFWC calculates this computing error may have resulted in the quota being set about 16% higher than intended.

While the hunting season was brief, it took place during the breeding season, ensuring that its impact would not be limited to the current generation. Among the small sample of wolves necropsied after the season (n = 22) were not only animals showing the hemorrhaging and bite marks of having interacted with hounds that pursed them, but females with fetuses (GLIFWC unpublished data). On the basis of studies such as Brainerd et al. (2008) which examined the impacts of breeder loss, Wisconsin's Green Fire estimated that 24-40% of recruitment was likely lost (Wisconsin's Green Fire, 2021). While harvest models such as Fuller et al. (2003) and Adams et al. (2008) suggest the population could recover to pre-hunt levels in 2-3 years if no further harvest were to take place, the WDNR was forced to begin preparing for a fall season to comply with Wisconsin Act 169, legislation that requires an annual season whenever wolves are not on the Wisconsin or Federal endangered species list. However, the fall 2021 season was halted by a stay issued in State court (Great Lakes Wildlife Alliance et al.; v. Wisconsin Natural Resources Board et al., Circuit Court, Dane County, WI, 2021 CV002103).

While some in the hunting community celebrated the wolf kill (intentional phrasing), regional Ojibwe tribes mourned the unnecessary slaughter of brother wolf and the trampling of their treaty-reserved rights. Herein we elaborate on the Ojibwe perspectives toward proper human relationship with Ma'iingan.

MY BROTHER

The relationship between Ma'iingan and the Anishinaabe (Ojibwe) extends all the way back to the Anishinaabe creation story. In that story, Ma'iingan was provided by the Creator to be a companion to the Original Man. As a result of this and other teachings, Anishinaabe people consider the wolf their relative. This concept of relatedness to another species is difficult for many Western-educated thinkers to comprehend because it contradicts

the principles and values of western science and Judeo-Christian society held by some people. But to the Anishinaabe, the wolf is an integral part of identity and kinship. Through stories, clan membership and culture, the wolf is woven into the spirit and identity of Anishinaabe people (other Indigenous Nations have their own, and sometimes different relationship with the wolf). When Anishinaabe people are asked to put population goals or harvest quotas on Ma'iingan, they see it as analogous to putting goals and quotas on their relatives – something unthinkable if we were talking of human relatives.

In the creation story, the Creator indicates that Ma'iingan and Original Man will always be considered as relatives and their fates would be intertwined (Benton-Benai, 2010). Thus the well-being of the wolf reflects the well-being of Anishinaabe society, a relationship that is captured in the Anishinaabe teaching: "What happens to the wolf will happen to the Anishinaabe. And, what happens to the Anishinaabe will happen to the wolf." This narrative, which has been passed down through many generations, reflects their paralleled histories.

Prior to European colonists coming into the Anishinaabe territory the Ojibwe people had a well-developed society with a governance structure, division of responsibilities passed on *via* the clan system, and a seasonally nomadic lifestyle. Ma'iingan existed across the Ojibwe territory, fulfilling their role within the upper Great Lakes ecosystems. Both Anishinaabe and Ma'iingan lived healthy lives.

When European immigrants settled along the east coast and encountered both wolves and Indigenous peoples, they responded to both similarly. Both the wolf and the Native peoples were despised and persecuted by many in the newly forming colonies.

These parallel attitudes moved west with settlers crossing the continent, as efforts to eradicate both wolves and Native Americans from the landscape continued. In the upper Midwest, four land cession treaties (**Figure 1**) were entered into in which the Ojibwe tribes ceded vast areas to the United States. The influx of European settlers coincided with the beginning of the planned extermination of wolves from that region.

While settlers put pressure on the government to eradicate wolves *via* bounties and other unlimited killing, the United States Congress was passing laws to remove Ojibwe tribes and eradicate treaty claims in direct contrast to the terms of the recently enacted treaties. Wolves proved relatively easy to kill, and eventually they were eliminated from the lower 48 states with the exception of an area of Ojibwe territory in northern Minnesota. Concurrently, the population of American Indians fell as low as 250,000 (Thornton, 1977). The 1940–1950s is known as the Termination Era when the federal government eradicated many federally recognized tribes and dissolved their reservations.

As wolves were declining so too was the free practice of the Ojibwe culture. Children were taken from Ojibwe households and sent to boarding schools where they were not allowed to practice their language or ceremony. The combination of treaty-making and treaty-breaking, termination, removal and assimilation had severe consequences for the Ojibwe culture and language.



In the 1960s, the fates of both Ma'iingan and the Ojibwe improved. The publication of Rachel Carson's *Silent Spring*, and the passage of the Civil Rights Act, allowed a new consciousness to emerge relative to ecology and equality. Additionally, the Indian Civil Rights Act was passed (1968), the Indian Education Act (1972); the American Indian Self-determination and Educational Assistance Act (1975), and the American Indian Religious Freedom Act (1978). This period also marked the passing of the Endangered Species Act (1973), and the following year, wolves finally had federal protection.

THE REAFFIRMATION OF TREATY RIGHTS

While most people think that the treaties between the tribes and the United States government granted rights to the tribes, the truth is that the treaties granted rights to the United States, and any rights that the tribes held and did not specifically cede were retained, including the rights to make their living by hunting, fishing and gathering. The Ojibwe tribes in the upper Midwest ceded large areas of what is now known as Michigan, Minnesota, and Wisconsin to the United States (**Figure 1**). In these treaties the signatory tribes reserved the right to remain in the ceded territories and to continue to live as they always had by fishing, hunting, and gathering. They relied on these activities to meet their needs for foods, medicines, materials for clothing and housing, and other utilitarian, spiritual and ceremonial purposes. Nevertheless, over time tribal members exercising these treaty-reserved rights were often arrested and charged under state laws.

In the mid-1980s the Ojibwe tribes in Wisconsin sued the state contending that their treaty rights continued to be valid and that tribes should have the sovereign prerogative to set their own natural resource regulations. As this treaty case unfolded, wolves from the Minnesota population began to reestablish themselves in Wisconsin. As in colonial times, many in the non-Indian community viewed both of these events as threats (David, 2009).

The tribes ultimately prevailed in this and related suits [see Lac Courte Oreilles Band of Lake Superior Chippewa Indians v. Wisconsin, 775 F. Supp. 321 (W.D. Wis. 1991) and Minnesota v. Mille Lacs Band of Chippewa Indians, 526 U.S. 172, 176–177 (1999)]. In these cases, it was found that the signatory tribes retained the right to harvest up to 50% of the harvestable surplus of fish and wildlife under their own set of rules and regulations, enjoining the states from enforcing state rules. Thus began the implementation of the tribes long-withheld exercise of treaty rights.

Subsequent to reaffirmation of the treaty rights, the tribes continued to reassert their sovereignty in a variety of venues including language revitalization and the reemergence of spiritual practices. Simultaneous with this cultural recovery, Wisconsin's tenuous Ma'iingan population grew in numbers and range. Except during recent periods marked by recreational wolf killing, both the assertion of tribal sovereignty and the health of the Ma'iingan population have been greater than at any time in recent history.

By examining these comparative histories, it becomes apparent (or is an arguable logical perspective) that "What happens to the wolf will happen to the Anishinaabe, and what happens to the Anishinaabe will happen to the wolf." After the controversial February 2021 Wisconsin wolf hunt, many Anishinaabe people were traumatized and outraged. The wolf hunt was perceived by many as an assault on family members, and many felt – and continue to feel - compelled to protect their family. The Ojibwe mourned not only the loss of wolves, but the loss of Mokaan-giizis, Migizi dodem (Joe Rose Sr., Eagle Clan), a deeply respected elder of the Mashkiziibii (Bad River) Tribe and lifelong wolf advocate, who walked on in the midst of this short, brutal season. Many Ojibwe and non-Ojibwe people contended he went to help killed Ma'iingan journey to the afterlife.

TREATY RIGHTS AND MA'IINGAN

Existing treaty cases do not define the full extent of treatyreserved rights. Notably, at the time of the final judgment in the Wisconsin case, Ma'iingan was classified as a federally endangered species and the state had little legal authority over wolves. In an update to the Wisconsin judgment [Second Amendment of the Stipulations Incorporated in the Final Judgment, Lac Courte Oreilles Band of Lake Superior Chippewa Indians v. Wisconsin, Case No. 74-C-313-C, at 41-43 (March 15, 2011)] the tribes and the state agreed that tribes should be required members of any wolf committee the state establishes. The state and the tribes agreed that consultation should take place and all attempts at consensus should be made in any wolf management action taken by the state.

The fact that Ma'iingan were not adjudicated during the Wisconsin trial or in any subsequent action creates uncertainty over how the unique relationship that exists between the Anishinaabe and Ma'iingan is to be recognized and respected by the state. Unlike other species litigated in the Wisconsin suit, Ojibwe people generally object to the recreational harvest of wolves. The tribes believe that their treaty right includes the right to protect wolves, so that living wolves can fulfill their cultural and ecological purposes.

In the instance of the 2021 February season the WDNR did not conduct the government-to-government consultation and attempts at reaching consensus with treaty tribes that is required by the federal treaty lawsuit case. Nevertheless, the WDNR pledged to honor the tribal declaration (of half of the quota attributed to ceded lands) while understanding that the tribes' intent was to protect those Ma'iingan from harvest. However, a lack of adequate harvest control mechanisms resulted in the 83% quota exceedance (218 harvested of a 119 quota) discussed above, rendering the state's pledge moot.

The Ojibwe contend that this gross overharvest is not only culturally abhorrent but threatens resources the tribes depend upon.

ECOLOGICAL AND CULTURAL SERVICES PROVIDED BY MA'IINGAN

The Anishinaabek relationship with Ma'iingan led them not to exterminate wolves, but to learn from, understand and accept them. In recent years western science added to this understanding, as it documents the ecological and social services wolves provide. What follows is not intended to be a thorough and comprehensive review of these ecosystem services, but some examples to illustrate the role of wolves in healthy ecosystems.

Historically, wolf reintroduction has resulted in increased biodiversity and ecological productivity in regions such as Yellowstone, where wolves were reintroduced in the late 20th century (Ripple and Beschta, 2012; Martin et al., 2020). The presence of wolves on a landscape can trigger a top-down trophic cascade, where a carnivore limits herbivore populations by direct predation, thereby allowing understory native plant species to regenerate (Ripple and Beschta, 2012; Ripple et al., 2014). These trophic effects have been seen to increase carbon storage capacity in boreal ecosystems, mitigating the effects of climate change (Ripple et al., 2014; Schmitz et al., 2014).

While not yet as extensively studied as the Yellowstone area, Ma'iingan affect landscapes in the Midwest as well. Wolf presence simultaneously supports the regeneration of herbaceous and woody plant species preferred by deer such as maple, hemlock, pine, spruce, and understory forbs (Flagel et al., 2016; Russell et al., 2017; Waller and Reo, 2018). In north-central Wisconsin, wolf presence was directly correlated with higher percentage cover and species richness of forb species in white cedar wetlands (Callan et al., 2013). These effects often have direct significance to Anishinaabe; plant species that benefit from these trophic cascades often have important medicinal, ceremonial, and utilitarian uses.

Ma'iingan prey upon the wild ungulate species that they coevolved with, historically contributing to the health of whitetailed deer populations in the Great Lakes region since pre-European settlement (David, 2009). Ma'iingan likely help regulate the spread of contagious diseases such as Chronic Wasting Disease (CWD), a highly contagious, neurodegenerative prioncaused disease infecting four North American cervid species, including white-tailed deer (Wild et al., 2011; Oliveira-Santos et al., 2021). CWD is prevalent across the Midwest states, particularly in Wisconsin where 32 counties have reported CWD cases in free-ranging cervids (Centers for Disease Control and Prevention [CDC], 2021). The most effective control methods are still unclear, but studies have shown that top predators like the gray wolf can selectively predate on infected deer before human hunters are able to identify symptomatic individuals which in turn likely reduces the spread and persistence of CWD in a system and potentially stops CWD emergence in new systems (Wild et al., 2011; Uehlinger et al., 2016). Additionally, a recent study showed a significant reduction in CWD prions in the excrement of mountain lions fed CWD-infected meat, suggesting that the digestion system of top predators can be an effective mechanism for reducing environmental CWD contamination (Baune et al., 2021).

Deer are an important protein source for the Ojibwe tribes, and Ma'iingan are seen as a crucial element of defense against the spread of CWD in the ceded territory. Currently, exercise of the treaty right is limited to public lands in the ceded territory. Eighty percent of the February wolf kill in the ceded territory came from public lands, which make up only 28% of the area (GLIFWC, unpublished data). Thus, the very lands the tribes depend upon for providing venison and other harvested resources are the same lands which disproportionately lose the ecological benefits Ma'iingan provides.

Finally, humans benefit from wolves in non-ecological ways as well. For example, a recent study found a significant reduction in deer-vehicle collisions in Wisconsin, primarily as a result of wolves' influence on deer behavior, saving up to \$8 million per year statewide (Raynor et al., 2021).

DISCUSSION

One of the seven primary teachings of the Ojibwe, humility (along with love, respect, courage, honesty, wisdom, truth), applies here as a reminder that our understanding of wolves is far from complete. Just as we understand wolf ecology much more now than we did 20 years ago, we will understand much more 20 years from now. Embracing humility from an ecological perspective suggests we are wise to assume that Ma'iingan – a being which occupied this region for thousands of years before being extirpated – has functions and benefits of which we are still ignorant. In the lack of perfect understanding, we maintain it is both arrogant and ecologically foolish to reduce or eliminate wolves from large parts of the landscape that wolves themselves find appropriate.

Looking forward, it is unclear if or how state and tribal wolf objectives can be meshed, particularly as long as the WDNR remains under the direction of, or are most responsive to, traditional resource harvesting interests.

While many in the non-Indian community disparage the application of Ojibwe cultural perspectives in wolf stewardship (a term more aligned with the Ojibwe world view than

REFERENCES

- Adams, L. G., Stephenson, R. O., Dale, B. W., Ahgook, R. T., and Demma, D. J. (2008). Population dynamics and harvest characteristics of Wolves in the Central Brook Range, Alaska. *Wildl. Monogr.* 170, 1–25. doi: 10.2193/2008-012
- Baune, C., Wolfe, L. L., Schott, K. C., Griffin, K. A., Hughson, A. G., Miller, M. W., et al. (2021). Reduction of Chronic Wasting Disease Prion Seeding Activity following Digestion by Mountain Lions. *mSphere* 6, e812–e821. doi: 10.1128/msphere.00812-21
- Benton-Benai, E. (2010). *The Mishomis Book, the voice of the Ojibway*. Minneapolis, MN: University of Minnesota Press.
- Brainerd, S. M., Andrén, H., Bangs, E. E., Bradley, E. H., Fontaine, J. A., Hall, W., et al. (2008). The Effects of Breeder Loss on Wolves. *J. Wildl. Manag.* 72, 89–98. doi: 10.2193/2006-305

"management"), they often overlook the cultural underpinnings of wolf management in the non-tribal community. While traditional Ojibwe teachings may seem outdated to some, they can directly inform appropriate Ma'iingan stewardship today. And they suggest a pathway based on embracing ecological principals, sound science, and human responsibility for coexistence.

In this view, Ma'iingan are allowed to determine their own range and population levels, so that they can provide ecological benefits in all areas of suitable habitat. In addition, wolves are not killed without sound and significant justification – as should be the case for any species. And a respectful and appreciative relationship is maintained.

While simple and straightforward, this approach is radically different from most wolf management traditionally embraced by state and federal natural resource agencies. However, we contend that the agencies that do so will find a large tribal and non-tribal public already eager to embrace an ecologically defensible and scientifically sound approach. In this way tribal perspectives can be incorporated into state's approach to Ma'iingan stewardship.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

AUTHOR CONTRIBUTIONS

JG and PD shared equally in writing the manuscript and shared first authorship. MP contributed to partial writing of manuscript and edited manuscript from TEK perspective. JO contributed to partial writing of manuscript, especially ecological perspectives, and edited manuscript. All authors contributed to the article and approved the submitted version.

FUNDING

This work was funded under the Bureau of Indian Affairs 638 contract with the Great Lakes Indian Fish and Wildlife Commission.

- Callan, R., Nibbelink, N. P., Rooney, T. P., Wiedenhoeft, J. E., and Wydeven, A. P. (2013). Recolonizing wolves trigger a trophic cascade in Wisconsin (USA). *J. Ecol.* 101, 837–845. doi: 10.1111/1365-2745.12095
- Centers for Disease Control and Prevention [CDC] (2021). Occurrence. Atlanta: Centers for Disease Control and Prevention.
- David, P. (2009). "Ma'iingan and the Ojibwe," in *Recovery of Gray Wolves in the Great Lakes Region of the United States*, eds E. Heske, T. R. Deelen, and A. P. Wydeven (New York, NY: Springer), 267–277.
- Flagel, D. G., Belovsky, G. E., and Beyer, D. E. (2016). Natural and experimental tests of trophic cascades: gray wolves and white-tailed deer in a Great Lakes forest. *Oecologia* 180, 1183–1194. doi: 10.1007/s00442-015-3515-z
- Fuller, T. K., Mech, L. D., and Cochrane, J. F. (2003). "Wolf population dynamics," in *Wolves: behavior, ecology, and conservation*, eds L. D. Mech and L. Boitani (Chicago, Illinois, USA: University of Chicago Press), 161–191.

- Johnson, R., and Schneider, A. (2021). Wisconsin Wolf Season Report. Wisconsin Department of Natural Resources Report. Wisconsin: Wisconsin Department of Natural Resources.
- Martin, J. L., Chamaillé-Jammes, S., and Waller, D. M. (2020). Deer, wolves, and people: costs, benefits and challenges of living together. *Biol. Rev.* 95, 782–801. doi: 10.1111/brv.12587
- Oliveira-Santos, L. G. R., Moore, S. A., Severud, W. J., Forester, J. D., Isaac, E. J., Chenaux-Ibrahim, Y., et al. (2021). Spatial compartmentalization: a nonlethal predator mechanism to reduce parasite transmission between prey species. *Sci. Adv.* 7:eabj5944. doi: 10.1126/sciadv.abj 5944
- Price Tack, J., Stauffer, G., and MacFarland, D. (2021). Wolf population abundance for winter 2020-2021. Wisconsin: Wisconsin Department of Natural Resources.
- Raynor, J. L., Grainger, C. A., and Parker, D. P. (2021). Wolves make roadways safer, generating large economic returns to predator conservation. *Proc. Natl. Acad. Sci. U. S. A.* 118:e2023251118. doi: 10.1073/pnas.2023251118
- Ripple, W. J., and Beschta, R. L. (2012). Trophic cascades in Yellowstone: the first 15 years after wolf reintroduction. *Biol. Conserv.* 145, 205–213. doi: 10.1016/j.biocon.2011.11.005
- Ripple, W. J., Estes, J. A., Beschta, R. L., Wilmers, C. C., Ritchie, E. G., Hebblewhite, M., et al. (2014). Status and ecological effects of the world's largest carnivores. *Science* 343:1241484. doi: 10.1126/science.1241484
- Russell, M. B., Woodall, C. W., Potter, K. M., Walters, B. F., Domke, G. M., and Oswalt, C. M. (2017). Interactions between white-tailed deer density and the composition of forest understories in the northern United States. *For. Ecol. Manag.* 384, 26–33. doi: 10.1016/j.foreco.2016.10.038
- Schmitz, O. J., Raymond, P. A., Estes, J. A., Kurz, W. A., Holtgrieve, G. W., Ritchie, M. E., et al. (2014). Animating the carbon cycle. *Ecosystems* 17, 344–359.
- Thornton, R. (1977). Tribal membership requirements and the demography of 'old' and 'new' Native Americans. *Popul. Res. Policy Rev.* 16, 33–42.

- Uehlinger, F. D., Johnston, A. C., Bollinger, T. K., and Waldner, C. L. (2016). Systematic review of management strategies to control chronic wasting disease in wild deer populations in North America. *BMC Vet. Res.* 12:173. doi: 10.1186/ s12917-016-0804-7
- Waller, D. M., and Reo, N. J. (2018). First stewards: ecological outcomes of forest and wildlife stewardship by indigenous peoples of Wisconsin, USA. *Ecol. Soc.* 23:45. doi: 10.5751/ES-09865-230145
- Wild, M. A., Hobbs, N. T., Graham, M. S., and Miller, M. W. (2011). The role of predation in disease control: a comparison of selective and nonselective removal on prion disease dynamics in deer. J. Wildl. Dis. 47, 78–93. doi: 10.7589/0090-3558-47.1.78
- Wisconsin's Green Fire (2021). The February 2021 Wisconsin Wolf Hunt: a Preliminary Assessment. Wisconsin: Wisconsin's Green Fire.

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's Note: All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Copyright © 2022 Gilbert, David, Price and Oren. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.