The Complexities of Gray Wolf Conservation and Management in Wisconsin: A Comprehensive Analysis of Legal, Scientific, and Policy Frameworks

Introduction: The Interplay of Science, Policy, and Conservation in Wolf Management

The effective management of wildlife populations, particularly apex predators such as the gray wolf (*Canis lupus*), necessitates a robust understanding of intricate ecological dynamics, alongside the evolving landscape of legal and regulatory frameworks. In Wisconsin, the conservation trajectory of the gray wolf presents a compelling case study where scientific data, policy decisions, and judicial oversight frequently intersect, often leading to periods of both progress and significant challenge. This report synthesizes information from a petition for state listing of wolves in Wisconsin and associated research materials, providing a comprehensive analysis of the legal, scientific, and management approaches that define wolf conservation in the state. The objective is to consolidate diverse sources, offering a structured foundation for further in-depth analysis and informing future conservation strategies.

I. Legal and Regulatory Frameworks: The Shifting Sands of Protection

The legal status of the gray wolf in Wisconsin is characterized by a dynamic interplay between federal and state authorities, frequently influenced by judicial review and legislative actions. Understanding these frameworks is essential for comprehending the complexities of wolf management.

A. Federal Statutes and Regulations: The Endangered Species Act (ESA)

The primary federal legislation governing species protection in the United States is the Endangered Species Act (ESA). This Act, specifically **16 U.S.C. § 1533**, outlines the criteria for listing or delisting species. A species may be designated as "endangered" if it is in danger of extinction throughout all or a significant portion of its range, or "threatened" if it is likely to become endangered in the foreseeable future. These determinations are based on five key factors: habitat destruction, overutilization for various purposes, disease or predation, the inadequacy of existing regulatory mechanisms, and other natural or manmade factors affecting survival. Critically, listing decisions are mandated to be made "solely on the basis of the best scientific and commercial data available".
Beyond initial listing, ESA Section 4(g) stipulates a minimum of five years of monitoring for

species that have recovered and been removed from the endangered or threatened lists. During this post-delisting period, the Secretary of the Interior is obligated to act promptly to prevent any significant risk to the well-being of the recovered species if monitoring data indicates such a threat.

A significant federal action impacting gray wolf status was the **U.S. Fish and Wildlife Service (USFWS) final rule, "85 Fed. Reg. 69778: Endangered and Threatened Wildlife and Plants; Removing the Gray Wolf (Canis lupus) From the List of Endangered and Threatened Wildlife"**, published on November 3, 2020, with an effective date of January 4, 2021. This rule sought to remove federal protections for gray wolves across the lower 48 states, with the exception of the Mexican wolf subspecies.

The repeated attempts to delist the gray wolf, specifically in 2007, 2012, and 2021, have consistently been followed by periods of population instability. This recurring pattern highlights a fundamental tension between scientific recovery benchmarks and political pressures. For instance, a proposed 2025 bill aiming to delist wolves explicitly emphasizes support for the agricultural sector and seeks to limit judicial review, thereby preventing court challenges to the delisting. Such legislative efforts to bypass judicial oversight and scientific review indicate that decisions are often influenced by specific economic or local interests rather than solely by long-term, comprehensive scientific assessments. This dynamic has contributed to a "see-saw" effect in wolf management, where federal protections are frequently reinstated after being prematurely removed, leading to a lack of consistent, stable management.

B. Judicial Decisions: Reinstatement of Protections

The judiciary has played a crucial role in shaping gray wolf conservation. A pivotal legal development was the federal court case, **"Defenders of Wildlife v. U.S. Fish and Wildlife Service, No. 21-cv-00344, N.D. Cal. 2022"**. On February 10, 2022, the district court vacated and remanded the USFWS's November 2020 delisting rule. The court determined that the USFWS "failed to analyze threats across the entire listed species" and based its decision on a "flawed conclusion that wolves outside of the Great Lakes do not matter to the recovery of the species". This ruling effectively reinstated ESA protections for gray wolves in 44 states, including Wisconsin.

The consistent judicial intervention in wolf delisting cases, particularly the vacating of USFWS rules, underscores the judiciary's critical function as a check on administrative discretion. The ESA mandates that listing and delisting decisions be made "solely on the basis of the best scientific and commercial data available". The court's finding in *Defenders of Wildlife v. USFWS* that the agency's scientific assessment was insufficient or incomplete under the ESA's stringent requirements demonstrates that courts are actively enforcing this standard. The recurring nature of such court-ordered reinstatements reinforces that the judicial branch acts as a vital safeguard, ensuring that executive agency actions adhere to the statutory intent of the ESA, particularly regarding the comprehensive assessment of a species' status across its full range, rather than allowing decisions to be arbitrary or influenced by incomplete analyses.

C. State Statutes and Regulations: Wisconsin's Autonomous Role

Wisconsin possesses its own Endangered Species Act (WETSA), which is designed to provide state-level protections for species designated as endangered or threatened. This state framework allows for conservation measures that extend beyond federal oversight, enabling localized management programs and theoretically empowering Wisconsin to act autonomously in protecting its wolf population.

However, a critical element of Wisconsin's regulatory landscape is a 2012 state law that

mandates an annual wolf hunt when the animal is not under federal protection. This legal requirement directly precipitated the controversial 2021 wolf hunt.
The inherent conflict between Wisconsin's stated desire for "autonomous" wolf management and its existing state law mandating a wolf hunt upon federal delisting creates a significant challenge for stable, science-based conservation. While the petition advocates for state-level action to ensure "effective implementation of its Wolf Management Plan and the enduring survival of its wolf population" and to "pioneer a more holistic, balanced, and interdisciplinary scientific framework for wildlife stewardship" , the 2012 law forces the state to implement a hunt regardless of immediate population dynamics or the latest scientific recommendations. This legal obligation can compel management actions that prioritize recreational or conflict mitigation goals over the long-term ecological stability of the wolf population, especially when federal protections are absent. The rapid overharvest during the 2021 hunt, where 218 wolves were killed in 72 hours against a quota of 119 , serves as a direct consequence of this mandatory hunting law, illustrating how state-level autonomy, when coupled with specific legislative mandates, can lead to outcomes detrimental to conservation goals.

II. Government and Institutional Reports: Data and Management Strategies

Official reports and plans from state and federal agencies provide crucial data on wolf populations, management efforts, and the impacts of various policies, forming the empirical basis for conservation discussions.

A. Wisconsin Department of Natural Resources (DNR) Publications

The Wisconsin Department of Natural Resources (DNR) is a primary source of data and management strategies for the state's wolf population.
The **Wisconsin DNR's "2021 Wolf Season Report"** is a critical document detailing the outcomes of the controversial February 2021 wolf hunt. This report confirmed that following the federal delisting in January 2021, Wisconsin authorized a harvest quota of 119 wolves. However, hunters killed 218 wolves within 72 hours, exceeding the quota by 82%. This indiscriminate overharvest disproportionately removed 33% of breeding females, disrupting pack structures and likely reducing reproductive success for multiple seasons. The report is officially archived and accessible via the Wisconsin Digital Archives.
The **Wisconsin DNR's "Gray wolf monitoring report"** provides essential annual population data. The 2021-2022 overwinter estimate indicated approximately 972 wolves within 288 packs. More recent figures for 2023 show the population exceeding 1,000 individuals, with an estimate of 1,007 wolves distributed among approximately 283 packs. These reports are fundamental for tracking population trends and assessing the impact of management decisions, utilizing methods such as winter snow tracking surveys, GPS-collared wolves, and mortality assessments.
Wisconsin's wolf management has been guided by several plans:

- The **"1999 Wisconsin Wolf Management Plan"** was a foundational document that set a recovery target of 350 wolves, a goal that was successfully met by 2004 with 373 individuals documented. This plan specifically aimed for a delisting threshold of 250 wolves and a management goal of 350 wolves outside Indian reservations.
- The more recent **"Wisconsin Wolf Management Plan 2023"** was approved by the Natural Resources Board in October 2023. This updated plan recommends a statewide population of around 1,000 wolves but notably "doesn't set a hard limit". It emphasizes long-term sustainable management, conflict resolution, and outlines provisions for a

regulated wolf harvest season if wolves are not federally listed, including zone-specific tags and an 8-hour kill reporting window. This plan is designed to guide management when wolves are not federally listed, ensuring harvest season plans and administrative rules are in place for timely implementation.

III. Scientific Literature: Ecological Factors and Threats

Beyond legal and governmental reports, peer-reviewed scientific literature provides critical insights into the ecological factors influencing wolf populations and the threats they face.

A. Habitat and Population Dynamics

Research on wolf habitat and population dynamics highlights the importance of undisturbed areas and the impact of human activity. **Mladenoff et al. (1995)** conducted a regional landscape analysis and prediction of favorable gray wolf habitat in the Northern Great Lakes Region. This work, published in *Conservation Biology*, predicted that only 14,864 km² (11% of Wisconsin) had at least a 50% probability of supporting wolves. Subsequent research by Mladenoff et al. (1997, 1999, 2009) further refined these models, indicating that suitable habitat had more than doubled by the mid-1990s and that wolves were adapting to areas with higher road densities as the population grew. Despite this, the current recovery remains geographically limited, with large portions of suitable habitat in central and southern Wisconsin still unoccupied. Wolves generally prefer areas with lower road density, as high road densities negatively affect wolf colonization and occupancy due to human disturbance.

B. Mortality Factors: Poaching and Disease

Human-caused mortality remains a significant threat to Wisconsin's wolf population. **Treves et al. (2017)**, in their work "Mismeasured mortality: correcting estimates of wolf poaching in the United States," published in the *Journal of Mammalogy*, indicate that illegal poaching accounts for a substantial portion of wolf deaths. Their research suggests that traditional methods of estimating mortality often underestimate the risk of poaching by 0.17–0.44, obscuring its magnitude as a major threat to endangered wolf populations. A study in Wisconsin found an estimated 28% higher mortality rate for unmarked gray wolves than for marked wolves when illegal killing comprised almost half of all deaths. This suggests that poaching is a more pervasive issue than official statistics might indicate, posing a serious challenge to wolf recovery and management.

Disease pressures also contribute to wolf vulnerability. **Almberg et al. (2012)**, in their *Philosophical Transactions of the Royal Society B* publication, discuss sarcoptic mange, canine parvovirus, and distemper as factors that lower pup survival rates and disrupt pack stability. Canine distemper virus (CDV) has caused major outbreaks in wolf populations (e.g., Yellowstone in 1999, 2005, 2008), leading to high pup mortality. Sarcoptic mange, caused by the mite *Sarcoptes scabiei*, has been observed in Yellowstone wolves since 2007, causing severe infections, hair loss, increased energy expenditure, and higher mortality risk. The spread of both CDV and sarcoptic mange is somewhat dependent on wolf density, with packs in lower density areas having lower exposure rates. **Jara et al. (2016)**, in *PLoS ONE*, further examined gray wolf exposure to emerging vector-borne diseases in Wisconsin, including Lyme disease, anaplasmosis, ehrlichiosis, and heartworm. They found a high proportion of Wisconsin wolves exposed to Lyme (65.6%) and anaplasma (47.7%), with exposure consistently higher in older

animals. While these diseases have not appeared to slow Wisconsin's wolf population growth, their prevalence remains a concern for long-term health.

C. Climate Change Impacts

Climate change poses long-term challenges by altering prey availability and increasing disease prevalence. **Harvell et al. (2002)**, in their *Science* publication "Climate Warming and Disease Risks for Terrestrial and Marine Biota," highlight that infectious diseases can cause rapid population declines or extinctions, and many pathogens are sensitive to temperature, rainfall, and humidity. Climate warming can increase pathogen development and survival rates, disease transmission, and host susceptibility. While the focus of Harvell et al.'s work includes marine and terrestrial biota, the principles apply to wildlife more broadly, suggesting that a warmer world could be a "sicker world" for many species. Increased host stress, pathogen virulence, and pathogen range expansion are predicted impacts of climate change on host-pathogen dynamics. For wolves, this could mean increased susceptibility to existing diseases or the emergence of new ones as environmental conditions shift.

IV. Historical Context and Indigenous Perspectives

Understanding the historical trajectory of gray wolves and incorporating Indigenous perspectives are vital for comprehensive conservation.

A. Historical Trajectory of Gray Wolves in Wisconsin

The gray wolf's history in Wisconsin is one of dramatic decline and partial recovery. Prior to European settlement in the early 19th century, populations were estimated between 3,000 and 5,000 individuals, thriving across 56,000 square miles and playing a vital role as apex predators. However, aggressive eradication campaigns, driven by fear and misinformation rather than scientific data, led to mass killings, incentivized by bounty systems. For example, in 1865, Wisconsin instituted a bounty of up to $5 per wolf pelt, leading to approximately 1,500 wolves slaughtered annually by the 1880s. This far exceeded actual livestock losses, which were estimated at $10,000 annually, demonstrating that fear, not science, drove extermination policies. Habitat destruction, with 70% of northern forests clear-cut by 1900, further exacerbated their decline. By the 1950s, fewer than 20 wolves remained in Wisconsin.
The ESA of 1973 marked a turning point, listing wolves as endangered in 1974. Wisconsin reinforced these protections by designating wolves as a state endangered species in 1972. Unlike Yellowstone National Park, where wolves were reintroduced, Wisconsin's recovery was natural, driven by recolonization from Minnesota and abundant prey. By 1980, the population grew to 25 individuals, and the 1999 Wisconsin Wolf Management Plan's goal of 350 wolves was surpassed by 2004. However, federal delisting attempts in 2007, 2012, and 2021 consistently triggered spikes in poaching and legal mortality, with illegal kills increasing by 20-30% during delisted periods. The February 2021 wolf hunt, which saw 218 wolves killed in 72 hours against a quota of 119, starkly illustrated the fragility of the population without robust regulatory frameworks.

B. Indigenous Perspectives

Indigenous perspectives, particularly those of the Ojibwe, Menominee, and Ho-Chunk Nations, offer a valuable model for sustainable management, emphasizing coexistence and ecological balance. These tribes view *ma'iingan* (wolf) as spiritual kin and ecological guardians, integral to

their cultural identity and traditional ecological knowledge. The absence of a collaborative approach that includes tribal perspectives has amplified conservation challenges and marginalized voices that have long championed harmony between human and non-human life. State protections, by listing wolves as endangered or threatened under Wisconsin law, would mandate consultation with tribal nations before enacting hunting seasons or land-use changes affecting wolf populations, ensuring management strategies align with long-term sustainability.

V. Conclusions

The conservation of the gray wolf in Wisconsin is a multifaceted issue, deeply influenced by the interplay of legal mandates, scientific understanding, and socio-political pressures. The evidence presented herein underscores several critical observations concerning wolf management in the state.

First, the federal regulatory framework, particularly the Endangered Species Act, while foundational for wolf recovery, has demonstrated a persistent vulnerability to political shifts. The repeated cycle of federal delisting followed by judicial reinstatement of protections, often due to inadequate scientific analysis of threats across the species' full range, creates a climate of uncertainty for wolf populations. This pattern highlights that the judiciary serves as an essential arbiter, ensuring that administrative decisions adhere to scientific rigor and the comprehensive protective intent of the ESA. Without this judicial oversight, wolf conservation efforts would be significantly more susceptible to short-term political or economic considerations.

Second, Wisconsin's aspiration for autonomous wolf management is complicated by its own state laws, particularly the 2012 mandate for a wolf hunt upon federal delisting. This legal requirement can force management decisions that prioritize recreational harvest over ecological stability, as evidenced by the rapid and excessive kill during the 2021 hunt. This situation illustrates that state-level control, while offering the potential for tailored management, can also lead to outcomes detrimental to conservation if not consistently guided by ecological science and adaptive management principles.

Finally, scientific research consistently identifies ongoing threats to Wisconsin's wolf population, including habitat fragmentation, significant levels of illegal poaching, and the impact of diseases exacerbated by environmental changes. Despite the population reaching approximately 1,000 individuals, its recovery remains geographically limited, and human-caused mortality continues to be a substantial factor. The long-term viability of the gray wolf in Wisconsin, therefore, hinges on the establishment of a robust, consistent, and science-based management framework that is resilient to political fluctuations and actively integrates Indigenous perspectives. Listing the gray wolf as an endangered or threatened species under WETSA would provide the necessary legal and financial stability to implement such a framework, ensuring the species' enduring presence as an integral part of Wisconsin's ecological and cultural heritage.

Citations

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