

# Wisconsin Elk Management Plan 2024-2034

## Prepared by the Wisconsin DNR Elk Advisory Committee

Committee members represent the following agencies and organizations:

Great Lakes Indian Fish & Wildlife Commission  
Ho-Chunk Nation  
Jackson County Forestry and Parks  
Rocky Mountain Elk Foundation  
United States Department of Agriculture –  
Wildlife Services  
United States Department of Agriculture – Forest  
Service  
University of Wisconsin – Stevens Point  
Wisconsin Bowhunters Association  
Wisconsin Conservation Congress

Wisconsin County Forest Association  
Wisconsin State Cranberry Growers Association  
Wisconsin Farm Bureau Federation  
Wisconsin Wildlife Federation  
Wisconsin DNR Bureau of Customer & Outreach  
Services  
Wisconsin DNR Division of Public Safety and  
Resource Protection  
Wisconsin DNR Bureau of Wildlife Management  
Wisconsin DNR Office of Applied Science  
Wisconsin DNR Division of Forestry

With Approvals by the:

Wisconsin DNR  
Wisconsin Natural Resources Board

## Wisconsin DNR Mission Statement

*To protect and enhance our natural resources: our air, land and water; our wildlife, fish and forests and the ecosystems that sustain all life.*

*To provide a healthy, sustainable environment and a full range of outdoor opportunities.*

*To ensure the right of all people to use and enjoy these resources in their work and leisure.*

*To work with people to understand each other's views and to carry out the public will.*

*And in this partnership consider the future and generations to follow.*

## EXECUTIVE SUMMARY

Historically, Wisconsin was home to a thriving elk population that was distributed throughout the state. By the late 1880s, elk were eliminated from Wisconsin due to habitat loss and unregulated hunting. More than 140 years later, wild elk are once again inhabiting Wisconsin's northern and central forests thanks to overwhelming public support and major partnerships between a variety of non-profit conservation groups, government agencies, tribal partners and thousands of conservation-minded individuals. Over the course of a quarter century, elk have become an integral and popular component of our state's wildlife community. They are a reminder that the conservation ethic and determination to right the conservation wrongs of our predecessors are alive and well in Wisconsin.

In addition to the benefits provided by returning a once common native system to the ecosystem, elk hold a significant economic and social value to the people of Wisconsin and are of cultural significance to several Native American tribes near or within Wisconsin. The value of elk is also reflected in the high level of public interest in elk recovery. As the species has become more abundant, a growing number of people are visiting the elk management zones in hopes of viewing an elk or hearing a distant bugle in the fall. Schools are incorporating elk ecology, conservation and management into science classes and field trips and tens of thousands of hunters submitted license applications with the desire to participate in Wisconsin's first elk hunting seasons. In short, the presence of wild elk has motivated thousands of people, adult and youth alike, to experience Wisconsin's wild landscapes, pursue outdoor recreational opportunities and learn about the state's wildlife conservation efforts.

The restoration of elk to Wisconsin's landscape has also provided broad benefits to the state's natural resources and public user groups such as hunters and wildlife watchers. Thanks largely to the presence of elk, thousands of acres of habitat enhancement, land acquisition and permanent land protection projects have been completed, benefitting a multitude of wildlife species while adding thousands of acres to Wisconsin's public land base. This public land is open to everyone and allows access for hunting, hiking, wildlife viewing and other uses. The improved habitat is not only beneficial to elk, but also greatly benefits species such as white-tailed deer, wild turkey, ruffed grouse and many non-game or rare species.

The previous written and approved Clam Lake (2000) and Black River (2001) elk management plans were written more than 20 years ago at a time when the elk populations in these areas were very small or non-existent. Similarly, the 2012 Clam Lake and Black River Elk Management Plan Amendment is over 10 years old. Much has changed since those plans were drafted, particularly as a result of the translocation of elk from Kentucky from 2015-2019, necessitating a new elk management plan to guide efforts over the next 10 years.

Wisconsin's elk population is no longer a geographically isolated novelty, but an established and growing herd of increasing ecological, social and economic importance which comes with associated challenges and opportunities. Due to the continued success of elk herds within the Clam Lake and Black River elk ranges, the focus of the *Wisconsin Elk Management Plan, 2024-2034* is intended to guide elk management at a statewide level to ensure healthy and robust elk populations while supporting consumptive and non-consumptive enjoyment of the elk resource. This plan reflects the best available information regarding ecological, social, economic and cultural issues surrounding elk management in Wisconsin.

The plan explicitly recognizes that Wisconsin's elk herds are relatively young and new. There is still much to learn about their ecology, population dynamics, habitat use and biological and social carrying capacities in the state. The plan supports increased growth of the elk population but acknowledges that population objectives may need to be adapted to address human conflict. Elk have occasionally caused damage to agricultural crops and property and have the potential to pose a threat to human health and

safety. Continued efforts will be needed to define “balance” across conflicting ecological, economic and social objectives.

This plan also recognizes that elk have and will continue to cross outside of primary elk management zone boundaries, and that this behavior can be allowed under certain conditions without major action. Long-distance dispersal has not been a common behavior of cow/calf groups due to their small home range size, tendency to make short, local movements and demonstrated lack of need to make seasonal migration-type movements. Occupancy of habitat outside the primary elk management zone boundaries is more common for bulls, which frequently make short, seasonal movements, but normally return to areas occupied by cow elk during the fall breeding season.

This plan was developed by members of the Wisconsin Department of Natural Resources (DNR) Elk Advisory Committee, which includes Wisconsin DNR staff with various areas of expertise. The committee also includes representatives from key stakeholder groups and partner agencies, each of whom bring valuable experience and insight to discussions. Several stakeholder groups were also involved in the development of the plan beyond those serving as official members of the committee.

While this document will serve to guide elk management decisions from 2024-2034, the information contained herein is also designed to provide to the public a transparent view of elk ecology and management in Wisconsin. This plan includes an expected implementation timeline of approximately 10 years but should be considered valid until it is replaced. The plan is recommended to be reviewed periodically by the department after approval to ensure it continues to address contemporary elk management. The plan’s first two sections include detailed summaries of elk ecology and population dynamics, and a historical account of elk in Wisconsin. For interested readers, the information contained in these sections should enhance their appreciation for elk and for the people who worked to reintroduce them in Wisconsin. By providing this informative resource, we hope to better engage members of the broader public as partners in the ongoing effort to manage elk in the state.

The “Elk Management in Wisconsin, 2024-2034: A Plan for the Future,” also identifies the overarching goal of the Wisconsin DNR elk management program and provides a set of objectives, strategies and products. These are designed to ensure the plan remains relevant and continues to direct and influence elk management decisions over the next decade.

The goal for elk management is to:

***Maintain a healthy, robust, and sustainable elk population that provides the ecological, social, economic, and cultural benefits of elk while minimizing elk-human conflicts in Wisconsin.***

Five specific objectives and supporting implementation strategies were developed to focus efforts toward achieving this goal:

**Objective A: Strive for a healthy and robust elk population in suitable habitats where public acceptance for elk is high.**

*Implementation strategies:*

- Manage elk populations using adaptive management through an objective-based approach supported by a set of metrics to help measure and evaluate progress toward a given objective.
- Efficiently monitor elk populations using the best available methods.
- Manage for elk population growth and genetic richness.

- Manage elk populations at socially accepted levels where habitat is suitable.
- Protect and monitor elk health.
- Maximize partnerships to ensure abundant and quality elk habitat on public and private lands.
- Require mandatory harvest registration and use registration data to inform population modeling and support management decisions.

**Objective B: Minimize elk-human conflicts.**

*Implementation strategies:*

- Monitor and respond to elk-human conflicts using the best available methods.
- Use the *Wisconsin Elk Conflict Response and Disposition Guidelines (Elk Conflict Response Guidelines)* to guide conflict management.
- Work with private landowners to increase knowledge of abatement techniques.
- Address indirect elk-user group conflicts such as elk-vehicle collisions.
- Utilize new research and products available for elk conflict management.

**Objective C: Conduct research to address management needs and decisions related to elk.**

*Implementation strategies:*

- Refine methods to help determine population size and distribution annually.
- Evaluate predator-elk interactions and their impacts.
- Model the impact of elk harvest season timing on herd dynamics, reproductive success and recruitment.
- Explore elk impacts to other wildlife, non-game species and habitat of special concern.
- Explore elk habitat use and impacts to forest regeneration and succession.
- Investigate effectiveness of new damage abatement techniques.
- Measure satisfaction and concerns of stakeholders (hunters, landowners, tourists and motorists).
- Estimate the economic impact of elk on local businesses and communities surrounding the elk management zones.

**Objective D: Develop communication strategies and outreach tools to increase the public understanding of ecological, cultural, social, and economic benefits of elk in Wisconsin.**

*Implementation strategies:*

- Use public surveys, social science literature and available communications channels to identify and address sensitive issues surrounding elk management.
- Create an “elk metrics system” through which a variety of data can be efficiently shared with the public.
- Encourage and expand participation of local, county, state and federal government agencies, Wisconsin's federally recognized tribes and other partners in elk management discussions/decisions.
- Ensure regular communication among Elk Advisory Committee members.

**Objective E: Provide recreational and cultural opportunities associated with elk.**

*Implementation strategies:*

- Provide an annual elk hunting season and establish harvest quotas to achieve population objectives for each elk management zone.
- Encourage responsible elk viewing and promote elk-related tourism.
- Increase recreational and cultural opportunities, outreach, and informational awareness about elk in Wisconsin.

**Key updates incorporated into this plan include:**

- 1) **Renaming of each elk management zone:** This plan proposes to rename the current elk ranges to more broadly define the general location of each elk herd within the state. The plan will refer to each elk range using new names for ease of reading. These names are the Northern Elk Management Zone (originally designated as the Clam Lake Elk Range) and the Central Elk Management Zone (originally designated as the Black River Elk Range).
- 2) **Expansion of the zone boundary for the Northern and Central Elk Zones:** This plan proposes an expansion to the Northern and Central elk management zones. Each expansion is supported by the DNR and targets increased flexibility in different aspects of Wisconsin elk management.

The proposed Northern Elk Management Zone expansion adds 7 square miles, increasing from 1,620 to 1,627 square miles. The increased area includes all private land, mainly forested with a portion of crop fields seeing chronic agricultural damage. With this adjustment, Northern Elk Zone hunting authorizations become valid on all WCADP enrolled properties which have been affected by chronic agricultural damage. There are no other proposed management efforts. Additional information can be found starting on page 40.

The proposed Central Elk Zone expansion includes an additional 115 square miles of suitable elk habitat, from 252 square miles to 367 square miles. This expansion includes areas of current elk use, in predominantly forested habitat with low conflict potential, and contains significant areas of public land including a significant portion of Ho-Chunk Nation land. Additional information can be found starting on page 45.

- 3) **Implementation of Adaptive Management using an objective-based population approach:** Since reintroduction, the elk population has been managed using a numeric goal as a long-term population goal to guide management efforts, which allows for little population flexibility and adaptation with conflict or nuisance. This plan proposes to manage the elk population using adaptive management by adopting an objective-based approach. This approach aligns population ranges with associated objectives and is founded by managing elk toward a density of 1 elk/square mile across each management zone. A list of metrics is utilized to guide management decisions based on current elk status on the landscape. Additional information can be found starting on page 49.
- 4) **Addition of Hunting Units:** This plan proposes delineating Wisconsin into 15 Hunting Units. The Northern and Central elk management zones encompass Units 1-10 with Units 11-14 adjacent to the Central Elk Management Zone. Unit 15 is a statewide unit which includes all lands outside units 1-14. The implementation of hunting units would allow for elk management on a localized level to meet population objectives. Additional information can be found starting on page 54.
- 5) **Eliminate the split hunting season framework:** Currently the elk hunting season opens the first Saturday nearest Oct. 15 and continues for 30 consecutive days. It reopens the second Thursday in December and continues for nine consecutive days. This plan proposes the elimination of the split hunting season framework. Season structure retains the elk hunting opening the first Saturday nearest Oct. 15 and the closing date be set to the Sunday nearest Dec. 15, allowing a continuous elk hunting season of approximately 58-65 days. Additional information can be found on page 60.
- 6) **Include a change to administrative code pertaining to feeding:** Current administrative code does not require a feed site placed for birds or small mammals to be removed if elk visit the site. This plan recommends feed sites placed for this reason be removed immediately if elk visit the feeding site. Additional information can be found on page 65.

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# SECTION 1: ELK ECOLOGY AND POPULATION DYNAMICS

## TAXONOMY

Elk (*Cervus canadensis*) are one of the largest members of the deer family (*Cervidae*) in North America, second only to moose. Members of the genus *Cervus* first appear in the Eurasian fossil record some 25 million years ago, but they do not appear in North American fossil records until the Miocene era, approximately five million years ago.

Six unique sub-species of elk were thought to have once existed in North America, however, there is ongoing debate among taxonomists as to whether such a breakdown by sub-species is warranted, believing instead that elk from different regions simply display different appearances and behavior due to variations in local habitat and climate conditions.

Elk native to Wisconsin prior to European settlement belonged to the Eastern elk subspecies (*C. c. canadensis*) which is believed to have gone extinct during the late 1800s. In addition to the Eastern elk, the Merriam's subspecies (*C. c. merriami*) of the southwestern U.S. and Mexico is also thought to have gone extinct. The Rocky Mountain sub-species (*C. c. nelsoni*) is the most common and numerous sub-species and was the sub-species used in reintroduction efforts in Wisconsin and other eastern U.S. states.

## PHYSICAL CHARACTERISTICS

Elk are one of three members of the deer family that inhabit Wisconsin, with the other two being white-tailed deer (*Odocoileus virginianus*) and, less frequently, moose (*Alces alces*). Elk are approximately three times larger than deer and about two-thirds the size of the much darker and flat-antlered moose. Adult elk vary in size by sex. A mature cow stands approximately four and a half feet tall at the shoulder, six and a half feet in length from nose to tail and weighs 500-650 pounds. A mature bull may stand five feet or more at the shoulder, stretch over eight feet long and weigh 600-900 pounds. Wisconsin elk calves typically weigh between 35-50 pounds at birth.

As the Shawnee name for elk, *wapiti* or "white rump", suggests, elk have a distinct buff-colored rump patch and stub tail. Beginning in the early fall, elk grow a thick, light tan-colored coat which consists of a wooly undercoat and long guard hairs, both of which combine to help insulate them during the cold Wisconsin winter. Elk of all ages grow a dark mane on their neck which is most prominent in the fall and winter. By late spring, they begin to shed their heavy winter coat and transition into a much thinner reddish-to-copper colored coat for the warmer summer months. Calves are born with a dull rusty color with white spots to help them blend into their surroundings during their most vulnerable time of life. By the end of the summer calves begin to grow a thicker fall and winter coat and lose their spots.

Like most members of the deer family, only bull elk have antlers that are grown and shed annually. Elk antlers are made of bone. Yearling bulls typically carry un-branched spikes. As bulls mature, their antlers usually grow longer and thicker, and their antler beams start to branch by developing multiple points. In Wisconsin, a typical mature bull has antlers approximately four feet long and carries five to six points per side. Mature bull elk have been used as a symbol of royalty and wilderness for centuries, and their regal antlers are one of the characteristics that make them sought after by both photographers and hunters. Antlers start growing in the late spring and are shed in late winter or early spring as testosterone levels decrease and growth of new annual antlers begins. As antlers grow during the summer months, they are soft and tender, covered in a protective layer of highly vascularized skin (velvet) and are enriched with blood vessels. They can grow at a rate of almost one inch per day and are the fastest growing mammalian tissue. Antlers reach their full growth by late summer and the velvet is shed as the antlers harden in late August. A mature bull's antlers can weigh up to 40 pounds per pair, and they become a lethal weapon when used to fight with other bulls during the breeding season (rut).

## **BEHAVIOR**

Elk are herd animals that live in social sub-groups of the overall population. The herd lifestyle of elk has developed primarily as a defense strategy against predators, and elk have fine-tuned this behavior to emphasize safeguarding calves. Although elk herds do not physically defend calves as a group in a similar behavior as bison or muskox might do, an elk herd is better able to detect and avoid predators through the sheer numbers of eyes, ears and noses. These sub-groups typically consist of cows, young bulls and calves while older age class bulls join the groups during the breeding season. Mature bulls will remain isolated by themselves or form small bachelor groups during the winter, spring and summer months, generally dispersed from the cow/calf groups. By late August into early September, the composition of elk groups begins to change as mature bulls (generally 3+ years old) gather cow/calf groups into harems for the upcoming breeding season. Actual breeding generally begins in early September, peaks in late-September and concludes by mid-October, although breeding into December has been documented.

Wisconsin cow elk typically become sexually mature at two or three years of age. A single “herd bull” will actively defend his harem and will mate with multiple cows over the course of the breeding season. Competition for control over harems is fierce between bulls. During this time, bulls may become less reclusive and show less caution than during other times of the year. Young bulls and those past their breeding prime cannot normally compete with prime-age bulls to hold a harem. A herd bull may lose up to 20% of his body weight during the rut. Much of a bull’s time is spent monitoring the cows’ readiness to breed, defending his harem against other bulls, and marking their territory by rubbing trees with their antlers and wallowing in mud pits. It is during this time that bull elk also make their distinct bugle call. Elk will continue to breed as long as there are cows in estrous, which can extend into the early winter months if a cow was not bred during the early fall period. After the conclusion of the rut, the cow/calf herds will re-form, and younger bulls will return to these groups. Most of the mature bulls will separate themselves from these groups beginning in late October.

Elk use a variety of unique vocalizations, the most notable being the bull bugle. The spine-tingling bugle of a bull elk is considered by many to be an iconic sound of the wilderness and adds to the experience of both hunters and recreational elk watchers during the fall.

An elk bugle is often described as a bellow that escalates into a high-pitched squeal or whistle of several seconds, eventually ending in a series of guttural grunts and chuckles. A bull may use any of the various components that make up the bugle singularly or as a full series. Bugling is used to advertise a bull’s presence, both to other bulls that might have ideas about challenging him, to collect or move the cow harem and to individual cows that are approaching their biological time to breed.

Cow elk exhibit their own unique sounds, often communicating with various mews, chirps and squeals. Calves mimic some of the same cow sounds, but at higher pitch. Calf calls are recognized and used to identify individual calves by their mothers.

All elk may use a short but startling bark as way of exhibiting alarm and alerting other elk of danger.

## **HISTORIC AND CURRENT DISTRIBUTION IN NORTH AMERICA**

Approximately 10 million elk are estimated to have inhabited North America before European settlement and were found throughout what is now the United States, Canada and Mexico (Fig. 1). One of six subspecies, the Eastern elk, once occupied much of the eastern U.S. including Wisconsin. As European settlers expanded westward across the continent, elk numbers were reduced by unregulated hunting and conversion of elk habitat to agriculture, leading to the extirpation of the eastern elk by the early 1900s. At this time, it is estimated that elk populations throughout North America were reduced to approximately

50,000 to 90,000 elk that lived in small, scattered herds within the Rocky Mountains and Pacific Coast of the U.S. and Canada. Since then, elk have made a remarkable comeback thanks to extensive restoration efforts and the adaptive ability of the species.

Robust elk populations once again exist throughout much of the American west and northward into Canada. Smaller, isolated populations of Rocky Mountain elk have been reintroduced to several eastern states, including Arkansas, Kentucky, Michigan, Minnesota, Missouri, North Carolina, Pennsylvania, Tennessee, Virginia, Wisconsin, and West Virginia.

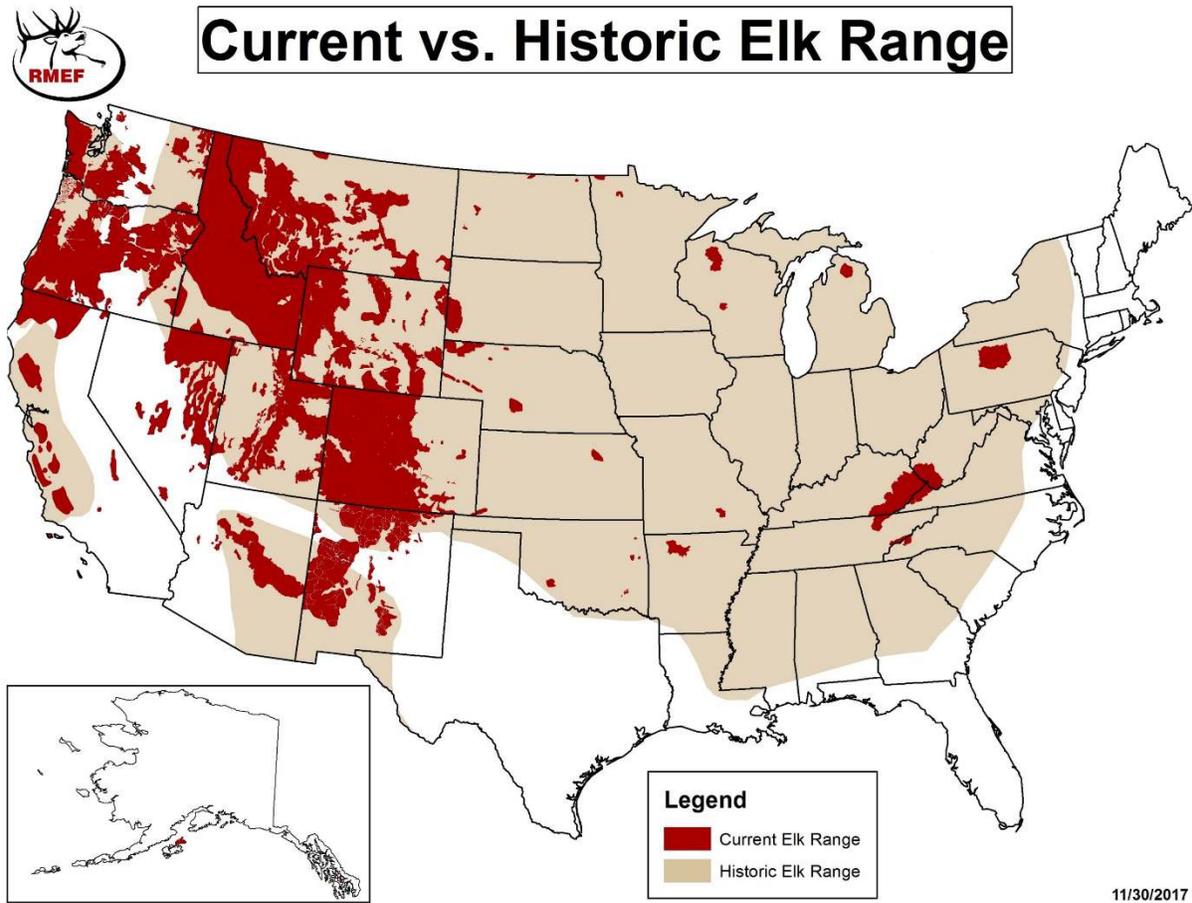


Figure 1. Historic (pre-European) and current (shown in red) distribution of elk in the United States (RMEF).

## ELK HABITAT

Elk are considered habitat generalists and can thrive in a variety of habitat and climatic conditions. In the predominantly forested eastern U.S., suitable elk habitat generally consists of a mosaic of woodlands and open, early successional habitat. Forests provide cover from human disturbance and predators, young woody browse as a food resource, and protection from seasonal weather conditions, whether from summer heat or as thermal cover during cold winter months. Open areas comprised of grasses, forbs and shrubs provide elk highly nutritious forage while the more open landscape also aids in predator detection and avoidance.

In Wisconsin, like other eastern states where elk populations have been reestablished, elk are generally considered non-migratory because of their ability to locate all their seasonal habitat needs interspersed within their annual home range. Commonly, the summer and winter range of cow/calf groups occurs in the same general area, allowing them to occupy an annual home range as small as 5-10 square miles.

In contrast to eastern elk populations, western elk are known to make seasonal movements to find the resources they need to survive throughout the year and avoid extreme weather conditions. Variation in seasonal weather patterns and elevation limit the water and cover resources available to western elk, so their habitat needs change throughout the year. Abundant moisture and cooler temperatures in high elevations provide lush forage in the summer, pulling elk upward. During winter months with deep snow in higher elevations, elk move to lower elevations as they seek protected valleys with less snow and warmer south-facing slopes. Annual migrations between seasonal habitats for western elk can exceed several hundred miles.

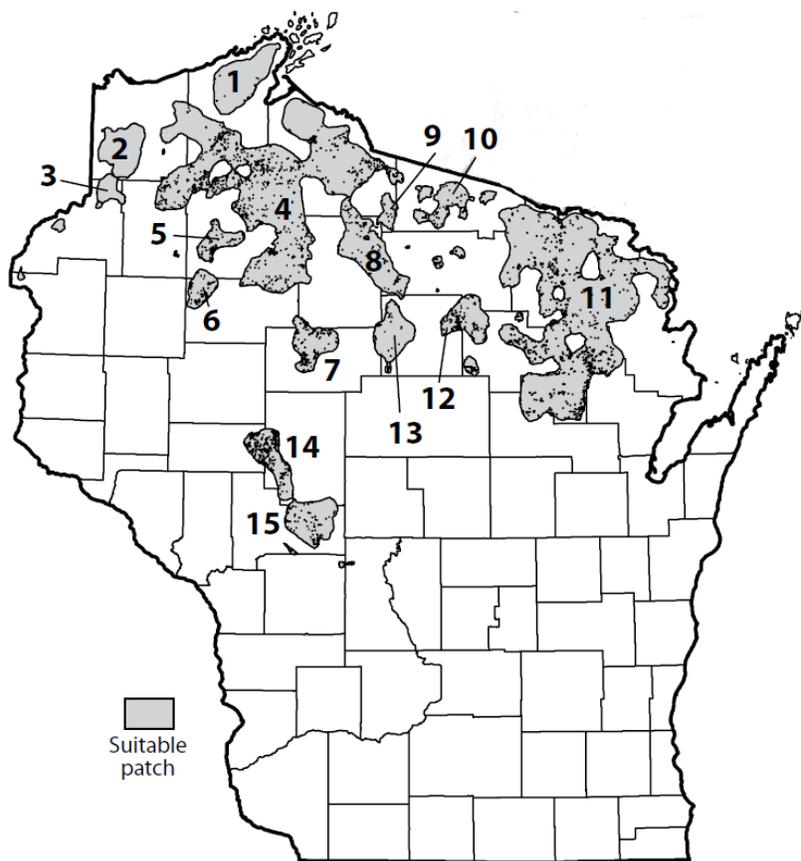


Figure 2. Suitable elk habitat patches in Wisconsin (Gilbert et al. 2010).

### Defining Wisconsin Elk Habitat

During the early years of evaluating Wisconsin's habitat suitability for elk in both the Northern and Central elk management zones, Michigan's Habitat Suitability Index (HSI) model developed by Beyer (1987) was used to help identify winter cover, winter forage and spring forage as potential limiting factors for elk populations in eastern states. Both of Wisconsin's elk management zones are similar in many respects (climate, vegetation, soil fertility, etc.) to the Michigan elk management zone. However, the early success of the Clam Lake area elk release caused other communities around Wisconsin to voice an interest in establishing their own local elk herds. When the Natural Resource Board (NRB) adopted the

Clam Lake Elk Management Plan in 2000, they developed guidelines that would be considered for any future reintroduction efforts including that the biological and ecological suitability of habitat for an area would need to be considered. However, most previous efforts to determine suitability considered only biological aspects, with little attention focused on social tolerance or on identifying potential conflicts with other resources or land uses. As such, the NRB required that the amount of and proximity to agriculture be considered, along with public attitudes regarding elk.

In accordance with the NRB's request, the Wisconsin Elk Habitat Suitability Analysis was completed in 2010 (Gilbert et al. 2010). The intent of this model was to conduct a statewide evaluation of areas potentially suitable for elk reintroductions. Utilizing Geographic Information Systems (GIS), the analysis included both biological elements (mostly land cover information derived from satellite imagery) and social elements such as agriculture, road density, and land ownership.

Although elk are likely capable of living anywhere in Wisconsin where they are socially tolerated, 15 areas of suitable habitat (Fig. 2) emerged where the analysis indicated that their habitat and nutrient needs could be fulfilled, while also minimizing the risks of damage to personal property, nuisance, or endangerment to human safety. Two of those suitable areas include the current Northern and Central elk management zones. While there have been and will continue to be situations that cause concern and may require management actions, both the Northern and Central elk management zones are considered suitable elk habitat with extremely strong public support for their presence.

## **NUTRITIONAL AND COVER REQUIREMENTS**

### **Diet**

Elk are highly adaptable animals that can live in many different habitats. As such, they exhibit a wide variety of forage and cover preferences, dependent on location. An elk's diet varies both geographically and seasonally and consists of mainly grasses, forbs, and woody plants. Grasses, forbs, woody shrub, tree brows and leaves are the main sources of summer forage while in winter, elk subsist on all available forage types and may shift more toward woody browse and available hard mast. Deep snow can limit access to ground layer vegetation (grasses and forbs) in winter, so woody browse is often the major source of winter forage available to elk. Where available, elk will also rely on hard mast, primarily oak acorns, as an important food source throughout the fall, winter and spring months.

As predicted by the Michigan HSI and demonstrated since, adequate winter forage for elk is present in both elk management zones. Several woody browse species are utilized by elk in Wisconsin and are a key winter diet component. Aspen, white cedar, maple and other northern hardwoods are all high-quality winter browse species that are readily available to elk in the north, while aspen, maple, oak and jack pine are common browse species in the Central Elk Management Zone. Upland conifers, although not optimal forage, are also utilized as winter forage for elk in the Northern Herd.

In addition to woody browse, grasses and hard mast in the form of acorns are also significant dietary components in winter when they are available to the elk. Snow cover can limit the availability of grasses to foraging elk, especially in the Northern Elk Management Zone where total winter accumulation of snow tends to be greater than in the Central Elk Management Zone.

As elk transition to spring, they require highly nutritious forage to restore their energy reserves depleted over the winter months and prepare for the upcoming birthing and calf rearing period. Plant species that green-up early in the growing season are important, and green grasses, forbs and sedges are generally preferred by elk over woody browse during this period. According to the Michigan HSI, optimal elk habitat should have a minimum of 10% of the area in cover types with high spring food suitability.

Planted wildlife openings, natural forest openings and forest clear-cuts contain the best forage during this time.

According to the Michigan HSI, Wisconsin's elk management zones did not contain sufficient forest openings to be rated as "optimal elk habitat." This assessment has influenced management practices significantly in both elk management zones, leading to the creation of many openings that are routinely used by elk. At current elk densities, and with significant portions of both management zones not yet occupied by elk, there are no indications that elk are lacking adequate spring nutrition. It is possible that spring forage may become a significant factor in limiting population growth in the future, especially if funding for important opening maintenance were terminated. Much of the maintained open area presently available in the elk management zones would be lost if no effort was made to limit woody growth along the corridor made by the U.S. Navy Extremely Low Frequency Communication System or managed forest openings. This would decrease the amount of spring forage and overall habitat quality for elk and possibly lead to lower recruitment, survival and overall health of the elk.

Summer and fall food resources have not been found to be as limiting for elk as winter and spring foods have, as forage is generally abundant during these seasons. Grasses, forbs, and tender leaves are commonly consumed during this period. Like other members of the deer family, elk evolved as a ruminant (cud-chewing) species with a multi-chambered stomach which provides an important predator avoidance mechanism. Plant material is only partially digested in the first chamber of the stomach during initial feeding, allowing the animal to eat quickly and retreat to safe cover. Their food is then regurgitated and chewed for a second time before being swallowed again, maximizing the digestibility of their fibrous diet and minimizing their predation risk.

### **Cover**

Similar to an elk's dietary needs, their habitat needs vary greatly by region and location. Because of their large body size, thick winter coat and diverse diet, elk are well adapted for survival in a wide range of habitat and climatic conditions. Throughout the elk's range in North America, elk inhabit arid desert habitats in the southwestern U.S., high mountain regions of the western U.S., coastal rainforests of the Pacific Northwest, and northern boreal forests in Canada. In general, elk are less dependent on specific cover requirements and are able to survive and acclimate to most areas in the U.S.

In Wisconsin, both elk management zones are located in primarily forested areas that are interspersed with natural and manmade forest openings, wetlands, lakes and rivers (Table 1). Perhaps the greatest limiting factor in Wisconsin is winter thermal cover. Optimal winter cover can consist of lowland conifers such as cedar, fir and spruce or upland conifers like red and white pine. Additional thermal cover is provided by dense forested stands with a well-developed conifer understory such as mature, deciduous aspen stands. Elk will also use areas exposed to increased solar radiation, such as south facing slopes, throughout the winter to maximize their thermal regulation. These aspects of thermo-regulation are generally more important in the Northern Elk Management Zone where deep snow can accumulate for much of the winter and temperatures can be extreme.

Table 1. Cover types on the Northern and Central elk management zones (calculated for public land only within each elk management zone).

Vegetative Community	Cover Type	Northern Elk Management Zone % Cover	Central Elk Management Zone % Cover
Forested Upland	Aspen	20	17
	Hardwoods	18	22
	Sugar Maple	10	0
	Red Maple	0	<1.0
	Red Pine	5	7
	White Pine	1	0
	Birch	2	<1.0
Non-forested Upland	Grass	1	7
	Forb	0	0
	Shrub	0	1
	Other	0	0
Forested Lowland	Mixed Swamp Conifer	7	0
	Lowland Black Spruce	7	0
	Northern White Cedar	2	0
	White Pine	0	9
	Tamarack	0	2
Non-forested Lowland	Shrub Swamp/Lowland	4	3
	Wetlands	2	0
	Sedge Meadow	1	0
	Marsh	0	10
	Other	4	0
Public Land Total		68	83

### Overall Assessment Of Wisconsin Elk Habitat

After an initial exploratory period succeeding both reintroductions, most cow/calf groups have remained in relatively small areas within the designated elk management zones, indicating that management zones are meeting all seasonal requirements. The warning signs of poor nutrition, such as low calf survival or low birth rates, have not been observed in Wisconsin’s elk herds. Overall population growth also supports this. The success of these reintroductions can be attributed, in part, to the elk’s ability to adapt to and survive in their new range in Wisconsin. Timber harvests and habitat management practices scheduled in the coming years are expected to continue to improve the overall habitat quality for both elk management zones.

## POPULATION DYNAMICS AND ECOLOGY

### Reproduction

Elk are considered harem breeders. Typically, a single dominant bull can breed 5-20 cows each breeding season. While the majority of the breeding is done by the herd bull, some cows are likely bred by smaller, less dominant bull called satellite bulls. Breeding usually occurs between early September and mid-October, with the peak of the breeding occurring in late-September. After a 240- to 260-day gestation period, the majority of Wisconsin calves are born from mid-May through late-June. Sexually mature cows typically produce a single calf each year. While known to occur in rare instances in wild and captive elk, there are no records of twins born to Wisconsin elk. Calf sex ratios vary from year-year, however, the long-term average in the Northern Elk Management Zone is approximately 50:50, while sex ratios in the Central Elk Management Zone have included >50% male calves each year.

During most years in May and June, DNR elk program staff within both elk management zones monitor the locations of breeding age cow elk that are likely to give birth. Movement by a cow away from her cow/calf group, followed by spending two to three days in one location, are key indicators that the cow has given birth. When this behavior is observed, a team of staff and/or volunteers go to the cow's location and methodically search for the newborn calf.

Elk calves can stand and run within hours of being born and are able to outrun a human within a few days. Despite their speed and agility, newborn calves spend much of their first few weeks lying motionless, relying on their spotted coat and lack of odor to protect them from predators. Once calves are several weeks old, cow/calf pairs begin to gather back together in larger groups for protection and remain together for the remainder of the year. Calves remain bonded to their mother for the first year and may remain in the same loosely associated family group for several years.

Since 2001, DNR staff and volunteers have located over 248 elk calves in the Northern Elk Management Zone during spring calf capture efforts. Similar efforts in the Central Elk Management Zone have been made with over 73 calves located since 2016, following the first year of reintroduction. Of all the calves located, over 300 were fitted with radio tracking collars and contributed greatly to what we know about the population dynamics of elk in Wisconsin. Calves not located during the spring calf collaring efforts may be collared during winter trapping efforts when research and monitoring needs exist.

Historically, when newborn elk calves are handled, their weight, incisor measurements and other characteristics are examined to help estimate their age in days (using criteria developed by Johnson (1951)) and keep record of average weights of Wisconsin elk calves. By gathering age information from newborn calves, much has been learned about the calving season, the median birth date, the range of birth dates and the median and range of conception dates.

Before release, calves are fitted with a tracking radio collar that includes an expandable belt, allowing the collar to adjust to the growth of the elk. Developments in technology, specifically using Vaginal Implant Transmitters (VIT), allows for increased confidence when checking for pregnancy, knowing the timing of birthing events, finding newborn calves, and evaluating calf-survival. As is such, VIT's coupled with an iridium adult collar provide information on population level parameters to be more accurately represented when modeling herd growth.

Based on calf collaring efforts in the northern range between 2004 and 2013, the median calf birth date was May 28, and falls most often between May 25 and June 2. The earliest birth ever observed was May 13, and the latest was June 22. It should be noted, however, that cows that had not given birth by mid-June each year were not intensively monitored during late-June or later. During the first seven years of monitoring cows in the Central Herd, birth dates have ranged from May 19 to Aug. 11, with a median birth date of June 7. Interestingly, several calves captured during winter trapping efforts in the Central Herd were estimated to have been born in late November or December and survived through winter.

Conception dates can be determined by backdating from calf birth dates using an average 250-day (240-260) gestation period. The median conception date from 2005 to 2013 within the Northern Herd was approximately Sept. 21. For monitored elk, individual conception dates ranged Sept. 5 to Oct. 15. However, monitoring of potentially pregnant cows concluded each spring once a collaring goal was met, so there were likely animals giving birth later in the year that were not documented. Conceptions dates within the Central Herd have ranged from Sept. 11 through Nov. 6, with a median conception date of Sept. 29. Such data supports the current statutory requirement that the state elk hunting season may not begin before the Saturday nearest Oct. 15, after most breeding has occurred, helping to avoid disruption of the elk mating season by state elk hunters. Hunting during the breeding season could temporarily impact breeding activities, especially as permit and hunter numbers increase.

On average, newborn calves in the Northern Herd weigh about 35 pounds, with calves over 50 pounds documented. While there is very little difference between female and male calf capture weights, the mean weights have varied from year to year. During years with late springs (2008 and 2013), when cows have less nutrition available to them in the months leading up to calving, calves averaged 33.7 pounds in the Northern Elk Management Zone. In contrast, years with early springs (2010 and 2012) produce larger calves on average at 38.1 pounds for the same elk management zone. Weights of individual one-day-old calves ranged from 16 pounds to 55 pounds for the Northern Elk Management Zone. Weights for calves born in the Central Elk Management Zone have averaged 42 pounds and have ranged from 30 pounds to over 52 pounds.

The weight and health of the calf can be influenced by several factors and can often indicate health issues of the mother. Whether these issues are due to severe winter, late “green-up,” parasites, debilitating injuries or age, the collective measurement of spring calf weights provides an indication of the health of the cows producing the calves and potentially the overall quality of habitat within the elk management zones.

Through these annual herd monitoring and research efforts, DNR staff have been able to document pregnancy and birth rates for elk in Wisconsin. Based on their findings, Wisconsin cow elk do not become sexually mature until they are at least 1.5 years old (during the fall breeding season) and most cows do not become pregnant for another year or two. By the time a cow reaches 3.5 years old pregnancy rates can exceed 85%. Pregnancy rates for cows that are 2.5 or over 15 years of age have been documented to be less than 50%, while yearling elk have only been documented to be pregnant on two occasions. Pregnancy rates for the Central Herd appear to be similar to the Northern Herd through the first few years post-release and are expected to improve as the herd matures and adjusts to their landscape.

### **Bull Age Structure and Bull:Cow Ratios**

Research in western states suggested that bull age significantly influenced the timing and synchrony of the rut (Noyes et al. 2006) and that bull:cow ratios around 25:100 resulted in tending of all females in a harem (Bender 2002). Typically, when mature bulls ( $\geq 3$  years old) are present, a harem situation is established where a dominant male controls most of the breeding activity within a harem. Younger bulls stay on the periphery of the harem and attempt to breed individual cows if opportunities arise. In the Michigan elk herd, harem size is related to bull:cow ratios, which have been reported as high as 60:100 (Bender 1996). Given the low total population size in Minnesota elk herds, a bull:cow ratio of roughly 50:100 is thought to be adequate to maintain a natural elk breeding complex and a sustainable number of males in the breeding population. States that hold large numbers of elk and elk hunting seasons tend to have bull:cow ratios of 14:100 to 25:100. However, states with significantly smaller elk herds (1,000 or fewer, which includes most eastern elk states) attempt to hold adult bull:cow ratios of 33:100 to 50:100.

Mature bulls are the most popular with the viewing public, and a ratio of 60 bulls:100 cows has been determined to be most desirable in Michigan which contains a population size similar to the goals of Wisconsin’s Northern Herd. This ratio of bulls to cows is about twice as many bulls to 100 cows as are in many western herds. Considering that Wisconsin’s elk herds are significantly smaller than any western state’s herd, managing for a robust bull:cow ratio of approximately 40-60 bulls:100 cows will provide a larger overall population with high breeding success and ample public opportunities to view and hunt mature bull elk. Most recent bull:cow ratios within the Northern Elk Management Zone and Central Elk Management Zones are roughly to 40:100 and 90:100, respectively.

### **Life Expectancy**

Despite the many challenges that Wisconsin elk face, several elk have lived well beyond the average life span of a wild elk. Many Kentucky translocated cows were adults and currently have an unknown age.

Within the Northern Herd, several cows have lived to be 20 to 23 years old. Once past peak maturity, most are lost to wolf predation or age/malnutrition.

The oldest documented elk in Wisconsin was a cow known as Cow 13 that was born in Michigan in 1994 and brought to Wisconsin as a calf during the 1995 Northern Herd release. Cow 13 died in the spring of 2019, apparently from malnutrition and old age, just one month shy of her 25<sup>th</sup> birthday. She was one of the oldest known wild elk ever documented in North America. Cow 13 was captured multiple times over the years and was an extremely aggressive and protective elk who lived in an area of high-quality habitat, which surely helped her reach old age.

The oldest documented Wisconsin bull was born in 1998 and died in a rut fight in November 2016, making him over 18 years old. Several other bulls are known to have lived close to this age, and most known bulls were eventually taken by wolves in their old age.

### Population Growth

The Northern Herd originated with 25 elk acquired from Michigan and released in May 1995 near the town of Clam Lake. Annual growth rates have ranged from -16% to 30% annually (Table 2) based off annual pre-calving population estimates. In 2017 and 2019, an additional 91 elk acquired from Kentucky were released into the Northern Elk Management Zone. As of April 2023, the pre-calving population is estimated to have reached approximately 271 (196-339 at 95% CI) elk (Fig. 3). Excluding years succeeding Kentucky releases, the average annual growth rate is approximately 9% for the Northern Herd.

The Central Herd was founded with the release of 23 Kentucky elk in August 2015 and was supplemented with a release of an additional 50 Kentucky elk in July 2016. As of April 2023, the Central Herd contains approximately 126 elk. Population growth rates have ranged from +4% to +29% and have averaged +17% over the six years succeeding the reintroduction efforts.

Table 2. Annual pre-calving population estimates and growth rates for the northern and central elk herds.

Year	Northern Herd		Central Herd	
	Population	Growth Rate	Population	Growth Rate
1995	25	N/A		
1996	21	-16%		
1997	25	19%		
1998	32	28%		
1999	40	25%		
2000	52	30%		
2001	59	13%		
2002	68	15%		
2003	81	19%		
2004	95	17%		
2005	99	4%		
2006	96	-3%		
2007	109	14%		
2008	123	13%		
2009	131	7%		
2010	131	0%		
2011	151	15%		
2012	154	2%		
2013	145	-6%		
2014	127	-12%		
2015	129	2%		
2016	137	6%	13* <sup>1</sup>	N/A

2017	157*	15%	50 <sup>2</sup>	N/A
2018	168 <sup>3</sup>	N/A	52	4%
2019	190*	13%	59	13%
2020	220 <sup>4</sup>	N/A	76	29%
2021	257	17%	90	18%
2022	259	1%	105	17%
2023	271	5	126	20%
Average annual growth rate		9%		17%
*KY elk in quarantine not included in estimate				
<sup>1</sup> 23 KY elk released in August 2015				
<sup>2</sup> 50 KY elk released in July 2016				
<sup>3</sup> 31 KY elk released in July 2017				
<sup>4</sup> 60 KY elk released in August 2019				

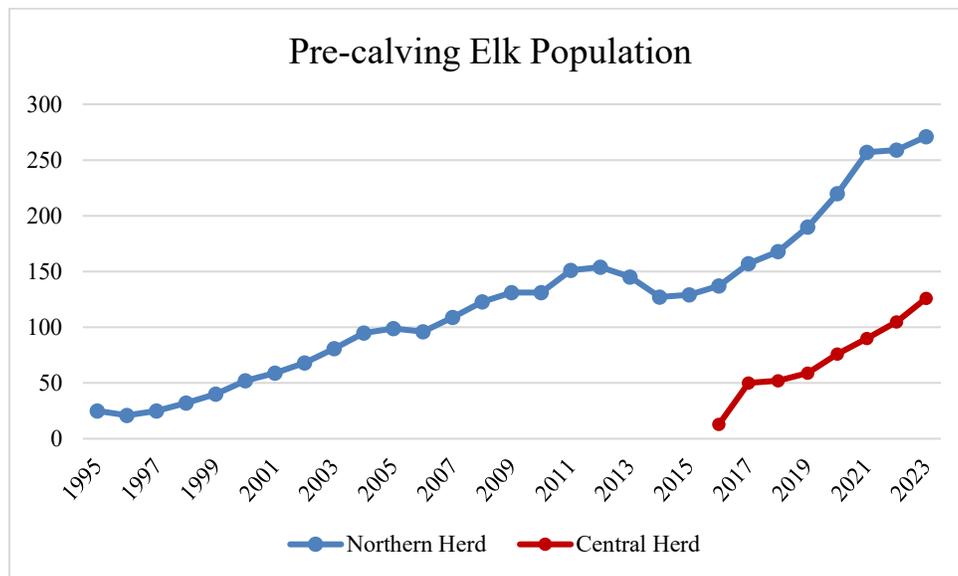


Figure 3. Annual pre-calving elk population for the northern and central elk herds.

## ELK MORTALITY

In reintroduced wildlife populations, understanding and addressing causes of mortality that may impact population growth and ultimately recovery is of high importance for managers. Once known, mortality information is applied to help tailor management practices that reduce losses and provide the elk population the highest probability to thrive. Radio collars equipped with mortality notifications are the primary tool to detect mortalities. Staff are alerted within hours rather than days or weeks of an elk's death. To a lesser extent, DNR staff also rely on public reports of mortalities from uncollared elk. Once a mortality event is detected, a field inspection and/or necropsy is conducted to determine the cause of death when possible.

Through December 2023, DNR staff investigated and verified 434 elk mortalities within the Northern Herd (Table 3) and were able to determine the cause of death for most of those events. Predators (both wolves and bears) and vehicle collisions have accounted for over half of all known mortalities in the

Northern Elk Management Zone. The unknown/undetermined category increased substantially due to staff vacancies and COVID-19 constraints. The remaining mortalities include a wide variety of causes that include complications due to parasites (meningeal worm), other infectious disease (mostly respiratory and gastrointestinal), drowning, legal/illegal harvest, rut fights, birthing complications, winter severity and other causes.

Through the first nine years (2015-2023) of the post-reintroduction period of the Central Herd, 99 mortalities have been documented and attributed to many of the same causes as the Northern Herd (Table 4), although in different proportions. As of December 2023, vehicle collisions were the leading causes of mortality for the Central Herd.

Table 3. Causes of elk mortality within the Northern Elk Herd from 1995-2023.

<b>Mortality Cause</b>	<b>Number</b>	<b>Percent</b>
Wolf Predation	149	34.3%
Unknown or Undetermined	64	14.7%
Vehicle Collision	50	11.5%
Legal Harvest	47	10.2%
Poor Health (E. Coli, Pneumonia, Bacterial Infection, etc.)	44	10.1%
Bear Predation	30	6.9%
Meningeal Worm/Other Parasites	13	2.9%
Drowning	12	2.7%
Illegal Harvest	8	1.8%
Euthanized	7	1.6%
Birthing Complications	4	0.9%
Other or Unknown Predation	4	0.9%
Rut Fight/Trauma	2	0.5%
<b>TOTAL</b>	<b>434</b>	<b>100.0%</b>

Table 4. Causes of elk mortality within the Central Elk Herd from 2015-2023.

<b>Mortality Cause</b>	<b>Number</b>	<b>Percent</b>
Vehicle Collision	33	33.3%
Unknown or Undetermined	14	14.1%
Wolf Predation	12	12.1%
Poor Health (E. Coli, Pneumonia, Bacterial Infection, etc.)	9	9.1%
Illegal Harvest	9	9.1%
Euthanized	6	6.1%
Meningeal Worm/Other Parasites	6	6.1%
Rut Fight/Trauma	3	3.0%
Predation Other or Unknown	3	3.0%
Other	2	2.0%
Birthing Complications	1	1.0%
Drowning	1	1.0%
<b>TOTAL</b>	<b>99</b>	<b>100.0%</b>

## **Environmental Conditions: Spring Green-Up And Severe Winters**

Early spring green-ups not only benefit cows and calves, but all elk replenishing their depleted fat reserves after winter. Birth weight of a calf is a relative indicator of cow elk health coming out of winter. Sustained long-term average or above long-term average birth weights at the herd level is essential for herd growth and health. Using the DNR's Winter Severity Index, which measures the is number of days  $\leq 0^{\circ}\text{F}$  and number of days  $\geq 18$  inches of snow between Dec. 1 and April 30, extreme winters have shown negative population level impacts to elk.

During the winter of 2013-2014, the Northern Elk Management Zone accumulated 165 Winter Severity Index points with 70 days of sub-zero temperatures and 95 days of at least 18 inches of standing snow. During that winter and through the summer of 2014, an estimated 22% of cows, 20% of bulls and 85% of calves were lost.

The winter of 2022-2023 produced a Winter Severity Index score of 111 with 83 snow depth days. The full extent of the impact is not yet known.

Winters of 2013-2014 and 2022-2023 were the result of not only direct mortality due to starvation and predation, but some elk were also hit by vehicles as they traveled on snowless roads or were lost to the effects of excessive corn consumption from non-natural food sources. As a result of both severe winters, pregnant cows that survived the winter produced few calves as verified by DNR staff observations, surveys and field necropsies.

While we do not have enough data to suggest whether the timing of spring green-up is more important than winter severity, it can be concluded that late springs following severe winters appear to be detrimental to calf survival in northern Wisconsin.

## **Predation**

Black bears and wolves were identified in Wisconsin's original elk management plan as the main predators of elk. Monitoring and mortality investigations have shown that predation has accounted for a significant portion of the total elk mortality in the herds.

Any mortality, regardless of its source, can influence population growth. While both elk herds have grown over time, it is likely that both would contain more elk had predation occurred less frequently.

Despite the presence of these predators and future anticipated losses from them, annual recruitment is expected to exceed predation and other mortality causes and allow population growth. Predation events are expected to be a continued source of mortality for both herds, but as the elk populations grow, the impact of individual predation events on population growth are expected to be less significant.

The original elk management plan states that a predator reduction policy to boost elk population growth was not biologically necessary and would likely be unacceptable to many people. Under those assumptions, the DNR chose not to implement specific predator control options to support elk populations. Changes to predator management should occur under the management of those species through their respective management plans and annual harvest seasons.

## **Wolves**

Wolves are the primary predator of elk in Wisconsin and occupy all suitable habitat where elk are found. Since elk reintroduction, wolves have accounted for 34.3% and 12.1% (Dec. 31, 2023) of known elk mortalities in the northern and central herds, respectively. Wolf pack density is high through the entire Northern Elk Management Zone. Similarly, pack density within the Central Elk Management Zone is

high on large blocks of forested habitat but diminishes on the outer fringes of the range where forest gives way to agricultural areas and higher human activity.

Wolf predation rates are impacted by a variety of factors. These factors vary between the Northern and Central elk management zones and may include elk and/or wolf distribution, age and health of individual elk, availability of alternative prey species, habitat use, weather conditions and wolf pack.

All other factors aside, winter severity is known to play perhaps the most significant role in influencing wolf predation on both elk and deer populations. Wolf-caused mortality has been highest during years of severe winter conditions including prolonged sub-zero temperatures and deep, crusted snow. January, February and March are peak months for wolf predation in Wisconsin. These late winter periods are typically characterized by deep snow and cold temperatures, while the elk are weakened by diminishing fat reserves and food availability making them less able to escape predation. While wolf predation of both deer and elk are highest during years of extreme snow and cold, elk are less likely to succumb than deer due to their larger size which allows them to move more freely through deep snow and lets them access food resources that may be inaccessible to deer. In addition, elk grouping behavior allows them to better avoid predators. Although mature bulls may not have the protection of a large group, their size and hardened antlers are usually defense enough. The loss of mature, hard-antlered bulls happens most often during years of exceptionally severe winter conditions.

Wolf predation has been a factor in the slower-than-anticipated elk population growth within the Northern Herd and early within the early reintroduction period for the Central Herd. Population modeling suggested that without wolf predation, pre-calving elk numbers within the Central Elk Management Zone may have surpassed 100 elk by 2019, rather than the 2020 pre-calving estimate of 75-80. However, since 2017, there has been one documented wolf mortality within the Central Herd (2017-2023).

While all suitable northern and central forest elk habitat is occupied by wolf packs, the territorial aspects of wolf packs make more widespread wolf distribution unlikely. Additionally, Wisconsin wolf packs average four wolves at their low point (late winter), although annual fluctuation in pack size is common. Thus, the wolf population within each elk management zone is not expected to increase significantly in the future as the suitable wolf range in Wisconsin is currently occupied at peak wolf pack density and the number of wolves within each pack does not change significantly from year to year. During years of low deer numbers, elk are likely to become more important prey for wolves. Due to the variable nature of wolf predation events, the impacts of this predation vary by year.

## **Bears**

Black bears have accounted for 16.9% of observed elk calf mortalities in Wisconsin's Northern Elk Management Zone with no bear predation events documented in the Central Elk Management Zone through 2023, although the cause of several calf mortalities could not be determined and may have ultimately been due to bear predation.

Bear predation is anticipated to be a continued annual cause of mortality within the Wisconsin elk herds and appears to occur at increased levels during years of late spring green-up.

No bear predation events have been recorded in the Northern Elk Management Zone after Aug. 1, as calves are likely strong enough to move with the entire cow/calf group, which provides additional protection. Bear densities are lower within the Central Elk Management Zone, and it is anticipated that bear predation rates on calves will be lower in that zone than the Northern Elk Management Zone.

## **Other Predators**

In addition to wolf and bear predation, other predators such as coyotes, bobcats, and potentially cougars, may also cause mortality in elk. Although no mortality of elk (specifically calves) has been attributed to either cougars or bobcats, it is possible and may occur at a relatively low frequency.

Cougars play a role in elk ecology of western states and have accounted for elk mortality within the reintroduced elk herd of Missouri. Although the presence of cougars has been verified in Wisconsin, they have not yet been suspected of killing elk in Wisconsin. Future possibilities of cougar caused elk mortality are possible but are not anticipated to be a significant cause of mortality.

### **Other Causes Of Mortality**

Across the country, and wherever wildlife lives in proximity to roadways, wildlife-vehicle collisions occur. Elk-vehicle collisions have occurred in both elk management zones and are a leading cause of mortality in both elk herds. Both original Wisconsin elk management plans predicted that such incidents would occur, but it was anticipated that the relatively low road density within each elk management zone would help reduce this risk.

In the Northern Elk Management Zone, vehicle collisions have accounted for approximately 11.5% of known elk mortality while in the central range, vehicle collisions have accounted for 33.3% of the documented mortality as of December 2023.

In both management zones, open, grassy areas along roads regularly attract elk and can increase the probability of a collision if the elk seek out those areas to feed. In contrast to deer, however, elk tend to display deliberate and methodical movements that provide more time for motorists to avoid a collision. Most elk-vehicle collisions documented in Wisconsin have resulted in the elk's death or significant injury, although there are known cases where the animal survived and even produced calves following a collision. Despite there being a number of elk-vehicle collisions in Wisconsin, very few of those collisions have resulted in human injury. Several other management actions have been successfully initiated in Wisconsin to help reduce collisions including warning light and signage systems that alert motorists of the presence of elk in the area, public outreach and education, and strategically placed habitat improvements to draw elk away from roadways.

Artificial feeding of elk can have a significant influence on elk behavior in the patterns and routes they use for movement, and physiologically due to levels of uncommon food in the diet, and disease transmission due to a finite point of food. Mortalities to elk have been documented due to these negative effects which underscores the need to educate the public to not feed elk by use of corn or artificial bait.

Although miles of active railroads within each range are common, elk-train collisions are possible, but rare. One known collision has occurred between a train and an elk in the Northern Elk Management Zone, leading to the death of the animal.

Several other mortality causes have been documented less frequently among Wisconsin elk. The mortality causes are typically not preventable and occur naturally in a wild elk population. Additional mortalities have included parasites and infectious disease (meningial worm, liver fluke, E. Coli, pneumonia, and other bacterial infections), rut fight wounds, drowning by falling through thin ice, illegal harvest, acidosis (corn toxicity), complications due to birthing, and more. Poor nutrition and body condition has also been documented as a cause of mortality in young calves or in adult elk during extreme winter conditions. In some instances, DNR staff cannot immediately investigate a mortality and the cause of these mortalities

cannot always be determined. In these situations, the mortality cause is listed as unknown. If a necropsy is conducted and no definitive cause of death is identified, the mortality cause is unknown/undetermined.

Legal harvest is now an annual mortality source (currently only in the Northern Herd) and has accounted for 10.1% of the total mortality.

## **HOME RANGE SIZES IN WISCONSIN**

Elk distribution throughout their range can be influenced by many factors, including weather, meteorological seasonality, habitat conditions, human disturbance, predator activity, pregnancy status of cows, and competition with other elk. Unlike habitats in the western U.S. where the availability of food, water and cover may be spread out over many miles and at varying elevations, the daily and seasonal needs of Wisconsin elk are common across their home range. Such plentiful resources allow Wisconsin elk to live within fairly small home ranges and have demonstrated limited natural expansion into adjacent suitable habitat thus far. As the population increases, natural range expansion is expected to become more common as competition for resources increases.

Monitoring in the Northern Elk Management Zone has shown that the average annual cow home range is approximately 6 square miles and can be as large as 18 square miles. Cow/calf group home ranges, in general, are slightly larger than individual cow home ranges. In the Central Elk Management Zone, annual home range size for cow/calf groups is approximately 6 square miles, on average, but up to 13 square miles, depending on seasonality. Within these annual home ranges, however, much of an elk's activity and time may be spent on a smaller proportion of their home range.

Annual bull home range sizes tend to be significantly larger than cow/calf home ranges as bulls regularly move away from cow/calf groups outside of the breeding season. Individual bulls have been documented moving from 5-20 miles away from cow/calf groups after the conclusion of the breeding season, with occasional longer distance movements being documented. In many cases, mature bulls are only found near cow/calf groups during the months of September and October. When including their winter/spring/summer ranges, bull home ranges often exceed 15 square miles.

## **CARRYING CAPACITY**

Wisconsin's elk numbers are growing. With more than 1,620 and 360 square miles making up the Northern and Central elk management zones, respectively, there are significant portions of suitable elk habitat yet to be occupied by elk. In 2000, elk occupied about 45 square miles of the Northern Elk Management Zone primarily in the vicinity of the town of Clam Lake at a density of approximately 1.2 elk per square mile. By 2024, elk occupied a minimum of approximately 400 square miles at a similar density.

Within the Central Elk Management Zone, elk currently occupy approximately 60 square miles, or 15-20% of the 367 square mile management zone, at a density of 0.4 elk per square mile across the management zone. Given elk currently occupy 15-20% of the entire Central Elk Management Zone, localized density is closer to 2.0 elk per square mile within the occupied range.

Wisconsin's biological carrying capacity of elk is unknown at this time. However, research from Michigan (1973), which closely resembles Wisconsin's habitat type and availability, found biological carrying capacity for elk to be 4.9 elk per square mile.

Both of the current elk population estimates are well below the predicted maximum biological carrying capacity in Wisconsin and perceived social carrying capacity, but population ranges for each herd are set to be a balance between biological capacity and social considerations. Population size, social tolerance

and environmental impacts will be important considerations when reassessing and considering adjustments to population levels within the scope of this plan and beyond 2034.

## SECTION 2: ELK IN WISCONSIN

### HISTORICAL OVERVIEW OF ELK IN WISCONSIN

Eastern elk were native to Wisconsin and once described as being a common animal with evidence that they were found throughout the state. They were especially abundant in the grasslands and open woodlands of the southern and western parts of the state, as well as near the transition areas of prairies and forests. Written records and the discovery of antlers and bones confirm that elk lived in at least 50 of the state's 72 counties (Fig. 4), though the continued discovery of elk remains throughout the state suggests that elk likely existed statewide.

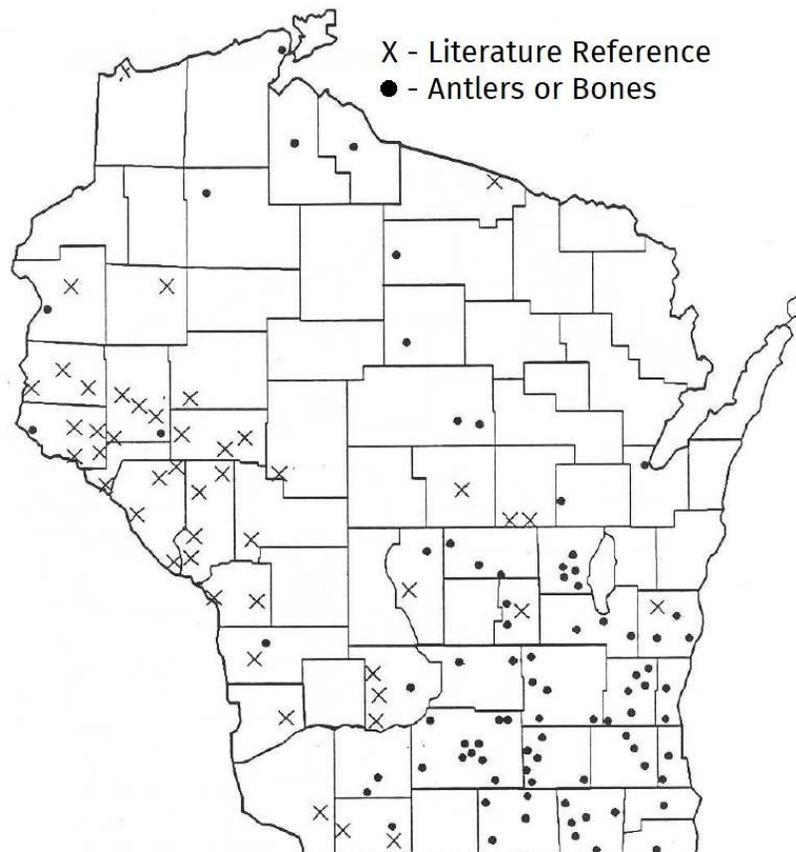


Figure 4: Discovery sites of elk antler or bone and location of historic reference to elk in Wisconsin (Schorger 1954).

The story of elk extirpation in Wisconsin is similar to that of many other species during the period of early European settlement, as unregulated and market hunting and the conversion of native habitats to human uses forever changed the Wisconsin landscape. By the middle of the 19<sup>th</sup> century, surviving elk populations were restricted to the more sheltered forest habitats of northern and central Wisconsin. Elk were likely extirpated from the state during the late 1800s, although the exact year is not clear. Records suggest that elk were present in the 1870s and that the last elk was likely shot in 1886 west of Stevens Point. Eastern elk were eventually extirpated from North America, and subsequent efforts to bring elk back to the eastern states have relied on source populations of Rocky Mountain elk.

## **NATIVE AMERICAN TRIBES AND ELK**

Federally recognized tribes have played a significant role in shaping elk management recommendations within both elk management zones. Elk are a culturally significant resource to many tribes. Elk were historically and to this day continue to be valued for subsistence, medicinal, cultural, religious and economic purposes. The Ojibwe Bands of the 1837 and 1842 Treaties and the Ho-Chunk Nation have been and continue to be committed partners in the effort to return elk to the landscape. They have contributed funding, staff and other resources to the elk reintroduction efforts in the Northern and Central elk management zones, respectively.

This elk management plan recognizes that the well-being of Wisconsin's elk herds requires a collaborative, government-to-government relationship between the DNR and Native American tribes. The DNR recognizes and respects tribal sovereignty and the off-reservation harvest rights that were reserved by the Ojibwe Bands in the 1837 and 1842 Ceded Territories as confirmed by the federal court in *Lac Courte Oreilles (LCO) v. State of Wisconsin*, 775 F.Supp. 321 (W.D.Wis. 1991). The DNR will continue to collaborate on a government-to-government basis with Native American tribes regarding elk management and policy.

### **Ojibwe Tribes**

The Ojibwe tribes who exercise off-reservation treaty rights in the 1837 and 1842 Ceded Territories in Wisconsin have contributed greatly to the reestablishment of elk in Wisconsin. Financial contributions through Tribal gaming revenues for elk management and reintroduction activities totaled over \$1.7 million between 2001 and 2017. In addition, the Ojibwe tribes held welcoming ceremonies for the initial reintroduction efforts of elk in 1995 and more recently during the release of elk translocated to the Northern Elk Range from Kentucky.

As a result of the *LCO* decision that reaffirmed off-reservation treaty rights, the Ojibwe treaty-signatory tribes retained the right to harvest up to 50% of the harvestable surplus of fish and wildlife in the Ceded Territory in Wisconsin under their own set of off-reservation rules and regulations. This set of rules and regulations is known as the *Model Off-Reservation Conservation Code for the 1837 and 1842 Ceded Territories in Wisconsin*.

During the first two elk hunting seasons in 2018 and 2019, the Ojibwe tribes worked together, forming intertribal hunting groups to pursue elk in a ceremonial manner, for subsistence use. In subsequent years, elk tags were issued to members of elk hunting groups from individual tribes. Each year, hunters and tribal community members have congregated at a ceremonial elk harvest camp in the Chequamegon-Nicolet National Forest near Clam Lake, where they held ceremonies for the opening of the tribal off-reservation elk harvest seasons. The ceremonial elk harvest camp provided an opportunity for many tribal citizens of all ages to participate in various aspects of the elk hunt. The camp also provided an opportunity for those not directly involved in the elk hunt to exercise their off-reservation treaty rights by participating in other hunting, fishing and gathering activities in the surrounding area. Great Lakes Indian Fish and Wildlife Commission (GLIFWC) biologists and law enforcement staff met with tribal elk hunters at the ceremonial harvest camp each year to provide an elk hunter orientation and to issue permits, carcass tags and biological sampling kits. In the 2021, 2022 and 2023 elk hunting seasons, the Ojibwe tribes agreed to have all elk processed by local meat processors and to split up the elk meat equally among the tribes. The elk that were harvested by the tribal hunting groups were often shared with community members at community feasts and ceremonies.

### **Omashkooz – The Strong, Majestic Four-legged One**

The last wild elk was likely killed in Wisconsin in 1886. Locations throughout the state like Elk, Wisconsin and Elk Mound are evidence that elk had a presence here at one time during the settlement by

Europeans immigrants. In the town of Barnes, WI, in Bayfield County, the remains of an elk, now called the Silver Beach Elk, were found in Middle Eau Claire Lake. The bones and antlers of this elk were estimated to be 500 years old. Butcher marks were also found on the bones indicating that elk were hunted and consumed in this region well before European contact. Today, the reintroduction of wild elk marks an historical achievement for the Anishinaabe nations and the people of Wisconsin.

The Anishinaabe people see the elk as a long-lost relative that is returning to their homelands in Wisconsin. Since the eradication of wild elk, the Anishinaabe people have struggled with many hardships to preserve their tribal governance, treaty rights, ancestral languages and cultural traditions. Passed down through oral traditions, it is known that the elk were a cherished food source. Anishinaabe hunters believe that, if they bestow proper conduct and respect before the hunt, game such as deer, moose and elk will offer up their flesh for the good of the people. Thus, hunting becomes ceremony. The name that is used today for elk is *omashkooz*. In the Ojibwe language, *'mashki'* is translated as 'strong or solid, and *'-ooz'* is thought to be a linguistical remnant of an ancient Indigenous classification for ungulate species, relative to the name *'mooz* or moose. The name *'omashkooz'* refers to the strong, majestic stature of the elk where its head is held high and its stamina is displayed to all, especially predators.

In 2017, GLIFWC commissioned a local Anishinaabe artist, Sarah Agaton Howes, to create an art piece to reflect the first elk hunt in Wisconsin after 130 years. The title of that art piece is called, "Return of the Medicines" (Fig 5.). The elk is a symbol of a return to our Anishinaabe lifeways that include traditional foods, medicines and storytelling.



Figure 5. Sarah Agaton Howes, Anishinaabe's "Return of the Medicines" art piece.

## Ho-Chunk Nation

The Ho-Chunk Nation also known as "People of the Big Voice", spoke to exercise their power of self-governance with resolutions establishing a Department of Natural Resources in 2015 and 2016 amending the Nation's Constitution, adding a *Rights of Nature* laws. Law language includes "...Respect the rights of Nature, life cycles, structures, functions and protect the rights of all living plants, animals, and the environment in which all living entities and organism reside and promote and protect maintenance and regeneration of its life cycles, structure, and functions...". Consequently, *hųwųwą* (elk) is an exemplar being of whom Ho-Chunk people care, respect, and share life to promote its rights of nature while preserving our cultural and traditional ways of life. The Ho-Chunk Nation's Department of Natural

Resource vision is "...to provide long-term cultural, social, political, and economic stability of the Ho-Chunk Nation, and conserve, preserve, and protect nature". Current operations of the Ho-Chunk Nation DNR include a dedicated staff of Land, Forestry, Wildlife and Agriculture divisions serving as woogus hirakara "takes care of creation." As a means of capacity-building within the department and the Nation, Ho-Chunk Nation DNR has successfully engaged in training and partnering opportunities with state, federal and non-profit conservation organizations, such as the elk reintroduction on Ho-Chunk aboriginal lands.

## **HISTORY OF WISCONSIN ELK REINTRODUCTIONS**

### **Early Translocation Efforts**

In 1872, the U.S. Congress established Yellowstone National Park. This was followed by the enactment of the Yellowstone Park Protection Act of 1898 and the Lacey Act of 1900. Together, these actions provided effective rules, funding and staff that gave protection to elk in Yellowstone National Park, allowing the population to grow. By 1912, a significant number of elk were being captured and used in reintroduction attempts across North America. During the early- to mid- 20<sup>th</sup> century, elk were hauled by train to more than 35 states (including Wisconsin) for the purpose of re-establishing elk populations. In 1913, a "carload" (exact numbers are not known) of elk from Yellowstone National Park were released into an enclosure at what was then the state game farm near Allequash Lake, just south of the town of Boulder Junction in Vilas County. From that shipment, only two cow elk and a single bull survived. While the elk herd grew slowly, a second shipment was added to the enclosure in 1917, but the herd suffered heavy mortality due to poor health and severe winter conditions. The small herd survived and 15 elk were released into the wild in 1932. The population was estimated to be 25 elk in 1946, but illegal harvest was common and by the 1950s no elk were thought to remain.

During the same time that elk were first being reintroduced to Wisconsin, seven Yellowstone elk were also released into the Pigeon River State Forest in the northcentral region of Michigan's lower peninsula. These seven elk would eventually contribute individuals to a later reintroduction effort in Wisconsin.

### **Modern Era Reintroductions**

In 1989, the Wisconsin legislature directed the Wisconsin DNR, in conjunction with the University of Wisconsin-Stevens Point (UWSP), to initiate a feasibility study (Parker 1990) with the aim of determining whether moose, caribou (*Rangifer tarandus*) or elk would be the best candidate for a reintroduction. Habitat evaluations were completed to identify several areas where low human and road densities created wilderness-like areas that would be most suitable for a reintroduction attempt. Elk emerged as the most likely species to recover to sustainable populations in the existing habitat of northern Wisconsin. And unlike moose and caribou, elk were expected to be least likely to suffer major health setbacks due to the presence of the meningeal worm (*Parelaphostrongylus tenuis*) that is commonly carried by white-tailed deer. However, faced with the many challenges of a growing deer population, DNR leadership elected not to pursue elk reintroduction at that time.

By 1994, the Michigan elk herd had grown to about 1,100 animals. Despite a lack of action by the DNR, a significant grassroots effort had emerged to pursue another Wisconsin reintroduction attempt. The origin of Wisconsin's successful elk reintroduction can be traced back to a small group of individuals who formed the Wisconsin Elk Study Committee in 1993. Wisconsin Elk Study Committee members had local connections in the Great Divide District of the Chequamegon-Nicolet National Forest, including Professors of Wildlife Management, Dr. Ray Anderson and Dr. Orrin Rongstad. They invited into their fold Wisconsin's Rocky Mountain Elk Foundation (RMEF) volunteer chair, Bernie Lemon, of New Berlin. The Clam Lake, WI area was familiar to both Drs. Anderson and Rongstad who had conducted decades of research in the area on black bears and white-tailed deer, respectively. The greater Clam Lake area also contained a key landscape component, the U.S. Navy Extremely Low Frequency communication

system. The system was created during the cold war era for communication with nuclear submarines. This same system's 400 acres of linear openings would provide critical habitat for elk in an otherwise dense forest. The U.S. Navy supported the elk project, and Wisconsin Elk Study Committee and RMEF persuaded then-Governor Tommy Thompson to include funding within the state budget proposal to support research that would investigate the feasibility of restoring elk to Wisconsin. Responsibility for the project was given to UWSP with a \$25,000 a year General Purpose Revenue line-item in the state budget, which RMEF matched with \$100,000 per year. Once funding was secure, the rest began to fall into place. If the study was successful, a full reintroduction would be considered.

Driven by the persistence of local advocates with strong political influence, university staff, and others, along with interest and funding in the state's budget from then-Governor Tommy Thompson, Wisconsin's elk reintroduction effort continued forward.

An agreement with the State of Michigan supported the donation of 25 wild elk from their herd. In March 1995, 18 females and 7 males were captured and held in a Michigan enclosure. Health testing of the 25 elk was completed before transport to Wisconsin. By early May, the elk were transported to Wisconsin and held in a two-acre acclimation pen a short distance south of the Town of Clam Lake in the heart of the Chequamegon-Nicolet National Forest, Great Divide District in Ashland County.

After a brief acclimation period the elk were released on May 17, 1995. During the following four years, this population was monitored by Dr. Ray Anderson of UWSP and his students. During this time, the population doubled in size and acclimated to its new surroundings. Despite some initial exploratory movements by several elk, the majority of the herd took up residency within the original Clam Lake Elk management zone. At the close of the study in 2000, the reintroduction was considered a success due to the population growth and minimal conflicts associated with the herd and management responsibilities were transferred to the DNR.

### **The Beginning Of The Central Elk Herd**

The establishment of the Northern Elk Herd near Clam Lake proved that elk could be successfully restored as a member of Wisconsin's wildlife community. Encouraged by this success, interest in restoring elk to the central forest region of Wisconsin emerged among members of the Jackson County Wildlife Foundation (JCWF) by 1999. The growing enthusiasm for elk to return to this portion of their historic range culminated with the Jackson County Board of Supervisors adopting a resolution in favor of a reintroduction attempt. Subsequently, in 2000 the DNR conducted a series of three public meetings attended by representatives from a wide variety of stakeholder groups including private landowners, conservation organizations, cranberry growers and other agricultural producers, and private citizens. The meetings indicated strong support for a potential reintroduction among the general public, but concerns about crop damage, wildlife and livestock health, and recreational implications were also raised.

In December 2001, the Wisconsin Natural Resources Board (NRB) adopted the *Black River Elk Herd Management Plan*. As part of the plan, the DNR determined that the Black River State Forest and surrounding public lands (primarily the Jackson County Forest) matched the criteria of lying within historical elk management zone and providing suitable habitat to fulfill an elk herd's biological needs while minimizing the potential for human-wildlife conflicts. The Wisconsin elk habitat suitability analysis utilized GIS land cover data further found that, within the central forest region of Wisconsin, Jackson and Clark counties contained the most appropriate winter cover and ample winter and spring forage bases, the largest contiguous area of public land, and the lowest road density within the central forest region. Based on this information, the original Black River Elk Management Zone was delineated in eastern Jackson County. The Black River Elk Management Zone consists of 252 square miles of primarily state and county forest lands along with parcels owned by the Ho-Chunk Nation and private landowners.

In 2002, detection of Chronic Wasting Disease (CWD) near Mount Horeb in Dane County Wisconsin resulted in all movement of cervid species be halted, and although the framework was set, the central Wisconsin elk reintroduction was put on hold. Additionally, the DNR ruled out the game farm industry's offer of founding the Central Herd with captive-bred elk based on the fact that partner funding was contingent upon proceeding with a reintroduction using only wild elk. Captive-bred elk were also felt to be more likely to habituate to humans, have the potential to contain European red deer genetics, and be less likely to acclimate to the wild.

Around 2012, the state's efforts regarding CWD had shifted from eradicating the disease to containing its spread. Although southern Wisconsin was considered a CWD-endemic area, the disease had not been detected in Jackson County or any adjacent counties. With three primary goals in mind: 1) restoration of a native species to its historical range, 2) increase wildlife-based tourism, and 3) provide elk hunting opportunities to help support elk management, the DNR decided to move forward with plans for reintroduction in the Black River Elk Management Zone. However, translocation of elk was predicated upon finding a donor state that was free of CWD and that had an elk population large enough to provide Wisconsin with the desired number of elk (originally determined to be 275) to be split between the central and northern herds.

In 2012, the DNR drafted an amendment to the original elk management plans, lending momentum to the reintroduction effort. The *2012 Clam Lake and Black River Elk Management Plan Amendment* assessed the Northern Herd's level of adaptation to the Northwoods while synthesizing genetic and habitat preference information to develop new goals for the existing and potential elk herds. The plan recognized multiple factors that resulted in the slower-than-anticipated growth of the Northern Herd. Among these factors, the amended plan considered the potential consequences of low genetic diversity due to the relatively small number of elk (25) translocated from Michigan (known as the founder effect) and lack of potential for elk to immigrate into the population due to its isolation. Thus, sufficient genetic variability and low disease risk were significant attributes when searching for an appropriate donor state.

In the 2012 amendment, extensive discussion between DNR and Kentucky Department of Fish and Wildlife Resources staff allowed Kentucky to be identified as the most desirable donor state. Kentucky's elk reintroduction efforts began in 1997, and by 2002, they had translocated over 1,500 elk from six western states into the mountainous region of eastern Kentucky. By 2006, the herd was estimated to have attained the state's population goal of 10,000 animals and this herd supported a managed elk hunt. The size of the founder herd and its diverse genetic background suggested high heterozygosity and allelic richness to enhance the genetic diversity and health of Wisconsin's Northern Herd and reduce the potential consequences of the founder effect for a reintroduced herd in Jackson County. Furthermore, through the testing of several thousand animals, Kentucky was designated by USDA as being a low risk CWD state, and the risks associated with other cervid diseases were considered to be minimal. During the spring of 2012, staff from the DNR and the Ho-Chunk Nation traveled to Kentucky to learn more about their elk reintroduction program and current management efforts. This marked the start of planning for trapping, quarantine and transport of elk to Wisconsin.

The DNR recognized that the central Wisconsin elk reintroduction project would incur costs throughout the process, from procuring materials and equipment to providing staff labor to support elk capture and transport. The 2012 amendment estimated the total cost of the reintroduction to range from \$480,000 to \$560,000. The projected cost included expenditures for site preparation and holding pens, disease testing materials, monitoring equipment, transportation, trapping, and feed for the elk. The expense would be covered primarily through partner funding, including an initial \$300,000 pledge from RMEF, \$150,000 contribution from the Ho-Chunk Nation, \$50,000 pledge from the JCWF, and contributions from other local partner organizations, businesses, and individuals. RMEF also agreed to help cover the cost of the quarantine facilities. These components could be relocated as the project shifted from the Central Elk

Management Zone reintroduction to the Northern Elk Management Zone supplemental stocking, reducing the project cost.

After receiving approval to move forward with the plan from the NRB, legislation that allowed the interstate transport of elk, and many other logistic considerations, the DNR initiated a plan to obtain elk from Kentucky. Due to the demands of staffing, health testing, travel and other logistics, and the building of quarantine facilities, the five-year plan focused on one Wisconsin elk management zone at a time. A translocation plan was developed that detailed each step of the process from preparing the Wisconsin quarantine pen to final release. Several crews would assist in trapping, disease testing, transport and monitoring of the held elk. The plan also included post-release monitoring procedures and a protocol for agricultural damage abatement. In addition, it outlined a strategy for communicating progress and results to DNR programs, partners and the general public. Project coordinators and the DNR's wildlife veterinarian oversaw plan development and all stages of implementation.

Wisconsin reached an agreement with Kentucky to bring up to 50 elk annually until a total of 150 elk had been translocated. To incentivize the agreement, the DNR offered to collaborate with Kentucky on their ruffed grouse restoration efforts. Ultimately, only funding was provided to Kentucky to support grouse habitat enhancement and hiring a grouse biologist in Kentucky.

During January and February in 2015, 2016, and 2017, Wisconsin staff traveled to Kentucky to assist in the capture of elk. During the first three years, two crews of eight people participated in on-the-ground trapping activities alongside Kentucky staff. Each crew spent approximately two and a half weeks in Kentucky starting in early January. Kentucky staff were integral in locating trapping sites on both public and private lands, and in providing guidance during elk trapping efforts. DNR staff assisted with construction of mobile traps, transport of elk from trapping sites to the quarantine pen near Pineville, KY, husbandry during the quarantine period, and health testing. These efforts were highly dependent on elk activity and winter weather. The three-year effort resulted in 98 elk captured for Wisconsin.

In 2018, no elk translocation efforts were performed due to an economic development project in southeastern Kentucky. When Wisconsin translocation efforts resumed in 2019, helicopter captures were utilized and resulted in 50 elk being captured. Rather than taking weeks, it took less than three days, marking the fastest and most productive capture effort during the five-year translocation effort. Although helicopter capture was more expensive, it also relieved the DNR of associated expenses related to five weeks of staffing, housing, transport and trapping. The quick capture also allowed an earlier start to the quarantine holding period.

Significant efforts were taken to ensure that all elk transported to Wisconsin had no detectable disease of concern and were otherwise healthy. Interstate movement and importation of the elk into Wisconsin had to be approved by both the United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services (USDA-APHIS-VS) and Wisconsin's Division of Animal Health within the Department of Agriculture, Trade, and Consumer Protection (DATCP). DNR staff worked closely with these agencies and Kentucky counterparts.

Each year, elk were quarantined for at least 120 days, a period which officially began once capture had ceased and all elk for transport were housed in the quarantine facility as a single herd. After 30 days, the first round of testing for bovine tuberculosis (bTB), brucellosis, and a variety of other diseases and the application of official USDA identification tags was completed in Kentucky. After initial testing and 45 days of quarantine the animals were transported in modified livestock trailers overnight to Wisconsin. There, they completed the remainder of the quarantine period in a seven-acre, double-fenced enclosure within each elk management area. A final round of bTB testing was conducted after 120 days to meet the comingled herd requirement for the final test. This annually coincided with calf birthing, so elk were

typically held for an additional timeframe to allow all births to occur inside the quarantine facility. Calves were able to grow prior to release, improving their survival chances. During two separate years (2015 and 2019), elk were held through early August as part of the testing protocol. In each of these years, an individual elk had blood test results on the Cervid Dual Path Platform VetTB assay that were non-negative. These animals could either be re-tested in 30 days or euthanized and have tissues submitted for culture (8 weeks). If a second test at 30 days was non-negative, the animal would need to be euthanized and have tissues submitted for culture (8 weeks). To ensure *Mycobacteria bovis* (the causative agent for bovine tuberculosis) was not present and to improve the remaining elk had an opportunity to successfully establish territory before winter, primary attempts at culture were the choice taken. In both cases, primary necropsy and additional bacterial culture did not detect *Mycobacteria bovis*, and the elk were cleared for release.

A summary of the number of elk captured, transported and released in Wisconsin is provided in Table 5.

Following release, DNR staff closely monitored adult elk through the use of GPS tracking collars. All mortalities were promptly investigated to verify cause of death and help inform management strategies. When applicable, whole carcass submission to Wisconsin Veterinary Diagnostic Laboratory for full necropsy was completed for all Kentucky elk mortalities occurring within five years of release. Elk monitoring data continues to provide critical insights into elk movements, habitat use and survival.

Table 5. Summary of Kentucky/Wisconsin Elk Translocation, 2015-2019.

Year	Herd	Captured	Transported	Released	Females	Males
2015	Central	29	26	23	13	10
2016	Central	40	39	50	38	12
2017	Northern	29	28	31	19	12
2018	N/A	No translocation occurred				
2019	Northern	50	48	60	43	17
TOTAL	Both	148	141	164	113	51

## ELK POPULATION MANAGEMENT

The original *Clam Lake Elk Management Plan and Environmental Assessment* listed three herd population management strategies including:

- 1) **Natural increase:** the herd would be allowed to increase to some target level only through natural increase (the option preferred by the DNR at the time and selected by the NRB).
- 2) **Supplemental increase:** additional elk would be released to grow the population more quickly.
- 3) **Population reduction:** to serve as a contingency plan if elk began to cause unanticipated problems.

From 1996 through 2003, the Northern Elk Herd grew at an average rate of 21 percent per year but eventually slowed (Table 2). Due to this slowing growth rate, the *2012 Elk Plan Amendment* emphasized the need for supplemental increase to not only bolster the Northern Herd but to also support the establishment of the Central Herd. Assisted dispersal was also added as a new management option that would help elk spread to unoccupied suitable habitat within the management zone, utilization of beneficial habitat during critical portions of the year, reduce impacts related to predation, and enhance natural increase of established elk by fostering additional cow/calf groups and breeding animals.

All of the aforementioned management strategies have been utilized since the original release in 1995, with reduction only occurring at the local level. This management plan re-evaluates the success and need

for each strategy during the plan's implementation. Regardless of the strategy, management of Wisconsin's two elk herds differs from other reintroduced species in that the goal of other efforts has been to restore a species to the core of its former range and allow expansion to fill all suitable habitat. However, this plan supports elk inhabitation be focused within elk management zones where public land ownership and local tolerance is high. Management zone boundaries can be evaluated and modified as appropriate in the future as data is collected on elk habitat use, social tolerance and elk-human interactions.

### **Natural Increase**

This strategy allows both elk herds to increase through natural biological recruitment until a target population objective is reached. The population objectives are set based on elk densities on the landscape and levels anticipated to avoid significant negative landscape and social effects. Much of Wisconsin's current Northern and Central elk management zones are not occupied by elk, so there remains much to be learned regarding public tolerance, elk distribution and other factors. Population objectives are currently set to allow one elk/square mile in both elk management zones. This allows room for considerable natural herd growth while anticipating few negative conflicts.

### **Supplemental Increase**

Supplemental increase would provide for herd growth through the addition of elk from an outside source herd to be released within existing herds, thereby helping increase their numbers and reach higher population more quickly. A supplemental increase was conducted in the northern range through the release of 91 Kentucky elk in 2017 and 2019. As a result of the success already achieved through interstate transport, coupled with growing concerns of disease spread through transport of elk and other cervids, this plan does not seek additional elk from herds outside Wisconsin during the next 10 years. However, this plan recommends the DNR maintain flexibility of moving elk within the state to ensure the long-term sustainability of existing herds. Expansion of elk into additional management zones with suitable habitat and high public support and low potential conflict will be reevaluated during future elk management planning processes.

### **Assisted Dispersal**

This option involves the capture of elk from one area within an elk management zone, relocating and releasing with acclimation to unoccupied habitat within the same elk management zone. Resources within both elk management zones are abundant, and telemetry and GPS monitoring of the herds has shown that cow elk often do not naturally disperse. The assumption is cow/calf groups are able to fulfill their resource needs in a relatively small home range. Because it was assumed that elk would naturally disperse throughout suitable habitat, neither of the original Wisconsin elk management plans addressed the need to capture and relocate elk to help occupy their range and foster herd growth. During 2009, DNR elk staff explored the successful efforts of other eastern elk states in accelerating the occupation of habitat and herd growth through the practice of assisted dispersal.

Assisted dispersal efforts may also be executed to reduce group numbers or relocate elk who have moved into in an area of conflict. Relocation may be within unoccupied areas of the management zone or within established sub-groups where elk may mix with previously established cow/calf groups in areas of low conflict.

Since 2010, assisted dispersal has been used several times with good results. The first group of 12 elk was captured and moved 10 miles to an area of high-quality habitat near Moose Lake in eastern Sawyer County. As of May 2023, this sub-group increased to at least 35 animals. In anticipation of the translocation effort from Kentucky, assisted dispersal was used in 2014 to establish an elk sub-group on or near the Flambeau River State Forest. Starting with 26 elk, that population has since increased to

approximately 75 (not including elk added from Kentucky) with growth rates similar to those seen from 1996 to 2004. Adult survival is high, and predation is low thus far for this group established through assisted dispersal.

Along with the individual group successes, the cumulative results have also been encouraging. In 2010, only four cow/calf sub-groups were present within the Northern Herd. Since then, three of four attempted assisted dispersal efforts have been successful when measured in terms of herd growth and occupation of formerly unoccupied suitable habitat. Additionally, the relocation of Kentucky elk into the Clam Lake area has formed additional cow calf groups. As of spring 2024, 12 cow/calf groups exist, not including single or pairs of elk located elsewhere across the Northern Elk Management Zone, increasing occupancy across the zone.

Because of these successes, assisted dispersal was approved in the *2012 Elk Plan Amendment* as a management tool, and there are ample arguments to continue using this practice in the primary management zones of both elk management zones until each is more fully occupied. Available areas in which to expand is not a limiting factor as about 25% of the Northern Elk Management Zone and approximately 15-20% of the Central Elk Management Zone was occupied as of December 2023.

Finally, a mixing of more diverse genetics was a strong argument that favored the Kentucky supplemental increase. Those genetics are now present in Wisconsin and are being spread across both elk management zones. Assisted and natural dispersal between 2020-2023 has accounted for over 30 Kentucky elk moved into additional occupied portions of the northern elk zone.

In summary, assisted dispersal will establish more cow/calf groups within more high-quality habitat, resulting in a faster growing population, expand hunting and elk viewing opportunities, provide a relocation tool for conflict or transient captured elk and promote tourism over a broader geographic area in each elk management zone while accomplishing the goals of strengthening the genetic richness of the Northern Elk Herd.

## **POPULATION MONITORING**

Population monitoring is critical to elk management as it provides the demographic information necessary to make informed management decisions. Elk within the Northern and Central elk management zones are monitored using three main methods that include tracking collars, remote trail camera grids, and observational surveys. Radio collars and elk observational data has been used to monitor elk in Wisconsin since their release in 1995. Trail camera grids have also been used with success to annually monitor and estimate elk populations and demographics since 2012.

Two types of telemetry collars have been deployed on Wisconsin elk including Very High Frequency (VHF) radio collars and GPS collars. Data from tracking collars are used to determine habitat use, daily and seasonal movements, interactions between collared animals, time and location of calving events, and time, location, and potential cause of mortality events. Most collars are clearly marked so individual elk can be identified in trail camera photos and field observations. All collars deployed between 1995 and 2014 were VHF collars. Between 2015 and 2022, most yearling and adult animals, as well as all Kentucky translocated elk, received GPS collars. VHF collars were deployed on calves until 2021. With the development in collar technology, GPS collars are now being deployed on calves as of 2022.

Significant advances have been made to tracking collars in recent years. The switch from VHF to GPS collars was made because GPS collars collect accurate location information automatically based on user-defined schedules. GPS collars also collect and transmit data over a satellite network, and the data is stored online so staff can easily monitor animals from a computer or mobile device. Online monitoring is

more time and cost efficient than locating VHF collared elk, which requires walking, driving, or flying within range of the collar signal, collecting locations during staff working hours, and decreased location accuracy because of human triangulation error.

Figure 6 shows one week of GPS collar location data for multiple elk within the Northern Elk Management Zone. This collar was programmed to collect a location every 13 hours, but the location fix rate can be set to any period desired by the user. Additionally, GPS collars have been programmed to send mortality alert emails and text messages within four hours of collar inactivity, allowing staff to investigate mortalities quickly, minimizing the likelihood a carcass will be degraded prior to investigation.

In the same way, GPS collars also allow staff to monitor elk near nuisance or damage situations such as their proximity to highways, human occupancy or agriculture. In short, GPS collar technology has advanced rapidly, and these collars can collect exponentially more data that can help answer research and management needs.

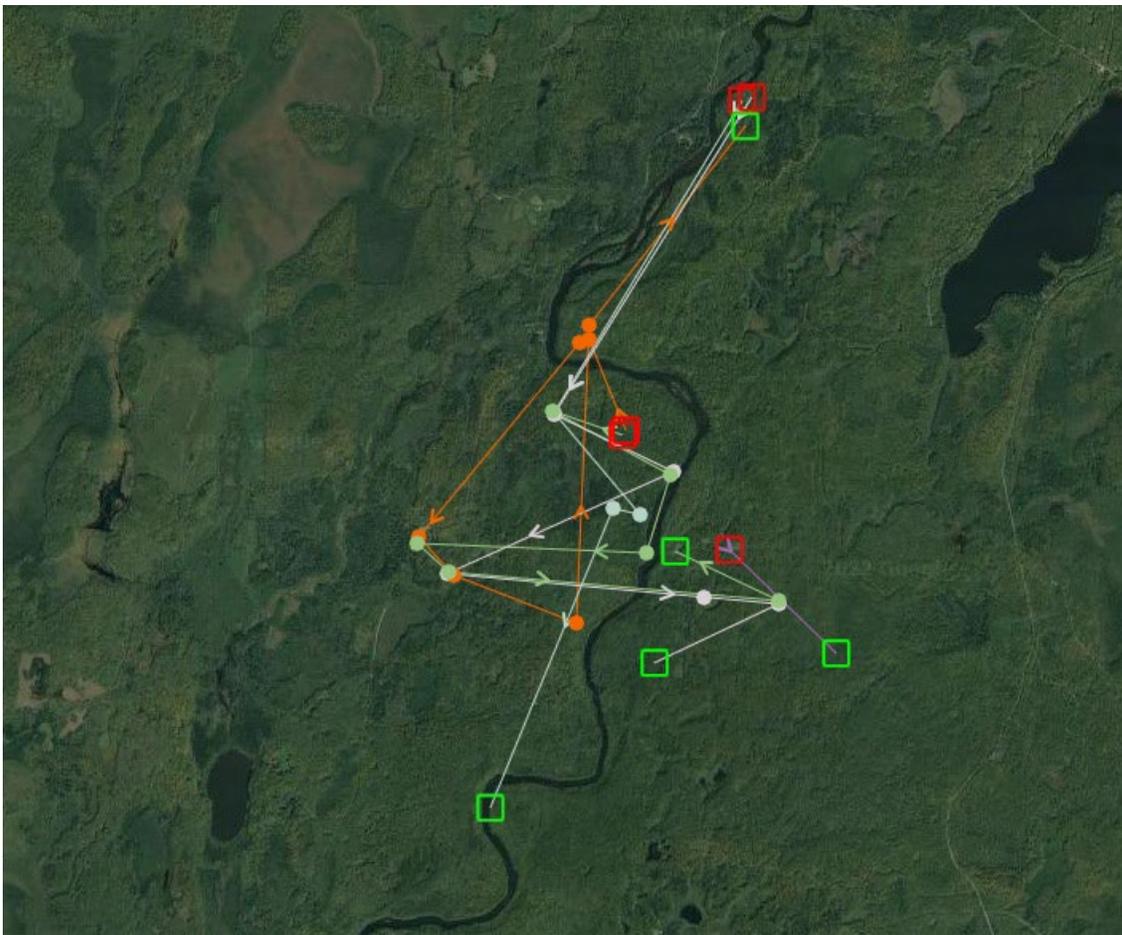


Figure 6. Sequential locations for multiple elk in the Northern Elk Management Zone over a seven-day period.

### **Collaring Goals**

As each Wisconsin elk herd becomes established within their respective management zones, important data is collected through tracking collars and used to support management decisions. While the Central Herd is still relatively new, collaring goals and needs may differ between the Central and Northern Elk

Management Zone until there is sufficient data to support population estimation and management decisions. Research projects and management needs may also vary by zone and year. As such, collaring efforts between the two management zones may not always be consistent with each other.

To collect elk location data and allow the herds to be monitored, this plan recommends the DNR elk management and research staff collar elk near a specific level, to be met each year:

**For cow elk,** elk project staff will attempt to maintain ~20-30% (or minimum of 3) of cows within individual cow/calf groups collared annually. Typical cow/calf groups are 10-30 elk so this would result in approximately 3-9 collars per group. Having multiple collars per group will allow for collar failure or loss amongst temporary spatial splitting of groups, while still allowing staff to track the majority of the herd. Collaring could occur either every winter if targeting a different group(s) on a rotational basis or on a more concerted, range-wide effort every three years (based on the documented life expectancy of three to four years for the collars). The percentage of elk collared in a given year will fluctuate based on collar loss rate and timing of past collaring effort. Some years, the collared proportion may fall below 20%, some years it may be higher than 30% to account for upcoming collar failures. It is important to note that survival and reproductive rates, habitat use, and other variables change over time so maintaining a proportion of the elk collared annually will provide robust data for the population model.

**For bull elk,** elk project staff will attempt to maintain a minimum of 10-20% of the bulls collared annually to monitor bull survival rates, movements, habitat use and conflict potential. Due to the transient nature of bulls outside of the breeding season and difficulty of capture, collaring bulls may require different capture techniques such as remote darting or targeted trapping.

**For calf elk,** elk project staff will attempt to collar calves on a recurring basis for a 2–3-year consecutive period every 6-10 years to acquire the important herd demographic information collected through calf collaring (herd productivity, calf survival, sex-ratio, etc.). Collecting data for 2-3 consecutive years allows for variation analysis across years and takes advantage of intense cow collaring events conducted immediately preceding calf search years.

When attempting to collar and study neonate calf survival or cause-specific mortality, DNR Wildlife Management and Office of Applied Science staff should provide a minimum target number of calves to be collared, with support from the Elk Advisory Committee and Department. Department staff continue to utilize varying methods and technologies to locate and collar calves. Department staff can analyze cow elk movement patterns via GPS collars to find newborn calves or monitor deployed Vaginal Implant Transmitters (VITs) in pregnant cow elk which signal birthing events. Calf survival data is considered essential for population projections and models.

For assisted dispersal or relocation efforts, elk project staff may collar all held elk, to effectively monitor assisted dispersal effectiveness, survival, habitat use, and movements. This collaring would occur on an as-needed basis.

For opportunistic or unique circumstances where elk are captured for reasons other than to directly collar, elk project staff will attempt to collar these animals as opportunities present themselves. This may be various situations including an elk that is captured and relocated, a nuisance elk targeted for behavior monitoring, an entangled or injured elk, etc.

### **Trail Camera Population Monitoring**

Three trail camera grids are currently utilized to help monitor elk. The Clam Lake and Black River camera grids were deployed in the spring of 2015 centered near the town of Clam Lake and in the Black River State Forest, respectively. The Flambeau River grid (Fig. 7) was deployed in the spring of 2017,

centered in the Flambeau River State Forest of the Northern Elk Management Zone. Grids were located to encompass the majority of area used by the elk and minimize overlap with private property where access permission is required. The DNR's Snapshot Wisconsin program and their network of volunteers now monitor the deployed camera grid systems over three portions of the Northern and Central elk management zones.

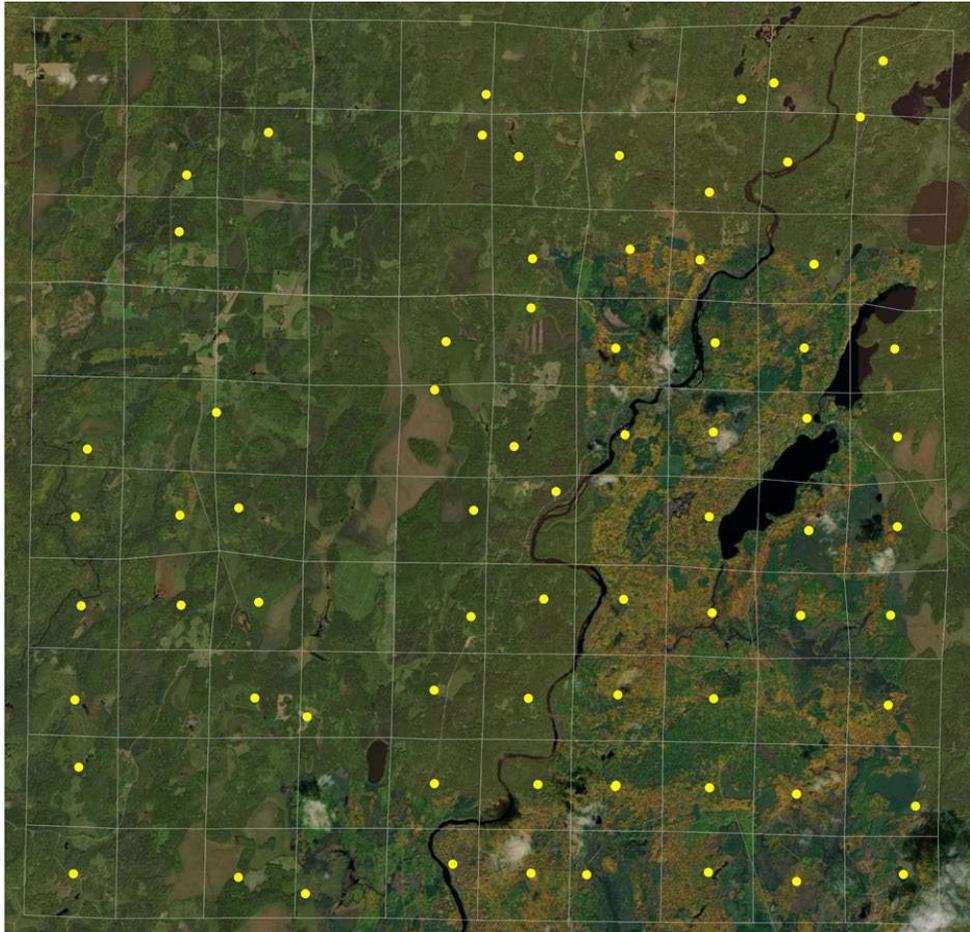


Figure 7. The Flambeau River Snapshot WI camera grid.

Trail camera data from Snapshot Wisconsin can be used to collect data on bull counts, cow/calf ratios, daily and annual activity patterns, individual animal information and population size. Minimum bull counts are determined from photos of bulls taken during the period of hardened antlers (late August through winter) only, as it is often difficult identifying individual bulls when they are growing antlers during the velvet stage. Bulls can be classified by age classes (spikes (1 year-old), raghorns (2-year-olds) and mature bulls (3+ years-old)), antler characteristic, and identifiable marks (i.e., ear tags, collars, permanent injuries). This information can be combined with the photo location and time, are used to resolve the identity of, and count, individual bulls.

Elk activity patterns are estimated by analyzing the time and date of photo captures. Figure 8 shows the daily activity pattern of elk on the Clam Lake grid during 2017. The figure displays the crepuscular nature of elk, with activity peaks during the morning and evening hours. Camera data can also be used to estimate seasonal changes in activity and differences between age and sex classes.

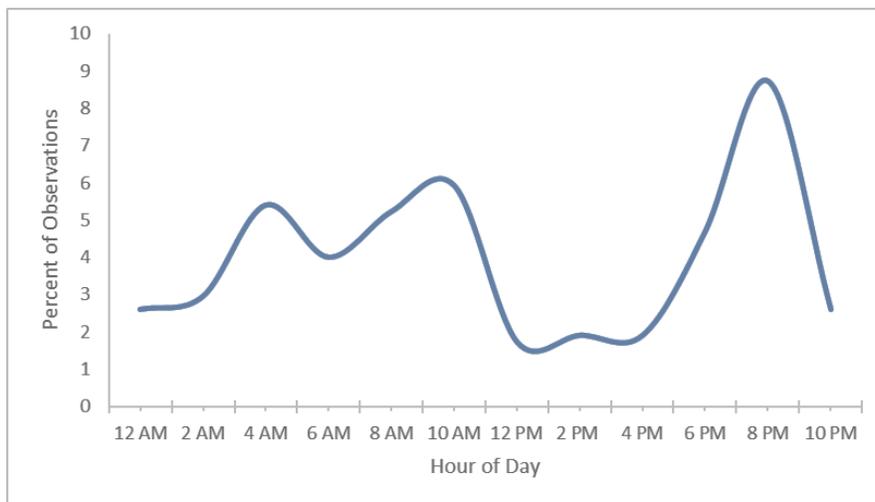


Figure 8. Percent of elk observations per hour of the day from the Clam Lake grid from Jan. 1 – Dec. 31, 2017.

### Elk Population Projection Model

Managing Wisconsin's elk herds to meet ecological, social, and economic objectives necessitates the ability to predict impacts of management, i.e., harvest, on the population. Wisconsin's projection model uses the best available data on current population size, annual survival and reproductive rates to project the population into the future. Historically, the model has used census or minimum counts as the starting population for the projection models, but will be transitioning to population estimates, once a new model for estimating population size is fully adopted. The population is broken up into calves, bulls and cows (Fig. 9). Bulls are further classified into age classes: spikes (1 year-old), raghorns (2-year-olds) and mature bulls (3+ years-old).

An approach, called a lifetable analysis, was used to predict changes in the elk population until 2019. However, the method did not account for uncertainty in the predictions. For example, the approach relied on an average estimate for annual survival and reproductive rates, producing a single value for the predicted population, rather than a range based on expected variation in the parameter rates. The method also included multiple age classes for cows, but not bulls; limiting its utility to evaluate bull harvest on bull age distribution.

In 2019, a new model was developed based on the lifetable, called a stochastic matrix population model. The method is similar to the lifetable approach, including using the same age and sex classes, but it also accounts for expected variation in model parameters, and produces an estimate of the predicted future populations with confidence intervals. In subsequent years, the model was further revised to reduce the number of cow age classes and expanded the number of bull age classes. The current model includes calves, cows aged 1 year and older, and the three bull age classes: Spike, Raghorn, Mature.

The model is used to forecast the effect of various bull harvest scenarios on the population and is used to inform bull quota discussions for the Northern Herd. Harvest scenarios are developed that can either keep the quota constant over the span of the simulation or can adapt given predicted herd metrics. The DNR works closely with the Elk Advisory Committee to define metrics and corresponding thresholds to inform the population modeling and when modeled quotas can be increased, including threshold growth rates and the number of mature bulls predicted in the population. The model will eventually be applied to the Central Herd, but include changes to reflect that herd's unique dynamics, i.e., survival and reproduction rates, and

committee-defined herd metrics. Importantly, these models are decision support tools, aimed at informing management, rather than prescribing a specific action. The modeling framework will eventually be applied to the Central Herd, but include changes to reflect that herd's unique dynamics, i.e., survival and reproduction rates.

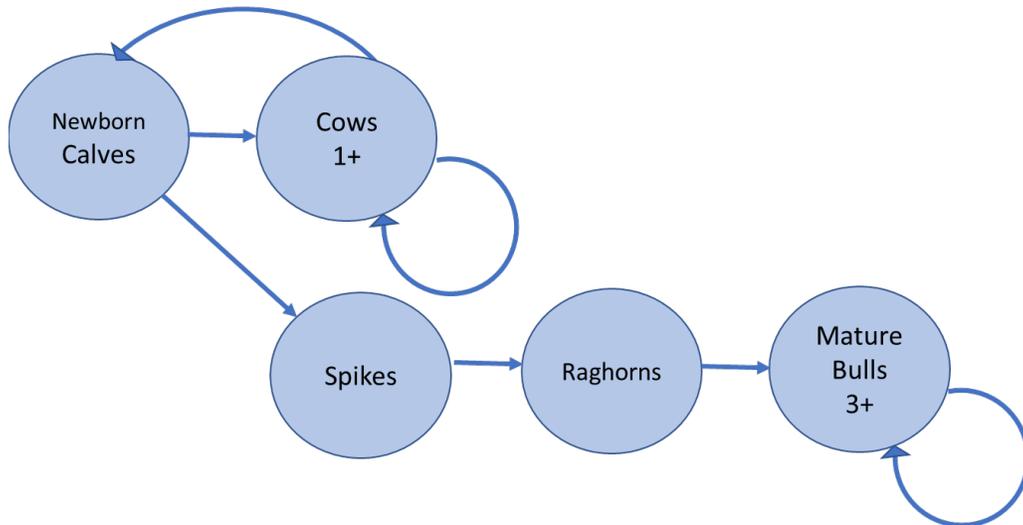


Figure 9. Conceptual diagram of the elk population model. Arrows from the cow stages to the calves stage represent reproduction. The remaining arrows represent possible movements between life stages that can occur within a given year. For example, a calf that survives its first year will transition into the yearling cow stage or the spike (1 year old) bull stage. The model does not differentiate cows over one year old, so individuals stay within that stage until death.

## ELK RESEARCH

Research has been invaluable in assessing many factors of elk herd health and will be vital to future monitoring and management. The Wisconsin elk herds have provided numerous research opportunities that have aided management efforts in Wisconsin and elsewhere across elk management zone. Wisconsin elk research began immediately following the 1995 release of 25 elk into the Great Divide District of the Chequamegon-Nicolet National Forest by UWSP. The release was considered experimental, and the first studies were designed to assess the feasibility of permanently reintroducing elk into Wisconsin. These studies assessed questions pertaining to population demographics and behavior, including survival and birth rates, mortality causes, winter feeding site selection and winter forage utilization and home range size and release site fidelity.

Subsequent studies have mainly been conducted by UWSP and have explored factors affecting summer habitat use and female home range size, spatial and habitat relationships between elk and their predators, liver fluke and meningeal worm prevalence and intensity, population estimation techniques, genetic variation within the Clam Lake Herd and their founding herd in Michigan, and habitat selectivity and site fidelity of the central elk herd.

### Past Research Efforts

One of the earliest studies conducted on elk in Wisconsin evaluated the productivity, survivorship and winter-feeding ecology of elk in the Clam Lake Elk Management Zone (Lizotte 1998). It was found that winter feeding sites were influenced by the presence of northern white cedar and percentage of canopy cover, with winter diets consisting of mostly woody browse. Productivity of the herd increased each of

the three years following the release of the elk and survival of calves was high over this period. After several years of elk being on the ground in the Clam Lake area, Anderson (1999) reviewed the experimental reintroduction of elk in Wisconsin and determined that the reintroduction was a success at that time. Shortly after this work, management responsibility of the elk herd was transferred to the DNR.

Following the transfer of management responsibilities from UWSP to the DNR, Fawcett (2004) looked at resource selection of elk and wolves within the Clam Lake Elk management zone from 1999-2003. It was determined that although elk and wolves use similar habitat types, the two species were spatially separated because elk avoided areas of high wolf activity year-round. Based on the elk habitat selection, it was recommended that forested wetlands and wetlands should be protected and timber types such as aspen should be promoted. In addition, it was suggested that closure of certain roads and trails may be beneficial in reducing stress on elk during critical times of the year (calving and winter).

Parasite infections have long-been identified as a potential limiting factor of elk herd growth and survival in Wisconsin. Weiland (2008) found that elk in the Clam Lake Elk Management Zone have low infection rates of meningeal worm and that this parasite is not likely to cause significant mortality in this elk herd. In contrast, liver flukes were found to be more prevalent in elk (33-46% prevalence rate), however, liver fluke infections have not been found to cause mortality in elk in Wisconsin.

To evaluate concerns of low levels of genetic variation within the Clam Lake Herd due to both the Clam Lake and Michigan elk herds being founded with relatively few individuals, Roepke (2012) evaluated genetic variation levels within the herd and found them to be lower than genetically robust western elk herds, but not as low as elk herds that had sustained prolonged bottlenecks such as those in Pennsylvania. Roepke (2012) also evaluated three separate population estimation techniques to evaluate their usefulness on Wisconsin's elk, including aerial surveys and mark-recapture estimates.

After the conclusion of several assisted dispersal efforts in the Clam Lake Herd, Blicharz (2015) evaluated the effectiveness of the efforts while also exploring the use of trail cameras as a population estimation tool. It was found that the success of assisted dispersal may be contingent upon distance moved and the habitat quality surrounding the release sight. Further, trail cameras used to estimate the population were found to have potential to be a useful tool in estimating the size of the elk herd.

Following the reintroduction of the Black River Elk Herd, Bryan (2018) evaluated the home range sizes, release-site fidelity, and habitat selection of the recently released elk. It was found that home range size and dispersal distances increased after three months post release as much of the elk activity was located near the release site initially. Dispersal distances were greater for adults than juvenile elk and for maternal females vs. females without calves. Male elk were found to have greater home range sizes than females. Additionally, the reintroduced elk selected for a variety of vegetation cover types and preferred sloped terrain while they selected against the cranberry, shrubland, wetland and open water habitats. Elk did not avoid wolf activity centers, but they selected against them during the time period that coincided with winter.

### **Current Research Efforts**

The DNR and the University of Wisconsin – Madison have partnered to advise two graduate student projects, funded by RMEF, Pittman-Robertson funds, and elk hunting application fees, aimed at better understanding elk population dynamics and habitat use in Wisconsin. A PhD project is studying the influence of wolves on elk including, how elk make tradeoffs when selecting habitat based off forage quality and predation risk. A masters project is evaluating the nutritional value of managed forage openings for supporting elk with the intent of informing habitat management decisions.

Additional research continues to evaluate population estimation techniques, including aerial survey techniques and spatial capture-recapture models for marked and unmarked population, with the goal of producing reliable and cost-effective population estimates. The DNR will continue to consider and adapt monitoring and estimation methods with advancements in survey and quantitative techniques.

Research will continue to support elk management through the development of decision-support tools to predict the influence of harvest regulations and other management actions on Wisconsin's elk herds. Current models predict the influence of quotas on the Northern Elk Herd, but ongoing efforts will extend the model to simulate how those decisions also influence socio-economic objectives, including agricultural damage, wildlife viewing opportunities, and hunter satisfaction.

## **WISCONSIN ELK MANAGEMENT ZONE DETAILS**

### **Location of Wisconsin Elk Management Zones**

Wisconsin holds two distinct Elk Management Zones (Fig. 10), identified by their geographical location. The Northern Elk Management Zone lies in the northwest part of Wisconsin and includes portions of Ashland, Bayfield, Price, Rusk and Sawyer Counties. The Central Elk Management Zone is in west-central Wisconsin encompassing most of eastern Jackson County.

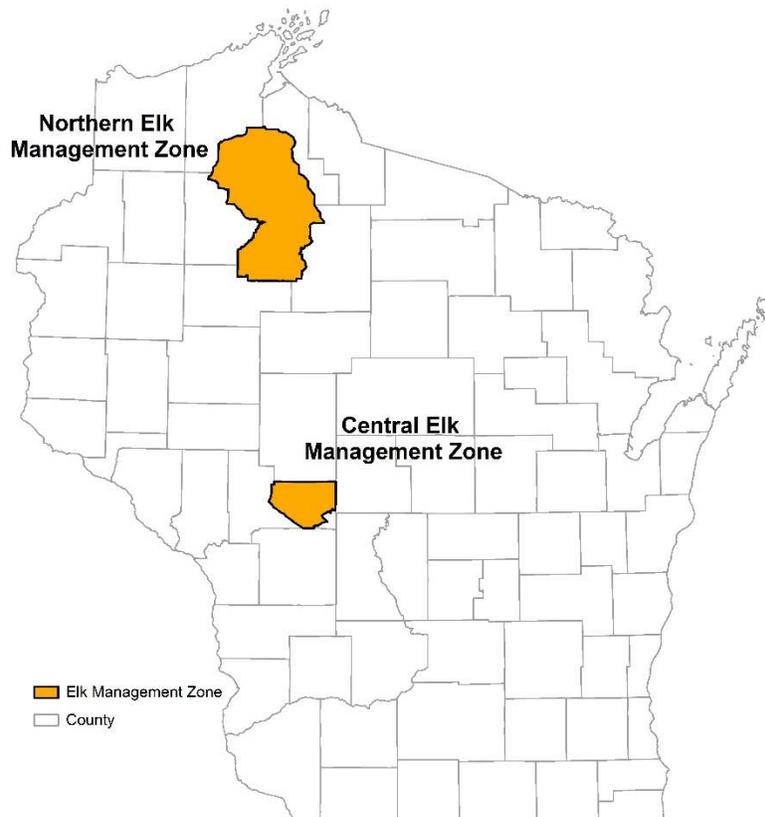


Figure 10. Location of Wisconsin Elk Management Zones

### **Northern Elk Management Zone**

The original Clam Lake Elk Range was named after the community that sits near the center of the range. After the 2012 annexation of the southern lobe, the range was not renamed. As elk increase in numbers

and occupy range further away from Clam Lake, the current name becomes overly specific for identifying the full area occupied by elk. This plan now refers to the original and expanded Clam Lake Elk Range as the Northern Elk Management Zone.

**Description and Habitat**

The 2012 amended Clam Lake Elk Range (Fig. 11) held 1,620 square miles of area. An additional seven square miles of primarily private land was added to improve flexibility using hunting as a tool in areas of chronic agricultural damage, as well as using county highway boundaries. The Northern Elk Management Zone (Fig. 12) lies within the Northern Forest Region of Wisconsin. Its 1,627 square mile area is primarily forested with a significant number of forest openings maintained for elk and other wildlife use. Overall, 68% of the Northern Elk Management Zone is public land.

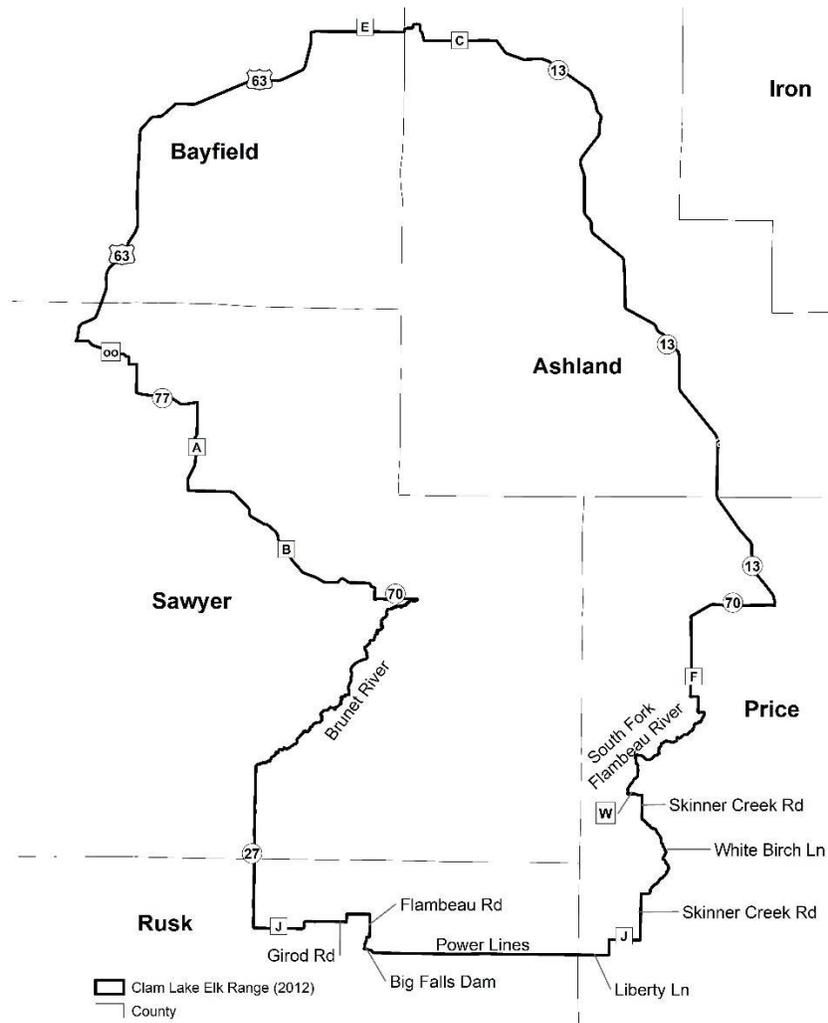


Figure 11. Clam Lake Elk Range boundaries as identified in the *2012 Clam Lake and Black River Elk Management Plan Amendment*.

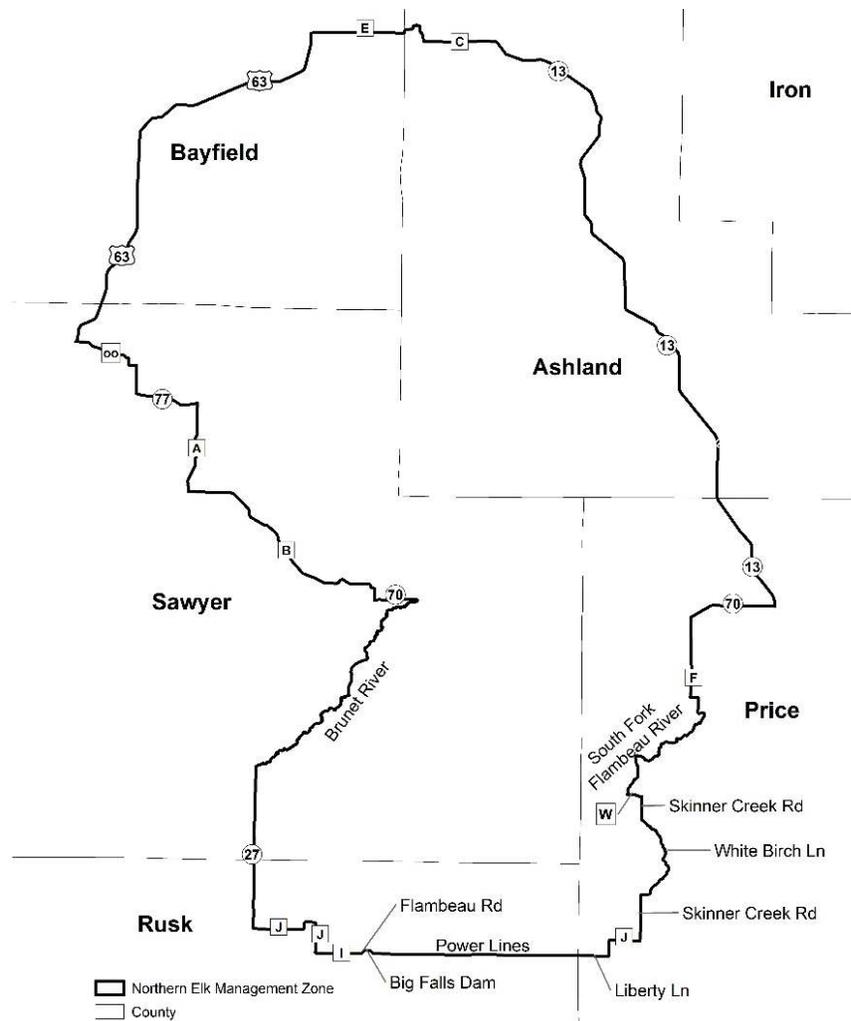


Figure 12. Northern Elk Management Zone with Boundaries Identified.

The majority of the Northern Elk Management Zone falls within the North-Central Forest Ecological Landscape. The mean growing season is 115 days, making it the shortest growing season of all ecological landscapes in the state. The mean annual temperature is 40.3°F. Summer temperatures can be cold or freezing at night in the low-lying areas, limiting the occurrence of some biota. The mean annual precipitation is 32.3 inches, and the mean annual snowfall is 63 inches. Soils consist of sandy loams, sands and silts. Organic soils, peats and mucks are common in poorly drained lowlands. Lakes, rivers, streams and springs are common across the landscape. The mesic northern hardwood forest is dominant, made up of sugar maple, basswood, and red maple, with some stands containing scattered hemlock, yellow birch and/or white pine pockets. The aspen-birch forest type group is also abundant, followed by spruce-fir. Forested and non-forested wetland communities are common and widespread. These include Northern Wet-Mesic Forest (dominated by either northern white cedar or black ash), Northern Wet Forest (acid conifer swamps dominated by black spruce and/or tamarack), non-forested acid peatlands (bogs, fens and muskegs), alder thicket, sedge meadow, and marsh (including wild rice marshes).

There are five state highways that cross or border the range, with a sixth lying just south of the southern boundary. Additionally, numerous county highways run throughout the Northern Elk Management Zone. There are no sizeable human population areas within the range border.

The Northern Elk Management Zone lies roughly in two lobes. The northern lobe was the original Clam Lake Elk Range and encompasses a total of 1,112 square miles centered on the Chequamegon-Nicolet National Forest-Great Divide District. This area consists of 589 square miles (377,200 acres) of flat to rolling terrain in portions of Ashland, Bayfield, and Sawyer Counties. Approximately 65% of the northern lobe is under public ownership, with relatively little of the private ownership in agricultural production.

A key component of the landscape is the now-decommissioned U.S. Department of Navy's Extremely Low Frequency Communication System. The system line is an X-shaped corridor annually maintained as a wildlife opening that includes lowland sedge and upland grass/forb meadows, free of trees and shrubs. Each segment is about nine miles long, totaling over 36 miles, and varies from less than 20 to more than 300 feet wide. Because these open areas are dominated by grasses, sedges, and forbs which are highly palatable forage for elk, the line provides seasonally important elk habitat and is maintained as a wildlife opening through regular mowing and prescribed burning.

The southern lobe of the Northern Elk Management Zone currently contains 515 square miles, including 508 square miles of suitable elk habitat that was officially added to the range by administrative rule in 2012. Public (federal, state, county and open industrial forest) lands make up 78% of the lobe, and include major blocks of the Sawyer, Price, and Rusk County forests, the Flambeau River State Forest, multiple state wildlife areas, and large blocks of industrial forest land.

The entire Northern Elk Management Zone is located within the 1837 and 1842 Ceded Territories where the Ojibwe tribes' off-reservation treaty-observed rights may be exercised under their respective tribal conservation codes.

Aspen clear cuts are one of the primary sources of food within the Northern Elk Management Zone (Fig. 13), and many properties provide regenerating aspen stands in industrial and managed forests aggressively managed for revenue generation. They contain vast acreages of aspen in all age classes including over 171,700 acres (23% of lobe) of aspen forest (Fig. 14). By age class on public land ownership, this can be broken out into 28,100 acres of 0–14 year old aspen which provide high quality winter and spring forage for elk and other wildlife; 69,600 acres of 15–44 year old timber that, once cut, will provide new growth for future quality forage; and 49,700 acres of 45 year old and older aspen that is ready for rotation and will provide additional future aspen habitat.

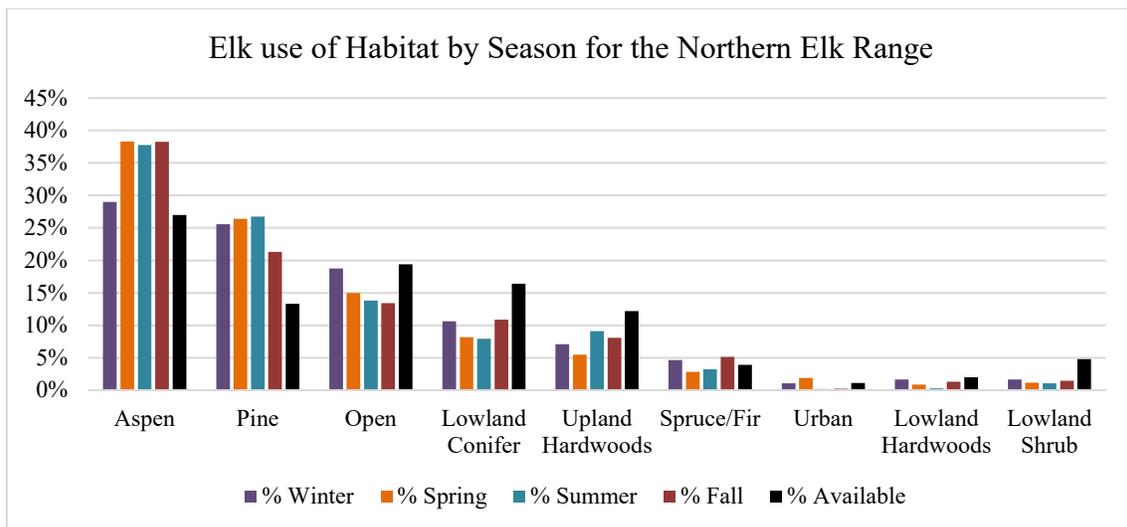


Figure 13. Use of available habitat types by month from 1999-2011 for the Northern Elk Range.

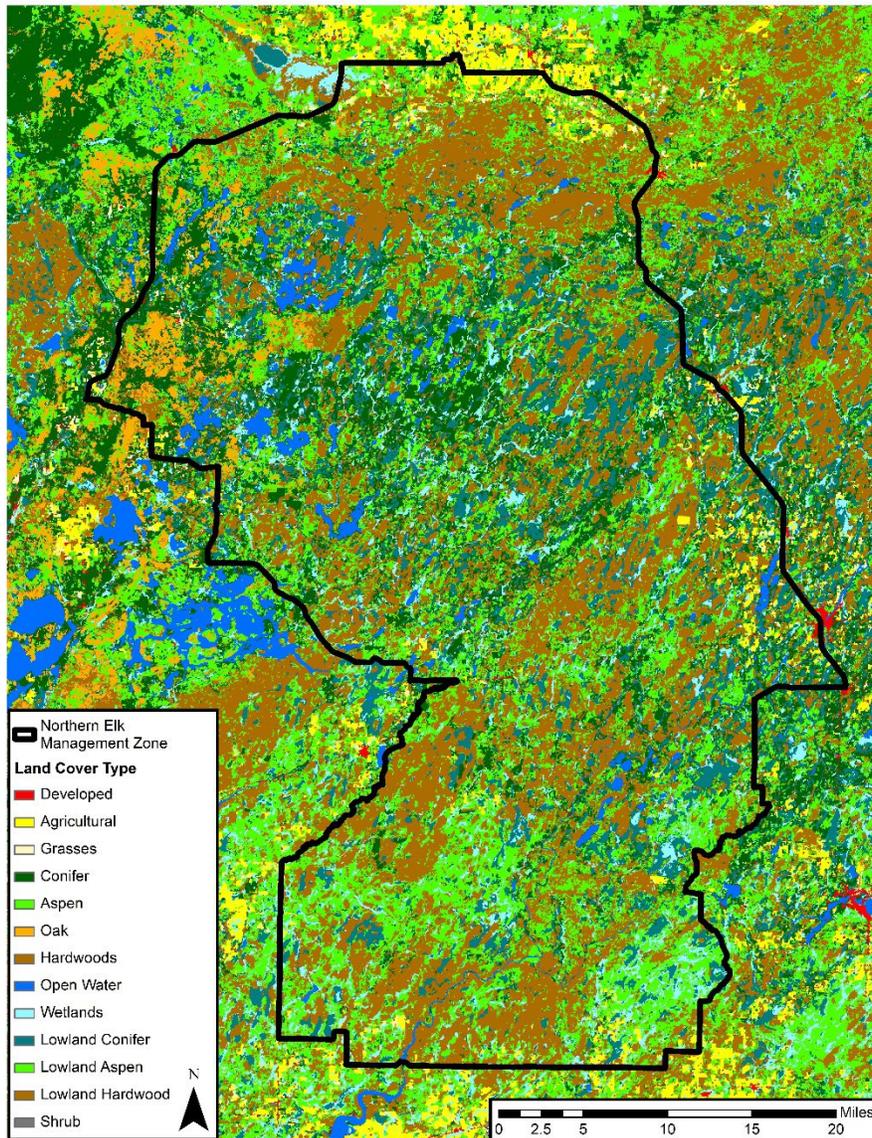


Figure 14. Current landscape cover type of all landownerships within the Northern Elk Management Zone.

Since the original reintroduction in 1995, many habitat and timber management projects have helped maintain and improve the habitat for elk within the Northern Elk Management Zone. Timber salvage operations associated with spruce decline, jack pine bud worm, and windstorm clean-up, along with the creation of forest openings and management of the the U.S. Navy Extremely Low Frequency Communication System Line and habitat enhancement on private lands have provided important habitat components favored by elk. Other projects like the US Forest Service’s Early Successional Habitat Initiative, Good Neighbor Authority, the Black Torch Vegetation Management Project and the Wisconsin Young Forest Partnership emphasize young aspen forest habitat and are contributing to aspen forage availability. Wildlife opening maintenance, and the use of prescribed burning, are being implemented to produce variable sized units of cool season grasses to promote calving habitat and spring, summer, and fall foraging availability. Enlarging the elk management zone in 2012 to include properties where partners continue practicing forest management and harvest ensured that the long-term habitat needs of the elk herd and other wildlife that depend upon early successional habitat and open types would be met.

### **Boundary Delineation And Population History**

Within this plan, the gross area of the Northern Elk Management Zone is 1,627 square miles. The addition of 7 square miles to the Northern Elk Management Zone is not expected to change the management or composition of the zone but will offer improved flexibility for abatement near a chronic row cropping property previously split by the zone boundary (Fig.12). Most of the management zone is publicly or industrially managed forested land, with agricultural communities on the fringes. The Northern Elk Management Zone is delineated by major landscape features including highways, rivers, town roads and a powerline right-of-way.

A previous population goal of 1,400 elk was established in the *2012 Elk Plan Amendment*. This population goal was originally established in the *2000 Management Plan and Environmental Assessment* as 1-2 elk per square mile for the 1,112 square miles Clam Lake Elk Range. When the boundary was expanded through the *2012 Elk Plan Amendment*, the goal remained unchanged for the then established 1,620 square miles range. This goal represented a density of approximately 0.9 elk per square mile recognizing that elk live in family groups and observed densities are locally higher.

While many areas of Wisconsin have been identified as suitable elk habitat and are biologically capable of supporting elk populations, elk occupy around 30% of the Northern Elk Management Zone as of 2024. This plan recognizes that several years of natural population growth and assisted dispersal are required before the Northern Elk Management Zone will occupy a significantly higher percentage of the range. This plan recognizes resources and management efforts will remain focused within the current Northern Elk Management Zone until the elk population reaches a higher population objective. A higher population density is intended to be a long-term effort. Density of 0.8-1.0 elk/ square miles will likely not be reached during the life of this plan.

### **Central Elk Management Zone**

The original Black River Elk Range was named after the landscape identifier that also helped name the nearby city of Black River Falls and the surrounding Black River State Forest that makes up much of the elk management zone. To be consistent in identifying each elk herd based on their location within Wisconsin, this plan now refers to the original Black River Elk Range as the Central Elk Management Zone.

### **Description And Habitat**

The Central Elk Management Zone (Fig. 16) is approximately 80 miles south of the southern boundary of the Northern Elk Management Zone. Land ownership consists of large areas of the 68,000-acre Black River State Forest (including the Dike 17 Wildlife Area) and 120,000-acre Jackson County Forest (including the Wazee Recreational Area), lands owned by or held in trust on behalf of the Ho-Chunk Nation, and privately-owned parcels.

The zone lies within the central forest region of Wisconsin and is primarily forested with some open grasslands, barrens and sedge meadows scattered throughout. The vegetation mosaic consists primarily of pine (jack, white, red), oak (red, white, black), central hardwoods, and aspen forest, with intermittent open areas, primarily lowland sedge marshes. The topography of the area is flat to rolling and contains many hills, water bodies and sandstone bluffs. The area is characterized by shallow topsoil with little organic matter and noticeable leaching of several iron compounds into the lower layers of the subsoil. The climate is cool and moist, with an average annual air temperature of 46°F. The average precipitation within the management zone varies from 30-34 inches per year with an average snowfall of 43 inches per year. Compared to the Northern Elk Management Zone, temperatures are slightly warmer and considerably less snowfall accumulates in the Central Elk Management Zone.

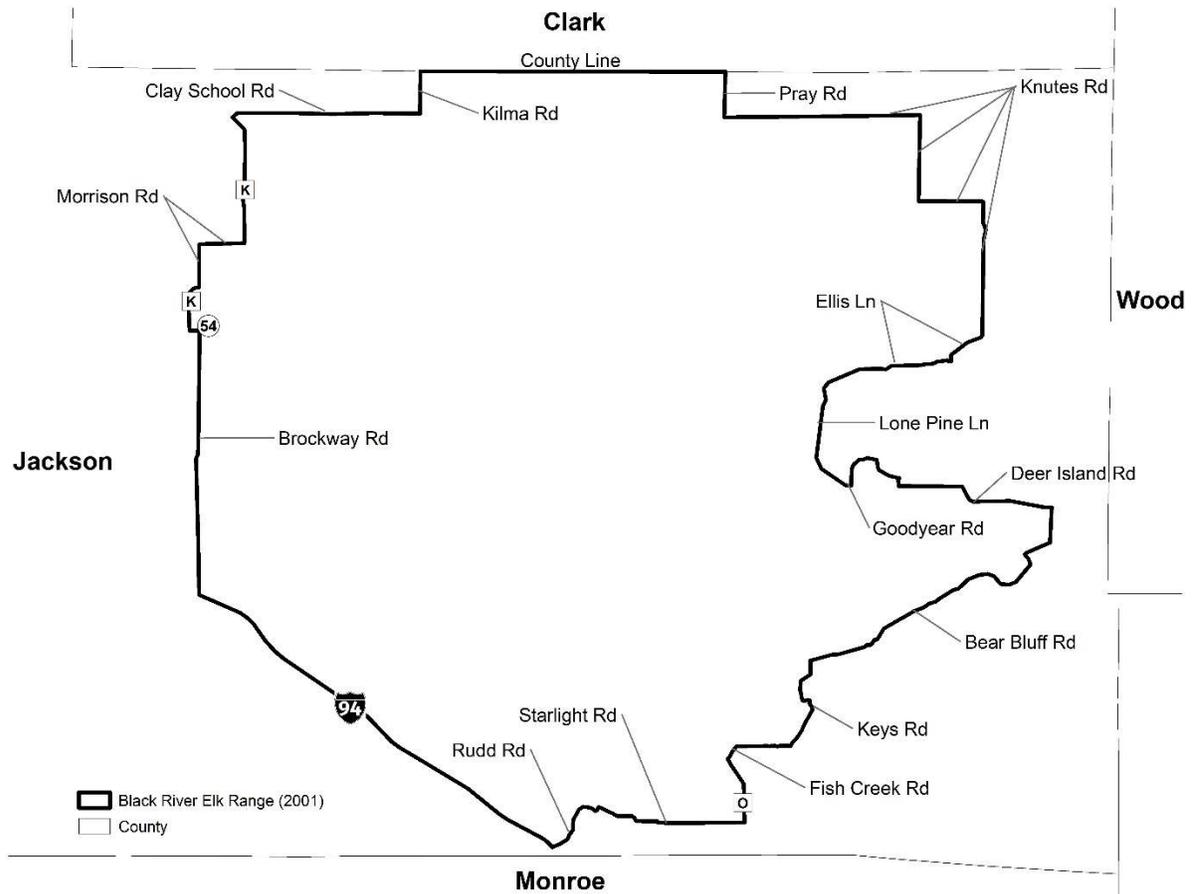


Figure 15. Black River Elk Range boundaries as identified in the original 2001 *Black River Elk Herd Management Plan and Environmental Assessment*.

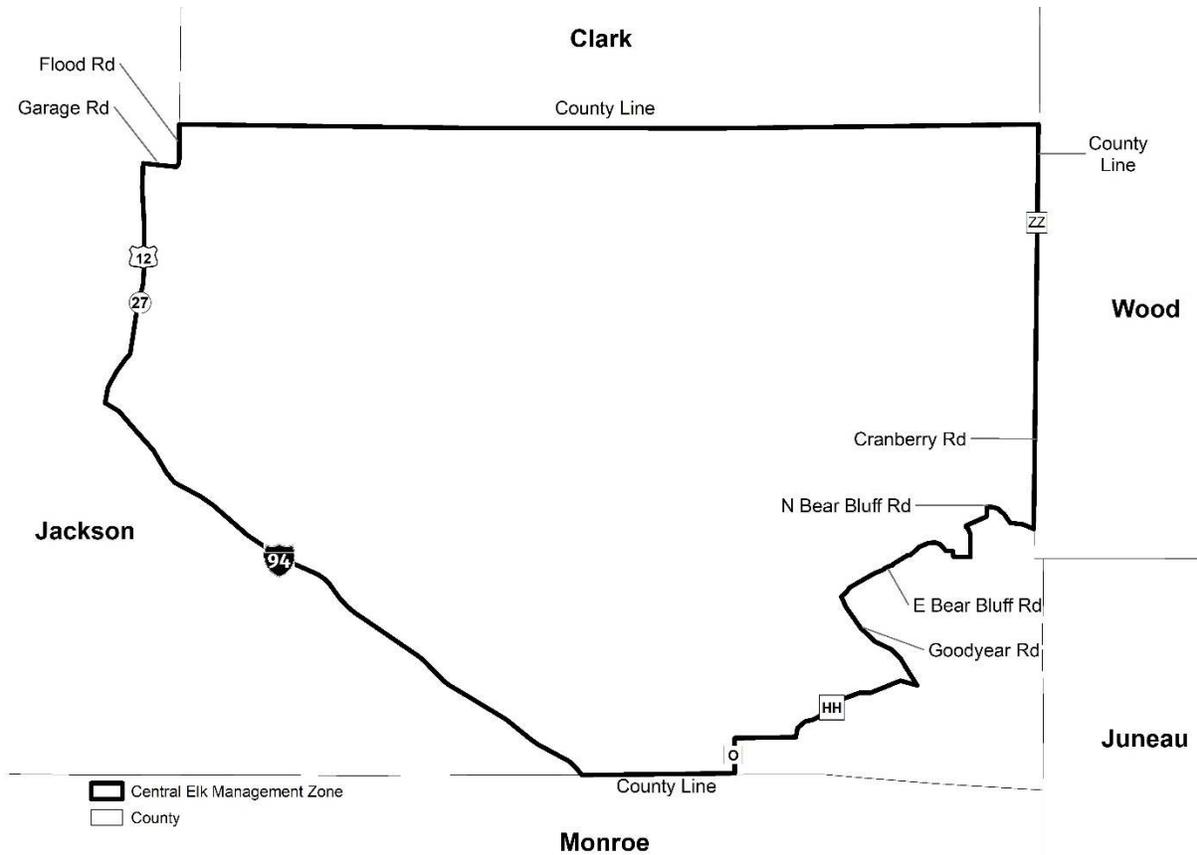


Figure 16: Central Elk Management Zone with Boundaries Identified

After the initial release of elk in 2015 and 2016, the central elk herd continues to settle into the range and adapt to their new home. Thus, documentation of habitat preferences of the central elk herd is ongoing and continually evolving. Based on analysis of GPS collar data, the central elk herd uses oak, pine, barrens, grasslands, and agricultural fields within the elk management zone at a greater rate than other, less preferred habitats such as marshes, lowland conifer, and mixed hardwoods. Where present, elk have shown a strong preference of early successional habitat such as grasslands, barrens, forest openings, and agricultural fields as primary food resources while oak and pine stands are primarily used for cover. Additionally, oak stands are used extensively during the fall as these areas provide both food (acorns) and cover resources. A Central Elk Management Zone cover type map can be found in Figure 17.

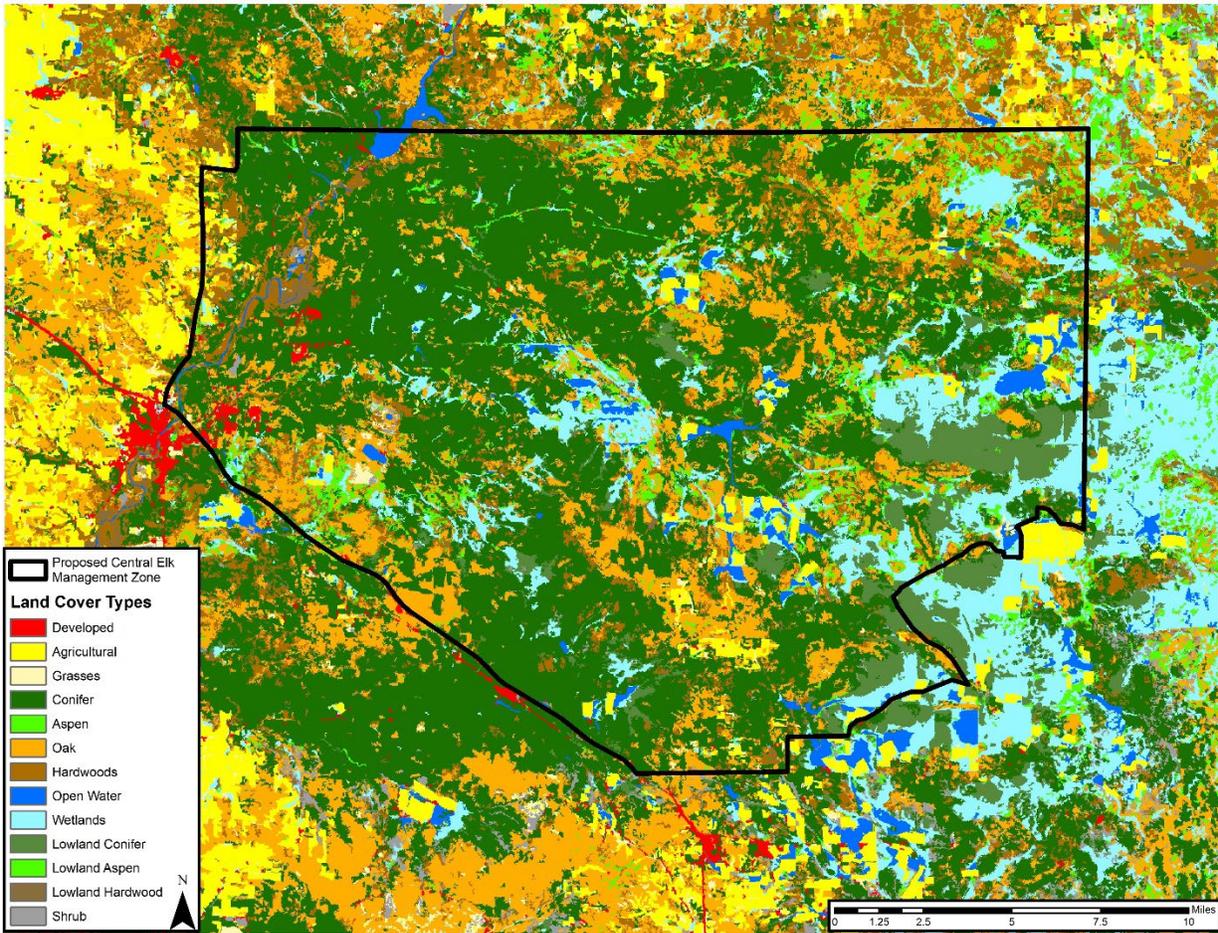


Figure 17. Current landscape cover type of all landownerships within the Central Elk Management Zone.

Since reintroduction, habitat projects have helped maintain and improve the habitat for elk and other wildlife species within the Central Elk Management Zone. Habitat improvements will ensure that important food resources are available to the elk to maximize herd health and survival while also mitigating nuisance concerns such as elk near roadways or causing damage to agricultural crops. Completed and ongoing projects have focused on increasing the amount of early successional habitat (primarily grass/forb forest openings and young woody browse), barrens management, and oak stand improvements. Habitat projects have been located near areas that receive the highest use of elk and will be expanded to other areas of the range to attract and promote elk in currently unoccupied habitat.

### **Boundary Delineation And Population History**

The original Black River Elk Range was established at 252 square miles and was incorrectly identified as being 320 square miles. The DNR and elk management partners agree that the current range is too small to realistically encompass wild elk movements and habitat needs of a sustainable elk population. As a result, this plan recognizes the Central Elk Management Zone as encompassing 367 square miles by adding approximately 115 square miles of highly suitable habitat within eastern Jackson County (Fig. 18). This expansion includes areas of current elk use, is predominantly forested habitat with low conflict potential, and contains significant areas of public land including a significant portion of Ho-Chunk Nation land. It contains a small number of cranberry bogs, many of which are already fenced due to previously documented deer damage.

The expanded range boundary will allow for more effective and efficient management of the elk population with minimal potential for additional conflict. The new unit boundaries are also more readily identifiable as they use major highways and county boundaries and align with the hunting unit boundaries where local elk herd numbers could be managed through hunting. The current population goal for the Central Elk Management Zone was established in the *2001 Black River Elk Herd Management Plan* at 390 elk with a density goal of 1-2 elk per square mile. This goal was established based on elk management densities found in other eastern states and is consistent with the Northern Elk Management Zone goal of 1-2 elk per square mile.

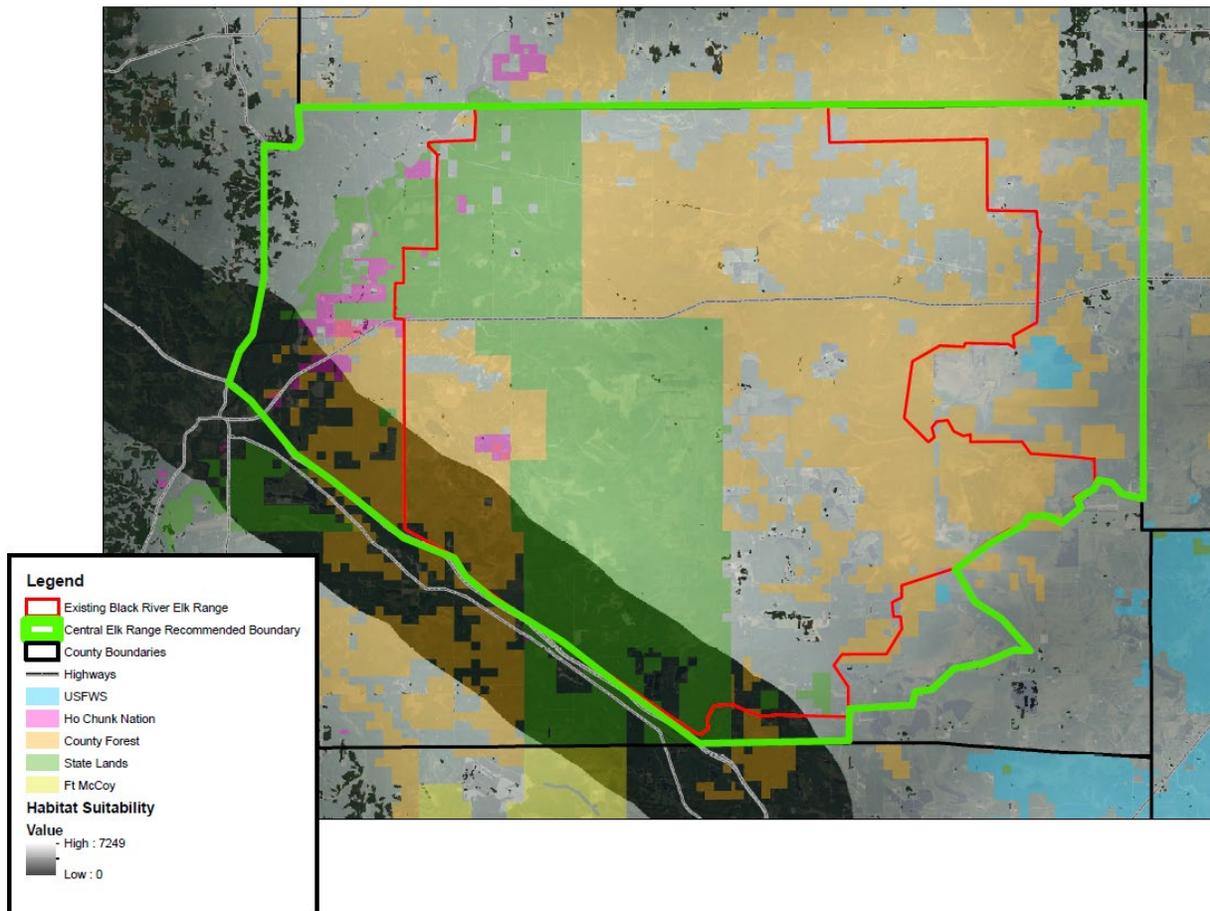


Figure 18. Habitat suitability within the Central Elk Management Zone.

## ADAPTIVE MANAGEMENT STRATEGY

Since reintroduction, Wisconsin's elk herd has been managed using a numeric goal as a long-term population goal to guide management efforts. This provides little flexibility for adaptation and adjustment if conflict levels are very high or very low.

Adaptive management uses an objective-based approach with an associated reference table and metrics and incorporates flexibility to adjust management actions as needed to achieve the objective, relative to what is actively occurring on the landscape.

Metrics are often used in the decision making as a tool to advise or evaluate whether the objectives are being realized. Identified metrics help assess population ranges and objectives and include a variety of

categories such as elk population abundance and distribution trends, conflict trends and implementation of the conflict program, public support, hunter harvest success and satisfaction, annual elk mortality, economic benefit, scientific developments and tribal engagement. Based on annual review of the metrics and localized needs, annual harvest quotas will be set to achieve the target population objective.

Each reference table (Tables 6, 7) provides guidance to allow the Elk Advisory Committee and the DNR the ability to review the elk population and identified target metrics annually and provide quota recommendations to achieve a desired population outcome. The reference tables were constructed using a staircase approach to represent anticipated elk population growth and are based off 20% incremental elk density categories in relation to one elk/square mile for each herd. The 0.2 elk/ square mile incremental increase in elk density, and the accompanying population ranges within the tables, allows for frequent management checks and balances within the herds. Some population ranges within the tables include multiple population objectives (ex. maintain OR increase), allowing the population to move into the adjacent lower or higher population range if desired per metric assessment and consideration. This approach provides flexibility during projected population management discussions to determine whether the population should remain stable, increase to a higher population range if metrics are acceptable, or decrease to a lower population range if significant conflict and nuisance or environmental factors warrant greater attention. Within the core of each reference table, simply representing a population range with a singular objective of maintain does not allow the flexibility to shift to categorically higher or lower population ranges. This improves the DNR's ability to guide the elk population abundance and rate of change for each elk herd.

Elk in both management zones primarily reside in sub-groups of 10-40 animals with home ranges between 5-15 square mile areas. Elk densities are not evenly distributed across each management zone, as elk utilize areas of variable quality habitat, spatial distribution, human and predator pressures, or managed at a lower density reduce nuisance or conflict potential. Thus, when evaluating elk management densities and their impacts, it's important to assess the herd at a zone and unit level.

#### Northern Elk Management Zone

Within the Northern Elk Management Zone, elk density is currently at 0.2 elk/square mile with about 30% occupancy of the zone. In the same 2019 *Wisconsin Public Attitude Survey* (Appendix 1), 45% of respondents stated a density of 0.9 elk/ square miles was "about right," while 13% of surveys indicated this was too high. The remaining 42% of respondents mentioned 0.9 was too low or had no opinion. Similar to the Central Elk Management Zone, a desire to remain above 0.4 elk/square mile, or 650 elk, was identified during the plan writing process as the lowest category of the reference tables (Table 6). Maintaining the population below this threshold greatly reduces elk recreational opportunity, herd health, and increases risk of herd level impacts or failure. It should also be noted that the Northern Herd is unlikely to reach 1.0 elk/square miles over the next 10 years based on current growth rates. Additionally, elk densities will be managed locally, managing for lower densities of elk near agricultural lands which lay on the fringes of the Northern Elk Management Zone.

#### Central Elk Management Zone

Within the Central Elk Management Zone, elk density is currently 0.4 elk/square mile across the 367 square mile expanded zone with about 15-20% occupancy. Since the 2015/2016 reintroduction, knowledge has been gained and the DNR continues to manage toward a density of approximately 1 elk/square mile. Based off a 2019 *Wisconsin Public Attitudes Survey* (Appendix 1), 43% of respondents considered an elk density of 1.2 elk/square mile for the Central Elk Management Zone to be "about right." Considering lower proportions of the zone are unoccupied, localized elk densities within the occupied spaces are expected to be higher. Elk densities will be managed at the zone level, however special precaution will be taken when considering management actions at the localized or hunting unit level, especially in areas experiencing high levels of conflict or nuisance report or where there is a shift in

public acceptance. Based on the reference table for the Central Elk Management Zone, the central elk population is recommended to increase until at least 0.6 elk/square mile, or 220 elk in total. A population below 220 will result in reduced elk hunting and tourism opportunities, two important benefits of the reintroduction, and put the herd at greater risk of failure due to the impacts of predation, severe winters, disease, or other mortality sources. After the herd surpasses 220 elk, the population will be managed objectively based off the reference table (Table 7) using the set of metrics stated in this plan.

Table 6 & 7. These tables provide guidance for managing the Central and Northern elk herds and does not establish any population size as a management goal. The information and population abundance with associated objectives are based off eastern elk management densities, public attitudes survey in Wisconsin (Appendix 1) and Elk Advisory Committee member representation. Elk harvest recommendations should consider not only these guidelines, but also the set of metrics included in this management plan.

Table 6. Northern Elk Management Zone Population Range Reference Table

<b>Northern Elk Zone</b>		
<b>Density Elk/Sq. Mile</b>	<b>Population Range</b>	<b>Objective for Population</b>
≤0.4	≤650	Increase
0.4 - 0.6	650-975	Increase/Maintain
0.6 - 0.8	975-1,300	Increase/Maintain/Decrease
0.8-1.0	1,300-1,620	Maintain/Decrease
>1.0	1,620+	Decrease

Table 7. Central Elk Management Zone Population Range Reference Table

<b>Central Elk Zone</b>		
<b>Density Elk/Sq. Mile</b>	<b>Population Range</b>	<b>Objective for Population</b>
≤0.6	≤220	Increase
0.6 - 0.8	220-290	Increase/Maintain
0.8 - 1.0	290-360	Increase/Maintain/Decrease
1.0 - 1.2	360-430	Maintain/Decrease
>1.2	430+	Decrease

## **ELK HABITAT MANAGEMENT**

Habitat management within both the Central and Northern elk management zones has focused primarily on the dietary needs of elk. Staff have utilized past research conducted on elk food preferences in Wisconsin and the eastern elk states, as well radio collar data to help inform habitat management decisions. While thermal cover has also been identified as an important habitat component for elk, thermal cover in the form of conifer stands is abundant within the elk management zones and does not appear to be a limiting factor.

As elk utilize a broad range of habitat types and food resources, management efforts must be diverse to ensure all aspects of an elk's diet are considered. As such, past and current management efforts have focused on the creation and maintenance of natural or established forest openings, enhancement of natural grassland and shrub-type habitats such as barrens, and forest management practices that promote early successional aspen and mast-producing oak.

In addition to natural forest openings and grassland habitat that is maintained through mowing, prescribed burning, or herbicide treatments, new openings have also been created on both private and public lands to increase the acreage of this important dietary resource. The creation of forage openings has been utilized to improve the nutritional quality and abundance of food for elk during the spring, summer and fall months. Food resources are critical during these times as elk prepare to give birth to and raise calves as well as to prepare for the upcoming harsh winter conditions. Additionally, these forest openings have

shown to be highly beneficial in drawing elk away from roadways and agricultural crops where nuisance behavior is more likely. These openings have also helped cultivate positive relationships with landowners, who have been able to get grass and clover fields created and planted on their property at little or no cost. Several of these were accomplished as a component of perpetual conservation easements developed by the RMEF, whereby the landowner donated their development rights to RMEF, ensuring the long-term opportunity to provide this habitat component on private lands. Staff will continue to maintain and create forest openings as needed and as opportunities are identified.

Forest management practices that promote important forest resources are also conducted. The forest resources that have been documented to be the most beneficial to elk in Wisconsin are aspen and oak (primarily red and black oak). Young aspen (0-10 years old) provides abundant high-quality woody browse throughout the year, while aspen leaves are highly attractive during the growing months. Elk also seek out mature oak stands during the fall and winter months in search of highly nutritious acorns which help elk build fat reserves for the winter months. In addition to the importance of aspen and oak, elk also utilize a broad range of other woody species (such as maple) in their daily consumption of forage. As such, newly established timber harvests that provide abundant early successional forest browse and abundant grass/forb resources on the ground layer are also highly attractive areas for elk in their search for food resources.

Elk management staff routinely meet with their state, county and federal land management partners to ensure elk habitat is considered during the development and implementation of forest management plans and projects. In addition to promoting beneficial forest elk habitat on public lands, DNR staff also actively work with private landowners to encourage similar habitats on private land. Typical recommendations include maintaining or increasing the acreage of important timber types such as aspen and oak, ensuring these species are properly managed through regular harvest, and other considerations such as invasive species control and forest conversion to less desirable species. Aspen and oak Habitat Management Guidelines are being developed and implemented by the DNR Wildlife Management staff and should be referenced prior to establishing timber sales within the elk management zones.

Land acquisition and protection is also critically important to the long-term health and persistence of Wisconsin's elk population. DNR staff have worked with several public land management organizations (DNR, county forests, USFS), partner groups such as RMEF, and private landowners to acquire and protect critically important habitat. These acquisitions not only protect important properties from development, but they also allow for beneficial habitat management practices to be completed that further aid in elk management efforts. In addition, they also provide public viewing and hunting opportunities for elk.

### **Habitat As A Predation Management Tool**

Habitat can play an important role in mitigating the potential impacts of predation on elk. Reintroduction efforts in recent years have focused on broad areas of young forest habitat rather than mature forest. Elk in the Northern Elk Management Zone are demonstrating an ability to avoid predators in young forest and mortalities have been low. In 2014 and 2015, 26 Wisconsin elk were moved to the Flambeau River State Forest and Sawyer County Forest in the southeastern quarter of Sawyer County where there are large areas of aspen cutting with dense stands of regenerated aspen. Aspen in the 0–10-year age class is abundant and provides excellent predator escape cover.

## **ELK HUNTING IN WISCONSIN**

During pre-settlement times, elk were respected as part of creation and harvested for substance, medicinal, cultural, religious, and economic purposes by some Native American tribes.

Post-settlement records of elk hunting can be found into the 1880s when the last known harvest of elk occurred, likely for market hunting or personal use. It is also speculated that elk released during Wisconsin's first reintroduction attempts in the early 1900s may have failed due to subsistence harvest by local residents during the Great Depression.

As of 2023, six managed elk hunts have been completed in the Wisconsin Northern Elk Management Zone (2018-2023). In 2018 and 2019, hunting was only open within the original Clam Lake Elk Range portion of the Northern Elk Management Zone. Starting in 2020, the entire Northern Elk Management Zone was open for elk hunting. To date, the Central Elk Management Zone has not held a hunt.

The DNR may establish a bull or antlerless elk harvest quota, which comes recommended by the Elk Advisory Committee, of legal elk (one antler of at least six inches for bulls or antlerless elk) in the winter prior to the fall hunting season. In accordance with federally affirmed off-reservation treaty rights, the Ojibwe tribes can declare up to half of the available annual elk harvest quota within the Ceded Territories of Wisconsin.

A summary of the Northern Elk Management Zone hunting seasons from 2018-2023 is found in Table 8.

### **Issuance Of Elk Hunting Licenses**

Elk hunting licenses are issued in accordance with state statutes which require all state hunters to apply and pay a \$10 application fee. Tags are issued through a random draw with all applicants receiving an equal chance at receiving a tag. Preference points (similar to the bear application) are not awarded for elk due to the low number of permits issued each year and extremely high interest in those permits. For example, if 25,000 applicants were awarded a preference point in 2021 and quotas remained near their current levels, it would take 2,500-5,000 years to get through the applicants with the highest point total who applied in 2021. Successful applicants may only receive one elk tag per lifetime. Non-residents may only apply for a permit if the total number of permits exceeds 100.

The elk license application period during 2018 and 2019 ran from May 1-31 each year. To provide greater opportunity to inform and allow hunters to apply, the application period was changed in 2020 to open on March 1 (the start of the annual license year) and continue through May 31. This change required no rule changes. Future application dates may change to better accommodate the quota approval process.

In accordance with state statutes, one tag each year for the first five years (2018-2022) of the hunting season was issued through a raffle administered by the Rocky Mountain Elk Foundation. Any Wisconsin resident could purchase an unlimited number of tickets, at a cost of \$10 per ticket, and all raffle proceeds were added to the elk application revenues to be spent on elk-related management and research.

### **Quota Setting**

Prior to 2020, administrative rule established range-specific population thresholds that had to be achieved before an elk hunting season could occur. These thresholds were 200 elk in the Clam Lake Elk Range and 150 in the Black River Elk Range. Once the population within each range hit their respective threshold, a hunt could occur within that range. Further, rules also required that the bull only harvest quota be equal to 5% of the total elk population. This was believed to result in a harvest that would not negatively impact the growing elk populations. These original rules were created in 2001 when the elk population was still relatively small and there was a strong desire by the DNR Elk Advisory Committee to assure the public that the state's elk herd(s) would be allowed to grow to sustainable levels before a hunt would occur.

Desiring the flexibility to allow the state’s growing elk herds to be managed based on scientific data regarding overall herd structure, population dynamics, winter severity, and other metrics, rule changes were promulgated in 2019 to eliminate the 5% harvest quota and population size thresholds when implementing hunting seasons. These changes were not finalized until after the quota-setting process for 2019, so the original quota-setting rules were used for both the 2018 and 2019 seasons, allowing the harvest of 10 bulls each year based on estimated elk populations of just over 200 elk in each of those years. Since 2020, annual elk harvest quotas for each elk management zone were recommended by the DNR Elk Advisory Committee and presented to the department leadership and the NRB.

Quotas are based on a variety of metrics that include reproductive success, winter severity, non-hunting mortality, herd composition (age structure, sex ratios, etc.), damage/nuisance occurrences, population size, local herd density and distribution, disease concerns, and social considerations. Tag allocations were calculated by anticipating near 100% success rate, in which the number of tags issued was the same as the quota for 2018-2023.

To date, elk hunter success rates have been high, and this plan retains the continued flexibility in determining the number of elk harvest authorizations to achieve the approved harvest quotas. Hunter success will be annually monitored and will continue to be considered in the quota setting process.

The Ojibwe tribes declared five bull elk tags during each of the first three elk hunts and four tags each in 2021, 2022 and 2023, respectively. The tribes administer their own process in allocating the tribal quota among Ojibwe bands with reserved rights in the 1837 and 1842 Wisconsin Ceded Territories.

Table 8. Elk Hunting Summary for State and Tribal Hunters for the Northern Elk Management Zone from 2018-2023.

Year	WI DNR License Applicants	RMEF Raffle Apps	Elk Harvest Quota	State Hunters	State Bulls Harvested	Tribal Quota	Tribal Bulls Harvested
2018	38,494	4,986	10	5	4	5	5
2019	23,036	1,859	10	5	5	5	5
2020	27,984	1,577	10	5	5	5	0
2021	25,215	1,593	8	4	3	4	4
2022	25,742	1,631	8	4	4	4	4
2023	21,312	N/A	8	4	4	4	4

### Elk Hunting Units

The boundaries for the Northern and Central elk management zones currently allow little control of harvest distribution of elk within the elk management zones. For example, during the 2018 elk hunting season, six bulls were harvested within approximately a 3-mile diameter area. Greater control of harvest distribution will aid in preventing negative impacts of localized harvest pressure. To have greater control of elk harvest distribution and minimize the possibility of overharvest in small areas, this plan divides both the Northern and Central elk management zones (including areas adjacent to the range to manage an expanding elk herd) into smaller elk hunting units (Figures 18 and 19, respectively). Doing so will allow high-resolution harvest management and the ability to adjust harvest in areas where population increase, or reduction is desired. As elk populations increase, elk hunting units will also allow for more targeted

hunting pressure to occur in areas of increased nuisance/damage issues or in areas where high elk numbers are not supported by the habitat or public interest. It is not uncommon for groups of elk to use multiple elk hunting units and move between units frequently. In addition to these identified hunting units within or immediately adjacent to the elk management zones, this plan delineates all areas within the state outside of these Hunting Units 1-14 be identified as an additional management unit, Unit 15, to allow for harvest of elk, when appropriate.

In addition to establishing elk hunting units, this plan recommends the DNR manage the annual harvest of elk by establishing unit-specific harvest quotas to allow for additional population control within each hunting unit. To allow for maximum flexibility of harvest control, quotas may be established for any unit or grouping of units, up to and including the entire management zone. Hunters would apply for, and be able to hunt, any unit or grouping of units that has an established quota for the year. In years when targeted population control is deemed necessary, individual unit quotas may be used to either focus harvest pressure within units experiencing high elk conflict or population growth to achieve a decrease objective, or alternatively, reduce/eliminate harvest within units with an increase objective. If unit specific quotas are not necessary for localized population control, units may be grouped together to allow hunters more area to hunt. In years when no control over the spatial distribution of harvest is necessary, hunters may be allowed to hunt the entire management zone (all units will be grouped together). Hunting would not be allowed in hunting units with no quota allocation (zero quota). Hunting unit groupings and quota would be developed annually, with recommendations from the Elk Advisory Committee and approvals by the Department.

#### Northern Elk Management Zone Hunting Units

The seven in-zone hunting units delineate the Northern Elk Management Zone into easily identifiable blocks of primarily forested public lands. Hunting unit boundaries are primarily delineated by physical features, including state or county highways and rivers. Hunters should be aware as different public landowner types have unique and specific motorized access regulations for their properties.

**Unit 1** is comprised of mixed private and Chequamegon-Nicolet National Forest, Great Divide District public land ownership stretching between State Highways 63 and 13. A small portion of Sawyer County Forest and National Park Service lands can be found on the western side of the unit. Composition of the forested landscape is primarily northern hardwoods and oak cover type. There is some scattered aspen as well as upland and lowland conifer throughout. Along the northern and northeastern portions of the unit boundary, landownership transitions to mainly private with an increase of agricultural fields. Unit 1 contains the most elevation variation across the entire northern elk management zone. The villages of Seeley, Cable, Drummond, Grand View, North York and Mellen wrap around the unit border in a clockwise fashion, increasing development in those areas.

**Unit 2** is 100% forested with no agricultural fields and is the smallest delineated hunting unit in the Northern Zone. A majority of the unit is comprised of the Chequamegon-Nicolet National Forest, Great Divide District and sees some of the highest elk use. The southern boundary of the unit is State Highway 77. A good mixture of northern hardwood, upland conifer, birch, and aspen, as well as some oak on the western side can be found. A portion of Clam Lake with increased human dwellings, Chequamegon-Nicolet National Forest, Great Divide District Campgrounds, and a designated day use area closed to hunting fall within Unit 2.

**Unit 3** is primarily forested USFS property falling between State Highways 77, 13 and Ashland County Highway GG east of Clam Lake, WI. Aspen and upland conifer components are strong in the west transitioning to northern hardwoods and lowland conifer to the east. Some scattered hay fields exist along the eastern edge off State Highway 13. Unit 3 barely touches Clam Lake on the southwest boundary and Mellen at the northeast corner.

**Unit 4** is mostly comprised of USFS forested lands, with scattered private property. High percentages of aspen stands dominate the core of the unit, with northern hardwood, upland and lowland conifer, and some oak increasing to the west. To the west of Moose Lake and near the western boundary of the unit, agricultural hay fields can be found. Near the southwest boundary, Lac Courte Oreilles Tribal property can be found, which is closed to hunting for state license holders. County Highway GG is the eastern boundary, with State Highway 77 delineating the northern edge and a combination of Sawyer County Highway B and State Highway 70 creating the southern line. The U.S. Navy Extremely Low Frequency Communication System headquarters is found within Unit 4 and the northeastern corner is the town of Clam Lake, but development increases closer to the southwestern and western boundaries, or the area nearest Hayward.

**Unit 5** holds the largest contiguous block of private land, about 50% of the unit to the east. The western half is mainly Chequamegon-Nicolet National Forest, Great Divide District, with a small portion of the Flambeau River State Forest and Price and Sawyer County forests. The western portion of the unit includes heavy aspen, northern hardwood, and lowland hardwood and conifer forests. Toward the east, the unit transitions to a mixture of upland hardwood and agriculture in primarily private ownership. It is not uncommon to find elk groups on solely private lands to the east. The unit boundaries are comprised of state highways 13, 70, and 77 as well as County Highway GG to the west. Park Falls, Butternut and Glidden all lie on the eastern boundary.

**Unit 6** is the western half of the 2012 expanded portion of the Clam Lake Elk Range. Large contiguous blocks of Flambeau River State Forest, Sawyer and Rusk County forests, and Wisconsin DNR conservation easement through Northwoods ATP Industrial Forest are found. Aspen is the major timber type with northern hardwoods, low land hardwoods, and low land conifer scattered about. Some stands of oak and upland conifer exist as well. Pockets of actively maintained wildlife openings and young successional forest blocks are common within the unit. Small quantities of hay and agricultural fields exist near the southern boundary. The southern and western boundaries are comprised of Rusk County highways I and J, state highways 27 and 70, as well as the northwest boundary following the Brunet River. Unit 6 is separated from Unit 7 by the Flambeau River. Although a developed landscape increase on the fringes as it nears the cities of Ladysmith and Winter, there are no populated areas within Unit 6.

**Unit 7** offers large block public lands on Flambeau River State Forest, Kimberly Clark Wildlife Area, as well as the Price and Rusk County forests. Similar to Unit 6, Unit 7's most abundant timber type is aspen, with mixed northern hardwoods, low land hardwoods and upland conifer. Agriculture exists to the east-central part of the unit. Kimberly Clark Wildlife Area offers vast open ground management to promote young successional habitat. The eastern and southern boundaries are a mixture of rivers, town roads, and powerlines. The western boundary is the Flambeau River, then utilizes state highways 70 and 13 for the remaining portions of the boundary. Development is minor throughout the unit and increases on the eastern edge.

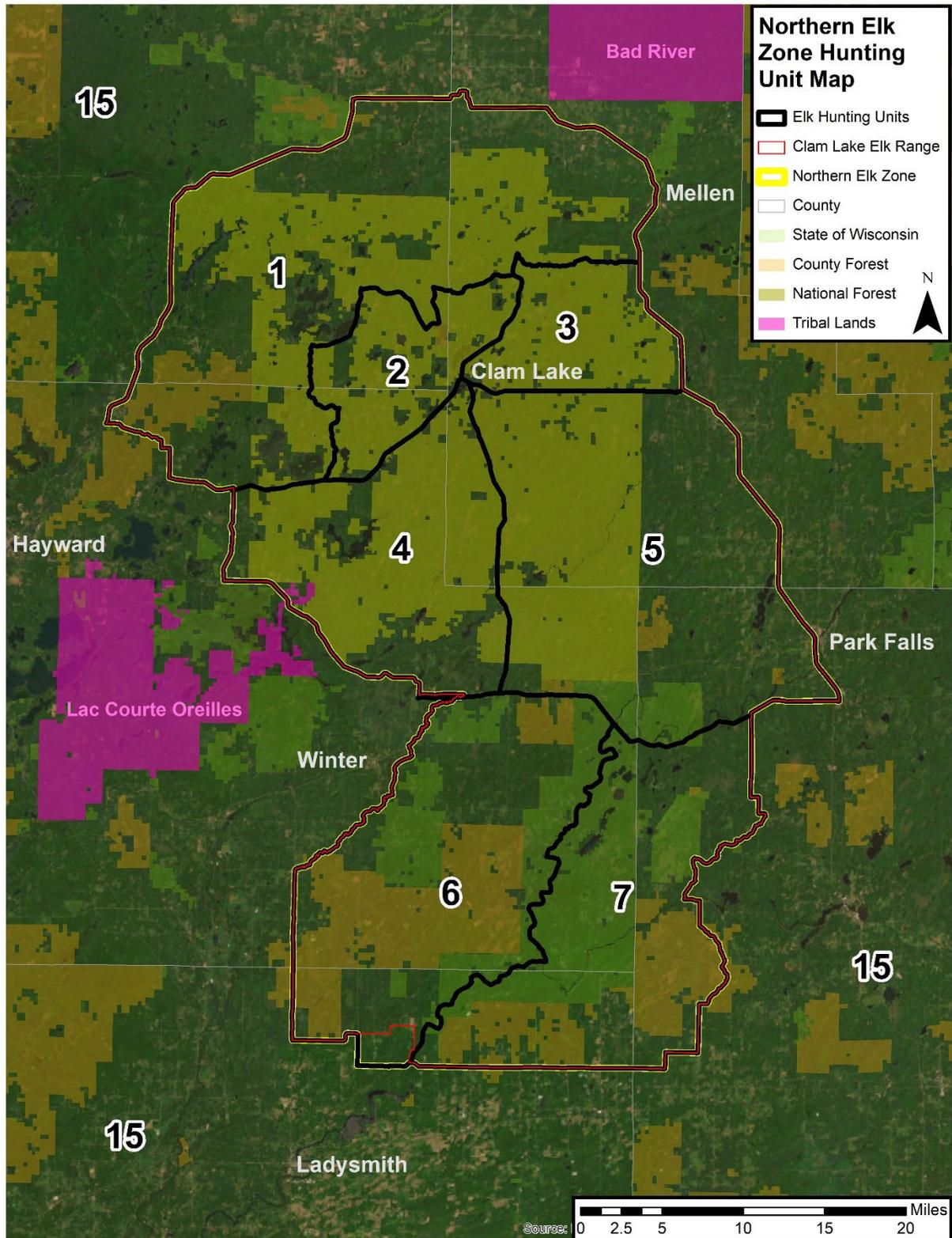


Figure 19. Elk hunting units in the Northern Elk Management Zone.

### Central Elk Management Zone Hunting Units

The three in-zone hunting units delineate the expanded Central Elk Management Zone into three units using the zone boundary and roadways. These areas are largely forested, contain numerous tracks of public lands, encompass the highest percent of suitable elk habitat and public acceptance is high. Management within these units would first allow for elk expansions into unoccupied areas and support healthy, sustainable sub-groups throughout each unit.

**Unit 8** is made up of large continuous blocks of public lands including ownership by DNR (Black River State Forest), Jackson County and Ho-Chunk Nation, which is closed to state hunting for state license holders. Composition of the forested landscape is primarily upland conifer with central hardwoods buffering the Black River, and transitions to a mix of conifer, oak, central hardwoods and wetlands to the east. There is some developed acreage within this unit as the town of Black River Falls sprawls to the northeast. The northern and eastern boundaries utilize the Jackson County line, US-12 and I-94 on the west, and State Highway 54 to the south.

**Unit 9** is dominated by Jackson County land, with pockets of private lands and even small portions of USFWS lands. Within county lands, the forested landscape is comprised of oak, central hardwoods and conifer and offers significant amounts of elevation and topography changes, for the area, especially on the western half. Privately owned parcels shift from forested landscapes in the northern half to higher compositions of agricultural fields in the southern half. This agricultural area is surrounded by ridges of hardwood and oak stands. The northern boundary follows State Highway 54 and the Central Zone boundary to the east and south (Fig. 20). The western boundary utilizes roads, from the north starting with N Settlement, Butterfuss, Yonkers, Townline, Whitney, Starlight and Doers Road before joining with the Monroe County Line.

**Unit 10** is almost all public lands made up by Jackson County, the Black River State Forest (DNR) and Ho-Chunk Nation. Lake Wazee County Park is near the center of this unit, which offers abundant elk habitat but is not open to hunting per county regulations. There are developed parcels within the northwest portion of the unit, as the town of Black River Falls sprawls to the east. Within the state forest parcels of this unit, conifer is the dominant land cover, however within the county parcels dominant cover types shift to oak, aspen and central hardwoods. The northern boundary utilizes State Highway 54, I-94 as the west and southern boundary, and the same set of roads for the eastern boundary as unit 9 does for the western boundary.

There are four hunting units adjacent to and surround the three primary units. They encompass lands that could support elk and have varying levels of suitable elk habitat. In general, elk would be allowed to reside within these units, however social acceptance and conflict levels would weigh greater into management objectives than the primary units.

**Unit 11** is split nearly equally between private and public land ownership. Public lands are predominately under the ownership of Jackson and Clark counties, with smaller amounts of parcels owned by the Ho-Chunk Nation. Forested land cover types are a mix of oak, conifer and central hardwoods. Agriculture and grassland parcels are dispersed through the unit, primarily on private lands. The northern boundary of this unit utilized US Highway 10 between Fairchild and Neillsville, State Highway 73 between Neillsville and Pittsville, and State Highway 80 as the western boundary. The southern edge uses State Highway 54 as well as the Jackson County boundary, before meeting up with US-12. The western boundary is delineated from the north by US-12, County Road F and finally County Road A.

**Unit 12** has large blocks of the Necedah National Wildlife Refuge, Sandhill and Meadow Valley state wildlife areas, and Wood County lands within the eastern half of the unit. Primarily, the western half is privately owned, but small blocks of county and Ho-Chunk Nation lands are scattered throughout. Cover

types vary across this unit, however, the uplands are represented by central hardwoods and oak stands, while the lowland areas are predominately wetlands, which serve as waterfowl habitat on public lands and act as support lands for acres in cranberry production on private parcels. The eastern boundary utilizes State Highway 80, State Highway 54 as the northern boundary, I-94 and the central zone boundary to the west (Fig. 20), and State Highway 21 from Tomah to Necedah.

**Unit 13** is largely comprised of Fort McCoy lands, including Black River State Forest and public lands owned by Jackson and Monroe counties. Fort McCoy is predominately in oak and grassland cover types, whereas the Black River State Forest and county lands are mixed with oak, central hardwoods and conifer. This unit offers significant amounts of elevation and topography changes. Private lands on the far east and west sides of the unit include agricultural lands. This unit is bounded by I-94 between Black River Falls and Tomah, portions of State Highway 21 and I-90 to the south, County Road I, the Jackson County line and State Highway 54 to the west.

**Unit 14** is mostly private land ownership, however there are contiguous blocks of public state lands scattered throughout the unit. This unit contains lower amounts of high-quality elk habitat compared to other units; however, it has two large ridge systems running through the unit which serve as pockets of suitable lands. Land cover type is dominated by oak and central hardwoods stands, and agricultural and grassland fields. The northern boundary is delineated by US-10 and the remaining boundary utilizes the Jackson County line. Management within this particular unit would be less likely to allow elk to grow in numbers and would have significant consideration for public support and conflict situations.

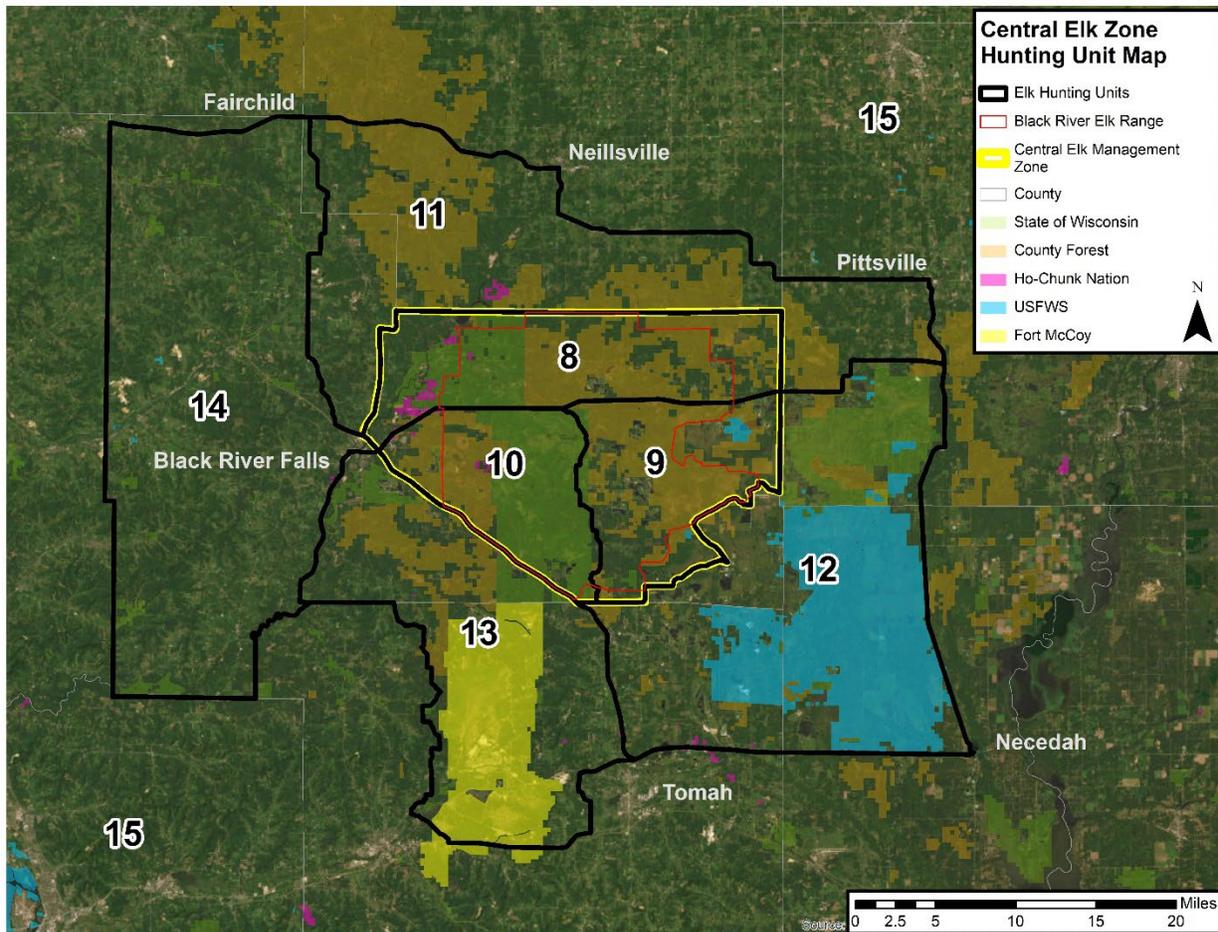


Figure 20. Elk hunting units in the Central Elk Management Zone.

**Unit 15:** Encompasses all remaining land in the state of Wisconsin not identified in units 1-14 (Fig. 21).

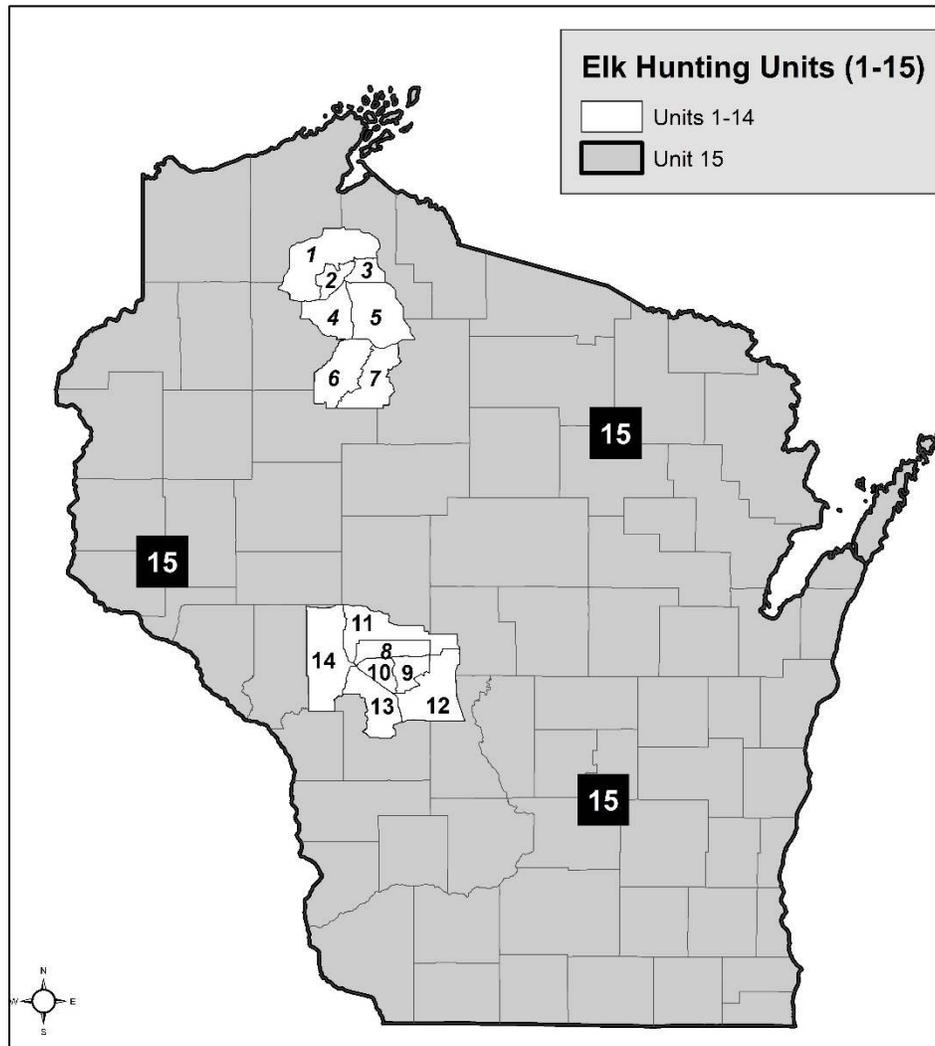


Figure 21. Hunting Unit 15

### **Season Timing and Duration**

State statutes require that the DNR may not establish an open season for hunting elk that begins earlier than the Saturday nearest Oct. 15. Previous administrative rules provide that the elk hunting season opens on the Saturday nearest Oct. 15 and continues for 30 consecutive days, opening again the second Thursday in December and continuing for nine consecutive days.

This plan implements one continuous season starting the nearest Saturday to Oct. 15 and remaining open until the Sunday nearest to Dec. 15. A continuous season structure allows greater hunter opportunity and flexibility.

Monitoring of both elk herds suggests that the median conception date of Wisconsin calves is approximately Sept. 21 and annually falls within the date range of Sept. 17-25. This plan supports the timing of the current season opening date, as it allows harvest to occur after the majority of breeding has taken place. The split season framework serves no biological or enforcement purpose.

Ojibwe tribes with off-reservation treaty rights in the 1837 and 1842 Ceded Territories have established off-reservation elk harvesting regulations, including hunting season dates which differ from state regulations. The tribal elk season in the Northern Elk Management Zone begins the Tuesday following Labor Day and ends the first Sunday in January. This may result in some hunting during the peak breeding period in September. However, during the first two years of the elk hunt, some tribal hunting groups chose to hunt elk later in the season, during cooler weather and following the peak breeding period. Although hunting during the breeding season may result in temporary disruption and protraction of breeding activities, the limited tribal activity is unlikely to impact overall breeding success. Several states have held elk hunting seasons during the peak breeding season with no negative consequences.

### **Weapon Use**

Per state statutes, an elk hunting license authorizes the use of firearm, bow and arrow, or crossbow. Permitting hunters a choice of these methods attempts to maximize the hunter experience and likelihood of success. Survey results indicate that maintaining this any-weapon season structure is preferred among Wisconsin residents when compared to an archery-specific permit or an any-weapon permit with a separate archery-only portion of the season. However, significant interest in an archery-only season that opens in September has been expressed. The current season structure allows hunter to pursue elk with archery equipment, hunt during a time where some rut/bugling activity is still occurring with minimal competition from high hunter numbers, reduces tourism conflicts, ensures minimal disruptions to breeding, and maintains an equal opportunity for all successful applicants. After significant discussion at the Elk Advisory Committee level, this plan retains the any-weapon permit.

### **Mandatory Hunter Orientation**

All Wisconsin elk hunters are required by state statutes to participate in an elk hunter orientation before they are issued and eligible to purchase their elk hunting license. The orientation covers hunting regulations, disease testing and tissue sampling requirements, tribal treaty rights and hunting, public land use regulations, and more. It also provides hunters information regarding elk habitat preferences, rutting behavior and timing, and aspects of elk biology that can help enhance their experience and increase their odds for a successful hunt. Each hunter gets personally acquainted with DNR wildlife management and law enforcement staff who they may interact with during the hunt. Ojibwe tribal hunters are also required by the tribes to participate in a similar orientation before hunting elk which is administered by the GLIFWC.

### **Mandatory Tissue Collection**

Administrative rules provide that the department may require any part of a harvested elk to be collected, sampled, or submitted to the department for disease testing or research purposes. Hunters are made aware of the DNR's sampling needs and are provided instruction and collection kits during their attendance at the mandatory elk hunter orientation. Tissue samples are submitted to the registering agent (usually a DNR or GLIFWC wildlife biologist) during registration.

## **HEALTH CONSIDERATION FOR WISCONSIN ELK**

The unique nature of a small, reintroduced elk population in Wisconsin has provided the opportunity to test a high percentage of the individuals for exposure to diseases of significance to elk, humans and domestic animals. Since the initial re-introduction of the northern elk population in 1995, intensive monitoring using radio collars has allowed for a sound background on exposure of elk to diseases of

concern, and prompt mortality investigations to determine cause of death. As the population grows and a smaller percentage of the population are fitted with radio collars, developing surveillance protocols for current and emerging disease threats will be considered.

### **Historic Disease Testing Ins Elk**

Through regular capture and handling of elk in Wisconsin, blood and fecal samples have been collected to evaluate exposure to organisms responsible for Brucellosis, Johne's Disease, Bluetongue, Epizootic Hemorrhagic Disease (EHD), Leptospirosis, Eastern Equine Encephalitis, Western Equine Encephalitis, Venezuelan Equine Encephalitis, West Nile Virus (WNV), Anaplasmosis, Neosporosis, Bovine Herpes, Infectious Bovine Rhinotracheitis (IBR), and Bovine Viral Diarrhea (BVD). These surveillance efforts have revealed either limited exposure by Wisconsin elk (WNV and EEE) or no identified exposure (all others). These tests represented both surveillance efforts for diseases that elk have been identified as compatible hosts for, and sources of, infection that are not present in Wisconsin (*Brucella* species) as well as investigatory in evaluating possible diseases that could impact elk populations. Although these tests provide information on the exposure to these disease agents, it does not directly inform if the population is susceptible to developing disease if naïve individuals are exposed to the causative organisms. As such, testing has also occurred through mortality investigations that involve the necropsy and site investigation of the elk carcass. These investigations have further allowed the DNR to evaluate if there are diseases of concern present in the population.

Based on the diseases and parasites that have been identified within Wisconsin and a desire to prevent the introduction of diseases not present within the state, a testing plan was developed in collaboration with other state and federal agencies for the 2015-2019 elk translocation from Kentucky. The plan included testing for diseases that primarily affect wildlife and those that primarily affect domestic animals but can spill over into wildlife. The plan also included testing for Bovine Tuberculosis (TB), Bovine Brucellosis (*Brucella abortus*), Bovine Viral Diarrhea Virus, Bluetongue and Epizootic Hemorrhagic Disease. The protocol outlined in that plan was executed in full, and no elk were identified as infected with these diseases.

### **Future Testing Needs**

The following section provides an overview of some of the disease agents that elk may be exposed to in Wisconsin (*Babesia* spp., *P. tenuis*, and CWD) as well as agents that have had more significant impacts on elk populations in other states (Elk hoof disease). Additionally, diseases that could impact elk, domestic livestock and human populations for which at minimum passive surveillance should continue (e.g., Bovine TB and Brucellosis) are also described. Biologists and hunters alike should be watchful for the presence of sick or dead elk on the landscape to aid in disease monitoring so that appropriate response measures can be taken, if warranted.

Although there has been no significant documented population declines of elk in Wisconsin associated with disease-causing organisms, there is the potential for elk to be exposed to several pathogens (bacterial, viral and fungal), as well as parasitic diseases and toxins.

### **Diseases Of Individual Animal Impact**

***Babesia odocoilei*:** *B. odocoilei* is the causative organism of a clinical babesiosis in cervids and has not been shown to cause disease in humans. It is a protozoan that infects red blood cells and for which white-tailed deer are the definitive host, although deer usually do not show any outward signs of this disease. *B. odocoilei* has been previously identified in Wisconsin, both in peer reviewed papers and in consultation with pathologists and other veterinarians who have identified either diseased animals or the organism. Although there are no peer-reviewed publications identifying *B. odocoilei* in Kentucky where elk were obtained for the 2015-19 translocation to Wisconsin, it has been reported in the literature as being isolated

in other eastern elk states including MN, VA, IN, PA, and SC, (when including both captive and wild populations). One of the first isolations of *B. odocoilei* in Wisconsin occurred from captive reindeer and elk and it has also been identified in black-legged ticks (deer ticks) in multiple locations throughout the state. In 2015, investigations into the mortalities of five elk translocated from Kentucky identified *B. odocoilei* as a likely factor in the mortalities. The clinical signs and gross necropsy corresponded to acute disease and the occurrence was consistent with tick emergence, suggesting that the infection occurred in Wisconsin. Whole blood samples collected in Kentucky were submitted for analysis, and none were indicative of any clinical disease prior to translocation. In subsequent years, efforts were made to identify animals that may have been more susceptible or naïve to the organism prior to translocation. No additional mortalities have been associated with the organism since, and it is unlikely to be a common source of individual animal health events or to have population-level effects in the future.

***Parelaphostrongylus tenuis***: When discussing *Parelaphostrongylus tenuis* (often referred to as brain worm or meningeal worm), it is important to understand its life cycle and its long-standing presence in Wisconsin. The definitive host of *P. tenuis* is the white-tailed deer, and deer are the primary species necessary for the completion of the parasite's two-host life cycle. In white-tailed deer, *P. tenuis* does not negatively impact the brain as it resides only in the blood vessels of the meninges where it does not cause damage. However, in other species of cervid, such as elk, caribou, and moose, infection can result in death or significant neurologic impairment. While *P. tenuis* can cause mortality in elk, the infection is sometimes cleared and, in some cases, may lead to limited or no clinical signs of disease.

In 1989, the Wisconsin State Legislature directed the DNR to explore the feasibility of reintroducing elk, caribou, or moose to the state. One aspect of the likelihood of success that was evaluated with this assessment was the impact that *P. tenuis* would have on these animals, as it had already been identified as a parasite present in the white-tailed deer herd of Wisconsin. As elk are not as susceptible to mortality from the infection compared to other non-deer species, they were determined as the cervid most likely able to succeed in an environment in which white-tailed deer were found. Since elk were first released in 1995, *P. tenuis* has been identified or suspected of causing disease in elk in both the Northern and Central elk management zones. To date, three elk in the Northern Elk Management Zone and four elk in the Central Elk Management Zone were verified to have died from *P. tenuis* infections and it is likely that other mortalities could have been partially attributed to the disease (wolf predation, vehicle collisions, etc.).

Currently, this disease does not appear to be causing significant population-level impacts in the Northern Elk Management Zone, but it has accounted for a greater percentage of the total mortalities in the Central Elk Management Zone and may have a greater impact in this area. Further investigation on possible exposure in the elk population may be warranted if testing methods become available for live animals. There currently are no commercially available live animal tests for this parasite.

### **Population Diseases Identified In Wisconsin But Not In Wild Elk**

**Chronic wasting disease (CWD)** is a fatal, infectious nervous system disease of deer, moose, elk and reindeer/caribou. It belongs to the family of diseases known as transmissible spongiform encephalopathies (TSEs) or prion diseases. CWD occurs only in members of the deer family.

The DNR began monitoring the state's wild white-tailed deer population for CWD in 1999. The first positive detections were found in 2002 in Dane County, approximately 250 miles from the Northern Elk Management Zone, and approximately 120 miles from the Central Elk Management Zone. Before the most recent re-introduction, extensive testing was conducted within both elk management zones to monitor for the presence of CWD. During translocation, additional measures were taken to ensure that equipment and staff were not transmitting the prion that causes CWD to translocated elk.

As of December 2023, no wild elk have been diagnosed with CWD in Wisconsin. CWD has been detected in two wild white-tailed deer in Jackson County in 2023 with no detections of CWD occurring within the five counties associated with the Northern Elk Management Zone. Cumulatively, more than 10,000 deer and elk have been tested for CWD since 2002 within the six counties that make up the Northern and Central elk management zones (Table 9). Most recently, both elk management zones underwent focused regional surveillance of the white-tailed deer populations between 2018 and 2020 in accordance with the DNR’s CWD surveillance and monitoring. Additionally, every elk that can provide a viable sample is tested for CWD. This includes all legally and illegally harvest elk, car-killed elk, or those euthanized or found opportunistically.

While it is likely that the risk posed by CWD to elk is low in the near term, DNR researchers and wildlife health staff will continue to collect information to thoroughly assess its geographical spread, abundance and risk. CWD in deer continues to increase in prevalence and geographic distribution each year, but when it will be detected in wild elk is impossible to predict. Monitoring and attempting to prevent the spread of this disease in deer are part of the Wisconsin CWD Response Plan. Elk are not yet a part of the response plan but should be added in the future.

Though an extensive CWD surveillance and monitoring program is in place, current options to actively manage the disease are limited. As discussions occur on the future of CWD management within the state, the elk population should be considered. CWD does occur in free-ranging elk in other states, but the large population sizes typical of these regions make predicting potential impacts on Wisconsin’s smaller population challenging. Additionally, ongoing research has indicated that multiple factors may influence how susceptible elk populations are to CWD infection, including population genetics and possible strain variations within CWD. As there is currently no vaccine or treatment for CWD, efforts should be made to reduce the spread into Wisconsin’s elk population. What this effort looks like should be based on the best science available.

Table 9. CWD sample numbers of elk and white-tailed deer within the Wisconsin Elk Management zones. Elk and deer cumulative sample amounts are from 2002 through Dec. 31, 2023.

Elk management zone	Elk samples	Deer samples
	Cumulative 2002-2022	Cumulative 2002-2023
Northern	144	8,000
Central	73	2,760
Other counties	10	N/A

**Diseases Not Currently Identified In Wisconsin**

The following diseases have not been identified in wild populations in Wisconsin and are not maintained in domestic livestock here. Their introduction could have significant impacts for both wild and domestic animals. Additionally, bovine tuberculosis and bovine brucellosis could pose human health risks.

**Elk Hoof Disease (Treponeme-associated hoof disease, TAHD)** is a disease of elk that is considered an emerging or newly identified disease. It has been identified in elk populations in Washington, Oregon and Idaho. It can look similar to some common bacterial diseases that can impact the hoof, recognized as hoof rot. However, it has been associated with a specific organism known as Treponeme. This disease is a major concern to elk populations in western states as it has increased in prevalence and range substantially over the past decade. Although research into the mechanism of this disease is still being conducted, it should be considered in any elk that shows clinical signs such as substantial hoof overgrowth and associated lameness. As a greater understanding is developed on the mechanism of

infection and maintenance of the disease in western elk populations, the information will be reviewed and utilized to minimize risk of introduction into Wisconsin.

**Bovine Tuberculosis** is a respiratory infection that is caused by the bacteria *Mycobacterium bovis* (*M. bovis*). *M. bovis* usually originates in cattle, but the bacteria can infect most mammals. The only wild cervid population known to be infected in North America is in the lower peninsula of Michigan; however, there it has been previously identified and extirpated from captive elk populations. It often affects the respiratory system and lymph nodes of clinically affected animals. Bovine TB does not spread easily. It is a chronic, slowly progressing disease that can take months or years to worsen, grow or spread. It is a disease that states work hard to ensure does not get introduced or maintained in their domestic livestock and wild cervid populations and has additional human health concerns. All elk that were part of the re-introduction program from 1999 and 2015-2019 were tested for bovine TB multiple times prior to release. Surveillance of Wisconsin's elk populations occur with testing of each hunter-harvested elk, as well as all opportunistic mortality investigations through lung evaluations and examination of lymph nodes collected for CWD.

**Bovine Brucellosis** is a disease that is caused by the bacterium *Brucella abortus*. This disease is another that is primarily associated with cattle. However, the disease has spilled over to other wildlife species, including elk, in western states, showing that elk are not only susceptible to the disease but can also act as a reservoir for it. The establishment of this disease in Wisconsin would be a major concern for both the elk population and domestic livestock. The most significant clinical manifestation of this disease is fetal abortion, but it is also of human health concern as humans are susceptible to clinical disease from this bacterium. Maintaining strong relationships with Department of Agriculture, Trade and Consumer Protection (DATCP) will play a key role in monitoring efforts, as DATCP monitors for TB in domestic livestock. Annual evaluation of reproductive success in Wisconsin's wild elk population will also aid in detecting TB.

### **Other Considerations For Elk Health**

**Baiting And Feeding:** Currently, baiting for the harvest of and recreational feeding specifically for elk is prohibited by administrative code. The current prohibition on baiting and feeding of elk in Wisconsin is a strong management tool that has multiple benefits. In Wisconsin, recreational feeding of elk, advertently and inadvertently, has been responsible for multiple vehicle collisions, and prohibitive rule changes helped to drastically reduce roadway mortality. Additionally, feeding of elk has caused several elk mortalities via metabolic toxicity associated with grain overload (the introduction of readily digestible carbohydrates, such as corn, that their rumen cannot process without proper acclimation). For these reasons, this plan recommends a change to the regulations to require feeding sites for other species be immediately removed if or when elk visit the site.

**Rehabilitation:** The behavior and nature of elk make them an unlikely candidate for inclusion in wildlife rehabilitation efforts. This plan recommends elk not be included in these endeavors and prohibits rehabilitation licensing for this species.

## **GENETIC DIVERSITY**

The Northern Elk Herd was established with 25 individuals acquired from Michigan whose herd is believed to have been founded with just seven elk. Past research has suggested that elk reintroductions should use a minimum of 15 males and 75 females to avoid inbreeding or 150 males and 750 females be used to avoid the loss of unique alleles through genetic drift (Schonewald-Cox 1986). Franklin (1980) also suggested that a minimum of 50-500 animals be used in ungulate reintroductions to avoid the same concerns. Therefore, a high probability exists that decreased levels of genetic variation occur in the

Northern Elk Herd compared to more populated western herds as a result of the founder effect in both the Michigan and Wisconsin elk herds.

Sufficient genetic variation among reintroduced populations is important for two primary reasons. Genetic variation can be related to traits associated with individual fitness and is also essential for long-term persistence, especially as it relates to environmental change (Honeycutt 2000). In general, insufficient genetic variation has been associated with negative impacts on developmental stability, growth and development rates, metabolic efficiency, fertility, survival, and resilience to disease (Allendorf and Leary 1986, Witmer 1990).

Concerns over the potential impacts of reduced levels of genetic variation within the Northern Elk Herd led to an analysis of the levels of genetic variation within this herd as well as the source herd in Michigan. Roepke (2012) found that both the Wisconsin and Michigan elk herds had similar levels of genetic variation; however, the levels were well below those of more genetically diverse western elk herds. Observed heterozygosity levels in Wisconsin and Michigan were 0.508 and 0.484, respectively. While these levels are below observed heterozygosity levels of up to 0.683 documented in some western states, they are not as low as those arising due to documented bottlenecks in California. It did appear, however, that the level of genetic diversity in Wisconsin's Northern Elk Herd was reduced compared to larger western herd and that those levels may have an impact on long term population growth. As such, the *2012 Elk Plan Amendment* recommended supplementing the Northern Elk Herd with elk from another source if the opportunity arose.

To address the concerns of low levels of genetic variation through reintroductions, 91 Kentucky elk were added to the Northern Elk Herd and the central elk herd was founded with 73 individuals through the 2015-2019 reintroduction efforts. This boost in genetic variation is expected to sufficiently improve levels of genetic variation in the Northern Elk Herd and provide the central elk herd a strong founding source of variation due to the genetically robust Kentucky elk. Future analysis should be conducted to re-assess levels of genetic variation within the Northern Elk Management Zone to evaluate the success of this aspect of the Kentucky translocation.

## **TRANSIENT ELK**

The Northern and Central elk management zones have been established to designate areas where primary elk management activities will occur. Each zone was established to maximize resources available to elk while minimizing negative human interactions. There are, however, areas outside these management zones that elk have and may utilized (both short- and long-term) where they do not pose an immediate threat to human health or safety, are not causing significant nuisance or damage situations, and do not pose a high risk of disease transmission.

Bull elk are especially prone to spend part of the year away from established cow/calf groups and potentially outside of established elk management zones, only to return to cow/calf groups during the breeding season. Elk outside the elk management zones are often enjoyed by local residents who do not want to see them removed. Whether or not the DNR takes action to address an elk outside the designated management zones is dependent on multiple factors including: the immediate threat to human health/safety, whether they are causing a nuisance or damage situation, level of risk for disease transmission, the location of the animal, distance from the a designated elk management zone, landowner cooperation if on private property, the time of the year, and proximity to human activity. Transient elk not negatively effecting these factors can be tolerated without removal, similar to other transient wildlife species outside of their established area of occupancy.

This plan will utilize the *Elk Conflict Response Guidelines* to manage transient elk situations and handle accordingly depending on the nuisance risk rating. Those posing a high or medium risk of human endangerment, disease transmission to resident deer or elk, or are causing agricultural damage may be dealt with immediately according to the non-lethal measures outlined in the guidelines. If those measures fail, the offending animal(s) may be euthanized as a last resort, however, euthanasia is the least preferred option by the DNR and the public.

Transient elk in a low or medium risk situation that are not causing significant agricultural damage and do not pose a high disease risk be allowed to remain outside of the elk management zone and will be monitored by the DNR to the best of its ability. If the elk do not return to the designated elk management zone within an extended timeframe, the specific circumstances may be further evaluated, after which appropriate methods may be used to encourage or physically return them to their original designated elk management zone. In many scenarios, however, it may not be warranted to relocate elk back to the designated range if the elk are in suitable habitat and local public tolerance of the elk is high. During the time period that the elk remain outside the designated range, should circumstances change and risk levels increase to medium/high, DNR staff are recommended to consult the appropriate internal and external partners before acting to address the situation through either non-lethal or lethal abatement measures. It is important to note that transient elk are most likely to be bull elk that are more apt to disperse from cow groups after the conclusion of the breeding season.

## **ECOLOGICAL IMPACTS OF ELK IN WISCONSIN**

### **White-tailed Deer**

Deer and deer hunting are culturally and economically important in Wisconsin. When elk were first released in each elk management zone, members of the public raised concern that elk would compete for resources with deer and potentially reduce or displace deer numbers. While elk and deer are closely related and use similar habitats, there is usually not a high degree of interspecific competition between the two. Resource partitioning by elk and deer is partly a result of the ability of each species to utilize different food and cover resources when both are found within the same general area. In Michigan, Pennsylvania, Kentucky, and other states where elk have been reintroduced into areas of high deer densities, elk and deer have been shown to be compatible neighbors with minimal negative impacts to the deer population. Competition between elk and deer during the early years of reintroduction in Wisconsin's Northern Elk Management Zone was found to be minimal. Observations of deer and elk intermingling in both elk management zones is common and there does not appear to be any negative consequences to local deer populations as a result of elk activity. Elk can, however, disperse deer temporarily from a local area if the deer become uncomfortable with the elk's presence. Such instances are rare and appear to only be temporary.

To date, elk densities have not increased to the point where they have seriously impacted browse availability or crowded deer out of winter yards. Population density goals for elk are extremely low compared to typical deer densities within each elk management zone. Research and monitoring using Forest Regeneration Metrics for both deer and elk may help inform the impacts of elk on various browse species important to deer.

### **Upland Birds**

Ruffed grouse and woodcock are popular game birds in Wisconsin and are generally abundant throughout areas identified as suitable elk management zone, especially in the Northern Elk Management Zone. Both birds thrive in young aspen habitat which is also preferred by elk. Aspen is a critical habitat component, used by grouse and woodcock for both food and cover. Woodcock will benefit from larger scale openings maintained for young succession habitat via prescribed fire. Elk and grouse habitat management practices are mutually beneficial and generally promote important habitat for both species.

### **Wild Turkey**

Turkey, another successfully reintroduced wildlife species in Wisconsin, are distributed across the entire state. Turkey hunting provides another large economic, social, and cultural recreation to resident and nonresidents. Within the elk management zones, managed grasslands, maintained wildlife openings and trail systems, conifer stands (specifically pine) and oak forests provide high habitat and landscape benefits to turkey. These habitats are used heavily during the turkey mating, nesting, and brooding seasons.

### **Wolves**

The attributes that define suitable elk habitat (heavily forested, low road densities, low human occupation) also define good wolf habitat, and often result in both species occupying the same areas. Both Wisconsin elk management zones are fully occupied by wolf packs that occasionally prey upon elk. Wolf predation on elk has occurred in both elk management zones and is typically highest during years of significant snowfall and sub-zero temperatures. As stated previously, elk and deer have been shown to be highly compatible neighbors, and elk are highly unlikely to influence deer densities. Deer continue to be the primary ungulate food source for wolves within both Wisconsin elk management zones. During years of low deer numbers, elk are likely to become more important prey for wolves, so are more likely to have positive rather than negative impacts on wolves within either elk management zone. Gray wolves within Wisconsin have been listed as federally endangered during much of the early reintroduction years of both elk herds and have seen multiple changes in listing status. They are currently listed as federally endangered.

### **Species Of Special Concern**

Several federally- or state-threatened or endangered species, or species of special concern, are present in the Northern Elk Management Zone including bald eagles, ospreys, red-shouldered hawks, trumpeter swans, spruce grouse, American marten, and wood turtles. There are no indications that these species have been negatively impacted by elk, nor are they expected to be in the future. A potentially detrimental effect on spruce grouse and American marten could be realized with the conversion of large conifer stands, which are important to these species, to early successional forest cover types. However, it should be noted that such habitat conversion is not occurring within the Northern Elk Management Zone, nor is it recommended for elk management.

The Central Elk Management Zone includes several of the same species as in the Northern Elk Management Zone. Additionally, Kirtland's warbler, Blanding's turtle, Karner Blue Butterflies, and Eastern massasauga rattlesnakes can be found. There are no indications that these species have been negatively impacted by elk, nor are they expected to be in the future. In many cases, elk habitat management efforts will positively support these species that rely on early successional habitats found in the Central Elk Management Zone. All management efforts will consider impacts to these species and avoidance measures will be used if necessary.

Based on the DNR's assessment and the USFWS's biological opinion, the introduction of elk into Jackson County will not likely jeopardize the continued existence of the Karner blue butterfly. It is understood that some incidental consumption of Karner butterfly eggs and larvae, which are found on lupine plants, will occur. The anticipated take by elk is not likely to result in substantial modification or destruction of critical butterfly habitat.

### **Forests And Other Vegetation**

Elk are large herbivores with broad diets that include many herbaceous species. When first released in the Northern Elk Management Zone, concern existed among both resource managers and the public that elk could adversely affect some species of native vegetation, including rare herbaceous plants. Elk were

native to the reintroduction areas and co-existed with native plants, including currently rare herbaceous species, until they were extirpated after European settlement. The potential effects of elk herbivory on rare herbaceous plants are difficult to predict because of the complex nature of the issue and the fact that much of the information required to evaluate it is lacking. Although numerous studies examining the diets of elk have been published, almost all of them were conducted in the western part of the continent where plant communities are very different from those occurring in Wisconsin. Habitat use studies in Wisconsin have been focused on the stand type and have not produced diet-level data. It is therefore uncertain how heavily elk may utilize different species of concern.

Perhaps most importantly, it is difficult to predict how rare plant populations may be affected by the addition of elk herbivory to deer herbivory. It is likely that high-density deer populations may have negative effects on some species of rare plants throughout northern Wisconsin. For species that are already impacted by deer herbivory, any herbivory by elk could exacerbate those impacts. Unfortunately, basic information regarding direct impacts of deer herbivory on specific species of rare plants in Wisconsin is lacking, which further complicates efforts to determine if the impact of elk herbivory is additive.

DNR elk management staff and partner agencies involved with elk habitat management efforts will consider impacts to rare or threatened plants or habitats when planning and implementing habitat management efforts. Regular consultation with DNR Natural Heritage Conservation staff will be required to ensure elk management incorporates concerns for all rare, threatened or endangered species.

In summary, some impacts of elk on other resources within the Northern and Central elk management zones may occur. At current elk population levels there is no evidence of elk impacts on white-tailed deer, threatened/endangered species, nor native vegetation, however, evaluation is limited by the availability of data and monitoring potential impacts should continue in the future as elk densities increase to management goals.

## **SOCIAL ACCEPTANCE AND ECONOMIC IMPACTS OF ELK**

### **Public Interest In Elk**

Once widespread across North America, elk were eliminated from Wisconsin in the 1880s due to unregulated hunting and habitat loss. Over the past 25 years, reintroduction efforts have brought elk back to Wisconsin, but little research has been conducted in this time to assess public attitudes and values toward elk.

There is no doubt that elk are a magnificent animal with high intrinsic value and appeal. Public input prior to the initial reintroduction of elk to the Clam Lake area indicated that public support for elk restoration was strong, with statewide restoration strongly favored or favored by 97% of survey respondents. Local residents were also strongly in favor or in favor of the Clam Lake reintroduction.

Twenty-five years later, public support for elk being in Wisconsin is still strong. A survey of Wisconsin residents, conducted in 2019, found that three out of four Wisconsinites hold a favorable attitude toward elk being in Wisconsin, while only 7% hold an unfavorable attitude (Appendix 1). Furthermore, only 5% opposed reintroducing elk to the state. At a more local scale, 81% of respondents within counties that currently have elk indicated somewhat to strong support for expanding elk management zone within their county. A similar level of support (82%) was shown by residents of counties that do not currently have elk but has suitable habitat to support an elk population for the reintroduction of elk into their county. In both cases, opposition to such efforts amounted to 10% or less.

Hunting is an important tradition throughout Wisconsin. Many residents of Wisconsin travel to western states each year to go elk hunting. However, such long-distance elk hunts are no doubt cost-prohibitive and/or logistically impossible for many people. The opportunity to hunt elk in Wisconsin was realized in 2018, creating a coveted opportunity to harvest a Wisconsin elk. The first elk season attracted over 43,000 applications. Over five years of an established hunt, \$981,000 has been generated by license sales with another \$52,000 in research donations during the application process, and an additional \$127,000 from RMEF raffles. Given the low allocation of harvest permits are available, application sales indicate considerable value to Wisconsin hunters.

Not only are elk of value to hunters, but elk-viewing tourism is also a strong draw for Wisconsin residents. In a recent survey of Wisconsin residents, 53% of respondents had seen an elk in the wild at least once, with 42% indicated that they had taken a trip to a national park or other destination to see elk in the wild. Although elk numbers in Wisconsin are still relatively low, a similar number of respondents to this survey (54%) indicated that they were somewhat to very likely to take a trip to see, photograph or hear elk in the future. An economic impact analysis of elk-viewing tourism for Wisconsin communities is not available. That said, reintroduction efforts in Pennsylvania were associated with an eight-fold increase in visitors in local communities over a period of 10 years.

At present, public outlook toward Wisconsin's elk is generally supportive. Although some proportion of the public will always disapprove of elk in Wisconsin, survey responses make clear that many Wisconsinites are excited about elk. Maintaining or ideally increasing public support for elk has been and will continue to be a primary goal of Wisconsin's elk management program. Survey results also highlighted opportunities for growing support, as only slightly more than half of Wisconsin residents (56%) were aware of elk restoration efforts in the state.

Social acceptance of wildlife is fundamentally important for successful wildlife restoration efforts to occur and be supported. Although previous public input surveys indicate that public acceptance of elk is high in Wisconsin, the public also acknowledged that elk have the potential to cause undesirable outcomes in the form of property or crop damage, elk-vehicle collisions, and other concerns. The DNR will continue to work with partners to determine what data are available or should be collected to identify and estimate the multitude of negative and positive effects that elk may have on local and regional economies, as well as on individuals. This information will inform elk population management decisions.

## **TOURISM AND ELK VIEWING**

As in all eastern elk states, there is ample evidence that Wisconsin's elk herds are a significant attraction to the public. Comprehensive surveys conducted by the DNR show that elk are broadly accepted by the general public in Wisconsin, and their presence has drawn significant interest from the public and provided an important boost to local economies. In many of the low-populated rural areas of the eastern U.S. where elk have been reintroduced, economies are suppressed compared to more developed regions of the states. In both elk management zones, local economies are dependent on tourism for the greater well-being of the area, and the presence of elk undoubtedly has helped these economies, with elk-related tourism only expected to increase as the herds grow.

Specific information such as the number of tourists visiting each elk management zone or the amount of money tourism generates annually within each elk management zone has not been fully measured. More than 15 years ago, the Cable Area Chamber of Commerce estimated that the Northern Elk Herd contributed approximately \$210,000 annually to the local economy. Other eastern elk herds have been more thoroughly studied. In a recent economic impact study in the Cherokee, North Carolina area, elk-related tourism is estimated to be contributing approximately \$29 million annually (Responsive Management 2020) to the local economy for a relatively small, reintroduced elk herd. In addition to the

financial boost, approximately 400 jobs are attributed to this aspect of tourism. This plan will implement an extensive study to fully measure the economic benefits of elk-related tourism both in terms of wildlife viewing and through the establishment of the hunting season in Wisconsin.

As with previous elk management plans, supporting and expanding upon elk viewing opportunities remains an important component in Wisconsin. In addition, it is expected that the strategies within this plan will promote elk-related tourism within both elk management zones. While viewing a wild animal is never guaranteed, information about how and when to have the greatest chance to see or hear an elk in a wild setting would be beneficial to elk-related tourism. Working with conservation partners and the tourism industry, the DNR will provide information to facilitate successful viewing. As herds grow and settle into preferred areas, this may include the designation of viewing sites whose locations can be made known through printed materials and the internet. These sites also provide opportunities to solicit feedback on elk management. This knowledge will be of importance to local governments as well as business and partner agencies in acquiring tourism-related funding, community planning, and other beneficial actions that can be enhanced through elk viewing opportunities.

## **ELK AND OUTDOOR RECREATION**

For elk to become part of the natural ecosystem found in Wisconsin's vast public lands, they must adapt to current land uses that also occur on those properties, including motorized vehicle traffic, outdoor recreational activities such as hunting and hiking, logging, and wildlife viewing. Prior to elk reintroduction, public concern was raised that some outdoor activities would be restricted to limit their respective impacts on elk. While the presence of elk is routinely taken into consideration when managing activities and resources within the elk management zones, recreational activities have not been restricted since the very early years of elk reintroduction in the north, nor are they expected to be restricted due to elk in the future. This section addresses some of the common recreational activities and how they relate to elk and elk management.

### **Hunting Access**

During the writing of the *2012 Elk Management Plan Amendment*, concern was raised that forest roads commonly utilized by hunters, particularly bear hunters, would be closed to protect or avoid disturbing elk. This concern was based on the perception that a significant number of roads had been closed on public lands specifically for the benefit of elk, thereby restricting recreational activities. Although segments of a small number of roads were indeed closed during the early years of the northern elk reintroduction, they have long since been permanently opened with only a few exceptions that typically don't pertain to elk. Road closures can occur on all public lands for a variety of reasons and may be due to road damage, vehicle activity off designated roads, or poor road conditions. This plan does not support roads be closed solely to protect elk.

### **Off-Road Vehicles**

Both off-road recreational vehicle (ATVs, UTVs) and snowmobile use may affect elk activity. In Wisconsin and Michigan, biologists have observed that elk can be temporarily displaced from areas experiencing frequent use of these vehicles. Both of Wisconsin's elk management zones are popular destinations for recreational trail riding by both recreational vehicles and snowmobiles. Trail systems have been well established within both elk management zones and travel off the trail systems is generally prohibited.

Disturbances to elk by motorized recreation have been documented in many western states, but there is currently no indication that snowmobiles, recreational vehicles, or other motorized vehicles have significantly displaced elk from important habitat in Wisconsin. There is also the potential for collisions between elk and snowmobile or recreational vehicle users, as have been documented elsewhere. In

Yellowstone National Park, there are collisions between snowmobiles and large mammals, including elk, each year on groomed trails. Similarly, many accidents occur between snowmobiles and white-tailed deer occur each year in Wisconsin. No such incidents are known to have occurred in Wisconsin between recreational vehicles and elk, however, these conflicts between elk and recreational motor vehicle users may occur in the future as the elk herds increase in numbers and expand their range. Future planning of the creation of new recreational trails may want to consider routes that minimize disturbance to elk.

### **Non-Motorized Recreation**

Human activities such as cross-country skiing, hiking and snowshoeing can impact elk, but do not appear to be a major concern in Wisconsin. Both elk management zones have designated ski trails, and while increasing in popularity in recent years, hiking and snowshoeing are also restricted primarily to trails and logging roads. It appears unlikely that any of these activities will ever have noticeable impacts on elk.

Searching for shed deer and elk antlers has grown considerably in popularity and is perhaps one of the most concerning activities among all outdoor recreation that can impact elk. Most elk antlers are shed in March and April, however, competition to find antlers and a lack of knowledge leads to many shed antler hunters scouring the woods months before antlers are shed. During this critical time, elk are recovering from winter and in the poorest physical condition of the year, so people engaged in shed hunting are likely to be searching in areas occupied by elk, causing them to flee and use precious energy in the process. Shed hunting activity may lead to elk dispersing to areas less suitable for elk where the elk conflicts or predation may increase.

Similar disturbance to the elk can also occur during the fall breeding season as wildlife watchers seek elk. While this activity is a well-accepted and an encouraged opportunity for the public, it may also have negative impacts associated with disturbing elk.

More guidance on reducing the risk of disturbing elk during these activities may benefit the public as well as our elk herds.

This plan recognizes that outdoor recreational activities could negatively impact elk, though it does not call for closing trails or limiting public access. Elk in Wisconsin do experience human-caused disturbances in many forms and appear to have adapted well. However, as land use and forest plans are developed within the DNR or by partner agencies, they should be reviewed from the viewpoint of how management actions may impact elk.

## **ELK CONFLICT MANAGEMENT**

Conflict management is an important component of elk management in Wisconsin. While the number of elk conflicts on a statewide basis may not be significant, impacts to individuals can be. Human tolerance toward elk can be influenced by a variety of factors. For individuals, the influence of these factors will likely depend on their experience with elk over time, thus tolerance may not be static. The public may tolerate elk in an area with human development, however, if property damage, safety issues, and/or vehicle collisions increase, public tolerance will likely decrease. Agricultural producer's tolerance for elk will likely depend on their perceived and/or real concern over damage to their crops. Producers' tolerance may increase when there is abundant natural food available or planted crop varieties are less palatable, reducing elk utilization of their crops. When responding to elk conflicts, it is important to have an integrated conflict management program in place that includes both non-lethal and lethal abatement options and balances conflict management with social and biological factors.

Elk conflicts in Wisconsin are separated into two categories: 1) agriculture damage and 2) nuisance or other conflicts. Many of the same abatement methods are used for both categories, however,

administrative management of conflicts is different between the categories. This section provides general information about recent trends in elk-human conflicts as well as general information on DNR and cooperator responses to complaints. More detailed information pertaining to the response and management of elk conflicts can be found in the *Elk Conflict Response Guidelines* document that was developed in 2016 and updated in 2024.

### **Agriculture Damage Conflicts**

Elk impacts to agriculture producers can result in significant losses, not only from the loss of agriculture crop production but also from time and effort spent implementing abatement to minimize impacts. Elk damage to commercial agricultural crops, which includes stored crops and cover crops grown on licensed bird hunting preserves, are eligible for assistance through the Wildlife Damage Abatement and Claims Program. Elk became eligible for the Wildlife Damage Abatement and Claims Program in 2003 when administrative rules establishing an elk hunting season were created. However, the first elk enrollment in the program did not occur until 2013, when two individuals enrolled in Ashland County. Under state statute, the Wildlife Damage Abatement and Claims Program is administered by participating counties with oversight by the Wisconsin DNR. The program provides support for abatement activities intended to reduce damages caused by designated wildlife species, including elk, and provides partial compensation for damages caused by those species. This program is funded by a \$2.00 surcharge on each hunting license, a \$4.00 surcharge on Conservation Patrons licenses, and revenue generated from the sale of antlerless deer harvest authorizations or “bonus tags.” Hunters, in exchange for funding the program, are provided access to enrolled properties to assist with the removal of the species causing damage during the appropriate state hunting season.

The number of producers enrolling in the Wildlife Damage Abatement and Claims Program fluctuates from year to year. Factors like crop prices, crop rotations/varieties, crop conditions/yields, and landowner cooperation can impact the number of enrollees and yield loss each year. Annual variation in crop prices can directly affect the amount paid per claim. In 2023, 18 agricultural producers enrolled in the program for elk abatement assistance with 7 of the producers filing claims with the department seeking compensation for elk damages. Of the seven producers seeking compensation for damages, three producers were in the Central Elk Management Zone and four producers were in the Northern Elk Management Zone. (Fig. 22, 23). As the elk population continues to grow, we anticipate there will be continued agricultural crop damage. The DNR is continuing to work toward damage abatement and mitigation for all crop types within the Wildlife Damage Abatement and Claims Program.

A variety of non-lethal abatement methods have been implemented in response agricultural damages caused by elk including hazing and harassment methods, temporary and permanent fencing, repellents (Plantskydd<sup>®</sup> and Trico<sup>®</sup>), trapping and translocation, diversion crop plantings, and public hunting.

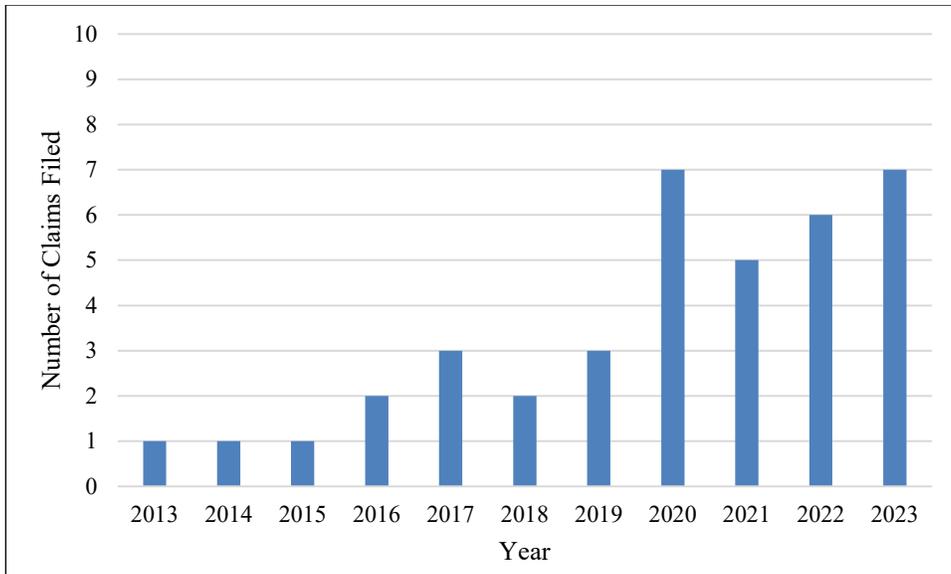


Figure 22. Number of Wildlife Damage Abatement and Claims Program Elk Claimants, from 2013-2023.

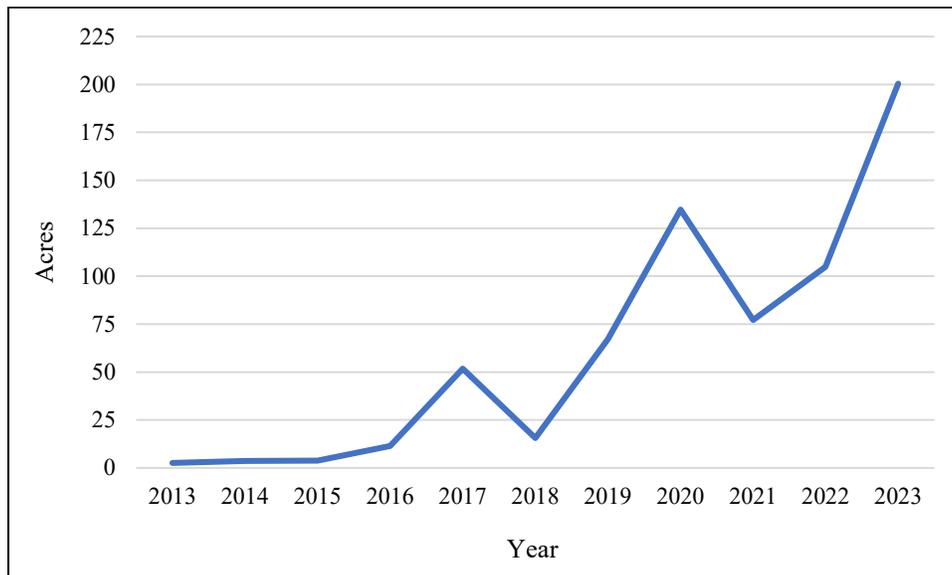


Figure 23. Acres of crop damage by as reported by the Wildlife Damage Abatement and Claims Program. 2013-2023.

**Hazing And Harassment** - Historically, hazing and harassment of elk have been the primary abatement techniques used to minimize elk damage to commercial agricultural crops. Hazing of elk has been conducted by the DNR, USDA-Wildlife Services and agriculture producers and has had mixed results as an abatement technique.

**Permanent Fencing** - The installation of 8' high-tensile woven-wire fence, labeled as a "permanent fence," has also been utilized as an abatement option.

In 2016, the DNR offered permanent fencing to 16 agriculture producers located within or on the border of the Central Elk Management Zone. Five producers implemented fences at a cost to the DNR of approximately \$244,000 (75% cost-shared by Wildlife Damage Abatement and Claims Program, 25% cost-shared by the DNR Wildlife Management Program). Producers are required to maintain permanent fences for 15 years, including sustaining a minimum level of crop production within the fence(s) for that contractual time period. A legislative change to the Wildlife Damage Abatement and Claims Program in 2018 added cover crops at licensed bird hunting preserve as an eligible crop included under the Wildlife Damage Abatement and Claims Program. As a result of this change, a landowner with a licensed bird hunting preserve implemented permanent fencing to protect pheasant cover from ongoing elk damage. Total cost was just under \$82,000, with the DNR cost-sharing around \$72,400 and landowner around \$9,600. In 2020, two permanent fences were constructed around standard row crop fields that sustained significant elk damages the previous year. The cost of these fences totaled approximately \$56,000 with the Wildlife Damage Abatement and Claims Program covering approximately \$42,000 and the property owner covering \$14,000. In 2021, one permanent fence was constructed for the protection of cranberries at a total cost of approximately \$105,900.00.

**Temporary Fencing** - Several temporary fence designs have been implemented with varying degrees of success. For temporary fencing to be effective it should be utilized on small acreages. An example of a practical use would be for the protection of silage bags or other stored crops.

**Repellents** – Repellents were utilized in 2020 and 2021 to address elk browsing in corn fields. Fields received several applications of repellents first by ground application and then by aerial application as the height of the corn plants increased. Early results indicate the repellents have limited effectiveness on browsing by elk. Repellents are also costly especially when aerial applications are necessary.

**Trapping And Translocation** – Trapping and translocation have been utilized to reduce herd sizes at locations where significant elk damages have occurred. Most recently, over the winter of 2022-2023, 15 elk were trapped and translocated in Jackson County and moved away from an agricultural area experiencing annual elk damages. While this is an effective abatement method, translocation cannot be conducted until after the growing season and after damages have occurred, requires a lot of time and labor and is costly. Additionally, trapping success is largely dependent on winter weather conditions with reduced success during mild winters with little snow cover.

**Planting of Diversion Crops** – In 2021, the DNR and USDA-Wildlife Services implemented a pilot project to test the efficacy of planting a diversion crop to limit elk browsing and damaging to neighboring agriculture crops. This was a two-year pilot project with the option of extending the project to a third year. Under this project, the DNR leased a 22-acre crop field that was located in an area that experienced frequent elk activity and elk damage the previous year. A mixture of brassicas was planted and, in 2022, a high forage corn variety was planted. Elk were observed in the diversion crop fields during both years. In 2023, corn and soybeans were planted to provide variety within the diversion fields and to mimic forage availability within the surrounding acreage on commercial agricultural fields. GPS points of collared elk and grazing levels were used to evaluate the effectiveness of the pilot project. In July and August 2023, elk GPS points were proportionately greater within the diversion crop fields than GPS points in adjacent fields within a one-mile radius. Also, based on October grazing assessments, corn within the diversion field was heavily grazed.

Based off results over three years from the pilot project, the DNR believes diversion fields are an effective abatement tool that can be established in certain situations as part of a multi-faceted

management tool to utilize in the future.

**Public Hunting-** As mentioned above, agriculture producers receiving assistance through the Wildlife Damage Abatement and Claims Program are required to allow public hunting access to properties enrolled in the program. During the required elk hunter orientation classes, hunters are informed of the hunting opportunities provided through the Wildlife Damage Abatement and Claims Program and since 2022, three hunters harvested elk on or adjacent to a property enrolled in the program. Hunters have pursued elk on Wildlife Damage Abatement and Claims Program properties since 2020.

In future years, we expect other hunters will take advantage of these opportunities as well.

While this program provides hunting opportunities for elk hunters, it is not likely that it will significantly reduce elk damages as a limited number of harvest authorizations are issued each season.

It should be noted that as elk numbers have increased, more traditional agricultural producers (i.e., corn, soybeans, forage) may sustain damage. In most cases the producer’s fields are not contiguous, rather, they are scattered throughout an area. Implementing abatement measures that are both effective and practical under these settings will be difficult. In situations where abatement is not effective or practical, providing compensation for elk damages may be the only feasible option.

Table 10: Appraised Elk Damages by Crop Type, from 2013-2023.

Year	Total Assessed Damage	Alfalfa	Alfalfa/Grass	Corn	Cranberries	Hay/Haylage	Soybeans
2023	\$88,124.16	\$0.00	\$0.00	\$84,550.78	\$0.00	\$0.00	\$3,573.38
2022	\$65,130.79	\$0.00	\$0.00	\$55,348.47	\$0.00	\$4,820.40	\$4,961.92
2021	\$47,645.89	\$0.00	\$0.00	\$45,608.36	\$0.00	\$343.50	\$1,694.03
2020	\$32,765.53	\$146.17	\$0.00	\$19,128.05	\$1,450.80	\$1,130.10	\$10,910.41
2019	\$14,302.84	\$0.00	\$0.00	\$1,042.41	\$888.55	\$0.00	\$12,371.88
2018	\$5,807.28	\$0.00	\$0.00	\$3,276.42	\$2,530.86	\$0.00	\$0.00
2017	\$5,745.22	\$933.25	\$64.55	\$2,993.62	\$0.00	\$665.00	\$1,088.79
2016	\$2,076.09	\$0.00	\$0.00	\$1,880.64	\$0.00	\$0.00	\$195.45
2015	\$153.00	\$0.00	\$0.00	\$0.00	\$153.00	\$0.00	\$0.00
2014	\$893.23	\$0.00	\$0.00	\$893.23	\$0.00	\$0.00	\$0.00
2013	\$1,201.91	\$0.00	\$0.00	\$1,201.91	\$0.00	\$0.00	\$0.00
<b>Total</b>	<b>\$263,845.94</b>	<b>\$1,079.42</b>	<b>\$64.55</b>	<b>\$215,923.89</b>	<b>\$5,023.21</b>	<b>\$6,959.00</b>	<b>\$34,795.86</b>

### Nuisance And Property Damage Conflicts

Nuisance conflicts are defined as non-agricultural conflict where elk exhibit behavior that is creating conflicts with humans or causing damages that do not meet the damage eligibility requirements of the Wildlife Damage Abatement and Claims Program. Nuisance situations can be very broad and may include but are not limited to damages to cranberry dikes, ditches, beds, and water control structures; impacts on forest regeneration; damage to personal property; elk frequenting road right-of-way; or elk entering an urban or human occupied area.

Responses to nuisance and property damage conflicts are detailed in the *Elk Conflict Response*

*Guidelines* document. The guidelines create a mechanism for reporting and tracking elk complaints and provide guidance to ensure a consistent response to reported conflicts. Under these guidelines all elk complaints are directed to USDA-Wildlife Services for screening. The DNR maintains a cooperative services agreement with USDA-Wildlife Services for managing wildlife conflicts caused by several species including elk. This includes maintaining a toll-free number for reporting complaints which is monitored during and after normal business hours, on weekends, and on holidays. Once a complaint is received, USDA-Wildlife Services then categorizes the conflict into high, medium, and low risk situations based on the potential impact to human health and safety. The toll-free number for the Northern Elk Zone is (800) 228-1368, and (800) 433-0663 for the Central Elk Zone

The DNR and USDA-Wildlife Services have received relatively few nuisance elk complaints. The leading complaint in the Central Elk Management Zone has been elk near or on roadways. In the Northern Elk Management Zone, the most frequent complaint has been elk eating ornamental plantings. Other complaints have included damage to fruit trees and gardens, damage to forest regeneration and damage to private property.

Most nuisance elk complaints have been resolved by providing technical assistance/advice to property owners. Educating property owners is a critical component of nuisance elk management, as most conflicts can be resolved through the implementation of various harassment or hazing techniques. Harassment measures like the installation of motion lights near ornamental plantings or physically hazing elk have worked well in most situations. The DNR and partners will continue to explore other abatement options and techniques, implementing effective methods as nuisance situations arise.

### **Forest Damage**

Elk can adversely affect timber resources and forest regeneration, and negative impacts can increase when elk populations are too large for the supporting habitat. While not viewed as significant at the current elk densities in Wisconsin, over-browsing, bark stripping, and antler rubbing can inhibit growth or kill woody vegetation.

A study undertaken by Michigan State University to determine the extent and severity of elk damage to forest crops found that heavy browsing appears to decrease stem densities and cover and increase the frequency of some herbaceous species. Browsing of greater than 50% of annual woody production affected tree height and shoot production of big-tooth aspen. Decreases in tree height and twig production of quaking aspen were observed only when 100% of annual woody growth was browsed. Browsing by elk has not been shown to reduce stem density below that of natural thinning, therefore, final stocking densities of stands at harvest are not impacted. Campa (1989) concluded that "no effects on timber production can be identified to date." Small stands, especially those adjacent to cover, appear to be most susceptible to over-browsing, however, there is no evidence to support this observation.

Additional research in the Canadian Rockies has shown established elk populations at low densities with hunter and wolf predation risk can keep elk from targeted browsing on timber regeneration, limiting damage and impacts. According to White and Feller (2001), "where elk have lower densities and are not attracted to valley bottom travel routes that are heavily used by wolves or human hunters, low herbivory results in dense, multi-aged aspen stands that are resistant to periodically higher browsing rates by fluctuating populations of elk." Both wolf predation and hunter pursuit occur in Wisconsin and are expected to limit focused elk browsing in individual harvests.

Observations through the early 2000s in northern Wisconsin showed moderate, but limited, impacts on small scale (40 acres or less) aspen clearcuts. This period was coupled with limited logging on large parcels of land in the greater Clam Lake area. Elk targeted these small, scattered timber sales as food availability was isolated and less available than previously. Storm damage salvage timber sales and the

establishment of the Good Neighbor Authority around 2015 have increased the size, density and frequency of timber stand turnover in the Clam Lake area. The establishment of elk in the southern lobe of the Northern Elk Management Zone has offered a mosaic of completed and prospective timber sales. Through current observations and location analysis, northern elk appear to be moving frequently between the various stands of regenerating timber, not targeting specific stands or areas. Some of the frequent movement can be attributed to interactions with outdoor recreators and presence of wolves. This pattern of habitat use, if continued, should limit forest damage by elk. Elk management would benefit from research conducted in Wisconsin to identify the impacts of elk on forest regeneration.

### **Elk-Vehicle Collisions**

Among nuisance events, vehicle collisions with elk can result in human injury and significant property damage. Vehicle collisions are one of the leading causes of elk mortality in both elk management zones and will continue to be a management concern into the future. Public surveys indicate support for developing management strategies that attempt to reduce vehicle-elk collisions.

The DNR works with the Wisconsin Department of Transportation, local highway and law enforcement agencies, and other elk management partners to reduce the risk of vehicle-elk collisions whenever possible. Elk crossing warning signs have been utilized in both elk management zones with success in increasing motorists' awareness of elk in the immediate area. In the Northern Elk Management Zone, a special elk warning system that utilized the signal from elk radio collars was installed along a segment of highway where most elk collisions occurred during the mid-2000s. The system included three receiving stations and seven beacon systems that would trigger highway sign lights to blink when an elk walked within a quarter mile of the highway. Large information signs at the beginning and end of this stretch of highway warned motorists that when the lights were flashing elk were close to the highway. During the first three years following installation, annual elk vehicle collisions were reduced from 2.9 to 1.4 elk collisions per 100 elk per year. While accident rates fluctuated each year after, they remained lower than accident rates prior to installation of the system. However, due to the small home range of elk, some radio-collared elk were seemingly always within a quarter mile of the warning system, such that the lights flashed for the majority of time, partially negating its value as a warning system. To reduce maintenance costs, the system has since been altered so that it flashes constantly. In addition to the illuminated warning signs, more traditional "elk crossing" signs have been installed along areas of high elk travel in each elk management zone.

In addition to warning the public of possible dangers through signage, the DNR and their partners use a number of strategies to help prevent or reduce vehicle-elk collisions. Public education and outreach have been one of the primary tools used to make motorists aware of the elk's newly established presence in each area. Billboards, fliers, print and broadcast media, and other signage have all been used to notify motorists that they may encounter elk along their travels. Additionally, DNR staff primarily collar adult elk with blaze orange radio collars that help to make elk more visible to motorists.

Fencing, highway overpasses/underpasses, habitat enhancement, hazing, rule changes to prohibit feeding and other methods have been successfully used to reduce elk collisions in Wisconsin or elsewhere. Opportunities exist that will allow the DNR to work with transportation officials, partners, and the public to identify additional methods to reduce elk-vehicle collisions.

### **FUNDING ELK MANAGEMENT**

Costs of elk management are primarily associated with staff salaries and benefits, travel, research, monitoring and habitat work that benefits many more species than just elk. These activities are currently supported by Fish and Wildlife Segregated Funds (license revenue) and Pittman-Robertson funds (tax on

sporting equipment) at a cost of approximately \$496,500 per year for management and \$149,760 for research. Partner grants through RMEF and others provides an additional \$75,000 to \$135,000 annually, primarily for habitat work, conservation education, and research/monitoring.

Elk hunting now provides a new funding source in that revenue is generated by elk hunter permit application fees, and through the sale of elk hunting licenses. The cost of a permit application was established in state statutes at \$10, of which \$7 is earmarked specifically for elk management, research and education. Revenue from the sale of the elk hunting permits (\$49 resident, \$250 non-resident) is also earmarked for elk management. More than 161,700 applications were received during the first six elk hunting seasons, helping to generate over \$1,000,000 (including cash donations). Additional revenues from elk hunting have also occurred. Within state statute, the RMEF was provided with one elk harvest authorization each year for the 2018 - 2022 elk hunting seasons. The permit was raffled by RMEF (sale at auction is not allowed) and generated approximately \$127,000. These funds were earmarked for elk management in Wisconsin.

Future elk management costs are anticipated to be covered through these existing funding sources.

## SECTION 3: FUTURE MANAGEMENT OF ELK IN WISCONSIN - GOALS, OBJECTIVES AND STRATEGIES

Goal of Elk Management Plan:

*Maintain a healthy, robust and sustainable elk population that fulfills the ecological, social, economic and cultural benefits of elk while minimizing elk-human conflicts in Wisconsin.*

**Objective A: Strive for a healthy and robust elk population in suitable habitats where public acceptance for elk is high.**

**Objective B: Minimize elk-human conflicts.**

**Objective C: Conduct research to address management needs and decisions related to elk.**

**Objective D: Develop communication strategies and outreach tools to increase public understanding of the ecological, cultural, social and economic influences of elk in Wisconsin.**

**Objective E: Provide recreational and cultural opportunities associated with elk.**

### **Objective A: Strive For A Sustainable Elk Population In Suitable Habitats Where Public Acceptance For Elk Is High.**

**Strategy A1: Manage for population increases when socially accepted and where habitat is suitable.**

*Specific to the Northern Elk Management Zone:*

***A1a. Rename the current Clam Lake Elk Range the Northern Elk Management Zone.*** The Clam Lake Elk Range was expanded in the 2012 Elk Management Plan Amendment. As elk increase in numbers and occupy range further away from the town of Clam Lake, the current name becomes overly specific for identifying the full area occupied by wild elk. The DNR intends to pursue an administrative rule change that more accurately depicts the area occupied by wild elk by renaming this area the Northern Elk Management Zone

***A1b. Modify the Northern Elk Management Zone boundaries to encompass 1,627 square miles and recognize this as the area of primary management of elk.*** This boundary adjustment will consist of major landscape features including highways, rivers, town roads and a powerline right-of-way while retaining 68% public land ownership primarily in high quality elk habitat. With the addition of the 7 square miles of private lands, there is no anticipated impact to additional habitat work or other elk management efforts but will include additional hunter opportunity and increased conflict reduction flexibility. The DNR will focus elk management activities within the management zone, primarily on publicly accessible lands, and allow herd growth related to elk densities, public acceptance, and other defined metrics to determine population objectives.

*Specific to the Central Elk Management Zone:*

***A1c. Rename the current Black River Elk Range the Central Elk Management Zone.*** As with the Northern Elk Management Zone, it is appropriate to remove specific geographic names and allow for a more accurate description of the area occupied by the current central elk herd. The DNR intends to pursue an administrative rule change that renames the areas occupied by wild elk in central Wisconsin as the Central Elk Management Zone.

***A1d. Modify the Central Elk Management Zone boundaries to encompass 367 square miles and recognize this as the area of primary management focus for elk.*** Several areas outside the current Black River Elk Range contain excellent elk habitat and are likely to be occupied by elk in the future. A slight expansion of the current range to add these areas to the primary elk

management zone would ensure their inclusion as primary elk hunting units once a hunt is established in the management zone and allow increased flexibility to utilize harvest to address local elk damage/nuisance issues. The DNR will seek a rule modification to support these changes to the boundaries of the Central Elk Management Zone.

***A1e. Manage each elk herd at sustainable and ecologically functional levels that reflect biological and social carrying capacity densities supported by public tolerance and assessed using qualifying metrics.*** The original Clam Lake and Black River elk management plan suggested a population goals of 1,400 and 390 elk, respectively, and a population density of between 1-2 elk/square miles. Since its writing, the DNR has gained increased knowledge and experience related to managing elk within the Northern and Central elk zones. At current occupancy levels of 30 and 15-20%, respectively, this plan recommends managing toward an elk density of 1 elk/square mile. This plan strives to balance all aspects of social acceptance of elk with a sustainable and ecologically functional elk population, while additionally utilizing metrics identified within this plan to minimize conflict and promoting defined population objectives.

*For potential new elk management zones or translocation between elk management zones:*

***A1f. Retain intra-state translocation as an option to augment elk populations.*** With the successes achieved through interstate transport of elk from Kentucky, coupled with growing concern over disease transmission risks associated with ungulate transport, the Elk Advisory Committee feels additional interstate translocations are not warranted in the immediate future. However, supplemental stocking that uses wild elk from within-state sources only should be maintained as a management option to support 1) herd growth in existing wild elk populations within the Northern or Central elk management zones (highest priority), or 2) the introduction of wild elk to new and suitable areas that are supported by the public.

*General strategies for both elk management zones:*

***A1g. Develop guidelines to inform circumstances where elk occupy areas outside the primary elk management zones.*** This plan seeks to recognize that there are significant amounts of suitable elk habitat across Wisconsin, the majority being outside the boundaries of the elk management zones. Public surveys indicate significant support (56% support, 19% oppose) for allowing seasonal elk movement or natural stocking to occur unhindered outside the primary elk management zones. The plan recommends that the DNR engage the Elk Advisory Committee in developing recommended guidelines that include triggers for action which rely on metrics (public tolerance, proximity to disease detection areas, etc.) for use in addressing situations when elk travel outside their primary management zone.

***A1h. Utilize assisted dispersal to encourage full occupancy within both primary elk management zones.*** Due to abundant resources, Wisconsin elk routinely establish significantly smaller home range sizes than elk in western states, and this may have contributed to slower-than-expected herd dispersal since elk were first released in the original Clam Lake Elk Range in 1995. The capture of small numbers (12-18) of mixed-age and -sex elk, followed by their transport and acclimation to unoccupied suitable habitat has been successfully used to establish new elk groups in Wisconsin, thereby providing herd expansion and potentially accelerated population growth. The plan recommends that the DNR identify areas within the primary elk management zones where assisted dispersal may be appropriate, based on elk occupancy, long-term land management practices, habitat types, and other factors. Assisted dispersal should be utilized only within the primary elk management zones until all suitable habitat within each range is satisfactorily occupied by elk.

Assisted dispersal will also allow for improved genetic variation within the Northern Elk Herd by moving Kentucky elk that were released into the Flambeau River State Forest to areas currently occupied by descendants of the original release near Clam Lake.

***A1i. Create and maintain habitat that benefits elk.*** Whether intentional or a beneficial outcome of other management practices, the DNR and its partners will create and maintain habitat that benefits elk within the primary elk management zones. The Elk Advisory Committee will work with partners to identify and prioritize elk habitat needs and incorporate them into long-term management plans.

**Strategy A2: Efficiently monitor elk populations using the most appropriate methods.**

***A2a. Annually project zone-specific population size, composition, and distribution during the quota-setting process.*** A significant number of elk management actions are heavily dependent on accurate annual projections of herd size, composition and distribution. As the use of managed elk hunting grows in importance as the primary means of managing local elk abundance, annual zone-wide and unit-specific harvest quota determinations must be made with the most accurate and current herd information. DNR staff will continue to present information on elk population size, composition and distribution to the DNR Elk Advisory Committee to ensure that elk management decisions are guided by the best available science.

***A2b. Annually review performance of population monitoring tools, information needs, and new quantitative tools and metrics.*** Wisconsin elk reintroductions have led to the unique opportunity to monitor herd growth based on known numbers and herd composition within founding herds. Through early and regular radio collaring of a high proportion of each population, a significant amount of herd data and trends are well-documented and utilized, including survival and reproductive rates. As the herds have grown, new methods of population monitoring have been incorporated in anticipation of a reduced radio-collaring effort moving into the future. Scientists with the DNR's Office of Applied Science should continue to evaluate the performance of current methods and the utilization of new population assessment tools as they become available. Scientists should also identify new data needs and monitoring methods that may be useful in supporting or improving the performance of current or new population monitoring methods.

**Strategy A3: Utilize hunter-harvested elk to provide herd data.**

***A3a. Retain mandatory in-person harvest registration.*** Information and biological sample collection at the time of in-person registration helps inform population modeling, supports management decisions and is useful in disease detection. Collecting herd and harvest data of the highest quality is dependent on first-hand interviews with hunters and direct contact with harvested elk. The plan recommends that the DNR maintain existing rules requiring mandatory, in-person registration of all elk harvested, and annually provide tissue collection kits to be utilized by staff and elk hunters to aid in collecting various tissue samples at the time of registration.

***A3b. Demonstrate collaboration with tribal partners for sharing harvest results.*** Elk harvested by tribal members, pursuant to tribally regulated seasons, provide equally informative data as those collected from state hunters. The DNR will continue to request hunter harvest elk data and other information regarding elk from GLIFWC. Elk harvest data, shared in a timely manner, ensures that data is utilized in assessing herd health and management.

#### **Strategy A4: Monitor and manage elk health.**

***A4a. Collaborate with the DATCP and other partners to identify existing and new threats to elk health, reduce the risk of their introduction into wild elk populations when possible and conduct surveillance measures.*** The DNR routinely monitors for wildlife diseases that are present both within and outside of Wisconsin that pose a potential risk to elk herd health. To date, surveillance has focused primarily on detection of CWD, bovine tuberculosis, bovine brucellosis and other diseases of concern to both the agricultural industry and wildlife populations. As emerging disease agents are identified that could threaten elk and/or other wild or domestic ungulate populations, they will be incorporated into prevention and surveillance plans that help identify their presence, prevalence, and distribution in Wisconsin.

***A4b. Develop actions to address CWD and other threats to elk health.*** CWD continues to be detected in deer in new areas of Wisconsin, including within the primary counties of the elk herds, and is likely to eventually be detected within wild elk. The plan recommends the DNR, and partners continue to collaborate on means of preventing the spread of CWD to wild elk, work with the DNR's CWD Implementation Team to develop options for responding to detections in elk and within the elk management zones, and incorporate new knowledge and approaches into the Wisconsin CWD Response Plan. If other threats to elk health emerge, the DNR will address them through a similar process.

***A4c. Develop actions to address transient elk in CWD-affected counties.*** Wild elk have occasionally traveled outside the areas identified as the primary elk management zones, potentially going to areas where CWD or other ungulate diseases have been detected. This is likely to continue. The plan recommends the DNR, with the advice of the Elk Advisory Committee, develop guidelines for responding to such situations and incorporate them into the Wisconsin CWD Response Plan.

***A4d. Develop elk health testing summaries and make them easily accessible to the public.*** Concerns regarding animal health and risk of disease spread has highlighted the need for more transparent access to results of elk disease testing conducted by the DNR. The DNR will enhance public access to elk health testing results via the DNR website and communicate their availability to the public and key stakeholder groups.

***A4e. Develop outreach materials regarding potential elk diseases.*** Public concern regarding the potential impacts of cervid diseases will likely increase as CWD is detected in more areas of the state and elk populations grow and fully occupy their range. The plan recommends that the DNR, with the advice of the Elk Advisory Committee, develop outreach materials in collaboration with the DNR's Office of Communications to help hunters and the public become better informed regarding current and potential health threats, including information that will increase their ability to identify specific diseases, and develop a means for the public to report observations of sick elk.

***A4f. Collect biological samples for use in disease detection in elk.*** In addition to hunter harvest, biological tissues may be collected from vehicle-killed elk and other mortalities that provide viable samples for use in disease detection. The plan recommends that the DNR's Wildlife Health program will provide staff and partners with instruction and collection kits to be utilized whenever opportunities for viable tissue collection presents itself.

***A4g. Work with County Deer Advisory Councils (CDACs) within and adjacent to elk management zone to help them understand how their recommendations may impact elk.*** Deer abundance, disease detection, season structure, forest impacts by deer, and a wide range of other recommendations made in the interest of deer management and deer hunting can also have significant impacts on elk populations, elk management, cultural impacts, and more. The plan

recommends that DNR liaisons to CDACs provide members with elk management information to ensure that members understand the implications of deer management activities on elk and take them into consideration when making deer management recommendations.

**A4h. Update feeding restrictions for elk.** Baiting and feeding sites may be the most likely source of exposure for contagious disease transmission and serve as a vector for the spread of ungulate diseases, including CWD. Baiting is a prohibited method of hunting elk. This plan recommends a change to the rules to discontinue recreational feeding sites if elk become present.

## **Objective B: Minimize Elk-Human Conflicts**

### **Strategy B1: Monitor and respond to forest and agricultural damage caused by elk.**

**B1a. Respond to agricultural damage conflicts through the Wildlife Damage Abatement and Claims Program.** Section 28.889, Wis. Stats., currently provides a system for wildlife damage abatement, assistance, and elk crop damage compensation to commercial agricultural producers. The plan recommends that the DNR, working with cooperators, continue to address elk related agricultural conflicts in accordance with its statutory authority.

**B1b. Maintain an integrated conflict management program to address elk-caused agricultural damage that provides both lethal and non-lethal control options.** The *Elk Conflict Response Guidelines* were developed in part to provide guidance to staff and partners when responding to agricultural conflicts. This plan recommends that document be considered the primary reference for staff and partners when resolving agricultural damage situations and will be made widely available to them. This document should be reviewed and updated periodically as new policies or techniques become available.

**B1c. Explore and utilize current and new elk abatement options and techniques.** Addressing agricultural damage and forestry impacts caused by elk is still relatively new for Wisconsin. The plan recommends that the DNR work with partners to continue to search for new methods, tools, technology and harvest strategies that will most successfully and efficiently resolve elk conflicts. In accordance with public desires expressed in surveys, responses are anticipated to emphasize non-lethal methods but will remain flexible to allow for the use of annual hunter harvest and lethal methods according to the *Elk Conflict Response Guidelines*.

**B1d. Develop annual summaries of elk damage utilizing data from the Wildlife Damage Abatement and Claims Program.** The plan recommends that the DNR annually summarize the location, type, and severity of all agricultural damage caused by elk, and describe the abatement measures used, their cost, and other pertinent information regarding the elk damage management program. Annual reports will be shared with stakeholders and with the general public via the DNR's website.

**B1e. Appraise all elk damage to commercial agriculture.** While the maximum compensation to individual agricultural producers caused by elk is \$10,000, appraisal of damage will not cease after the compensation cap has been reached in order to provide a full assessment of damage caused by elk. Wildlife Damage Abatement and Claims Program staff will work with partners at USDA-Wildlife Services to ensure that all elk damage to agriculture crops that are enrolled and eligible for compensation in the Wildlife Damage Abatement and Claims Program be appraised.

### **Strategy B2: Monitor and respond to nuisance situations caused by elk.**

**B2a. Maintain a cooperative agreement with USDA-Wildlife Services to respond to elk nuisance situations.** The plan recommends the DNR continue to work cooperatively with USDA-

Wildlife Services to fulfill elk conflict management. To do this, it is recommended that the DNR maintain a cooperative agreement with USDA-Wildlife Services which authorizes USDA-Wildlife Services to provide services for elk-human conflict as directed by the DNR and as detailed in the *Elk Conflict Response Guidelines*. Agreements should be reviewed annually by both parties.

***B2b. Provide outreach and training to staff and partners who may respond to nuisance situations that involve elk.*** The *Elk Conflict Response Guidelines* were developed to provide guidance to staff and partners when responding to nuisance situations and include thresholds for the severity of the situation and appropriate response. The plan recommends that this document be considered the primary reference when resolving nuisance situations and will be made widely available to them. This document should be reviewed and updated periodically as new policies or techniques become available. In addition to providing written guidance, staff and responding partners should be provided opportunity for training that will prepare them for responding to various elk nuisance situations.

### **Strategy B3. Work with landowners to increase knowledge of abatement techniques.**

***B3a. Engage locally to address issues related to elk damage and nuisance.*** Opportunities to provide face-to-face interaction with local producers and landowners are invaluable in building the DNR's credibility and disseminating information that may help landowners resolve agricultural and forest damage and nuisance conflicts. DNR staff should identify and participate in events where important stakeholders are present to share general information pertaining to elk damage management and abatement techniques.

***B3b. Utilize statewide and local groups to provide outreach.*** Stakeholder groups often utilize newsletters, websites and other outlets to provide information to their members. The plan recommends that the DNR work with the leadership of relevant stakeholder groups to provide content related to abatement, annual summaries, and other information related to elk damage and nuisance.

***B3c. Update current and develop new outreach materials regarding human-elk conflicts for public distribution.*** Elk herds will benefit from a more informed public, and therefore materials that includes information about elk ecology and behavior, contact information for agency assistance and descriptions of general abatement strategies that individuals can employ when attempting to address nuisance and damage problems, will be updated. The plan recommends that the DNR, with the advice of the Elk Advisory Committee, develop materials for the public that will foster coexistence with elk in Wisconsin.

### **Strategy B4: Minimize elk-vehicle collisions.**

***B4a. Explore methods that help reduce the occurrence of elk-vehicle collisions.*** Vehicle collisions are one of the leading causes of mortality for elk in both management zones. Fencing, highway overpasses/underpasses, warning signs and other methods have been successfully used to reduce collisions in Wisconsin and elsewhere. The plan recommends that the DNR work with transportation officials and partners to identify methods that may reduce the occurrence of elk-vehicle collisions.

***B4b. Utilize signage and other warning systems on roadways and consider new warning techniques.*** Various highway warning systems have proven effective in alerting motorists of the possibility of elk in the roadway. The plan recommends that the DNR continue to collaborate with transportation officials to utilize signage and warning systems where needed, and to explore new warning system options as they become available.

***B4c. Utilize Elk Conflict Response Guidelines for the for the disposition of elk carcasses.*** As elk populations grow and occupy their management zones, the frequency of elk-vehicle accidents or other non-hunting causes of mortality will increase. Experience indicates that these animals are valued as a source of meat and other parts (hides, antlers, etc.). This plan recommends the *Elk Conflict Response Guidelines* be the primary reference document determining the process and final disposition of elk carcasses. Within the document, guidelines identify documentation strategy, process, health testing and other requirements.

## **Objective C: Conduct Research And Monitoring To Address Management Needs And Decisions Related To Elk.**

### **Strategy C1: Refine methods that help annually determine population size and distribution.**

***C1a. Identify minimum annual goals within each elk herd to be fitted with tracking collars.*** Monitoring using tracking collars will continue to be an important tool to provide data that will inform population models and annual herd estimates, allow potential nuisance situations to be monitored, and for conducting other research. The available effort to deploy collars has historically been based on staff availability and other work priorities, but no annual goals were defined to ensure the number of collars deployed provided meaningful results. Although this approach has proven sufficient at past and current population levels, collaring similar percentages of the population in the future is not expected to be possible or necessary. Because tracking collars provide invaluable information, minimum annual collaring goals should be established to ensure that enough collars are functioning and providing data that adequately inform population models and to support management needs.

### **Strategy C2: Identify factors that limit elk population growth.**

***C2a. Develop a comprehensive study that looks at the wide range of factors that influence the population dynamics of elk in Wisconsin.*** In the Northern Elk Herd, initially high population growth gave way to slower growth, spawning concerns among staff and the public regarding the impact of predators and habitat on elk herd growth. Recognizing that research is needed to identify the factors limiting elk population growth, ongoing research opportunities may lead to potential management actions that ensure herd growth and long-term sustainability. Should disease agents be identified that impact elk populations, additional studies should be initiated specific to disease impacts.

### **Strategy C3: Determine the impacts of harvest on elk population dynamics.**

***C3a. Determine how elk harvest rates impact bull age structure.*** Maintaining a bull age structure that includes adequate numbers of mature bulls is a desirable management strategy because of the potential impact that mature bulls have on herd dynamics and hunter/viewer satisfaction. The age structure of bulls may change over time if season structure changes, or if hunters remove herd bulls by selecting for large antlers thereby causing the average age of bulls to decline. The DNR should continue to monitor elk harvest to determine its impact on standing bull age-structure and identify how changes in age structure impact herd dynamics. These impacts should be considered when determining appropriate tag allocation.

### **Strategy C4: Measure social tolerance for elk among stakeholders.**

***C4a. Conduct an economic assessment of elk on local communities.*** The economic impacts of elk-related tourism are capable of influencing management decisions within each elk

management zone, not only by the DNR and partners, but by local communities as they make decisions that influence tourism, elk habitat, viewing areas and more. The DNR should use surveys to measure the net financial impact of elk on local communities within elk management zone.

***Utilize surveys to measure support for elk and to identify areas of concern.*** Wisconsin's elk population is expected to grow and expand. A variety of methods can be used to gauge public sentiment toward elk, identify benefits and areas of concern, and influence management decisions and actions. The DNR should use surveys as needed to gauge public support for elk and various management actions. Prior to the writing and implementation of the next elk management plan, a more comprehensive statewide survey should be conducted to inform long-term recommendations and actions.

**Strategy C5: Conduct research to inform habitat management decisions.**

***C5a. Complete a cost/benefit analysis of creating and maintaining wildlife openings.*** The Wisconsin DNR and several partners have invested significantly in the creation and maintenance of wildlife openings that benefit elk in forested areas. Past analysis indicates that openings have value, but that value may change over time as forests mature and forest management priorities change. The plan recommends that the DNR, in collaboration with partners, conduct research to evaluate the need and value of wildlife openings as a benefit for elk, or if limited resources should be focused elsewhere.

***C5b. Assess what habitat types elk are using over the long-term, five or more years after release.*** Managing elk habitat and predicting areas of elk expansion requires an understanding of elk habitat requirements and preference. The intensive monitoring of elk locations through GPS-collaring will enable analysis of elk resource selection. The DNR should analyze elk resource selection over time as the elk population grows and expands.

***C5c. Conduct research to measure the impacts of elk on forest regeneration.*** Light to moderate deer browsing has been found to increase forest biodiversity and provide positive benefits to forest health. However, if browsing is greater than what a forest can withstand, future forest regeneration could become compromised, and available browse for future generations of deer can become depleted. The DNR should conduct research to determine if elk similarly impact Wisconsin's forests and how to apply this knowledge to elk management.

***C5d. Monitor forest regeneration within the primary elk management zones.*** Forest Regeneration Metrics are being applied throughout the state to measure the impacts that deer have on forest regeneration. The DNR will gather Forest Regeneration Metrics within both primary elk management zones to measure deer and elk browsing impacts at current elk densities and develop a baseline for use in measuring future forestry impacts caused by elk.

**Strategy C7. Prepare for future assessment of genetic diversity of Wisconsin elk herds.** A primary goal of the Kentucky translocation effort was to introduce new genetics into the original Michigan lineage of elk in Wisconsin. While it will take several generations to measure the impact of this, the DNR should collect tissue samples and store both samples and genetic data to allow this analysis to occur in the future.

***C7a. Create a tissue sample repository and database.*** DNR biologists should continue to obtain genetic samples from each elk from which viable samples can be collected, including live capture and dead elk. The DNR should create a repository for all tissue samples collected from Wisconsin elk and a database for associated information.

## **Objective D: Develop Communication Strategies And Outreach Tools To Increase Public Understanding Of The Ecological, Cultural, Social And Economic Influences Of Elk In Wisconsin.**

**Strategy D1: Utilize public surveys, social science literature and public communications outlets to identify and address sensitive issues surrounding elk management.** Periodically, and as recently as 2018, public surveys have provided insight into the public's acceptance and tolerance levels of elk and helped identify their management preferences for elk that have proven useful in directing or supporting management actions.

***D1a. Utilize the most recent social science literature, public surveys and other methods to evaluate public opinion about elk as the need arises.*** The plan recommends that the DNR consider using surveys to measure public attitudes toward elk, especially as the herds grow or occupy new areas both inside and outside of the primary elk management zones. The DNR should keep abreast of current social science literature, and use surveys as needed to identify public preference for various management actions, and to measure the public's acceptance of elk in Wisconsin.

**Strategy D2. Enhance transparency and accessibility of information regarding elk in Wisconsin.** There are a variety of methods that the DNR can use to inform and educate the public regarding elk ecology and management in Wisconsin that will serve to build advocacy and enhance transparency.

***D2a: Continue to share elk management information on the DNR website and other public communications tools.*** The internet has been a constant and primary method for sharing news, recreational opportunities, and information regarding elk in Wisconsin. As technology and communications strategies evolve, the DNR's Wildlife Management Program and Office of Communications should continue to explore and utilize new and existing methods of sharing elk management information with the public.

***D2b. Develop an internet-based elk metrics system.*** The Deer Metrics System was created in 2014 as a method of providing detailed information to the public regarding deer hunting and management. The residents of Wisconsin would likewise benefit by having access to similar information regarding elk. To provide transparent and timely sharing of data related to elk management in Wisconsin, the plan recommends that the DNR create an Elk Metrics System to serve as a repository for elk-related information. The system should contain useful information regarding elk biology and population dynamics, harvest, disease monitoring and testing results, season frameworks and regulations, agricultural damage and nuisance reports, hunter surveys, and more, and be easily accessible through the DNR website.

***D2c. Ensure that the Wisconsin Elk Management Plan 2024-2034 is widely available to the public and our partners in elk management.*** This document provides a comprehensive overview of elk ecology and management in Wisconsin and summarizes objectives that will guide decision-making processes regarding elk in future years. As such, it serves as an effective outreach tool to increase public understanding of, and appreciation for, elk that can help residents make informed decisions regarding elk. The plan should be posted on the DNR website, and hard copies made available at agency offices and service centers.

**Strategy D3: Encourage, expand and enhance participation of local, county, state, federal and tribal agencies and other partners in elk management discussions and processes.**

***D3a. Host an annual elk summit to engage partners in elk management.*** Agencies within each elk management zone would benefit from an annual gathering which encourages and engages

partners to share issues related to elk management successes, challenges and outreach efforts. To achieve this, the DNR should host an annual meeting to enhance relationships and encourage collaboration. Representatives of county, state, federal, and tribal partners, sectors such as tourism, forestry, and business, and others that interface with the local elk population should be encouraged to attend.

***D3b. Participate in organizational and local events that enhance public knowledge about elk in Wisconsin.*** Local community events and organizational gatherings provide excellent opportunities to engage and educate the public regarding wild elk. DNR staff and partners have done much already they should continue to utilize relevant public meetings to engage the public on issues related to elk.

***D3c. Recognize the value of tribal partnerships in elk management.*** This plan recognizes that the well-being of the elk herd is benefited by a collaborative relationship between the DNR and tribal nations. The DNR recognizes and respects tribal sovereignty, and acknowledges that this plan in no way intends, or should be construed, to modify, alter, abridge or in any way affect treaty reserved rights as they have been established by the federal government, court decisions and stipulations. The DNR will implement its authority in implementing this plan in a way that does not infringe upon the established rights and sovereignty of tribal entities.

#### **Strategy D4: Enhance communication of elk research.**

***D4a. Develop a communications plan to share elk research projects and results, including work that has been done to date.*** It is important to keep the public informed on elk research activities and findings. This plan recommends the DNR develop and execute an ongoing proactive communications plan to provide timely reports of research activities and results.

**Strategy D5: Ensure that communication among members of the Elk Advisory Committee is timely and sufficient to support representative input and effective elk management decision-making processes.** The DNR Elk Advisory Committee is charged with the development of recommendations regarding elk management in the state. Members include DNR staff and representatives from relevant constituent groups. Committee members must be provided data and information in a timely fashion. In doing so, it allows them to confer with their organizational leadership and members, make informed recommendations and be kept apprised of policy and issues of relevance to elk management.

***D5a. Hold biennial meetings of the DNR Elk Advisory Committee.*** The committee should meet at least two times each year. Meetings should generally be scheduled late fall and early spring to address various aspects of this plan, determine data collection and monitoring needs for the year, annual review of population model output and setting of harvest quotas for the fall hunting season provide updates on stakeholder activities related to elk.

***D5b. Provide for transparent and timely sharing of data.*** To ensure that DNR Elk Advisory Committee members can adequately review and consider information and gather feedback from the organization or sector they represent, the DNR should strive to provide information as far ahead of meetings as possible. Partner representatives on the committee will be encouraged to do likewise.

### **Objective E: Provide Recreational And Cultural Opportunities Associated With Elk.**

**Strategy E1: Provide an annual elk hunting season which opens the Saturday nearest Oct. 15.** Since elk were first released in 1995, elk hunting has been planned for and considered a benefit of managing a

herd in Wisconsin. During the first six elk hunting seasons, hunter interest was high with over 161,700 hunters applying for the chance to draw one of few state elk tags. Interest in elk hunting is likely to grow in the future as the elk herds expand, nonresident hunting opportunities arise, and harvest authorization availability increases. Hunting will also continue to grow in importance as a source of funding for elk management and research, and as a management tool as a balance between social tolerance and elk populations is sought. Research and monitoring of Wisconsin elk indicates that the majority of cow elk are bred before Oct. 15.

***E1a. Establish Elk Hunting Units and utilize regulated hunting as the primary method of managing elk abundance and distribution.*** The boundaries that identify the current Clam Lake and Black River elk ranges currently serve dual purpose as single elk hunting unit boundaries, allowing for little control of elk harvest distribution through their range. As elk numbers increase in both elk management zones, managed hunting will grow in importance as a herd management tool, as will the need to allow or prevent harvest within segments of the management zones. The growing herds will also support higher harvest quotas as well as create the potential for increased nuisance/damage issues. Public surveys indicate a strong desire among constituents that elk damage, nuisance and disease situations be addressed through hunting. To implement the plan's recommendations, the DNR should seek rules that divide each primary elk management zone into multiple elk hunting units that will provide effective distribution of elk harvest. Elk hunting units should also be established that encompass areas outside the primary elk management zones where public tolerance of elk may be low and provide flexibility and options for addressing elk damage/nuisance situations through hunting. Elk harvest quotas should be established for each hunting unit (or grouping of units) and hunters would be required to apply for, and hunt within, specific hunting units based on the quota allocation and application submission. The DNR will retain the authority to close a unit to hunting if a quota is reached.

***E1b. Lengthen the elk hunting season by eliminating the split season.*** Wisconsin elk hunting season currently begins in mid-October, ends prior to the November gun deer season, and resumes in December. This split serves no biological or enforcement purpose. To maximize elk hunter opportunity, the DNR should retain the current opening date in mid-October but pursue a rule change that provide a continuous season that runs through the Sunday nearest Dec. 15.

***E1c. Retain all current application and winner requirements, as well as the random draw system to select elk hunt participants.*** Elk license applicants are required to submit one \$10 application through Go Wild that enters them in a random license drawing. Nonresidents are allowed to apply once the number of permits exceeds 100. The DNR should retain the current process for allocating elk hunting licenses and harvest authorizations through the random draw and successful tag winners may only receive one tag/lifetime.

***E1d. Provide a longer period for the public to apply for an elk hunting license.*** The application period for the first two elk hunts, in 2018 and 2019, was May 1 through May 31 each year. This allowed the DNR Elk Advisory Committee an opportunity to make annual population projections and recommend harvest quotas. With high confidence that elk hunting will occur annually, the application period for elk should open March 1, the date in which the new license year opens. Further, the application period shall close May 31. The DNR should enhance the Go Wild system to accept elk hunting applications during this timeframe with harvest authorization winners selected after the completion of the application period.

***E1e. Develop a marketing plan to encourage elk hunt participation.*** Although interest in elk hunting has been high during the initial seasons, a significant number of hunters reportedly missed the application deadline due to a lack of awareness of this opportunity. The plan recommends that the DNR's Wildlife Management team collaborate with the DNR's Office of Communications to develop a marketing and communications plan to raise awareness among

hunters regarding the growing opportunities to hunt elk in Wisconsin and the associated application process.

***E1f. Retain current rules that allows any-weapon use.*** Elk hunting and license issuance are once-in-a-lifetime opportunities in Wisconsin with a season framework that attempts to maximize hunter experience and likelihood of success. The plan recommends that the DNR retain current rules that allow hunters to pursue elk during the entire open season with the weapon of their choice, as long as that weapon falls within certain minimum requirements as defined in Wis. Admin. Code s. NR 10.11.

***E1g. Retain carcass tag requirements.*** Currently, hunters must possess a carcass tag while hunting, validate the tag immediately and affix the tag to the carcass if they leave it. These requirements assist law enforcement staff during routine patrols and investigation activities. The DNR should retain these carcass tagging requirements.

***E1h. Develop an incentive program to provide access to private lands.*** As elk numbers increase in areas where agricultural damage or other social tolerance levels may be exceeded, access to private lands to harvest elk will be important in addressing nuisance and damage situations, or for providing hunting opportunity. The DNR should create an incentive program that rewards private landowners who allow meaningful elk hunter access that produces measurable benefits and harvest results.

***E1j. Measure and manage for high levels of elk hunter satisfaction.*** With extremely low levels of participation, the first elk hunts provided high satisfaction by most hunters. As participation levels increase, hunters are likely to face increased crowding of elk hunters on public lands, interference from other hunters (elk or otherwise), and difficulty gaining access to elk on private land. The DNR should annually survey elk hunters to measure overall hunter satisfaction and identify specific issues that may be addressed through changes in elk management, public outreach, rule or other methods as needed.

**Strategy E2: Encourage responsible elk viewing and promote elk-related tourism.** Elk viewing is a valuable recreational activity that stimulates local economies and helps increase the public's appreciation for elk, their habitat and wildlife management in general. Although elk viewing has grown as a recreational activity, significant efforts have not been made to manage practices specifically for this activity. The DNR, in collaboration with partners, should explore ways to encourage and expand this activity.

***E2a. Develop information materials regarding non-hunting, elk-related recreation that helps maximize viewing enjoyment while minimizing negative impacts on elk.*** Elk-related recreational activities such as elk viewing, calling, and shed antler hunting continue to grow in popularity. While these activities are encouraged by the DNR if done irresponsibly, these same activities can disrupt breeding activity or cause physical exertion and stress to elk during times when they may be in less than peak condition due to the rigors of winter. Ultimately, these activities may lead to unintended negative impacts on elk populations or distribution. The DNR, with the advice of the Elk Advisory Committee, should develop information materials to help educate outdoor enthusiasts on how to get the most of their elk-related experience while minimizing the potential negative impacts that their activities may have on elk.

***E2b. Work with local and state tourism entities to promote and educate elk-related tourism.*** A significant proportion of the public remains unaware of Wisconsin's elk reintroduction efforts and elk-related recreational opportunities. The DNR should partner with the Department of Tourism and local entities to develop and expand the distribution of printed materials, web content, video,

and other communications tools that will help inform and enhance the public experience of enjoying elk-related activities through education and opportunity.

***E2c. Identify habitat development/management practices that help promote elk tourism and viewing.*** The DNR and its partners create and maintain forest openings for the benefit of elk and other wildlife. Much of this work is done with the intent of not only providing habitat known to be desirable and beneficial for elk, but secondarily could provide prime opportunity for recreational elk viewing. The DNR, in collaboration with partners, should attempt to create wildlife habitat that is beneficial to elk while also taking recreational viewing into consideration.

**Strategy E3. Address other recreational activities that have the potential to negatively impact elk.**

Elk are highly adaptable animals that occupy a variety of habitats, often coming in close proximity to human activity that can impact their behavior, productivity, health and distribution.

***E3a. Develop guidance regarding the use of recreational vehicles in elk management zones.*** It is well documented that elk avoid areas immediately adjacent to recreational vehicle trails. Both of Wisconsin's elk management zones are popular areas for recreational trail riding. The DNR should develop guidance materials and work with partners to inform trail riders of how to minimize any undesirable impacts of their activities on elk. Further, the DNR should monitor elk activity as it relates to recreational trail systems and provide input, when appropriate, during public review processes regarding the creation of new roads and recreational vehicle trail system development.

***E3b. Retain the DNR's commitment that no roads will be closed for the benefit of elk.*** The 2012 *Elk Management Plan Amendment* and the 2011 state budget contained language that promised no requests would be made by the DNR to close existing roads for the purpose of protecting elk. Elk must adapt to existing roads and other human activity in Wisconsin. Property managers and land management agencies may close roads for a variety of reasons not related to elk and doing so is done at their discretion. While the DNR may be asked to participate in reviews regarding access to public forests, the DNR should not request closures of existing roads owned and managed by our partners.

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## **Appendix 1: Public Awareness of and Attitudes towards Elk and Their Management in Wisconsin**

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## About this Report

This report presents results of a statewide survey of Wisconsin residents regarding their awareness of and attitudes towards elk. It also examines the public's tolerance for various elk behaviors and preferences for management actions in response to six scenarios describing potential human conflicts with elk, as well as the preferences related to the hunting of elk in Wisconsin. The study was conducted in support of the Wisconsin Department of Natural Resources' wildlife management program. This report presents study findings, interprets the information within pertinent contexts, and may identify potentially useful lines of additional inquiry. This report does not, however, include specific recommendations or policy prescriptions.

## Report Author

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## Acknowledgements

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Kevin Wallenfang, Wisconsin Department of Natural Resources' big game ecologist, and Bob Nack, chief of the Big Game Section, were lead proponents for the conduct of this study. Kevin and Bob also contributed much thinking to the research questions that were addressed. Bob Holsman, Jordan Petchenik and Lauren Bradshaw reviewed and provided critical feedback on the sampling methodology and survey instrument. David Fulton and Eric Walberg, USGS and University of Minnesota, provided valuable insights into lines of inquiry based on their parallel work in Minnesota. Members of the department's Elk Advisory Committee were influential in the study design and reviewed survey questions. External organizations with a presence on the committee included the Ho-Chunk Nation, Rocky Mountain Elk Foundation, Wisconsin Wildlife Federation, U.S. Forest Service, Wisconsin Bowhunters Association, Wisconsin Conservation Congress, Great Lakes Indian Fish and Wildlife Commission, Jackson County Forestry and Parks, and University of Wisconsin–Stevens Point. Adam Mednick served as a “naïve” pre-tester of the questionnaire. Anna Brose produced maps for the report and numerous presentations. Funding for this research was provided through a Wildlife Restoration (Pittman-Robertson) grant.

## Key Findings

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Overall, the public generally:

- holds similar attitudes across the state towards elk and their management.
- holds very positive feelings towards elk.
- are highly supportive of elk reintroduction efforts—residents in counties that currently have elk are supportive of expanding elk range within their counties, while residents in counties that have suitable habitat are supportive of introducing elk to their counties.
- tends to agree with Department of Natural Resources’ population and density goals for elk in both the Clam Lake and Black River herds.
- is most concerned about maintaining the health of the elk herds in Wisconsin.
- is tolerant of elk leaving their designated range, with a majority supporting the Department of Natural Resources taking no action in this situation, given no other concerns are present.
- prefers to address the issue of crop damages caused by elk through economic compensation to farmers for their losses, as well as subsidies towards fencing to exclude elk from their fields.
- prefers non-lethal responses including trapping and relocating elk or hazing elk to encourage them to leave an area, in situations where an elk may be threatening trail users or damaging fences.
- is accepting of lethal responses to scenarios where the actions of an individual elk threaten the health of the elk herd; however, the general preference of the public is for a hunter to be provided the opportunity to harvest the animal rather than for a wildlife professional to do so.
- is supportive of holding a managed hunt for elk; however, given the limited nature of the hunt due to current elk population levels, a season framework that allows hunter choice of weapon within a single time period was the most popular.

## Introduction

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Once widespread here and across North America, elk were eliminated from Wisconsin in the 1880s due to unregulated hunting and habitat loss. Over 130 years later, they once again live in our state. Elk are found in two distinct ranges in Wisconsin. The largest and oldest elk herd in the state is the Clam Lake elk herd. The Clam Lake herd ranges across Ashland, Bayfield, Price, Sawyer and Rusk counties in northern Wisconsin. The other, the Black River elk herd, is found in the forested region of Jackson County in the central part of the state.

The reintroduction of elk to Wisconsin has been an ongoing process for more than 25 years. In 1993, the Wisconsin state legislature authorized the University of Wisconsin-Stevens Point (UW-SP) to evaluate the potential for reintroducing elk to the Great Divide District of the Chequamegon-Nicolet National Forest (CNNF) near Clam Lake. During February 1995, 25 elk were trapped in Michigan's lower peninsula, held in a quarantine facility while undergoing disease testing and transported to the Clam Lake release site. After being held in a pen for an acclimation period, the elk were released into the CNNF in May 1995. At that time plans were also made, but not carried out, to reintroduce elk to the Black River State Forest near Black River Falls of west central Wisconsin (Jackson County). Management responsibility for the Clam Lake herd was transferred from the UW-SP to the Wisconsin Department of Natural Resources (Wisconsin DNR) in 2000 after the initial reintroduction study was considered a success. At that time, approximately 40 elk were present in the herd.

In 2014, the department entered into an agreement with the state of Kentucky to translocate as many as 150 wild elk over a period of up to five years. The overall plan involved dividing these animals into two areas of the state, including releasing up to 75 elk to establish a new elk herd in the Black River State Forest with a long-term population goal of 390 elk. This effort occurred in 2015 and 2016 with 73 elk released. The plan also called for adding up to 75 elk to the existing Clam Lake herd with a long-term population goal for the Clam Lake herd of 1,400 elk. One year of this effort was completed in 2017, resulting in the release of 31 Kentucky elk into the Flambeau River State Forest (FRSF) near the town of Winter. Early spring of 2019 marked the final translocation effort, with 48 elk transported to the FRSF in April. Including calves born while in quarantine, 60 elk were released in August.

In March 2018, elk herd projections for the Clam Lake herd exceeded the 200-elk threshold established in administrative rule for offering a limited elk hunting season. As a result, Wisconsin held its first managed elk hunt in state history in 2018 with ten harvest tags split equally between the state and tribes. By late 2019, the Clam Lake elk herd was projected to exceed 230 animals (not including those translocated from Kentucky) and the Black River elk herd was projected to be 75-80 individuals.

The Wisconsin DNR has been managing the state's elk population guided by a plan that was last updated in 2012. In 2017, members of the Wisconsin DNR's elk advisory committee comprised of department staff and representatives from partner organizations, including the Rocky Mountain Elk Foundation, concluded that an updated elk management plan would be merited, given the nearing conclusion of the current translocation of elk from Kentucky, and populations levels within the Clam Lake herd reaching the threshold for holding a managed hunt. The

advisory committee also acknowledged the need for additional information to allow it to accurately represent current public opinions of elk in Wisconsin, as well as public preferences for different ways in which the Wisconsin DNR may respond to management issues related to different elk behaviors to help better inform development of an updated management plan.

The research reported here was conducted to inform the Wisconsin DNR's wildlife management program on the public's awareness of and attitudes about elk as well as the public's tolerance for different types of elk behavior and preferences for management actions in response to three different elk-human interaction scenarios and two scenarios related to the potential infection of elk with chronic wasting disease (CWD). Finally, public opinions on elk hunting in Wisconsin and preferences for elk season structures were also assessed.

The results presented in this report are based on data generated from a questionnaire mailed to 2,300 Wisconsin residents, stratified to ensure representation of those living in elk range and from an online panel of 1,100 residents that included 300 elk-range residents. Responses from this sample were weighted to reflect the 2010 Census population of Wisconsin with a margin of error of  $\pm 3\%$ .

## **Methods: Sampling, Data Collection and Analysis**

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### ***Questionnaire Design and Development***

Public attitudes towards elk in Wisconsin were assessed using two survey modes: a postal survey of randomly selected Wisconsin households and an online survey of panelists recruited by a third-party firm to represent residents of the state. Questions were developed through consultation with the Wisconsin DNR's big game ecologist and Big Game Section chief, the elk advisory committee and a review of elk related survey work conducted in Minnesota. After an initial draft was developed, it was presented to key members of the elk advisory committee for review and feedback, followed by an internal review by the Bureau of Wildlife Management and agency administration. The revised questionnaire was then pretested by staff volunteers who were naïve to the project. Minor revisions (e.g., clarifying ambiguous language, adding response options) were made to the draft which was then shared with Wildlife Management for final review and approval.

### ***Sampling***

As noted in other studies we've conducted, a standard public opinion survey for Wisconsin might contact between 400 and 1,000 people. We drew a larger sample ( $n = 3,400$  including both mail and email elements) because we wanted to assess potential differences in elk attitudes and preferences between populations living in or near current elk range and those living in counties where no suitable elk habitat exists.

An eight-page questionnaire was mailed to 2,300 randomly selected Wisconsin adults (minimum age of 18 years old) residing in Wisconsin households. Household addresses were purchased

from a commercial firm and randomly drawn using a mix of address-based-sampling of U.S. Census records and known rentals. We followed standard mail survey protocols. A maximum of three contacts were made with each household: 1) an initial questionnaire with a cover letter (signed by the Wildlife Management bureau director) and a first-class hand-stamped, addressed return envelope (known as the full mailing); 2) a follow-up postcard that served as a “thank you” for returning the questionnaire or as a reminder to please complete and return it; 3) and a second full mailing sent to all non-respondents. Mailings were conducted in August-October 2018.

A concurrent survey was conducted via an online panel. The third-party survey firm guaranteed 900 completed questionnaires from participants selected to mirror the demographics of the state (or a better representation of the demographics than would be obtained from a mailed survey) plus 300 from counties in or adjacent to current elk ranges. Because the online format could manage survey length more effectively by allowing respondents to skip questions that do not apply to them, this version of the survey contained some additional questions that would not apply to most respondents or would have rendered the printed survey confusing.

Online panelists were e-mailed a link to an electronic questionnaire hosted on the Wisconsin DNR’s survey platform. The e-mail message was routed through the company from which the panel was recruited and maintained. To ensure demographic representation of the statewide sample, age-gender quotas were established based on distributions from the U.S. Census. Access to the survey was closed when the number of completed surveys in each quota bin was achieved. For counties in or near elk range, no demographic quotas were established to increase the available sample for this group.

The response rate is based on a formula that divides the number of returned questionnaires by the total number mailed, minus the number of cases determined to be ‘non-sample.’ For this study, a non-sample is defined as respondents who are deceased or mailings were undelivered with no forwarding address provided. The online panel survey achieved its target of 1,280 completes, essentially a 100 percent usable response. Of the 2,300 mail questionnaires, 258 were eliminated as non-sample. Usable questionnaires were returned by 621 residents for a mailed questionnaire response rate of 30 percent. Including the returns from the online panel yields a total response rate of 65 percent. An additional 210 (10%) individuals responded to the mail survey by “opting out” and completing a short series of question on the front page that allowed comparison between respondents and non-respondents on key characteristics.

To further ensure representativeness of the final dataset, responses to the mail and panel surveys were weighted to reflect demographics of the state population using U.S. Census data. We also weighted data to correct for geographic oversampling of some counties and pooled the resulting responses to create a statewide composite of attitudes and preferences.

The Analysis Services Section in the Bureau of Environmental Analysis and Sustainability conducted all tasks associated with the survey effort. This included assembling the mailings, tracking the response rate, performing the necessary data entry, data cleaning and conducting all analyses using SPSS version 25. All mailings originated from and were returned to the Bureau of Environmental Analysis and Sustainability in Madison. The margin of error for the study is +/-3 percent.

## Results and Discussion

### *Respondent and Opt-out Characteristics*

Pooling online and mail survey respondents provided a total of 1,901 total participants. An additional 210 individuals returned their questionnaires with the opt-out page completed (Table 1). Approximately 60 percent of those who opted out of participating felt that they did not know enough to participate, while another third indicated that they trusted the Wisconsin DNR to manage the elk herd without their input, and 22 percent were simply not interested in the topic (Table 2). A small minority of individuals, three percent, indicated that they felt their opinion would be ignored.

**Table 1:** Frequency distribution of survey responses and opt-outs.

	Frequency	Percent
Opt-out	210	10
Respondents	1901	90
Total	2111	100

**Table 2:** Reasons given for choosing to opt-out of participating in the survey. Note: individuals could check more than one option, so the total does not add up to 100 percent.

	Frequency	Valid Percent
I'm not interested in the topic	46	22
I trust the DNR to manage the elk herd without my input	66	31
I feel my opinion will be ignored	7	3
I feel I do not know enough to participate	123	59
I am too busy	8	4

Five additional questions in the opt-out section were repeated in the full version of the survey in order to allow comparison between respondents and opt-outs. The comparisons revealed some statistically significant differences that are worth noting. Respondents were slightly more likely to be female (48%) than were opt-outs (45%; Table 3) and opt-outs were significantly more likely to be older individuals having a mean age of 67 years compared to a mean age of 48 for respondents (Table 4). Among the listed stakeholder groups, respondents were more likely to identify as a hunter (26%), motorized trail user (10%), landowner (27%), or business owner (6%), whereas opt-outs were more likely to identify as belonging to none of the stakeholder groups listed (58%; Table 5). No significant difference was found in the distribution of rural versus urban settings for primary residence between these groups (Table 6).

**Table 3:** Gender distribution of respondents and opt-outs. ( $\chi^2=8.19$ ;  $p=0.017$ ).

	Opt-outs	Respondents Unweighted
Male	53.1%	52%
Female	44.9%	48%
Other	2.0%	<1%%

**Table 4:** Mean age of respondents and opt-outs (T=14.42; p<0.001).

	N	Mean Age	Std. Deviation	Std. Error Mean
Opt-outs	190	67.0	16.1	1.2
Respondents	1672	48.8	16.6	0.4

**Table 5:** Stakeholder group membership self-identified by respondents and opt-outs.

	Opt-out	Respondent	T-value	P-value
Hunter	26%	12%	4.31	<0.001
Native American Tribal member	3%	1%	1.44	0.05
Motorized Trail User	10%	4%	2.07	0.01
Agricultural Producer	6%	3%	1.60	0.11
Game Farmer	1%	0%	1.59	0.11
Forester	3%	1%	1.58	0.11
Landowner	27%	19%	2.38	0.02
Business owner	6%	2%	2.17	0.03
None of these	49%	58%	2.56	0.01

**Table 6:** Location type for primary residence of respondents and opt-outs ( $\chi^2=11.58$ ; P=0.21).

	Opt-out	Respondent
Rural on a farm	7%	7%
Rural non-farm	21%	23%
Small town	19%	23%
Suburb	12%	18%
City	40%	29%

## ***Awareness of Elk in Wisconsin***

The next section of the survey assessed respondents' awareness of elk in Wisconsin (Table 7). Almost 60 percent of respondents indicated they were aware that elk historically lived in Wisconsin. Fewer (54%) were aware that elk had been extirpated from the state, with 54 percent also aware that wild, free-ranging elk currently live in Wisconsin. Of those who indicated they were aware of the reintroduction, three quarters (76%) said they were aware of the reintroduction in the Clam Lake area, while almost 60 percent were aware of the Black River Falls reintroduction.

**Table 7:** Frequency distribution of awareness of elk in Wisconsin.

Awareness that...	Yes	No
Wild, free-ranging elk historically lived in most of Wisconsin	59%	41%
Wild, free-ranging elk had disappeared from Wisconsin	54%	46%
Due to reintroduction efforts, wild, free-ranging elk currently live in Wisconsin	54%	46%
Elk were introduced to the Clam Lake area*	76%	24%
Elk were introduced to the Black River Falls area *	59%	42%

\* only asked of individuals who indicated they were aware of reintroduction efforts.

Participants in our online survey who indicated they were aware of elk in Wisconsin were asked to select information sources from which they have gotten information about elk in the state (Table 8). Friends or family members (10%) and TV news (10%) were the most common sources of information, followed by newspapers (8%), the DNR website and Facebook (both 5%). DNR staff, other social media and other unlisted sources each accounted for about two percent. Email (2%) and conferences or tradeshow (0.3%) were the least likely to be selected as sources for information about elk.

**Table 8:** Sources from which web survey respondents had gotten information about elk in Wisconsin.

	Frequency	Percent
Family member or friend	217	10%
TV News	216	10%
Newspaper	171	8%
DNR Website	113	5%
Facebook	108	5%
DNR Staff	49	2%
Other Social Media	46	2%
Other	42	2%
Email	31	2%
None of the above	28	1%
Conference or Tradeshow	7	<1%

### ***Experiences with Elk***

The next series of questions focused on respondents past experiences with elk, either through wildlife tourism or by living near elk. Forty-three percent of respondents have visited a national park or similar destination where experiencing elk was an important part of the experience, while seven percent have hunted elk, and six percent have lived in an area of the country where elk may be found in another state (Table 9).

**Table 9:** Past experience visiting, hunting or living with elk in another state.

Have you ever...	Frequency	Percent
... visited a National Park or similar destination in North America for which viewing, photographing, or hearing elk was an important part of the experience?	726	43%
... hunted elk?	124	7%
... lived in an area of the country where elk may be found? (In another state)	100	6%

When it comes to types of elk encounters, about half of respondents (52%) indicated that they had seen an elk in the wild at least once before, while 40 percent indicated they had seen signs or heard elk (Table 10). Online respondents were also provided the opportunity to indicate negative encounters with elk, with approximately four percent indicating that they have experienced

damage to personal property at least once, two percent having hit an elk with their vehicle (though not necessarily in Wisconsin), and four percent having experienced crop damages.

**Table 10:** Frequency of different types of encounters with elk.

How many times have you...	Never	Once	More than once	Total
...seen an elk in the wild	48%	21%	31%	100%
...seen or heard signs of elk (e.g., tracks, bugling)	59%	16%	25%	100%
...experienced damage to personal property caused by elk*	96%	3%	2%	100%
...hit an elk with your vehicle*	98%	2%	1%	100%
... experienced crop damages from elk*	96%	3%	1%	100%

\*These items were only asked on the online version of the survey.

A final question in this section focused on the likelihood of seeking out experiences with elk, whether through non-consumptive (wildlife viewing) or consumptive (hunting) wildlife tourism (Table 11). Here, a similar number of respondents indicated that they were “somewhat” to “very likely” to take a trip in the future to view, photograph or hear elk (52%) as indicated that they had done so in the past. In contrast, approximately 20 percent of respondents indicated that they were “somewhat” to “very likely” to take an elk hunting trip, more than double the number who said they had hunted elk before.

**Table 11:** Likelihood of taking a trip to experience elk.

	Very unlikely	Somewhat unlikely	Unsure	Somewhat likely	Very likely	Total
view, photograph, or hear elk	14%	12%	19%	37%	17%	100%
hunt elk	60%	10%	10%	10%	11%	100%

### ***Attitudes about Elk Reintroduction in Wisconsin***

Overall, Wisconsin residents held a favorable attitude towards the presence of elk in the state, upwards of 75 percent when “somewhat” and “very favorable” ratings are combined. In contrast, fewer than eight percent hold an unfavorable attitude (Table 12). Approximately 16 percent were indifferent to the presence of elk in the state.

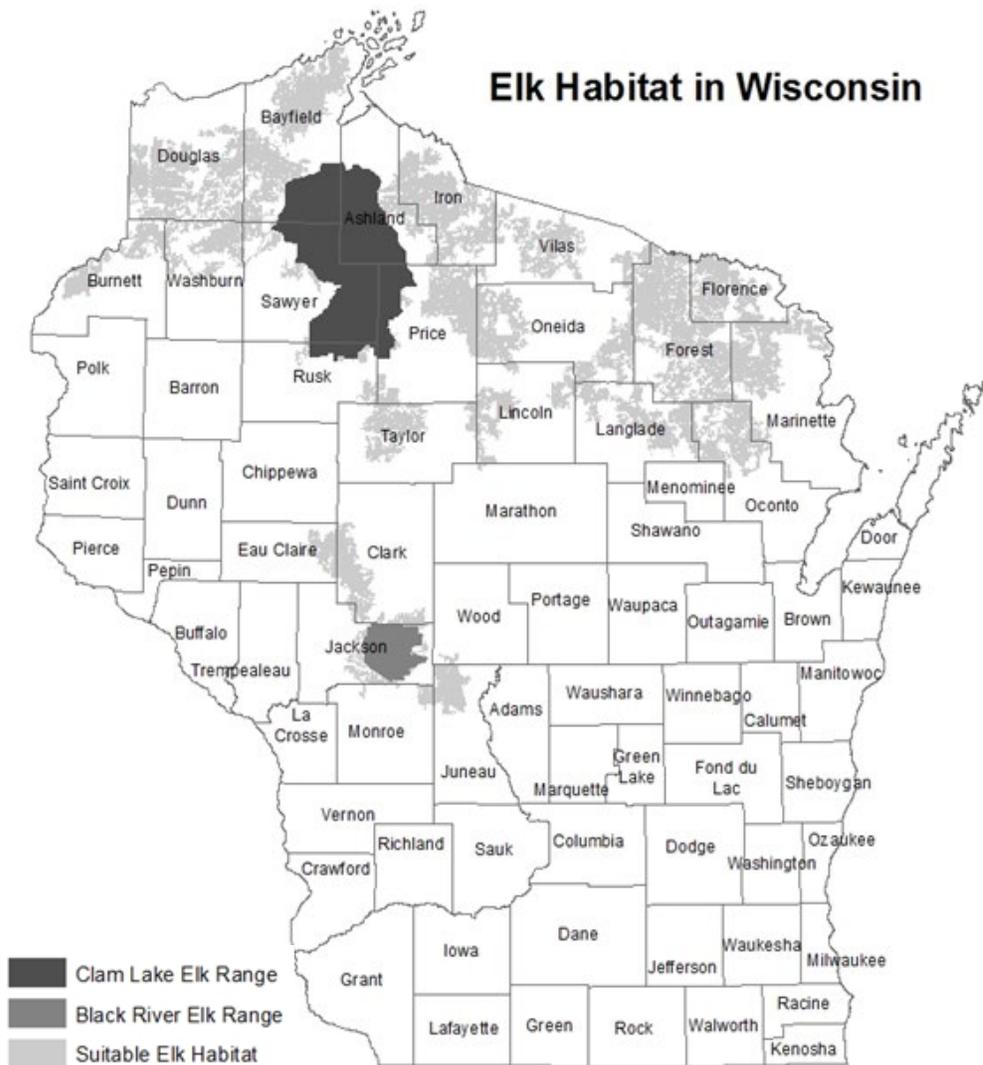
**Table 12:** Favorability towards elk being in Wisconsin.

	Frequency	Percent
Very unfavorable	68	4%
Somewhat unfavorable	57	3%
Indifferent	275	16%
Somewhat favorable	405	24%
Very favorable	869	52%
Total	1674	100%

While favorability of elk in the state was found to be high, support for reintroduction efforts was even higher, reaching over 80 percent when “somewhat” and “strongly support” ratings are combined (Table 13). Five percent of respondents somewhat to strongly oppose elk reintroduction efforts.

**Table 13:** Popular support for efforts to restore wild, free-ranging elk to Wisconsin.

	Frequency	Percent
Strongly oppose	35	2%
Somewhat oppose	45	3%
Unsure	228	14%
Somewhat support	514	31%
Strongly support	852	51%
Total	1674	100%



**Figure 1:** Elk range and habitat in Wisconsin. This map was provided to respondents to use as a reference when identifying their county's suitability for elk reintroduction.

To better assess local support for elk reintroduction efforts and the desirability for expanding elk ranges, respondents were asked to identify whether the county in which they live currently has elk, contains habitat that is suitable for elk, or is unsuitable for elk. To assist in this question, a map (Figure 1) was provided. In all, two thirds (67%) of respondents came from counties with no suitable habitat, 11 percent came from counties where elk have already been introduced, and 21 percent came from counties that currently do not have elk but that have habitat considered suitable for elk (Table 14). Follow up questions with these latter two groups revealed similar levels of support for elk reintroduction efforts as the statewide results. Eighty percent of respondents living in counties with elk indicating their support for range expansion within their county (Table 15). Similarly, 82 percent of respondents from counties with suitable habitat, but no elk currently, indicated they would support having elk in their county (Table 16).

**Table 14:** Distribution of residency in relation to elk habitat in Wisconsin. (Unweighted data).

	Frequency	Percent
I live in a county with no habitat suitable for elk (Unshaded areas on the map)	1127	68%
I live in a county where elk are currently found (Dark shaded areas on the map)	186	11%
I live in a county with habitat suitable for elk (Light shaded areas on the map)	357	21%
<b>Total</b>	<b>1670</b>	<b>100%</b>

**Table 15:** Support within counties that currently have elk for expanding elk range within the county.

	Frequency	Percent
Strongly Oppose	10	5%
Somewhat Oppose	10	5%
Unsure	18	9%
Somewhat Support	55	27%
Strongly Support	108	54%
<b>Total</b>	<b>201</b>	<b>100%</b>

**Table 16:** Support among residents of counties identified as having suitable habitat for elk for having elk introduced in their county.

	Frequency	Percent
<i>Strongly Oppose</i>	9	2%
Somewhat Oppose	14	4%
Unsure	47	12%
Somewhat Support	112	30%
Strongly Support	197	52%
<b>Total</b>	<b>379</b>	<b>100%</b>

Respondents from counties with suitable habitat were also asked to rate the importance of considering various factors in decisions regarding the introduction of elk into a new county (Table 17). In all, seven factors were assessed in this way. The most important factor was the presence of wildlife disease(s) that might affect elk in the county, followed by the amount of public land in the county, the amount of local support for elk introduction, and the amount of public funding available to pay for elk introduction, all of which were rated as “very important” by the majority of respondents. The amount of agricultural land, the amount of private funding and statewide support for elk introduction rounded out the bottom of the list. However, it should be noted that the vast majority of respondents still ascribed some importance to these factors as well.

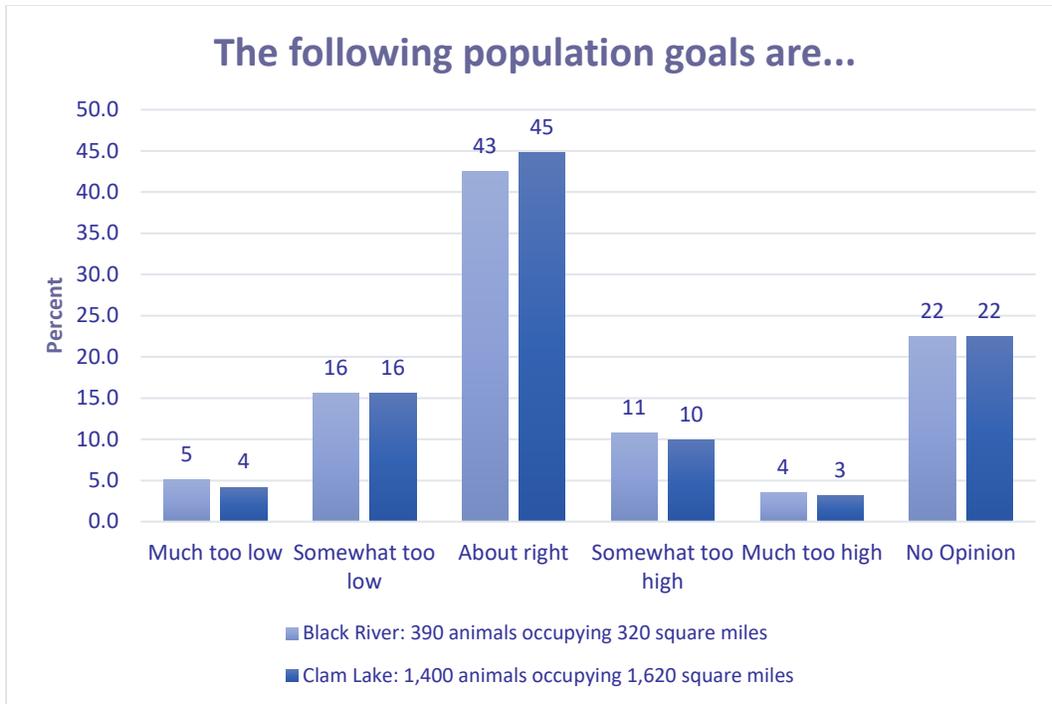
**Table 17:** Importance of considering factors when deciding whether or not to introduce elk into a new county.

	<b>Not important</b>	<b>Somewhat important</b>	<b>Very important</b>
The presence of wildlife disease(s) in the county that may affect elk	4%	30%	66%
The amount of public land in the county	8%	33%	60%
The amount of local public support for elk introduction	5%	41%	54%
The amount of public funding available to pay for elk introduction.	5%	41%	54%
The amount of agricultural land in the county	5%	46%	49%
The amount of private funding available to pay for elk introduction.	10%	42%	48%
The amount of statewide public support for elk introduction	10%	47%	43%

## ***Opinions about Elk Management in Wisconsin***

### **Population Goals**

Overall, public opinions of the numeric population goals set for the two elk herds were favorable, with 43 percent and 45 percent of respondents considering the Black River and Clam Lake herd population goals, respectively, to be “about right” (Figure 2). While these values constitute a plurality rather than a majority, approximately 20 percent of respondents found the goals to be too low, while approximately 13 percent thought they were too high. The remaining 22 percent were unsure or held no opinion.

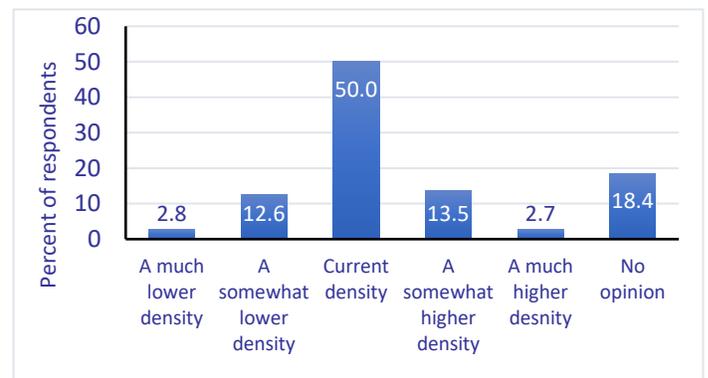


**Figure 2:** Public opinion of numeric population goals set for the Black River and Clam Lake elk herds.

Similarly, there was broad support for maintaining the current population density of one to two elk per square mile as the basis for setting population objectives (Figure 3), with 50 percent of respondents indicating this to be their preference. Approximately 15 percent of respondents preferred a lower density and, an equal number preferred a higher density; 18 percent expressed no opinion.

## Management Objectives

Several potential management objectives were evaluated by respondents to assess their priority for elk management activities (Table 18). An overwhelming majority of the public rated the avoidance of disease transmission from elk to existing wildlife and livestock populations as a high priority for elk management in Wisconsin. Slightly more than half of respondents (50-60%) rated maintaining a sustainable elk population and restoring a native species as high priorities as well. Providing cultural value to Native American Tribes of Wisconsin and providing hunting opportunities tended to be rated lower than other items on the list.



*Figure 1: Distribution of public opinions of the elk population density used as the basis for setting population goals.*

**Table 18:** Priority rating of potential management objectives identified by the Bureau of Wildlife Management.

	<b>Not at all a priority</b>	<b>Low priority</b>	<b>Medium priority</b>	<b>High priority</b>	<b>Not sure</b>
Avoid disease transmission to existing wildlife and livestock populations	1%	3%	17%	70%	9%
Maintain a sustainable elk population size	2%	4%	28%	58%	7%
Restore a native species	3%	6%	28%	55%	8%
Minimize damage to agriculture and personal property (e.g., fences, vehicles)	2%	9%	32%	50%	7%
Modify the current elk ranges to best fit public support and habitat suitability	2%	7%	39%	42%	10%
Minimize damage to trees and forest vegetation	3%	14%	37%	39%	7%
Expand the range of the existing elk populations	4%	12%	39%	37%	9%
Minimize resource competition with existing wildlife populations	3%	9%	43%	35%	11%
Provide cultural value to the Native American Tribes of Wisconsin	12%	17%	29%	31%	11%
Avoid impacts to captive elk herds	5%	14%	36%	31%	14%
Minimize costs of government elk management activities	3%	14%	43%	28%	12%
Provide elk hunting opportunities	14%	23%	29%	25%	9%
Provide economic opportunities through elk-related tourism and recreation	4%	16%	48%	24%	9%

### Management Activities

When asked to rate the priority of specific management activities (Table 19), in keeping with the priority ascribed to the management objectives, the public prioritized ensuring the elk herd remains healthy. Preventing elk from wandering into roadways, habitat management and introducing new elk to maintain genetic diversity were also rated as high priority by a majority of the public. Encouraging the harvest of top-level carnivores, such as wolves, in elk range received the lowest priority ratings.

**Table 19:** Priority rating of potential management activities identified by the Bureau of Wildlife Management.

	<b>Not at all a priority</b>	<b>Low priority</b>	<b>Medium priority</b>	<b>High priority</b>	<b>Not sure</b>
Ensuring the elk herd remains healthy	2%	3%	17%	75%	4%
Preventing elk from wandering onto roadways	2%	11%	28%	54%	5%
Habitat management (e.g., promote young forest)	3%	4%	33%	53%	7%
Introduction of new elk to maintain genetic diversity	3%	7%	33%	50%	7%
Preventing elk from going into areas of agricultural production	3%	11%	37%	44%	6%

Research and monitoring efforts to better understand elk ecology	3%	11%	39%	41%	7%
Relocating elk to speed their establishment within areas designated as elk range	4%	11%	44%	33%	9%
Encourage harvest of top-level carnivores within designated elk ranges	6%	17%	35%	27%	15%

## Crop Damage

Damage to agricultural crops has been identified as one of the more common negative impacts associated with elk. Survey participants were asked to indicate their support or opposition to seven management responses to an incidence of elk causing crop damages (Table 20). The majority of respondents either “somewhat” or “strongly supported” all non-lethal response options, including financially compensating farmers, subsidizing fencing costs to prevent future damages, and trapping and relocating the individual elk. Lethal response options, including holding a managed hunt, issuing a landowner permit to kill the animal, or having a wildlife professional shoot the elk received lower levels of support.

## Nuisance Scenarios

In addition to examining the issue of agricultural damages that may be caused by elk, the survey also explored five scenarios dealing with other potential nuisance problems that can be associated with elk. These scenarios ranged from movement of elk outside their established range to scenarios endangering people or property. Two scenarios addressed the issue of elk and chronic wasting disease (CWD). In each case, respondents were asked to rate the degree to which they would support or oppose different management responses designed to address these issues. Overall, the public showed greater support for non-lethal responses in most of the scenarios presented, with CWD being a notable exception.

**Table 20:** Distribution of support and opposition to response options in the event of crop damages caused by elk.

	Strongly Oppose	Somewhat Oppose	Unsure	Somewhat Support	Strongly Support
Compensating landowners financially for their losses	4%	10%	19%	40%	28%
Subsidizing fencing costs to prevent future damages from elk	5%	11%	19%	40%	26%
Trapping and relocating the individual elk	7%	15%	26%	36%	16%
Hazing the elk to encourage it to leave the area (e.g., through loud noises or strobe lights)	11%	18%	32%	26%	13%
Issuing a hunter harvest permit or holding a managed hunt on the property	14%	14%	25%	31%	16%
Issuing a permit to the landowner to kill the individual elk themselves.	25%	21%	23%	20%	12%
Shooting of the individual elk by a wildlife professional	24%	20%	29%	19%	8%

The management responses to a situation where an elk wanders outside of its designated range (Table 21) that received majority support were to leave it alone (56% support; 19% oppose) or to trap and return the elk (60% support; 20% oppose). Hazing the elk to encourage it to return to the established range garnered 48 percent support and 25 percent opposition. Shooting the elk was largely opposed, however, with support for hunter harvest permits (32% support) and landowner permits (30% support) preferred over shooting of the elk by a wildlife professional (21% support).

**Table 21:** Distribution of public support or opposition to management actions in response to a scenario in which an elk leaves the range established for them in the management plan.

	Strongly Oppose	Somewhat Oppose	Unsure	Somewhat Support	Strongly Support
Leave it alone	4%	15%	25%	34%	22%
Trapping and returning the elk to its original range	7%	14%	20%	41%	19%
Hazing the elk to encourage it to return to the established range on its own	9%	17%	25%	36%	13%
Issuing a landowner permit to kill the individual elk on their property.	27%	22%	21%	19%	11%
Issuing a hunter harvest permit or holding a managed hunt for that elk.	21%	23%	24%	22%	10%
Shooting of the individual elk by a wildlife professional	29%	24%	25%	15%	7%

Preferences for management responses to a scenario in which an elk is acting aggressively towards trail users showed little support for leaving it alone (27% support); however, non-lethal options received more support than lethal ones (Table 22). Trapping and relocating received support from 71 percent of the public, and hazing was supported by 63 percent. By contrast, shooting the elk by a hunter (42% support), landowner (40% support), or wildlife professional (39% support) were less popular.

**Table 22:** Distribution of public support or opposition to management actions in response to a scenario in which an elk is acting aggressively towards trail users, raising human safety concerns.

	Strongly Oppose	Somewhat Oppose	Unsure	Somewhat Support	Strongly Support
Trapping and returning the elk to its original range	5%	7%	16%	39%	33%
Hazing the elk to encourage it to leave the area on its own	7%	11%	20%	42%	21%
Issuing a landowner permit to kill the individual elk on their property.	20%	18%	21%	24%	17%
Issuing a hunter harvest permit or holding a managed hunt for that elk.	16%	17%	24%	27%	16%
Shooting of the individual elk by a wildlife professional	22%	16%	23%	24%	15%
Leave it alone	22%	29%	21%	17%	11%

When presented with a scenario that emphasized property damage (Table 23), public support for management actions followed a similar pattern, with respondents voicing the least support for leaving the elk alone (24% support) and the most support for non-lethal interventions (75% for trapping and relocating the elk, and 65% support for hazing the elk to encourage it to leave). Of the three lethal interventions presented, public support was marginally higher for the elk to be shot by a hunter (41% support) or landowner (39% support) rather than a wildlife professional (33% support).

**Table 23:** Distribution of public support or opposition to management actions in response to a scenario in which an elk has developed a habit of damaging fences, raising concerns about extensive property damage.

	Strongly Oppose	Somewhat Oppose	Unsure	Somewhat Support	Strongly Support
Trapping and returning the elk to another area	4%	6%	14%	42%	34%
Hazing the elk to encourage it to leave the area on its own	7%	10%	18%	44%	22%
Issuing a landowner permit to kill the individual elk on their property.	23%	18%	21%	24%	16%
Issuing a hunter harvest permit or holding a managed hunt for that elk.	19%	18%	23%	25%	15%
Shooting of the individual elk by a wildlife professional	25%	19%	23%	21%	12%
Leave it alone	20%	34%	23%	16%	8%

In contrast to the above scenarios, public support shifted towards more lethal responses when concerns about chronic wasting disease were introduced (Table 24). In the event that an elk wanders into an area known to have CWD, public support was highest for shooting of the elk by a wildlife professional (49%), issuing a hunter harvest permit (48%) and trapping and relocating the elk (47%). Issuing a landowner permit received 45 percent support overall, while hazing the elk received 37 percent support; 19 percent of respondents supported leaving it alone.

**Table 24:** Distribution of public support or opposition to management actions in response to a scenario in which an elk leaves its established range and wanders into an area known to have chronic wasting disease, raising concerns that it might contract the disease and bring it back to the herd.

	Strongly Oppose	Somewhat Oppose	Unsure	Somewhat Support	Strongly Support
Shooting of the individual elk by a wildlife professional	17%	11%	23%	26%	23%
Trapping and returning the elk to another area	16%	14%	22%	27%	20%
Issuing a landowner permit to kill the individual elk on their property.	19%	14%	23%	25%	20%
Issuing a hunter harvest permit or holding a managed hunt for that elk.	16%	13%	24%	28%	20%
Hazing the elk to encourage it to return to its established range on its own	19%	19%	25%	25%	12%
Leave it alone	33%	26%	23%	12%	6%

Should CWD be detected within ten miles of an area designated as elk range, a strong majority (81%) support managing/monitoring for CWD the same as for whitetail deer (Table 25). Other potential responses that were presented included reducing the elk population (35% support), halting efforts to increase the elk population but taking no other action (42% support) and continuing efforts to increase the elk population (24% support). In each of these last three management actions, however, twice as many respondents expressed an unsure opinion than the option of managing for CWD the way the department does in whitetail deer.

**Table 25:** Distribution of public support or opposition to management actions in response to a scenario in which chronic wasting disease is detected within 10 miles of an area designated as elk range.

	<b>Strongly Oppose</b>	<b>Somewhat Oppose</b>	<b>Unsure</b>	<b>Somewhat Support</b>	<b>Strongly Support</b>
Manage/Monitor for CWD the same as for whitetail deer	2%	3%	15%	38%	4290%
Reduce the elk population in the affected area	10%	17%	38%	21%	1450%
Halt efforts to increase the elk population in the area but take no other action	10%	17%	31%	31%	1110%
Continue efforts to increase the elk population in the area	18%	26%	32%	16%	840%

### ***Opinions about Elk Hunting in Wisconsin***

When asked about their support for holding a regulated elk hunt in Wisconsin, the majority of the public was supportive (Figure 4). While 45 percent of respondents indicated that they were supportive but would not hunt elk themselves, 17 percent of respondents indicated they would be interested in participating in an elk hunt. About one in five respondents (20%) were undecided on the issue, while the remaining seventeen percent opposed the hunt.

The online version of the survey explored some of the reasons for opposing an elk hunt (Figure 4). Of the 98 online respondents who opposed an elk hunt, the most common reason was that they did not believe there were enough elk to support a hunt (47%), followed by 39 percent who opposed all forms of hunting. Thirty-five percent indicated they were worried that elk might disappear again, and a similar percentage did not think that we need to hunt elk. Less popular reasons included the high cost of reintroduction efforts, a fondness for elk and the thought that hunting elk will not reduce human-wildlife conflict.

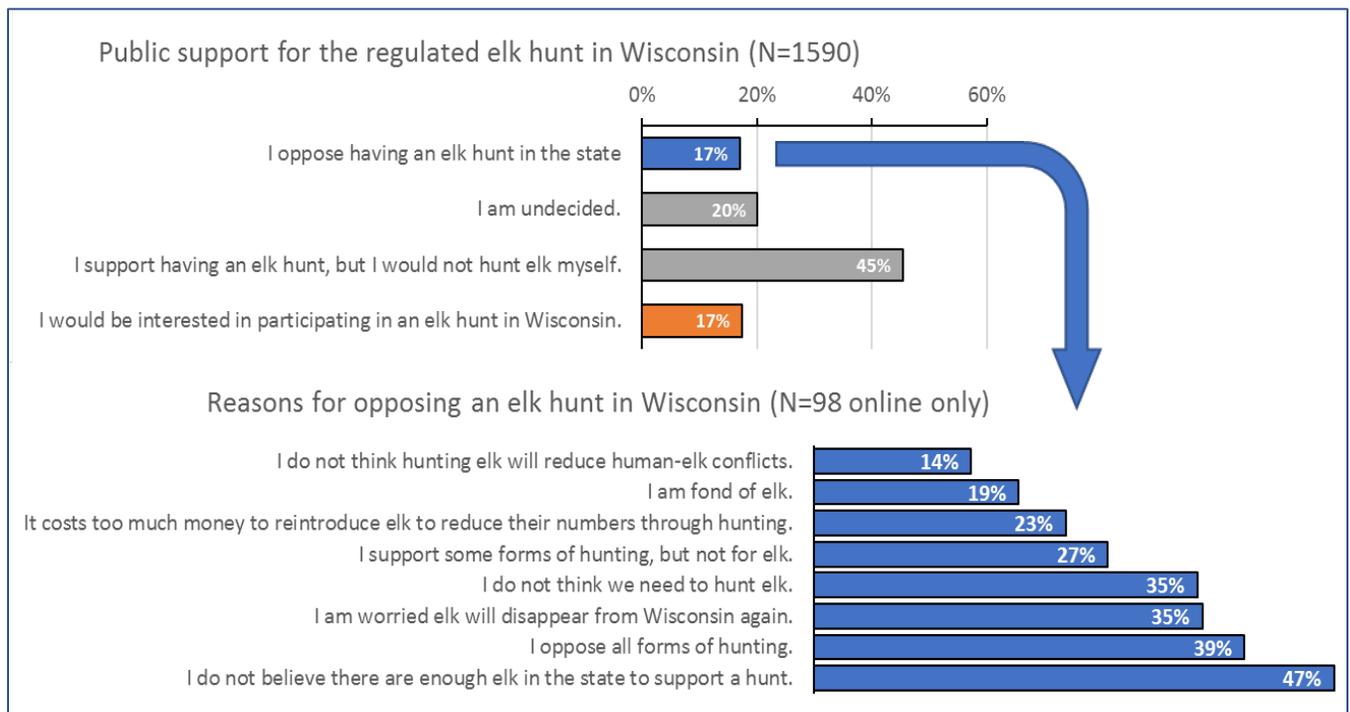


Figure 2: Public support for holding an elk hunt and reasons for opposition.

Respondents who indicated they would be interested in participating in an elk hunt were similarly prompted for additional information on the online version of the survey (Figure 5). These 95 respondents were asked if they applied for an elk harvest tag for the inaugural elk hunt in 2018. While 13 percent indicated they had applied, 87 percent had not applied for a harvest tag.

Those who had not applied for a harvest tag were then asked to indicate the primary reason they did not apply (Figure 5). The most common reason given was that they were not aware that they could apply (30%) or learned about it too late (17%). Others (14%) indicated they were not interested in hunting elk at this time. When combined, 30 percent of respondents selected reasons affecting their perception of the risk and reward of applying for a tag. Specifically, 14 percent thought that their chance of winning a tag was too low, eight percent thought there were too few elk to have a reasonable chance of successfully harvesting one even if they won a tag, and eight percent thought that the application fee was too high. Finally, seven percent of respondents indicated their primary reason for not applying for a tag as “Other.” Written comments identified two primary reasons from those whose reasons were not listed; most indicated that they were not yet experienced enough as hunters to go elk hunting, while others cited a lack of available time this year to accommodate an elk hunt.

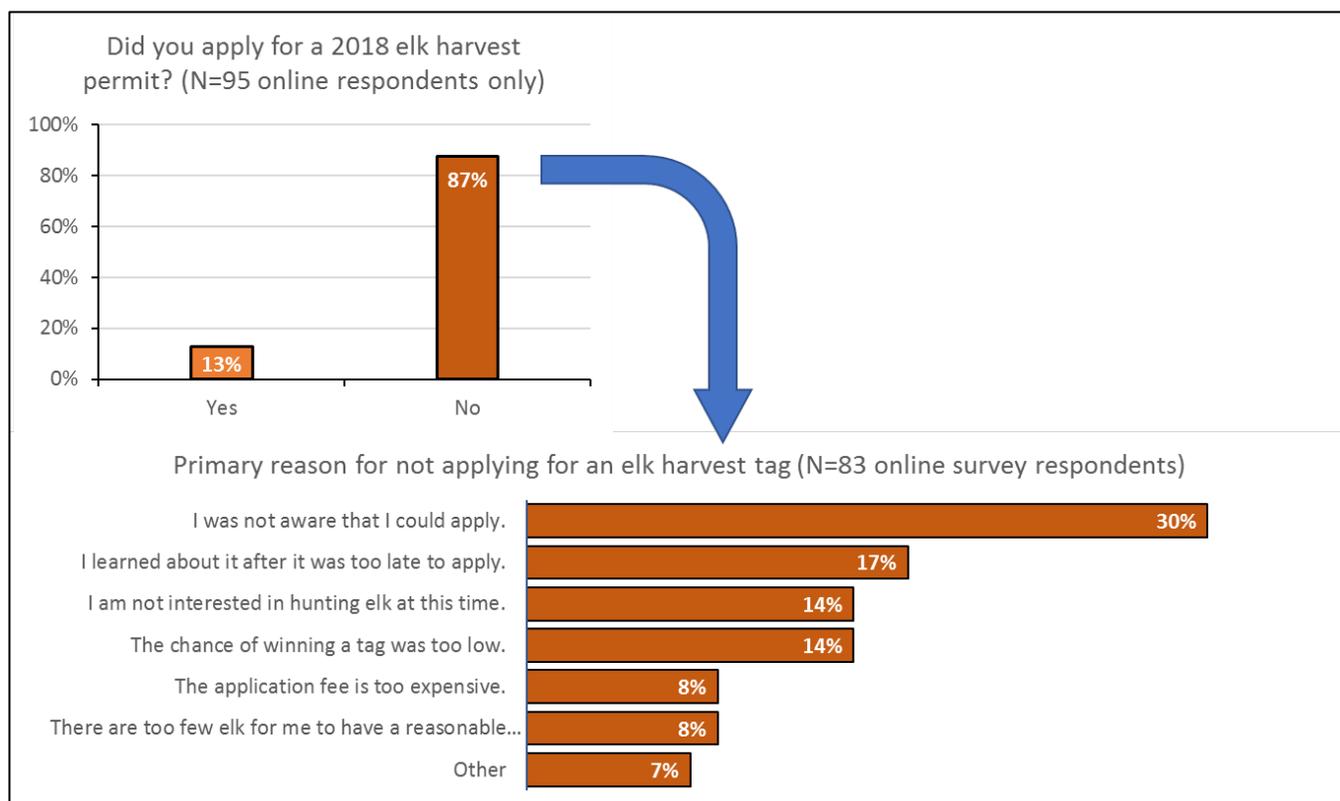
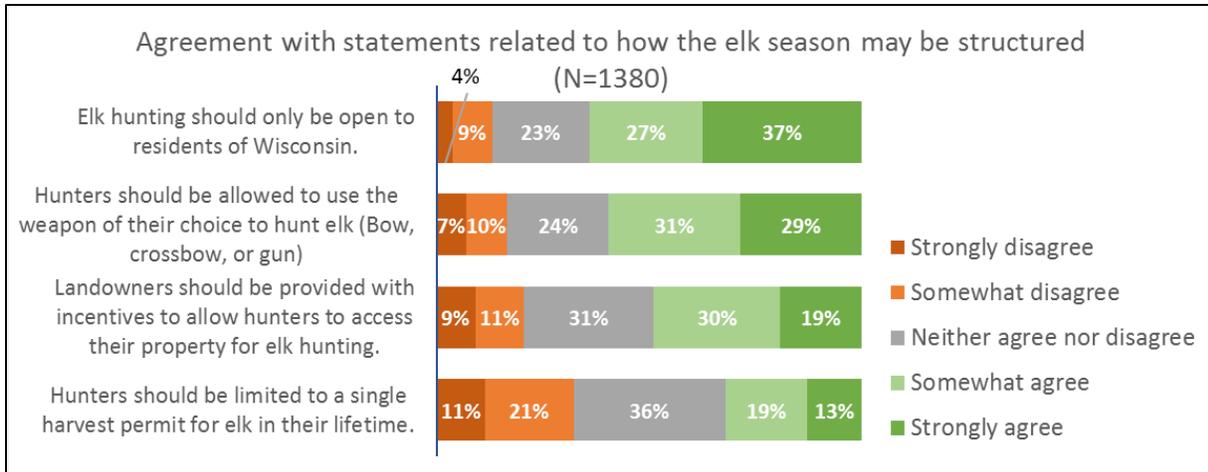


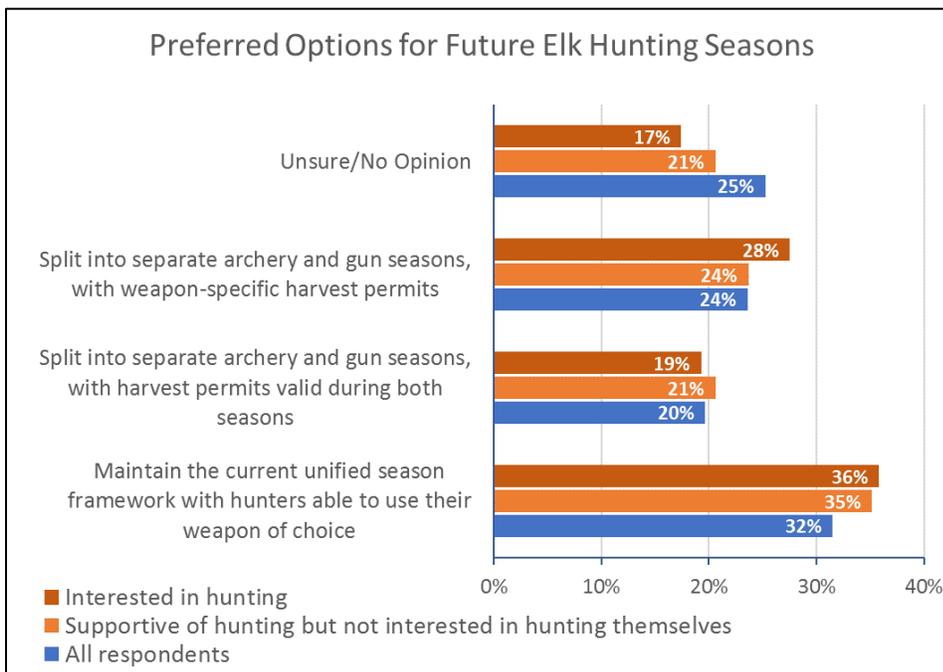
Figure 3: Elk harvest application submission by online respondents who indicated they would be interested in hunting elk and primary reasons for not applying.

Mail and online respondents who did not indicate opposition to elk hunting were asked two follow-up questions to elicit their opinions regarding options for structuring an elk hunting season. The first question examined their agreement with four statements about how the season may be structured (Figure 6). A majority of respondents agreed that elk hunting should only be open to Wisconsin residents (64%), and that hunters should be allowed to use the weapon of their choice to hunt elk (60%). On these two statements, approximately one-fourth (23-24%) of respondents indicated a neutral position, neither agreeing nor disagreeing. About half of respondents agreed that landowners should be provided with incentives to allow hunters to access their property for elk hunting (49%). About one in three respondents agreed that hunters should be limited to a single harvest permit in their lifetime (32%). On these last two statements, approximated one third of respondents (31-36%) neither agreed nor disagreed.



**Figure 6:** Agreement with four statements related to how the elk season may be structured.

The second question focused on the issue of weapon specific seasons and harvest permits and asked respondents to indicate their most preferred option (Figure 7). While no single option garnered a majority opinion, the plurality of respondents preferred to maintain the current unified season structure whereby hunters may use their choice of weapon and the harvest tag is not weapon specific. Among respondents interested in participating in an elk hunt, this option garnered 36 percent of responses. Interestingly, the second most preferred option involved separating the season by weapon type and issuing weapon specific tags, the direct opposite of the current unified framework. This option was preferred by 28 percent of those interested in participating in an elk hunt.



**Figure 7:** Preferences for weapon specific seasons and harvest tags.

## Written Comments

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At the end of the survey, respondents were provided an opportunity to comment openly on the topic of elk management. While the vast majority of comments were associated with individuals who held somewhat to very favorable attitudes towards elk being in Wisconsin, 15 comments were submitted by individuals who indicated they held a very unfavorable attitude. Interestingly, of those fifteen individuals, two left comments in apparent contradiction to their rating.

The following section provides these verbatim comments, sorted by each individual's attitude towards elk being in Wisconsin (see Table 12). In presenting these data, the favorability ratings of respondents are presented to the left of their comment. Some comments provided by respondents did not relate to the topic at hand but may be relevant to wildlife managers within the department. As such, all comments have been retained.

OPINION ON ELK BEING IN WISCONSIN	COMMENT
VERY UNFAVORABLE	I can think of no good reason for wild elk in Wisconsin. I can only imagine the damage they will do if encouraged to expand. There will be serious competition in foraging to the local animals, road fatalities, etc. And this 10-permit hunt is a joke with half of them given to ethically privileged poaching peoples (Tribes).
VERY UNFAVORABLE	I came across a small herd of elk in Georgia (Nat forest) on some backroads. Keep whitetail deer numbers in control- ban baiting/feeding. Pick a sustainable number of wolves & hunting to maintain numbers. I believe in science.
VERY UNFAVORABLE	I have heard of the elk in Black River area damaging fences and crops. And am worried about elk damage on my property being I'm right on the edge of county forest (should elk ever be restored in Eau Claire county)
VERY UNFAVORABLE	I like the idea of continued elk introduction to WI!
VERY UNFAVORABLE	I strongly oppose elk being introduced into Wisconsin. Leave it alone.
VERY UNFAVORABLE	I would not want no more elk to come to Wisconsin- Let the herds you planted be it. Done- Let watch and see what they do. Let nature run its course. Who's in a rush. Let's see what happens.
VERY UNFAVORABLE	Like it
VERY UNFAVORABLE	My major concern is hitting elk on the road.
VERY UNFAVORABLE	Once was able to enjoy outdoor activities.
VERY UNFAVORABLE	The Wisconsin DNR can't manage our White tail deer herd. How on earth can they be expected to manage a Elk herd as well.
VERY UNFAVORABLE	Up to 8 weeks of age elk calves are weak and bear and wolf food. It is estimated 80% of fawn losses due to bear kills. Bears and wolves out. Elk In.
VERY UNFAVORABLE	We have enough car/ deer accidents. We do not need to add elk to the mix. Deer damage our garden and flowers. We do not need to worry about elk too. Let things as they were!!

**OPINION ON ELK  
BEING IN WISCONSIN**

**COMMENT**

<b>VERY UNFAVORABLE</b>	What is the next thing that is proposed to be reintroduced? If the technology allows it, do we try to reintroduce dinosaurs? If an elk ruins a fence, crops, apples trees, etc., payments never consider the labor or the sentimental value
<b>VERY UNFAVORABLE</b>	Who the hell authorized more than 9500 doe permits for Bayfield county- Stupid!
<b>VERY UNFAVORABLE</b>	Wisconsin doesn't need elk. We already have too many deer. Focus resources better on deer management, longer season, more tags, and incentives to get landowners to allow hunting on their land Not even good enough public hunting areas either. Hitting a deer with your car is real threat. I do not want to hit an elk.
<b>SOMEWHAT UNFAVORABLE</b>	Don't think introducing elk will work. Don't think there is enough room for them. Wolves are getting out of hand. Seems it would be a n unnecessary expense.
<b>SOMEWHAT UNFAVORABLE</b>	Elks should not be reintroduced into Wisconsin they do not belong here they will be nuisance
<b>SOMEWHAT UNFAVORABLE</b>	I don't agree with re-establishing any herd/flock of any kind to profit from the harvest of animals. Whitetail population is too large and the rules for harvesting are too complicated/ too hard to understand. Almost as if they are designed to make people "mess up" and get fined.
<b>SOMEWHAT UNFAVORABLE</b>	I have no idea about Elk or hunting or fishing, so my answer as is it , also I am an old man for this activity
<b>SOMEWHAT UNFAVORABLE</b>	I like it
<b>SOMEWHAT UNFAVORABLE</b>	I think it's a pretty good idea
<b>SOMEWHAT UNFAVORABLE</b>	I would like to limit the elk population to area north of Hwy 8 only. Areas south of that are too populated and to close to CWD hotspots. Overall, I'm not a big fan of reintroduction of elk to Wisconsin.
<b>SOMEWHAT UNFAVORABLE</b>	I'm against having elk in the area because of crop damaging and fence damaging.
<b>SOMEWHAT UNFAVORABLE</b>	I'm not sure I support the reintroduction effort fully in that I had a situation years ago where I somehow startled an elk (I didn't know it was there) and it began to chase me - it was a frightening experience.
<b>SOMEWHAT UNFAVORABLE</b>	In out township of Seymour, we live on the northeastern side of Eau Claire county. It was shaded to be suitable for elk habitat. We have a lot of deer nuisance already. More deer ticks, loss of vegetation, and tree damage. I believe adding Elk would compound the problem we already have with deer. We also have vehicle damage when deer run across the roads.
<b>SOMEWHAT UNFAVORABLE</b>	My primary concern is the danger elk would pose to vehicles. Deer already cause too many accidents/injuries and elk being bigger would be even more dangerous. However, if the elk herds are kept away from roads and farms, I don't oppose their being in Wisconsin.
<b>SOMEWHAT UNFAVORABLE</b>	Recently, I watched an episode on TV about elk traveling/migrating on a proposed corridor from Canada to U.S. western states. The program said elk are a migratory animal. Are we going to allow the elk migratory corridors to keep these huge animals off the road while they expand their gene pool?

**OPINION ON ELK  
BEING IN WISCONSIN**

**COMMENT**

<b>SOMEWHAT UNFAVORABLE</b>	Strongly feel we need to control wolves before these herds will take off well. Worried about crop damage if elk get out of ranges. Otherwise support the efforts!!
<b>SOMEWHAT UNFAVORABLE</b>	This is a wonderful thing to continue
<b>SOMEWHAT UNFAVORABLE</b>	We already have too many deer to hit on our Wisconsin roads
<b>SOMEWHAT UNFAVORABLE</b>	We can't adequately manage deer-why expand on past mistakes. Too much damage-Hunt where they are now.
<b>SOMEWHAT UNFAVORABLE</b>	While I personally Do Not hunt or eat much meat at all honesty since moving from Florida to Wisconsin 4 years ago i've come to learn and respect the outdoors and wildlife. I understand hunting, fishing, and other such activities are a huge source of not only entertaining but also income for the federal, state and local governments and local businesses owners. I support anything that us done fairly and with respect to landowners, outdoorsman and the animals. While Northern Wisconsin is way too cold it's also beautiful and majestic.
<b>SOMEWHAT UNFAVORABLE</b>	With the current state of the DNR I am not confident in the agency's ability to make scientifically sound decisions in the management of elk in Wisconsin.
<b>INDIFFERENT</b>	Cars and elk is not good, people drive to fast.
<b>INDIFFERENT</b>	Don't let it get out of control.
<b>INDIFFERENT</b>	Don't kill animals
<b>INDIFFERENT</b>	I am confused as to why the Wisconsin DNR is working to bring elk back when they have mismanaged the deer herd to a level that is unrecognizable.
<b>INDIFFERENT</b>	I am not a hunter for any type of animal
<b>INDIFFERENT</b>	I did not know elk were in Wisconsin until I took this survey
<b>INDIFFERENT</b>	I don't care
<b>INDIFFERENT</b>	I generally agree with hunting being available to citizens, but it should be regulated, and I don't like the idea of land owners taking that into their own hands.
<b>INDIFFERENT</b>	I grew up in Southern Illinois. I am unfamiliar with elk. We do have elk in our zoo.
<b>INDIFFERENT</b>	I hope you can manage elk population better than wolf population.
<b>INDIFFERENT</b>	I think all animals should be treated well and with genuine care. Even when they are considered threats due to damaging property or harming others, they shouldn't be killed because of their actions. I believe they don't know better compared to humans and should be killed for that reason alone. With diseases, I can understand. We wouldn't want it to spread. However, as humans we should make better judgements and decisions. Learn to be selfless and love nature and animals. Not just ourselves.
<b>INDIFFERENT</b>	I think hunting elk would be fun
<b>INDIFFERENT</b>	I think managing the elk population is important to the eco system. With that being said, I am not opposed to hunting elk with similar rules to deer hunting. There should be a limit to how many elk a hunter may kill and separate seasons for choice of weapon.

**OPINION ON ELK  
BEING IN WISCONSIN**

**COMMENT**

<b>INDIFFERENT</b>	I would have concerns on Elk Vehicle accidents, deer do enough damage elk would be worse that needs to be addressed. Also how will the Elk know they are leaving a designated area, I don't believe they can read?
<b>INDIFFERENT</b>	I would like to see elk hunting in Wisconsin.
<b>INDIFFERENT</b>	I would worry that the elk would be hit but not killed and will die from injuries. Meat will be wasted and animal dies.
<b>INDIFFERENT</b>	I'm a wife and mon of all hunters. I don't hunt myself and I'm not against hunting. I am a person who loves animals and nature. I don't think we need to hunt elk unless they get out of hand or sick. I'm a big advocate of keeping wildlife sustainable so we don't need to have a lot of hunts. I don't ever want it to be about money making. I'm more for keeping all species of animals controlled.
<b>INDIFFERENT</b>	I'm not a hunter don't think I could kill an animal that did not harm me. I do enjoy seeing wildlife in its own environment.
<b>INDIFFERENT</b>	Interesting subject. I'd like to know more
<b>INDIFFERENT</b>	Keep up the good work!
<b>INDIFFERENT</b>	Most of the question I could not answer because I live in the city so I only see small animals.
<b>INDIFFERENT</b>	My concerns with the elk increase is that it will be like the Timberwolves, we weren't designated to be In the zone but they have migrated to Columbia county and we had livestock casualties because of wolves. We have plenty of deer down here and I think it will be a matter of time before elk would be down here.
<b>INDIFFERENT</b>	My parents live in Clark County where I grew up on a dairy farm. There have already been cases of Elk moving up into Clark County, so I think the management plan while good on paper is unrealistic in real life. These animals will move and find new ranges. I am not opposed to the Elk, but definitely have concerns about safety and agriculture. There has to be balance, and right now, I don't know that there is.
<b>INDIFFERENT</b>	Protect our agriculture, manage the herd accordingly.
<b>INDIFFERENT</b>	Spend conservatively.
<b>INDIFFERENT</b>	Stop being servant to Indians. I/E/ Preference on hunting elk permits and fishing limits and methods.
<b>INDIFFERENT</b>	The cost of this program. How many elk are killed by wolves. That is a waste of money. I would be interested in hunting if elk were closer to my county (Forest).
<b>INDIFFERENT</b>	They should do like they do for Bear hunting having to sign up for a permit to shot a Elk
<b>INDIFFERENT</b>	This is dumb. Why am I asked to waste what little time I have left on crop like this?
<b>INDIFFERENT</b>	This survey was filled out by a full-time staff member of Buckhorn State Park.
<b>INDIFFERENT</b>	This was a boring topic for a survey. You guys should do more interesting survey about music and movies ect..
<b>INDIFFERENT</b>	We have entertained elk on our property - 3 for 48 hrs- We tolerate damage, especially hay use in winter by deer etc. I believe we would not be able to do so for elk, as we would run out of hay for our own use.

**OPINION ON ELK  
BEING IN WISCONSIN**

**COMMENT**

<b>SOMEWHAT FAVORABLE</b>	1) Animals aren't pets, we shouldn't expect them to behave like a well-trained dog, if they live with us, we should expect their "nuisance". 2) If disease is known and probable outcome/by product then we should halt this experiment.
<b>SOMEWHAT FAVORABLE</b>	31-34 has no place on this form. Tags on a drawing should not go to a native American. Their chance of getting a tag should be equal with everyone else. Don't feed the elk to feed the wolves.
<b>SOMEWHAT FAVORABLE</b>	Control is important here so the elk population doesn't be wipe out like what happen in the pass.
<b>SOMEWHAT FAVORABLE</b>	Cool
<b>SOMEWHAT FAVORABLE</b>	Do what you can to maintain the elk herd.
<b>SOMEWHAT FAVORABLE</b>	Elk are cool!
<b>SOMEWHAT FAVORABLE</b>	Elk hunting is a lot of fun for people that are learning to get to know how to do elk hunting at a young age people do it all over the world but sometimes can be scary but if you like to do it and just keep your head up stats on the 24/7 365 days a year Nobody's Perfect

**OPINION ON ELK  
BEING IN WISCONSIN**

**COMMENT**

<b>SOMEWHAT FAVORABLE</b>	I think the wolf population should be reduced in Wisconsin.
<b>SOMEWHAT FAVORABLE</b>	I think they should do like they do the Bear Hunting season. Put in for a permit and get one every so many years.
<b>SOMEWHAT FAVORABLE</b>	I was unaware of this topic and I'd be interested in learning more and I think public updates (like local radio or television) would be helpful and widely appreciated. I strongly support the idea of reintroducing a native species.
<b>SOMEWHAT FAVORABLE</b>	I've been hunting 25 years ..I love hunting ..its Lot like deer hunting
<b>SOMEWHAT FAVORABLE</b>	I've hunted elk for 35 years. Saw two cows at Clam Lake refuge last week. My wife and I enjoy seeing them. Thank you DNR,
<b>SOMEWHAT FAVORABLE</b>	If you introduce elk, make sure they have enough to eat. I've heard that deer are slowly moving south for lack of food In the north.
<b>SOMEWHAT FAVORABLE</b>	In my opinion, the elk population will never stabilize in Wisconsin as long as we have wolves. I strongly disagree with any efforts to protect wolves or continue with the introduction of them. Wolves are and will continue to place negative effects on our deer and elk populations. I so thank anyone who works to protect our deer and elk and all of the other activities in our great state.
<b>SOMEWHAT FAVORABLE</b>	Interesting to think about
<b>SOMEWHAT FAVORABLE</b>	It should not a hunt for only native Americans. All Wisconsin residence should have equal chance. Not like spearing season that has ruined many lakes!
<b>SOMEWHAT FAVORABLE</b>	It's good to know elk are being reintroduced
<b>SOMEWHAT FAVORABLE</b>	My husband used to use deer, no longer but I have a son that loves to hunt deer
<b>SOMEWHAT FAVORABLE</b>	My main concern would be to keep them off the roads. They are a big animal.
<b>SOMEWHAT FAVORABLE</b>	No special permits for Native Americans
<b>SOMEWHAT FAVORABLE</b>	Please do not introduce more wolves in to our state. Especially in areas where you are trying to increase the elk herd.
<b>SOMEWHAT FAVORABLE</b>	Please make an effort to locate elk in areas far enough away from ag cropland and livestock. I believe there will be less confrontation if this would be closely monitored.
<b>SOMEWHAT FAVORABLE</b>	Primary concerns are elk hits with vehicles and agricultural crop damage from elk
<b>SOMEWHAT FAVORABLE</b>	Protecting Elk is very important
<b>SOMEWHAT FAVORABLE</b>	Should let the elk spread naturally through the forested areas in WI
<b>SOMEWHAT FAVORABLE</b>	Take wolves OFF endangered list and create a harvest season to manage population. Wasting money on elk otherwise.
<b>SOMEWHAT FAVORABLE</b>	The Enron has been destroyed under the current administration
<b>SOMEWHAT FAVORABLE</b>	The hunting permits should be a lottery and not giv3n to special groups, especially no special treatments for Native Americans or politicians
<b>SOMEWHAT FAVORABLE</b>	The question where you seen an elk in the wild should have a sub question where. In WI or on vacation out west

**OPINION ON ELK  
BEING IN WISCONSIN**

**COMMENT**

<b>SOMEWHAT FAVORABLE</b>	The survey help us to demonstrates an ability to transfer vision into execution.
<b>SOMEWHAT FAVORABLE</b>	There should be a limit on how often a person could get a permit for elk hunt given the current small number, but I don't know that once in a lifetime is necessary. My thought is that you may have a permit but you won't necessarily actually get the elk.
<b>SOMEWHAT FAVORABLE</b>	They say there was elk around till a few years after the civil war. There was a haystack they used to eat out of every winter. Every year there got to be less and then there wasn't any.
<b>SOMEWHAT FAVORABLE</b>	Very surprised by the elk information. It's great.
<b>SOMEWHAT FAVORABLE</b>	We have seen them and they are beautiful.
<b>SOMEWHAT FAVORABLE</b>	We lived near an elk farm I loved it but it was too much money for him to raise them so he sold them. They should make it affordable to raise them as livestock. They taste good.
<b>SOMEWHAT FAVORABLE</b>	We should trust the biologists and best practices in the area. We citizens should not try to micro-manage this initiative.
<b>SOMEWHAT FAVORABLE</b>	Wish there were more surveys like this one
<b>SOMEWHAT FAVORABLE</b>	With a minimal amount of tags going out I believe we should look more at elderly, Veterans, and make a wish hunters.
<b>VERY FAVORABLE</b>	Although I understand the benefits of elk hunting, I do not support it in any form. Let Wisconsin be a haven for endangered species.
<b>VERY FAVORABLE</b>	Although not a hunter I strongly support hunting especially if the game is used for food. The elk is a magnificent animal that should be protected until the desired population is achieved.
<b>VERY FAVORABLE</b>	Apex predators are essential in balancing the elk and deer populations.
<b>VERY FAVORABLE</b>	As an animal lover, the thought of unnecessary or cruelly killing an animal breaks my heart. This was their land before we stole it from them. Please don't allow hunting. Thank you.
<b>VERY FAVORABLE</b>	As long as the public is compensated for wolf or bear damages, the same should be extended towards elk. Practicality should always rule over emotion, always.
<b>VERY FAVORABLE</b>	Attempting to preserve sufficient habitat will work or not work. Elk need space to roam. A reasonable wolf population is not bad. The occasional cougar wandering around the state is not likely a problem.
<b>VERY FAVORABLE</b>	Back in the old days people had to hunt for their food. Now we have grocery stores so I feel that killing animals is unnecessary.
<b>VERY FAVORABLE</b>	Bear tags should switch from a point system to a lottery.
<b>VERY FAVORABLE</b>	Before this survey I was very elf ignorant. I think Elk are majestic creatures. They were here before us I think they should have the chance to live after we're gone. We should do everything in our power to insure there is a safe habitat for them to grow and flourish.
<b>VERY FAVORABLE</b>	Bring elk back !!

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<b>VERY FAVORABLE</b>	Bring them on! There are many areas where a limited herd could be developed.
<b>VERY FAVORABLE</b>	Bringing back Elk to WI is a positive thing overall for all state residents and I am willing to pay more in state taxes for successful mgt of the herds for all stakeholders. Thank you for conducting this survey!
<b>VERY FAVORABLE</b>	Disabled Veteran land/home owners should be given permits free of charge, every 3 years with permit fees in between years at half price.
<b>VERY FAVORABLE</b>	Don't kill them all.
<b>VERY FAVORABLE</b>	Elk are awesome hope to see some in my area soon
<b>VERY FAVORABLE</b>	Elk are beautiful. I would love to see them in the wild, but I am not a hunter.
<b>VERY FAVORABLE</b>	Elk help feed the wolf populations so deer will increase
<b>VERY FAVORABLE</b>	Elk hunt to control herd is a good idea, but do it like bear tags only so many tags a year!
<b>VERY FAVORABLE</b>	Elk hunting would be fine with me, but I don't like the idea of killing them just because they wander into the wrong area.
<b>VERY FAVORABLE</b>	Elk is a species I would love to be able to see and hunt commonly in Wisconsin, it would be great if we had more being bred cross the state and were a much more common sight, in my opinion for crop damage they should be treated like deer and farmers can obtain a tag to dispatch the animal. Although they can be dangerous people need to just learn to keep their distance when they spot an elk or be prepared to encounter elk in areas where they are know to be... If someone gets gored because they cannot respect the animals boundaries it is sort of the text book definition of natural selection and society has already done enough of preventing that already. My only major concern is the damage they can do if a car hits them, but other states are able to have both elk and freeways with a minimal amount of problems and honestly drunk drivers kill more drivers in Wisconsin than elk ever will anyway.
<b>VERY FAVORABLE</b>	Elk should be in Wisconsin
<b>VERY FAVORABLE</b>	Elk would be great!
<b>VERY FAVORABLE</b>	Get CWD under control. No deer farms. No baiting of wildlife.
<b>VERY FAVORABLE</b>	Glad that the Elk are back!
<b>VERY FAVORABLE</b>	Glad we're restoring our native species
<b>VERY FAVORABLE</b>	Grew up on a farm did plenty of hunting and fishing in younger days. 66 now slowing down a little.
<b>VERY FAVORABLE</b>	Have lived for a time in Wyoming and have been in awe of these magnificent animals.
<b>VERY FAVORABLE</b>	How come "elk are back" signs are on Hwy 54 east and not on I-94? We saw 5 elk east of Hixton on I-94.
<b>VERY FAVORABLE</b>	How do you keep the anti-hunter from getting wolf permits? Maybe who benefits the most from increased elk population are wolves.
<b>VERY FAVORABLE</b>	I agree that herds should be managed based on natural resources available and population density. Overall, I oppose elk hunting.

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<b>VERY FAVORABLE</b>	I agree that herds should be managed based on natural resources available and population density. Overall, I oppose elk hunting.
<b>VERY FAVORABLE</b>	I am 75 and a gun owner who supports CCW and I am also an NRA Range Safety Officer. Where I did hunt fowl when young, I haven't in over 50 years because I lost my desire to kill animals. And I've never hunted for deer in my life as I simply had no desire to kill such a beautiful animal. That's all.
<b>VERY FAVORABLE</b>	I am a compassionate animal lover and I support bringing more elk into Wisconsin.
<b>VERY FAVORABLE</b>	I am a supporter of quality habitat to support all native and some non-native species. Including a report with some background with the survey would have been nice to have to answer more accurately although they may just be projections. I support hunting and recreating outdoors--not so much the ATV access in many areas.
<b>VERY FAVORABLE</b>	I am glad that you are reintroducing Elk into this State.
<b>VERY FAVORABLE</b>	I am happy with elk running free, however, I would never want to see them living captivity. I spent a lot of time out west and love watching the elk.
<b>VERY FAVORABLE</b>	I am not a hunter anymore, but feel hunting is an important part of Wisconsin life.
<b>VERY FAVORABLE</b>	I am ready and looking forward to hunt elk.
<b>VERY FAVORABLE</b>	I am totally for an elk season in Wisconsin. The only problem I have personally is how tags are allocated, the same as the wolf hunt. Why do so many of the tags automatically go to Native Americans. This in my opinion deters people from participating.
<b>VERY FAVORABLE</b>	I am totally onboard with establishing herds of elk and packs of wolves.
<b>VERY FAVORABLE</b>	I am very concerned with the environment My daughter is a tech for the DNR in Marathon, so she keeps my updated on Wisconsin environmental issues
<b>VERY FAVORABLE</b>	I appreciate the work being done to reintroduce native species that have been driven out by human action. It's the kind of tax dollar spending anyone should be behind, because environmental protection is extremely important for all of humanity.
<b>VERY FAVORABLE</b>	I believe maintaining elk herds should be accomplished without hunting
<b>VERY FAVORABLE</b>	I believe that there are predators that can keep the elk numbers down. They are great animals and I don't believe animals in the wild deserve to be killed.
<b>VERY FAVORABLE</b>	I belong to the RMEF banquet for Hayward for the last 23 years.
<b>VERY FAVORABLE</b>	I can't wait to see the elk population grown in Wisconsin.
<b>VERY FAVORABLE</b>	I didn't know about the elk restoration project, but I'm glad it's happening. Keep Saving elk.
<b>VERY FAVORABLE</b>	I don't know
<b>VERY FAVORABLE</b>	I don't like to hunt animals. I think that researchers need to preserve wildlife. There are times that animals are a danger to humans, and it is the only time that humans should get rid of animals that are a constant problem/threat.
<b>VERY FAVORABLE</b>	I don't know anything about weapons suitable for hunting but if allowed it needs to be humane for the elk

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<b>VERY FAVORABLE</b>	I enjoyed this survey
<b>VERY FAVORABLE</b>	I enjoyed this survey and actually learned some things
<b>VERY FAVORABLE</b>	I feel a good habitat for elk is northern Bayfield county. It's remote, unpopulated, low impact of human intervention for the elk.
<b>VERY FAVORABLE</b>	I feel bringing Elk back to Wisconsin is AMAZING!
<b>VERY FAVORABLE</b>	I feel that the Elk herd should be higher than the 200 Elk in Clam Lake area before hunting is allowed and that we should make sure that the Elk population is being reproduced at a high rate, otherwise we are going to start cutting the herd to where it has been in the past.
<b>VERY FAVORABLE</b>	I feel that the elk need to be here as well as wolves but that there ought to be a wolf hunt to keep things on more even keel.
<b>VERY FAVORABLE</b>	I feel that we should let the Elk herds grow a little more before we decide to hunt them, allowing them the opportunity to grow.
<b>VERY FAVORABLE</b>	I find Elk beautiful animals, yet understand they somewhat need to be controlled, as to not increase people & wildlife interaction.
<b>VERY FAVORABLE</b>	I find this plan to reintroduce the elk very exciting!!!
<b>VERY FAVORABLE</b>	I grew up in a family that hunted deer and ate the meat. I have not known people who have hunted elk. If anyone does it for the meat, I hope that's why they do it.
<b>VERY FAVORABLE</b>	I have also lived in Oregon and seen big herds there. I come from a hunting family, but personally do not hunt. My dad comes to my home in Hayward to visit from southern IL and most mornings, he drives to Clam Lake to look for elk and the go out for breakfast. He has gone elk hunting in CO several years. For CWD management, do what the research supports, not opinions. PS - Need more research on ticks, tick diseases, and tick control and implement tick control measures.
<b>VERY FAVORABLE</b>	I have been hunting out of Drummond, WI for 53 years so I have some insight regarding deer and elk. Turning 25 elk into 200 in 22 years and touting that as success is an insult to the intelligence of anyone who have been paying attention. Then having a 10-tag season adds to that insult. I believe the DNR already knows that predators are the problem (wolves and bear). Work to get the wolf delisted and managed properly and the bear population is under control and the elk population will improve. Hint: you have the same problem with the deer population. Hint 2. Stop baiting statewide.
<b>VERY FAVORABLE</b>	I have enjoyed many deer hunting seasons with my son and grandchildren in the Nicolet Forest. We all would like to see a flourishing elk herd in Wisconsin,
<b>VERY FAVORABLE</b>	I have had the pleasure of watching the elk population grow over the years. So, I am only looking at this from the beauty of it all.
<b>VERY FAVORABLE</b>	I have seen elk jump large fences out west. You cannot fence in wild animals. We have elk in Monroe county. I have record on my trail cameras. They are neat to see and have eaten in my hayfield/ They are like the whitetail on Fort McCoy, they cross the border for lunch. I think property owners should have the first choice for hunting.

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	I have ancestors who were here before the U.S. was a nation and I feel I am just as native as anyone.
<b>VERY FAVORABLE</b>	I have seen many elk on highway 77 going towards Hayward. They are gorgeous animals and I like watching them
<b>VERY FAVORABLE</b>	I knew about the reintroduction of elk into Wisconsin, but I didn't know anything about how many and where. I don't know how much space they need, and it depends on the gravity of the situation between us and elk on the resolve of the issue. I love the idea of returning elk to Wisconsin. Thank you.
<b>VERY FAVORABLE</b>	I like the concept of having elk in Wisconsin. At the same time, I see concerns with a having a herd near I=94. There is a large risk for a vehicle incident that kills passengers. When that happens, support for elk in our area will immediately cease.
<b>VERY FAVORABLE</b>	I like the idea of a hunting season
<b>VERY FAVORABLE</b>	I like the idea of introducing wildlife that once was in the area back into it. I do not participate in any hunting though.
<b>VERY FAVORABLE</b>	I like to hunt elk very much.
<b>VERY FAVORABLE</b>	I live in Green County. Not a good place to raise elk in the wild. To heavily populated and to many highways.
<b>VERY FAVORABLE</b>	I live in Madison. The animal I interact with most are humans. I can't do things rural people do to their animal inconveniences even though an organized hunt might be beneficial. Make people adapt! Not animals. Didn't like the scenario answers- where is option for research? Humans should also bear some responsibility too. Not just kill an animal potentially in the way.
<b>VERY FAVORABLE</b>	I lived in Idaho for 14 years and went elk hunting and scouting my parent's own property in Bayfield County outside of Clam Lake
<b>VERY FAVORABLE</b>	I lived in Sawyer County for many years and enjoyed the large deer population but never seen any elk. Wish I could have seen and photographed elk. Current population is too small to have a hunting season for them.
<b>VERY FAVORABLE</b>	I love that Elk were brought back to Wisconsin. I lived near Clam lake back when they were first brought back.Had always wanted to see one.
<b>VERY FAVORABLE</b>	I love the introduction of elk in our state, but close monitoring is a must
<b>VERY FAVORABLE</b>	I love when the elk are out on hwy 77. I think they are a majestic animal and should not be hunted there are natural predators to keep the number of elk in control
<b>VERY FAVORABLE</b>	I mostly feel like the animals should be left alone
<b>VERY FAVORABLE</b>	I no longer hunt but I am not one to stop current hunters so long as the harvest numbers are regulated.
<b>VERY FAVORABLE</b>	I own 330 acres in Jackson county in Town of North Bend and Franklin. Would like to see elk there.

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<b>VERY FAVORABLE</b>	I really enjoy the challenge hunting gives me, however I am a handicapped resident, and I feel there should be allowances made for handicapped people to hunt elk from their vehicle and from the roads.
<b>VERY FAVORABLE</b>	I really think bringing native plants and animals back to Wisconsin is a great idea.
<b>VERY FAVORABLE</b>	I recently relocated to Racine from Phelps. WI, where I owned 12 acres located adjacent to the "wilderness reserve". I actually worked there for two years as they brought more elk, managed them, and then allowed for harvest. They're a gorgeous animal and I'm glad they're back in the state! (much to the dismay of some).
<b>VERY FAVORABLE</b>	I support all efforts to recreate/maintain WI's natural environment
<b>VERY FAVORABLE</b>	I support the elk restoration in Wisconsin.
<b>VERY FAVORABLE</b>	I support the reintroduction of Native Species, and although I do understand the incentive that the state has for allowing hunting, the preference must be given to a landowner if hunting shall be permitted on or within rifle range of their property.
<b>VERY FAVORABLE</b>	I thank it's great that elk have been reintroduced in the state. I believe the elk should be allowed to roam free and let nature take its course.
<b>VERY FAVORABLE</b>	I think if you do like the deer it will turn out good.
<b>VERY FAVORABLE</b>	I think it is good to re-introduce elk in Wisconsin
<b>VERY FAVORABLE</b>	I think it's pretty cool to reintroduce elk for us to see and our descendants, like it was before our time.
<b>VERY FAVORABLE</b>	I think it's very nice that you are helping the preservation!
<b>VERY FAVORABLE</b>	I think reintroducing elk in Wisconsin is a very good decision. Keep up the good work.
<b>VERY FAVORABLE</b>	I think that introducing elk back into Wisconsin is a good idea but should be managed very close to keep diseases and population under control as we do for the whitetail population.
<b>VERY FAVORABLE</b>	I think the bringing back of elk in Wisconsin was a good idea as long as there is enough space for them to limit the amount of impact on farmers
<b>VERY FAVORABLE</b>	I think they should not kill elk, cause it would be like eagles. eagles are extinct.
<b>VERY FAVORABLE</b>	I think this should be done much the way Bear permits are handled. Under no way should Gun and Bow hunters be in the woods at the same time!!
<b>VERY FAVORABLE</b>	I think Wisconsin hunters should get to hunt for the elk first for 10-15 years. Then let other states come in. Give locals the first chance. Thank you.
<b>VERY FAVORABLE</b>	I think you should relocate the elk and put them in all of the counties, not just a few.
<b>VERY FAVORABLE</b>	I totally support the reintroduction of elk in WI
<b>VERY FAVORABLE</b>	I use to hunt a lot but with age 83 I now do none of it
<b>VERY FAVORABLE</b>	I used to gun deer hunt, but hunter pressure is to great now in county owned land. (Dangerous!) Had my own hunting land but sold it because of taxes.
<b>VERY FAVORABLE</b>	I visit CO annually and enjoy seeing the elk roaming.

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<b>VERY FAVORABLE</b>	I was unaware of the existence of the Elk concern in Wisconsin before this survey. I will seek an opportunity to go to an elk viewing because of this.
<b>VERY FAVORABLE</b>	I wish this would have started sooner.
<b>VERY FAVORABLE</b>	I would hope elk hunting would be open to out of state hunters to bring in tourism dollars and get on the outdoors network.
<b>VERY FAVORABLE</b>	I would like more elk in Black River. I haven't seen any there yet and I go there a lot.
<b>VERY FAVORABLE</b>	I would like to see a Buck "only" for elk, and no calves or females taken, "if" a hunt is needed.
<b>VERY FAVORABLE</b>	I would like to see a healthy elk herd in Wisconsin. I want to hear an elk bugle.
<b>VERY FAVORABLE</b>	I would like to see elk in our state
<b>VERY FAVORABLE</b>	I would like to see elk in the wild where I live
<b>VERY FAVORABLE</b>	I would like to see elk reintroduced into Iron County.
<b>VERY FAVORABLE</b>	I would like to see more wildlife in Wisconsin.
<b>VERY FAVORABLE</b>	I would love to see more elk in Price County. What an opportunity for the residents of the area to be able to take in such nature.
<b>VERY FAVORABLE</b>	I would love to see the elk in Wisconsin, would love to see them on my property
<b>VERY FAVORABLE</b>	I would love to see the elk populations grow and also be able hunt to keep the population under control. I think letting out of state people hunt would be great for tourism and the local economy.
<b>VERY FAVORABLE</b>	I would love to see the elk, they don't need to be killed when they haven't even populated yet.
<b>VERY FAVORABLE</b>	I'm excited to see the elk population in the Black River Falls area increase and hope to have the experience of seeing one.
<b>VERY FAVORABLE</b>	I'm a retired (female) State Trooper, been in law enforcement for 31+ yrs, so follow the topic of elk management in Wis. I do not hunt elk or deer, but family, friends & Co-workers do/have. We need to work harder to have the elk herds succeed and continue to grow. I appreciate ALL of the State's efforts in furthering this.
<b>VERY FAVORABLE</b>	I'm not a hunter myself, but I enjoyed this survey.
<b>VERY FAVORABLE</b>	If animal is harvested by DNR meat should be given to a needy cause
<b>VERY FAVORABLE</b>	If anyone's crops are endangered, move the herd.
<b>VERY FAVORABLE</b>	If hunting only allow 1 elk per season per permit.
<b>VERY FAVORABLE</b>	If the state of Wisconsin, in partnership with the DNR, were willing to provide the land and funding for the maintenance of an elk herd in Wisconsin, I would be very interested in becoming an active care taker of an elk herd
<b>VERY FAVORABLE</b>	If we had a lot of elk, I'd be okay with hunting but w/ bow/crossbow. If we had a huge amount of elk where they were common, then gun hunting.

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<b>VERY FAVORABLE</b>	In consideration, I am not a tribal member, but my child is and I am employed through the Ho-Chunk and elk are considered culturally important and sacred. Thank you for reintroducing elk to the Wisconsin area.
<b>VERY FAVORABLE</b>	In today's society, equality and fairness are stressed- no matter of race, gender, religious beliefs. This philosophy should apply to everything need to follow the same laws and regulations for hunting and fishing. DNR's responsibility is to protect natural resources. By allowing Native Americans to be exempt from the laws and regulations, the DNR is failing at their purpose and there truly is no equality. Exempting Native Americans also causes the costs to others to be higher and they aren't having to pay to keep wildlife available. This also impacts the availability of natural resources.
<b>VERY FAVORABLE</b>	Introduce a herd in less wolf populated areas and reopen a wolf season again. Thanks!
<b>VERY FAVORABLE</b>	It is exciting to have a species reintroduced to what was once its native habitat.
<b>VERY FAVORABLE</b>	It would be great to see more elk in WI but with all of the land being sold in small parcels I just don't see how there could be enough habitat for them to exist unless there were bigger tracts of land.
<b>VERY FAVORABLE</b>	It's cool
<b>VERY FAVORABLE</b>	Keep expanding the herds in a safe manner, while being mindful of the impact on citizens residing in the area inhabited by elk. Maximize economic and tourism potential when possible.
<b>VERY FAVORABLE</b>	Keep politics out of it
<b>VERY FAVORABLE</b>	Keep up the good work.
<b>VERY FAVORABLE</b>	Keep up the good work. I hope someday we will be able to hunt elk in WI.
<b>VERY FAVORABLE</b>	Knowing a number of game wardens, CWD is not as widespread as the public is lead to believe. I know of animals (deer) that have been put down because they "may have been with CWD". This, is a horrible thing and only those farms who have had the issue should be closed. I don't wish to hear elk are being treated the same. As well- Native Americans should ge to hunt special and more to support their culture and families.
<b>VERY FAVORABLE</b>	Let nature take its course on wildlife.
<b>VERY FAVORABLE</b>	Let the population stabilize that their habitat is sufficient to support herds
<b>VERY FAVORABLE</b>	Let's eliminate wolves
<b>VERY FAVORABLE</b>	Live in Brown county, own land in Northern Oconto county. Would love to see elk back.
<b>VERY FAVORABLE</b>	Love the idea of having elk in Wisconsin.
<b>VERY FAVORABLE</b>	Make Crossbow season a week long
<b>VERY FAVORABLE</b>	My concern is that landowners may abuse the crop damage claim simply to have the ability to hunt elk on their property or have a friend do it.
<b>VERY FAVORABLE</b>	My family would love the opportunity to hunt elk in Wisconsin.
<b>VERY FAVORABLE</b>	My property in Oneida County would be suitable for elk.

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<b>VERY FAVORABLE</b>	Native Americans shouldn't be separated where they get their own tags. They should have to draw like everybody else. Southern Wis can hold elk as well. Start the yearly wolf hunt.
<b>VERY FAVORABLE</b>	Need to get the wolf population under control. There are too many.
<b>VERY FAVORABLE</b>	Need to make as natural as possible. Ultimately should be just like whitetail
<b>VERY FAVORABLE</b>	Not a big game hunter. Am excited that elk are being reintroduced into Wisconsin. Avid grouse hunter hope Wisconsin continues efforts to keep grouse habitat healthy. Hunt grouse around the Clam lake area, really enjoy seeing elk and their signs.
<b>VERY FAVORABLE</b>	Not a big game hunter. Am excited that elk are being reintroduced into Wisconsin. Avid grouse hunter hope Wisconsin continues efforts to keep grouse habitat healthy. Hunt grouse around the Clam lake area, really enjoy seeing elk and their signs.
<b>VERY FAVORABLE</b>	Ok for elk hunt in overpopulated areas or area of elk nuisance/damage to farmland. Once a permit holder gets an elk harvested- put them on bottom of list for permit in future.
<b>VERY FAVORABLE</b>	Opportunity for more hunters
<b>VERY FAVORABLE</b>	Please maintain a balance of large predators to large prey.
<b>VERY FAVORABLE</b>	Re: hunting: I answered "yes" because although I personally wont hunt elk, my husband and 2 sons will.
<b>VERY FAVORABLE</b>	Really cool conversation stuff going on.
<b>VERY FAVORABLE</b>	Reduce the wolf herd and bear population.
<b>VERY FAVORABLE</b>	Should do the same as deer hunting and if the DNR has to get involved fine but limit them. And landowners should talk ownership of their responsibilities to own their property.
<b>VERY FAVORABLE</b>	So long as Elk populations remain reasonable, and most importantly, healthy. All seems good and well.
<b>VERY FAVORABLE</b>	Some of your scenarios with the responses listed don't make a lot of sense. I own 80 areas in the clam lake herd area and I have elk on my property. I listened to elk bugling 2 days ago. My neighbors and I thoroughly enjoy having elk on our properties. We also like to hunt. We appreciate the DNR's efforts but also worry about the DNR overthinking and messing up a good thing. Sometimes the best thing to do is nothing at all. Please remember over 38,000 paid \$10 apiece for a chance to hunt when you consider the social impact of elk in Wisconsin.
<b>VERY FAVORABLE</b>	Somewhat support financial loss to farms but let professionals solve problem. Loved seeing elk at Black River.
<b>VERY FAVORABLE</b>	Stop the hunt.
<b>VERY FAVORABLE</b>	Strongly oppose Indian tribes are given elk tags. Every resident should have the same and equal opportunity to draw these very limited tags!!!
<b>VERY FAVORABLE</b>	Thank you for maintaining U.S. wildlife
<b>VERY FAVORABLE</b>	Thank you for the service in protecting elk herds, hunters and Wisconsin.

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<b>VERY FAVORABLE</b>	Thanks for giving the opportunity to be heard on this.
<b>VERY FAVORABLE</b>	Thanks to WDNR for gathering public opinions on these types of management policies.
<b>VERY FAVORABLE</b>	The biggest concern I would have how are we really going to get the CWD under control ? This seems to be the biggest concern in the state.
<b>VERY FAVORABLE</b>	The only time I saw elk in my area (Waushara co) was at a game farm.
<b>VERY FAVORABLE</b>	The wolf population is getting out of hand in the Clam lake area, they already have been chasing the whitetail deer or eating them, are the elk that are being purchased being monitored for wolves killing them off!
<b>VERY FAVORABLE</b>	There should be less corralling and collaring of elk; as well as transport elsewhere. Let them roam where they will. Too much stress on animals. Seeing elk w/ collars takes away from their beauty and grace.
<b>VERY FAVORABLE</b>	They should hold off on hunting until everything has been proven to work with establishing a new heard.
<b>VERY FAVORABLE</b>	I believe we should continue this project but also watch it for issues don't being on more issues such wolf's etc.
<b>VERY FAVORABLE</b>	This was pretty cool to learn about, because elk seem like really incredible animals and I honestly had no idea we ever had any here. Awesome project.
<b>VERY FAVORABLE</b>	This was very interesting and informative.
<b>VERY FAVORABLE</b>	To grow the elk herd, wolf and bear numbers need to be reduced.
<b>VERY FAVORABLE</b>	Too many bears -- Too many wolves!! Hard to grow a herd with too many large predators.
<b>VERY FAVORABLE</b>	Try working on getting a statewide ATV trail system on snowmobile trails for atvs.
<b>VERY FAVORABLE</b>	We have elk on trial camera between Fort mccoys and Tunnel city.
<b>VERY FAVORABLE</b>	We have property in Forest County near Argonne and seen have elk near there on Scot's Lake Rd in the National Forest
<b>VERY FAVORABLE</b>	We have too many predators, period.
<b>VERY FAVORABLE</b>	We need to protect/preserve our natural resources.
<b>VERY FAVORABLE</b>	WE own a summer home in Eagle River and some elk have been seen there recently and I would like to see more.
<b>VERY FAVORABLE</b>	We should use sound scientific advice and listen to stakeholders including tribal rights in the ceded territories. Habitat restoration should be based on climate change models.
<b>VERY FAVORABLE</b>	When 10 tags issued open up to out of state to generate income. Start small herds (5 animals) in several light shaded areas. Keep up the good work.
<b>VERY FAVORABLE</b>	Why introduce native animals just to kill them?
<b>VERY FAVORABLE</b>	Why isn't there a wolf season when there has been less cost invested in wolf being reintroduced and an unsustainable population?

**OPINION ON ELK  
BEING IN WISCONSIN**

**COMMENT**

<b>VERY FAVORABLE</b>	With elk being reintroduced to areas of Wis where campers or hikers may come into contact, it might be a good idea to educate the general public about the behavior of elk and what to expect if you encounter one.
<b>VERY FAVORABLE</b>	Would like to see elk range protected as far as development is concerned. We need our "up north" and the wildlife that go with it.
<b>SKIPPED</b>	I strongly support the reintroduction of elk into Wisconsin. To ensure the success of the program we also need to tightly control the wolf population.
<b>SKIPPED</b>	Stop pouring money on elk! Get rid of wolves!
<b>SKIPPED</b>	We have deer in area and enough crop damage without elk. If you want them. Keep them north of interstate 90.

## Appendix A: Mailed Questionnaire

### Wisconsin Elk Opinion Survey

Elk once ranged over most of North America and throughout much of Wisconsin. They disappeared from Wisconsin in the 1800s due to unregulated hunting and habitat loss with the onset of European settlement. Elk were reintroduced to Wisconsin in 1995, near the town of Clam Lake, and more recently near Black River Falls. In 2018, the Clam Lake herd is projected to surpass 200 elk, while the Black River herd is projected to be about 70 animals. The long-term population goal is 1,400 elk for the Clam Lake elk range and 390 for the Black River elk range. Both populations are providing wildlife viewing opportunities and are expected to offer regulated hunting seasons. While many enjoy the benefits of restoring elk to our state, others may have concerns about the potential financial, social or ecological costs that may also accompany the growth of these herds. Understanding your views is important for us to address such concerns while maintaining or even enhancing the benefits.



**1. Are you willing to participate in this study of public opinion regarding elk in Wisconsin?**

- Yes → *Go to next page and take survey*
- No → *If NOT, please help us by answering questions 1a-1f and return this questionnaire.*

*Thank you for sending this questionnaire back.*

**1a. Why have you declined to participate? Check all that apply.**

- I am not interested in the topic.
- I trust the DNR to manage elk without my input.
- I feel my opinion will be ignored.
- I feel I do not know enough to participate.
- I am too busy.
- Other: \_\_\_\_\_

1b. Are you?  Male  Female  Other/Rather not identify

1c. What is your age? \_\_\_\_\_ years

**1d. What best describes where you live now? Check one.**

- Rural on a farm
- Rural non-farm
- Small town
- Suburb
- City

**1e. Over the years, we've worked with a number of stakeholder groups whose feedback has been very valuable. Do you identify as a member of any of the following groups? Check all that apply.**

- Hunter  Game Farmer
- Native American Tribal member  Forester

- Motorized Trail User
- Agricultural Producer
- None of these

- Landowner
- Business owner

**1f. In which county is your primary residence?**

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## **AWARENESS OF ELK IN WISCONSIN**

*Please answer the following questions based on knowledge you **had prior to receiving this questionnaire.***

2. Did you know that wild, free-ranging elk historically lived in most of Wisconsin?  
 Yes       No
3. Did you know that wild, free-ranging elk had disappeared from Wisconsin?  
 Yes       No
4. Did you know that due to reintroduction efforts, wild, free-ranging elk currently live in Wisconsin?  
 Yes       No → *If NOT, please skip to Question 5.*
- 4a. Were you aware that wild, free ranging elk were introduced to the Clam Lake area and range throughout portions of Ashland, Bayfield, Price, Rusk and Sawyer counties in north central Wisconsin?  
 Yes       No
- 4b. Were you aware that wild, free ranging elk were introduced to the Black River Falls area of Jackson County?  
 Yes       No

## **PERSONAL EXPERIENCE WITH ELK**

*The next questions will help us understand your experience with elk and elk-related recreation in Wisconsin and elsewhere.*

5. Have you ever visited a National Park or similar destination in North America for which viewing, photographing or hearing elk was an important part of the experience?  
 Yes       No
6. Have you ever hunted elk?  
 Yes       No
7. Have you ever lived in an area of the country where elk may be found?  
 Yes – In Wisconsin       Yes – Another State       No       Not sure
8. How likely or unlikely would you be to take a trip in order to have one of the following experiences? *(Please circle one number for each experience below)*

	Very Unlikely	Somewhat Unlikely	Unsure	Somewhat Likely	Very Likely
<b>Viewing, photographing, or hearing</b>	1	2	3	4	5
<b>Hunting elk</b>	1	2	3	4	5

9. Thinking now about any experiences you may have had with elk, please answer the questions below by circling the number that best applies to you.
- About how many times have you ...      Never      Once      More than once

...seen an elk in the wild	1	2	3
...seen or heard signs of elk (e.g., tracks, bugling)	1	2	3

## ATTITUDES ABOUT ELK IN WISCONSIN

The following questions will help us determine your attitudes toward restoring wild, free-ranging elk in Wisconsin.

10. Overall, how would you describe your feelings about elk being in Wisconsin? (Please circle one number below)

Very Unfavorable	Somewhat Unfavorable	Indifferent	Somewhat Favorable	Very Favorable
1	2	3	4	5

11. To what extent do you support or oppose efforts to restore wild, free-ranging elk to Wisconsin? (Please circle one number below)

Strongly Oppose	Somewhat Oppose	Unsure	Somewhat Support	Strongly Support
1	2	3	4	5

## ELK RESTORATION IN WISCONSIN

Within this survey, areas that have been designated for elk are referred to as elk range even if the elk do not currently occupy it. **On the back of the cover letter accompanying this survey is a map of Wisconsin highlighting the locations of existing elk herds (dark shaded areas) and habitat that may be suitable for elk in the future.**

12. Using the map as a reference, which of the following best describes the county in which you live?

- I live in a county with no habitat suitable for elk (Unshaded areas on the map) → *Continue to Q13.*
- I live in a county where elk are currently found (Dark shaded areas on the map) → *Please answer Q12a.*

Q12a.

- 12a. To what extent would you support or oppose expanding elk range within your county?

Strongly Oppose	Somewhat Oppose	Unsure	Somewhat Support	Strongly Support
1	2	3	4	5

- I live in a county with habitat suitable for elk (Light shaded areas on the map)

→ *Please answer Q12b & Q12c.*

- 12b. To what extent would you support or oppose having elk in your county?

Strongly Oppose	Somewhat Oppose	Unsure	Somewhat Support	Strongly Support
1	2	3	4	5

- 12c. How important is consideration of the following factors when deciding whether or not to introduce elk into a new county? (Please circle one number)

for each row below)

	Not Important	Somewhat Important	Very Important
The amount of public land in the county	1	2	3
The amount of agricultural land in the county	1	2	3
The amount of local public support for elk introduction	1	2	3
The amount of statewide public support for elk introduction	1	2	3
The presence of wildlife disease(s) in the county that may affect elk	1	2	3
The amount of public funding available to pay for elk introduction.	1	2	3
The amount of private funding available to pay for elk introduction.	1	2	3

## ELK MANAGEMENT IN WISCONSIN

13. Please rate the following population objectives for the Black River and Clam Lake elk herds occupying their current designated ranges:

	Much too low	Somewhat too low	About right	Somewhat too high	Much too high	No Opinion
Black River: 390 animals occupying 320 square miles	1	2	3	4	5	0
Clam Lake: 1,400 animals occupying 1,620 square miles	1	2	3	4	5	0

14. The elk population objectives are based around a density of about 1-2 elk per square mile in their current ranges. If the elk ranges were expanded to include new areas, which of the following options would you prefer population objectives be based upon?

Much lower density	Somewhat lower density	Same density	Somewhat higher density	Much higher density	No Opinion
1	2	3	4	5	0

15. To what extent should the following objectives be a priority in elk management decisions? (Please circle one number for each objective listed.)

	Not at all a priority	Low priority	Medium priority	High priority	Not sure
Provide economic opportunities through elk-related tourism and recreation	1	2	3	4	0
Maintain a sustainable elk population size	1	2	3	4	0
Minimize costs of government elk management activities	1	2	3	4	0
Minimize damage to agriculture and personal property (e.g., fences, vehicles)	1	2	3	4	0
Minimize damage to trees and forest vegetation	1	2	3	4	0
Expand the range of the existing elk populations	1	2	3	4	0
Modify the current elk ranges to best fit public support and habitat suitability	1	2	3	4	0

<b>Provide cultural value to the Native American Tribes of Wisconsin</b>	1	2	3	4	0
<b>Avoid impacts to captive elk herds</b>	1	2	3	4	0
<b>Provide elk hunting opportunities</b>	1	2	3	4	0
<b>Restore a native species</b>	1	2	3	4	0
<b>Minimize resource competition with existing wildlife populations</b>	1	2	3	4	0
<b>Avoid disease transmission to existing wildlife and livestock populations</b>	1	2	3	4	0

**16. Managing for elk can take several forms. To what extent do you feel the following activities related to elk management should be a priority?**

	Not at all a priority	Low priority	Medium priority	High priority	Not sure
Habitat management (e.g., promote young forest)	1	2	3	4	0
Preventing elk from wandering onto roadways	1	2	3	4	0
Ensuring the elk herd remains healthy	1	2	3	4	0
Introduction of new elk to maintain genetic diversity	1	2	3	4	0
Encourage harvest of top-level carnivores within designated elk ranges	1	2	3	4	0
Research and monitoring efforts to better understand elk ecology	1	2	3	4	0
Preventing elk from going into areas of agricultural production	1	2	3	4	0
Relocating elk to speed their establishment within areas designated as elk range	1	2	3	4	0

**17. Damages to crops from elk are currently covered under Wisconsin's Agricultural Damage Claims Program, meaning that farmers are eligible to be compensated for their losses. To what extent would you support or oppose the following approaches to dealing with elk that damage farm crops?**

	Strongly Oppose	Somewhat Oppose	Unsure	Somewhat Support	Strongly Support
Compensating landowners financially for their losses	1	2	3	4	5
Subsidizing fencing costs to prevent future damages from elk	1	2	3	4	5
Hazing the elk to encourage it to leave the area (e.g., through loud noises or strobe lights)	1	2	3	4	5
Trapping and relocating the individual elk	1	2	3	4	5
Issuing a permit to the landowner to kill the individual elk themselves.	1	2	3	4	5
Issuing a harvest permit to a hunter or holding a managed hunt on the property	1	2	3	4	5
Shooting of the individual elk by a wildlife professional	1	2	3	4	5

## SCENARIOS

*Situations can occur which require managers to reassess the risks of adverse social, economic and ecological outcomes. The following questions provide some potential scenarios. For each scenario, please indicate your support or opposition to the actions listed.*

**18. SCENARIO: An elk leaves the range established for them in the management plan.**

**To what extent do you support or oppose the following actions taken in response to elk that leave the range established for them in the management plan?**

	Strongly Oppose	Somewhat Oppose	Unsure	Somewhat Support	Strongly Support
Leave it alone.	1	2	3	4	5
Hazing the elk to encourage it to return to the established range on its own.	1	2	3	4	5
Trapping and returning the elk to its original range	1	2	3	4	5
Issuing a hunter harvest permit or holding a managed hunt for that elk.	1	2	3	4	5
Issuing a landowner permit to kill the individual elk on their property.	1	2	3	4	5
Shooting of the individual elk by a wildlife professional	1	2	3	4	5

**19. SCENARIO: An elk is acting aggressively towards trail users, raising human safety concerns.**

**To what extent do you support or oppose the following actions taken in response to an elk causing concerns for human safety?**

	Strongly Oppose	Somewhat Oppose	Unsure	Somewhat Support	Strongly Support
Leave it alone.	1	2	3	4	5
Hazing the elk to encourage it to leave the area on its own	1	2	3	4	5
Trapping and relocating the elk to another area	1	2	3	4	5
Issuing a hunter harvest permit or holding a managed hunt for that elk.	1	2	3	4	5
Issuing a landowner permit to kill the individual elk on their property.	1	2	3	4	5
Shooting of the individual elk by a wildlife professional	1	2	3	4	5

20. *SCENARIO: An elk has developed a habit of damaging fences, raising concerns about extensive property damage.*

To what extent do you support or oppose the following actions taken in response to an elk causing concerns about extensive property damage?

	Strongly Oppose	Somewhat Oppose	Unsure	Somewhat Support	Strongly Support
Leave it alone.	1	2	3	4	5
Hazing the elk to encourage it to leave the area on its own	1	2	3	4	5
Trapping and relocating the elk to another area	1	2	3	4	5
Issuing a hunter harvest permit or holding a managed hunt for that elk.	1	2	3	4	5
Issuing a landowner permit to kill the individual elk on their property.	1	2	3	4	5
Shooting of the individual elk by a wildlife professional	1	2	3	4	5

21. *SCENARIO: Chronic Wasting Disease (CWD) is a fatal neurological disease that affects members of the deer family, including elk. The disease has not yet been detected in areas of the state where elk are found. An elk leaves its established range and wanders into an area known to have Chronic Wasting Disease, raising concerns that it might contract the disease and bring it back to the herd.*

To what extent do you support or oppose the following actions taken in response to an elk that is raising concerns for wildlife health?

	Strongly Oppose	Somewhat Oppose	Unsure	Somewhat Support	Strongly Support
Leave it alone.	1	2	3	4	5
Hazing the elk to encourage it to return to its established range on its own	1	2	3	4	5
Trapping and returning the elk to its original range	1	2	3	4	5
Issuing a hunter harvest permit or holding a managed hunt for that elk.	1	2	3	4	5
Issuing a landowner permit to kill the individual elk on their property.	1	2	3	4	5
Shooting of the individual elk by a wildlife professional	1	2	3	4	5

22. *SCENARIO: Chronic Wasting Disease is detected within 10 miles of an area designated as elk range.*

To what extent do you support or oppose the following actions taken if CWD was detected within 10 miles of an established elk range?

	Strongly Oppose	Somewhat Oppose	Unsure	Somewhat Support	Strongly Support
Continue efforts to increase the elk population in the area	1	2	3	4	5
Halt efforts to increase the elk population in the area but take no	1	2	3	4	5

<b>other action</b>					
<b>Manage/Monitor for CWD the same as for whitetail deer</b>	1	2	3	4	5
<b>Reduce the elk population in the affected area</b>	1	2	3	4	5

## ELK HUNTING IN WISCONSIN

*Under the current management plan, a hunting season for elk has been initiated for the Clam Lake herd because its population size exceeds 200 animals. Under state statute, the number of harvest permits is capped at 5% of the herd (i.e., at least 10 animals).*

**23. Which statement best describes your opinion about the regulated elk hunt in Wisconsin?**

*Check all that apply.*

- I oppose having an elk hunt in the state.
- I am undecided.
- I support having an elk hunt, but I would not hunt elk myself.
- I would be interested in participating in an elk hunt in Wisconsin.

**24. There are several components of managing elk hunting in Wisconsin. To what extent do you agree or disagree with the following components of how the elk season may be structured?**

*(Please circle one number for each objective listed.)*

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
<b>Elk hunting should only be open to residents of Wisconsin</b>	1	2	3	4	5
<b>Hunters should be allowed to use the weapon of their choice to hunt elk (Bow, crossbow, or gun)</b>	1	2	3	4	5
<b>Hunters should be limited to a single harvest permit for elk in their lifetime.</b>	1	2	3	4	5
<b>Landowners should be provided with incentives to allow hunters to access their property for elk hunting.</b>	1	2	3	4	5

**25. Under the current season framework, hunters who receive a harvest permit may use their weapon of choice (gun, bow or crossbow) to harvest an elk during a single elk hunting season. Which of the following options for future elk seasons would you most prefer?**

- Maintain the current unified season framework with hunters able to use their weapon of choice
- Split into separate archery and gun seasons, with harvest permits valid during both seasons
- Split into separate archery and gun seasons, with weapon-specific harvest permits
- Unsure/No Opinion

## GENERAL INFORMATION

Finally, we would like to know a little bit about you, so we can better understand how opinions on these issues may vary across the population.

26. Over the years, we've worked with a number of stakeholder groups whose feedback has been very valuable. Do you identify as a member of one of the following groups? Check all that apply.

- |  |   |
|--|---|
| <input type="checkbox"/> Hunter                        | <input type="checkbox"/> Game Farmer    |
| <input type="checkbox"/> Native American Tribal member | <input type="checkbox"/> Forester       |
| <input type="checkbox"/> Motorized Trail User          | <input type="checkbox"/> Landowner      |
| <input type="checkbox"/> Agricultural Producer         | <input type="checkbox"/> Business owner |
| <input type="checkbox"/> None of these                 |   |

27. Please check all of the following activities that you participated in during the past 12 months in Wisconsin.

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> ATV riding        | <input type="checkbox"/> Biking                              | <input type="checkbox"/> Bird watching  |
| <input type="checkbox"/> Camping           | <input type="checkbox"/> Cross-county skiing                 | <input type="checkbox"/>                |
| <input type="checkbox"/> Canoeing/Kayaking |  |   |
| <input type="checkbox"/> Fishing           | <input type="checkbox"/> Foraging (berries, mushrooms, etc.) | <input type="checkbox"/> Gardening      |
| <input type="checkbox"/> Hiking            | <input type="checkbox"/> Horseback riding                    | <input type="checkbox"/> Hunting        |
| <input type="checkbox"/> Motorboating      | <input type="checkbox"/> Photography                         | <input type="checkbox"/> Snowmobiling   |
| <input type="checkbox"/> Snowshoeing       | <input type="checkbox"/> Trapping                            | <input type="checkbox"/> Walking dog(s) |
| <input type="checkbox"/> None of the above |  |   |

28. In which county is your primary residence? \_\_\_\_\_

29. Which best describes the primary area where you live now? (Check one)

- |  |                                 |
|--|---------------------------------|
| <input type="checkbox"/> Rural on a farm | <input type="checkbox"/> Suburb |
| <input type="checkbox"/> Rural non-farm  | <input type="checkbox"/> City   |
| <input type="checkbox"/> Small town      |                                 |

30. Do you own more than 5 acres of land? (Check one)

- No  
 Yes → If yes, please answer Q30a.

30a. What is your primary use for this land? (Check one)

- |  |  |
|--|--|
| <input type="checkbox"/> Primary Residence           | <input type="checkbox"/> Agriculture - Livestock     |
| <input type="checkbox"/> Secondary Residence / Cabin | <input type="checkbox"/> Agriculture - Crops         |
| <input type="checkbox"/> Recreation                  | <input type="checkbox"/> Forestry/ Timber production |

31. Which of the following best represents your gross household income (before taxes) last year? (Check one)

- |   |   |
|---|---|
| <input type="checkbox"/> Less than \$20,000   | <input type="checkbox"/> \$100,000 to \$124,999 |
| <input type="checkbox"/> \$20,000 to \$39,999 | <input type="checkbox"/> \$125,000 to \$149,999 |
| <input type="checkbox"/> \$40,000 to \$59,999 | <input type="checkbox"/> \$150,000 to \$174,999 |
| <input type="checkbox"/> \$60,000 to \$79,999 | <input type="checkbox"/> \$175,000 to \$199,999 |

- \$80,000 to \$99,999
- \$200,000 or more

32. **What is the highest level of education you have completed?** *(Check one)*

- Grade school
- Some college
- Some high school
- Four-year college (bachelor's) degree
- High school diploma or GED
- Some graduate school
- Some vocational or technical school
- Graduate (master's or doctoral) degree
- Vocational or technical school (associate's) degree

33. **What is your gender?**

- Male
- Female
- Other / Rather not identify

34. **What is your age?**

\_\_\_\_\_ years old

35. **Please enter additional comments or thoughts you have in the space below.**

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