

Strategic Management Plan for Elk
Minnesota Department of Natural Resources
November 2, 2009

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STRATEGIC VISION

Through 2015, the Minnesota Department of Natural Resources will maintain a free-ranging, wild elk population in northwestern Minnesota. We envision a healthy, reproducing, yet limited population that affords recreational and economic opportunities (including regular hunting seasons) for all state citizens, while actively addressing elk depredation situations. Habitats and herd structure are maintained for sustainable reproductive potential, and hunters become partners in effectively managing problem animals and population size.

The short term vision (through 2015) for elk management is to effectively address depredation issues with multiple strategies and collaborate with landowners and stakeholder groups to increase acceptance capacity for elk populations. We envision a future where landowner acceptance of elk is improved by actively addressing elk damage situations. The long term vision (2015 – 2035) is to enhance the size and range extent of Minnesota's elk population while maintaining positive coexistence with private landowners. Continued growth of Minnesota's elk herd will be dependent on establishing enduring relationships with landowners and working cooperatively to solve elk management problems.

ELK MANAGEMENT GOALS

In 1987, legislation (Minnesota Statute 97B.516) was passed that required the Minnesota Department of Natural Resources (DNR) to write an elk management plan that recognizes the value and uniqueness of elk, provides for integrated management, affords optimum recreation opportunities, and restricts elk to nonagricultural land in the state. This was in response to much public controversy and debate surrounding elk management and elk impacts to agriculture. An initial draft version was developed in 1988 with input from a citizen's advisory committee. Public input was solicited again in 1999 when the plan was updated following implementation of a number of the plan's provisions (including public hunts and depredation payments).

While this plan covers a 6-year period, the long-term goal of the Minnesota DNR is to manage for elk populations larger than outlined in this plan. Ideally, this plan will create a climate that will allow for the future growth of Minnesota's elk population in both the Grygla area and Kittson County.

1. Monitor population status and achieve the population goals outlined in this plan within legal, social, and environmental limits.
2. Increase landowner acceptance of elk on the landscape by addressing and resolving landowner concerns.
3. Manage Minnesota's aspen parklands landscape as an integral component of elk habitat.
4. Provide opportunities for appreciation and recreational use including regular hunting seasons.
5. Increase information sharing with the public regarding elk and elk management issues.

INTRODUCTION

Minnesota's native elk were originally distributed over most of the state, but were extirpated by the early 1900s (Hazard 1982). Today, elk are restricted to northwestern Minnesota, primarily in two localized herds (Figure 1). The Grygla herd, a remnant from a 1935 restocking effort, occupies a 45 mi² area north of Grygla (Figure 2), while the Kittson County herd occurs in Kittson and Roseau Counties (Figure 3). A history of elk and elk management in Minnesota is given in Appendix 1.

Elk management has become increasingly polarized and politically charged. There are divergent opinions regarding nearly all aspects of Minnesota's elk program. Currently, opinions are on a spectrum from complete elimination to stocking elk in several locations around the state and greatly expanding numbers. This plan is intended to address the controversial issues surrounding Minnesota elk and set a direction by finalizing the DNR's Strategic Elk Management Plan.

During spring 2009, DNR established working groups to discuss elk management and populations. Work groups were established in Grygla and Kittson County. Each work group met twice to discuss the issues surrounding Minnesota's elk population and they ultimately made recommendations to DNR on a variety of elk-related issues. A summary of work group comments is presented in Appendix 2.

HABITAT AND HABITAT MANAGEMENT

Elk are primarily grazers and prefer open brushlands and grasslands for foraging and forested areas for winter and security cover. Ideal elk habitat in Minnesota is comprised of a mosaic of brushland and grassland with islands of forest that are interspersed with agricultural land. Food preferences of elk vary with the time of year. Among natural foods, grasses and forbs make up the bulk of the diet during the snow-free period. Woody browse is used during late fall and winter when herbaceous forage is less abundant. Elk also utilize agricultural crops, particularly those adjacent to wild land where they can feed without venturing far from cover. Sunflowers, soybeans and oats are favored crops, while corn, wheat and barley are also utilized. Alfalfa is utilized during spring green-up and late in the fall. Baled second and third cuttings of alfalfa and baled grain are highly preferred winter foods where available, especially during winters with deep snow.

A variety of habitat management efforts have been undertaken in the elk range to benefit elk and other native wildlife species of the area. Some are aimed at setting back plant succession through prescribed burning and mechanical treatment of brush. The DNR has also undertaken extensive brushland management through shearing and prescribed burning on the Wapiti Wildlife Management Area (WMA), which is a 32,000-acre area in Beltrami County. The objective of this intensive management is to improve habitat and attract elk to non-agricultural land (per MS 97B.516, subd. 4). Accelerated timber harvest has also been occurring in this area, which maintains both the aspen cover type and provides early successional habitats for elk and other wildlife. Likewise, accelerated prescribed burning and mechanical treatment activities, part of the brushland management goals for Kittson County WMAs, have benefited elk in that

area. Within both the Grygla elk range (which includes the 3,370-acre Grygla WMA in eastern Marshall County) and the Kittson County elk range (Caribou, Skull Lake and Beaches Lake WMAs (13,740, 7,432, and 30,667 acres respectively), additional active management including food plots, rotational cattle grazing and timber harvest has been ongoing to encourage elk use of State land rather than adjoining private lands. The DNR plans to continue this intensive management.

Efforts to establish food plots in the interior instead of on the edges of State land have been utilized as a further attempt to keep the elk on public lands. Food plots from 3 to 40 acres in size are planted to sunflowers, soybeans, oats, winter wheat, corn, buckwheat, clover, canola, or alfalfa to provide food and reduce elk depredation on private lands. Forest openings, logging trails and log landings are sometimes reseeded to legumes to provide good quality forage and to further reduce crop damage on private lands. Food plots have also been established on privately owned CRP fields to provide a means of reducing elk damage on nearby cropland in Kittson County.

DEPREDATION MANAGEMENT

Damage to agricultural crops and private land occurs in a number of ways including knocking down pasture fences, damaging growing crops including grains and hay, consuming and contaminating stored forage, and damaging gardens. A number of techniques are employed in an attempt to minimize or mitigate elk damage but success in dealing with free roaming wild elk has been highly variable. Improvements in depredation management are paramount to improving acceptance capacity of landowners toward elk.

Food Plots

Standing crop and green forage food plots purchased from local growers in appropriate locations on private land may provide alternatives for elk foraging in agricultural areas while minimizing the impact to agricultural operations. Food plots established by the DNR on public lands may also attract and encourage elk to spend less time on private land but use may be less predictable due to behavioral factors such as natural herd movements or wolf predation.

Stored Forage Management

During winter months stored forage such as feed or silage piles and baled hay are attractive to feeding elk. Damage results from direct consumption and contamination from feces and urine. Aggregating forage in locations near building sites and stacking bales in patterns recommended by the MDA can reduce occasional damage. For more chronic damage situations, fencing is appropriate. As provided in MN Statute 97A.028 landowners are eligible to apply for fencing and other deterrent material assistance to protect stored forage or other specialty crops. The cost share available through this program, however, is inadequate to address long-term stored forage protection but may provide short-term emergency assistance. Qualified producers in the Bovine TB Zone (Figure 4) are eligible for a 90 percent cost-share for stored forage fencing through MDA. Finding locally acceptable solutions for stored forage protection is necessary to improve landowner tolerance of elk.

Fences

Elk readily damage traditional fencing designed to contain livestock. Chronic fence damage is burdensome to the landowner and is a difficult problem to address. Fence damage significantly contributes to the existing low tolerance of elk by landowners. The crop damage compensation program managed by the Minnesota Department of Agriculture does not currently provide compensation for fence damage. Finding locally acceptable solutions to address fence damage is necessary to improve landowner tolerance of elk.

Winter Feeding

Supplemental feeding of elk is most common in western states, principally Wyoming. During winter, elk are most often fed at established feed grounds principally to mitigate for range damage and loss of winter habitat because of development.

The DNR has infrequently used hay as a lure to move elk away from a depredation situation. In these cases high-quality hay must be used for the practice to be effective. In general, the DNR discourages the feeding of deer and elk because it concentrates animals unnaturally, which could lead to the increased potential of disease transmission. This is particularly true of the Grygla elk herd given its association with the Bovine Tuberculosis (TB) management zone where deer and elk feeding in a broad area is prohibited by law (Figure 5).

Depredation Shooting Permits

Shooting permits are one of several tools used for elk depredation management. Because of the historically low population levels, elk shooting permits have been issued only in extreme situations. The discovery of bovine TB in cattle and increases in crop damage complaints have resulted in changes to the shooting permit policy to provide more flexibility to address disease transmission concerns. In addition, specific sub-groups of elk found to be causing chronic agricultural damage may be targeted for removal through shooting permits to landowners following guidelines established by DNR's wildlife damage management program. Currently, elk taken under shooting permits are given to food shelves or provided directly to needy families and are not retained by the permittee.

Crop Compensation

Elk depredation is managed differently than depredation from other big game species. Minnesota Statute 3.7371 requires the Commissioner of Agriculture to compensate landowners for crops damaged or destroyed by elk. The total amount of funding available in the compensation fund is determined by the Legislature each biennium. The Minnesota Department of Agriculture (MDA) is responsible for verifying elk damage claims and disbursing funds. Total payments over time have varied considerably; however, in recent years, claims have exceeded the amount of money available leaving a balance of unpaid claims. Unpaid claims are held over for the next fiscal year and paid first before new claims are processed. For fiscal years 2010/2011, the Minnesota legislature increased the appropriation to address the unpaid claims and anticipated future obligations.

POPULATION MANAGEMENT

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 results in tending of all females in a harem (Bender 2002). Typically, when mature bulls (> 4 years old) are present, a harem situation is established where a dominant male (called a “herd” bull) controls several cows in a herd. Younger bulls (called “satellite” bulls) stay on the periphery of the harem and try to breed individual cows from the harem. The herd bull spends a great deal of time protecting his harem from satellite bulls; thus, naturally occurring elk populations will not achieve a 1:1 adult sex ratio. In Michigan elk, 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 will be adequate to maintain a natural elk breeding complex and a sustainable number of males in the breeding population.

Ultimately the long-term viability of elk populations in Minnesota will be determined by landowner tolerance and public support for active elk management. Currently there is a desire by many Minnesota citizens to increase Minnesota’s elk herd, while most landowners who are negatively impacted by elk have a low tolerance to even the existing elk population size. Increasing the Minnesota elk herd will require significant improvement in landowner tolerance.

Genetics

Preliminary information from a recent analysis of genetic material from elk in the Grygla area suggests that this herd is not isolated, and that there is a periodic infusion of new animals into this herd, likely from Pembina Hills in northeast North Dakota and/or from southern Manitoba and the Kittson County herd (Denome, 1998).

Additionally, Denome (1998) found that elk from across North America all had low levels of genetic variation, low levels of in-breeding, and little population differentiation. This and other studies suggest that a lack of genetic variation in elk may be a characteristic of the species and suggests that genetic isolation is not a limiting factor for Minnesota elk.

Mortality Factors

The known mortality factors for elk in Minnesota are hunting, shooting for depredation control, poaching, predation, and accidents. Disease and parasites are also likely mortality factors but no specific pathogen has been identified. Gray wolves and black bear exist on the elk range, and are known to prey on elk, but the extent of predation on elk is unknown. White-tailed deer may cause indirect elk mortality through transmission of the meningeal worm (*Parelaphstrongylus tenuis*). Although deer are unaffected by these parasites, the brainworm is pathogenic in elk. *P. tenuis*-like larvae have been found in fecal samples of Minnesota elk, but the adult worms, needed for positive identification, have not been recovered.

Population Estimates

Elk population estimates for the Grygla elk herd are generated from annual aerial surveys

conducted during the winter, and from ground survey routes that are driven multiple times from spring through fall. Population estimates from the past five years have ranged from 35 to 55 animals (Fig. 6). Population estimates for the Kittson County herd are generated from annual aerial surveys conducted during the winter, from ground observations, reports from local residents living in the elk range, and population estimates by Manitoba Conservation (currently coordinated between DNR and Manitoba Conservation). Population estimates from the past five years in the Kittson County elk range have ranged from 112 to 215 animals. Scattered elk also show up from time to time on the periphery of the traditional elk ranges each year.

DISEASE MANAGEMENT

Elk are susceptible to a variety of known wildlife and domestic animal diseases and parasites. Minnesota's free-ranging elk populations are exposed to both captive cervids and livestock (primarily beef cattle) operations, and the potential movement of diseases between captive and wild animals is an on-going risk factor. Therefore, monitoring of Minnesota's wild elk for a wide variety of pathogens is important to maintaining the overall health of the population.

Chronic Wasting Disease (CWD) has become a concern with deer and elk populations nationwide and in some Canadian provinces in recent years. CWD has been documented in wild white-tailed deer populations in the neighboring states of Wisconsin and South Dakota. The presence of CWD in wild deer in adjacent states has prompted monitoring of CWD in wild populations of deer in Minnesota since 2000. CWD has also been documented in three different captive elk herds in Minnesota, one in Aitkin and one in Sauk Center, and one in Pine Island as well as a captive deer herd in Lac qui Parle County. This has prompted strengthening of regulations for captive cervid herds within the state.

Bovine tuberculosis (TB) is a contagious bacterium of the family *Mycobacterium*. The disease has its origin in European cattle and was most likely imported into North America from the European continent. Through the turn of the 20th century, the federal government implemented a bovine TB eradication program, which has largely been successful as the prevalence of the disease in domestic cattle has been reduced to very low levels.

In summer 2005, bovine TB was diagnosed in five Minnesota cattle farms near the town of Skime in southeastern Roseau County. By early 2009, the number of bovine TB-infected cattle farms identified had grown to 11. Subsequent to the discovery in cattle, DNR implemented a bovine TB surveillance program for deer and to date has detected 26 positive deer. However, the disease prevalence remains low (<0.5%) and limited in geographic distribution to a 164 mi² area centered around Skime, MN. There are concerns about potential disease transmission to elk because the Grygla elk range overlaps with some of the infected cattle farms. Elk taken during recent Minnesota hunting seasons, as well as other elk carcasses that are obtained, are tested for bovine TB and CWD. As of August, 2009 49 harvested elk have been tested and none were positive. To help minimize the risk of spread of bovine TB, a deer and elk feeding ban was established in 2006 that covers a 4,000 mi² area in northwest Minnesota.

An extensive deer population reduction project was initiated in 2006 to reduce deer populations to the point where deer-to-deer transmission of the bovine TB bacteria is minimized. Beginning

in 2008, elk were included in the targeted surveillance in that if they became available to sharpshooters, they would be removed and tested per the deer protocol. To date, one bull elk has been taken and it also tested negative.

HUNTING SEASON MANAGEMENT

Minnesota Statute 97B.515 authorizes a hunting season when the pre-calving population exceeds 20 animals. Hunting harvest has been the principal tool used to limit elk population growth. Generally, bull seasons have been held in September; while antlerless hunts have been scheduled later in the fall and into winter. Under existing MN Rules, landowner and tenants are eligible for up to twenty percent of the issued licenses. At least one landowner permit has been authorized for each hunt. Applicants for the hunts are required to submit an application for a party of one or two. Successful applicants are required to attend an orientation session at the Thief Lake Wildlife Management Area Headquarters where licenses are validated and hunters are briefed on factors pertaining to the hunt. Minnesota Statute 97A.433 requires that the elk hunt is a once-in-a-lifetime opportunity.

Seasons are only held when two or more licenses can be issued. Factors such as the relative proportion of bulls and cows in the population, the age distribution of animals in the herd, and depredation complaints are considered prior to authorizing a hunt. Currently, licensed hunters are not authorized to take depredating elk under special authorization.

Grygla

In 1987, Minnesota held its first elk hunt since 1893. Seasons have since been held from 1996-1998 and again from 2004-2009. The Grygla hunting zone is depicted in Figure 7. The DNR currently holds hunting seasons on the Grygla herd whenever the pre-calving population exceeds 30 animals. Table 1 summarizes past permit allocation and harvest.

Kittson County

The first elk hunt in Kittson County was instituted during 2008 in a 125mi² area located east and south of Lancaster (Figure 8). This hunt was instituted in response to an increasing number of standing crop and stored forage depredation complaints. In total, 11 licenses were offered (1 either-sex, 10 antlerless) and all were filled (Table 1). This hunt targeted the Lancaster subgroup (see Figure 9 for an explanation of the three subgroups found in the Kittson County herd). This subgroup of elk originated in approximately 2004 and contained a nucleus of animals of captive origin. Because of this status and the chronic depredation issues associated with this subgroup, it has been targeted for complete removal. Elk that repopulate this area following the removal effort will be considered of wild origin and managed in a manner consistent with the management plan.

Coordination with representatives of Manitoba Conservation will be an important facet of hunting and population management of the Caribou-Vita elk subgroup. Coordination with Manitoba Conservation will occur prior to establishing a hunting season.

RESOURCE VALUE

Minnesota Statute 97B.516 recognizes the value and uniqueness of elk to Minnesota and elk hunting and viewing generate real, but undetermined, economic returns for local communities and the state. Persons from outside of the elk range travel there to view and hunt the animals, and likely spend considerable resources in doing so. Elk have been highlighted as one of the species to see at several of the stops on the area's Pine-to-Prairie Birding Trail. Shed antler hunting is also popular.

The intrinsic value of maintaining elk on Minnesota's landscape is significant. Elk are a large, charismatic species, and a valuable part of Minnesota's natural history. The value of the Aspen Parkland ecosystem, with its near full complement of large mammals, including the elk, should not be overlooked.

STRATEGIES AND OBJECTIVES

Objective 1. Maintain pre-calving populations of 30 – 38 elk in the Grygla herd and 20 - 30 in the Kittson County herd, not including the Caribou-Vita subgroup. Maintain a socially acceptable number of elk in the Caribou-Vita subgroup, which is shared with Manitoba.

Strategy A. Conduct annual population surveys to monitor population status. Coordinate with Manitoba Conservation on surveys conducted on the Caribou-Vita subgroup.

Strategy B. Review, and if feasible improve, existing survey methodology, and assess the value of citizen reporting in the survey.

Strategy C. Establish a process and timeline with Manitoba to determine the population goal of the Caribou-Vita subgroup.

Strategy D. To the greatest extent possible, use hunting seasons to manage elk populations at population goal levels.

Objective 2. Improve landowner acceptance of elk.

Strategy A. Work with the Minnesota Department of Agriculture (MDA) and the Minnesota Legislature to continue a fully fund elk damage compensation program so that all damage claims are paid fully and timely.

Strategy B: DNR will work with the MDA to better publicize annual crop damage payment information to the public.

Strategy C. DNR will work with agricultural agencies to document fence damage and find solutions to the problem, including testing of a variety of fence types.

Strategy D. Work with the Minnesota Legislature to increase the statutory limit on emergency deterrent materials in 97A.028 for assistance in stored forage protection. Coordinate additional technical assistance on abatement techniques through the University of Minnesota, MDA, and DNR.

- Strategy E. Work proactively with landowners to identify depredation situations and prepare a cooperative damage plan that identifies a progressive series of abatement techniques. Examples of abatement techniques include temporary and permanent fencing, hazing, and depredation shooting permits.
- Strategy F. Establish in MN Rule a mechanism to authorize licensed elk hunters to take depredating elk outside the hunting seasons.
- Strategy G. Better clarify and communicate to hunters and landowners how non-licensed persons can provide assistance to licensed hunters during an elk hunt.
- Strategy H. Expand the food plot program on public lands throughout the elk range using locally accepted agricultural practices.
- Strategy I. Provide technical and financial assistance for private land management that benefits elk through the DNR private lands and private forest management programs. Expand the use of private land standing crop and green forage food plots.
- Strategy J: When elk are taken using depredation shooting permits, notify the affected landowners of disease testing results. Post all elk disease testing results on the DNR web site.
- Strategy K. Use existing authorities to promptly remove elk suspected of captive origin.

Objective 3. Improve forage quality and availability and maintain quality habitat on public lands for elk.

- Strategy A. Increase the quantity and quality of food plots on public lands throughout the elk range using locally recognized farming practices.
- Strategy B. Continue habitat development through brushland shearing, timber harvest, and prescribed burning in the Wapiti, Grygla, Caribou, Skull Lake, and Beaches Lake WMAs.

Objective 4. Maintain the health and reproductive potential of the elk population.

- Strategy A. Test all harvested elk, and all other suitable elk carcasses, for bovine tuberculosis, chronic wasting disease, and other diseases using adequately trained personnel.
- Strategy B. Seek and implement strategies to minimize elk-cattle contact.
- Strategy C. Maintain and enforce the existing wildlife feeding ban in the bovine TB management area.
- Strategy D. Maintain a targeted post-hunt sex ratio of 2 cows per adult bull.
- Strategy E. Use existing authorities to promptly remove elk suspected of captive origin. This includes the elk remaining in the Lancaster subgroup following the 2009 hunts. These animals will be removed by April 30, 2010. (Elk that repopulate this area following the removal effort will be considered of wild

origin and managed in a manner consistent with the management plan.)

Objective 5. Provide regular hunting seasons for elk in Minnesota.

- Strategy A. Annually monitor elk herd movements and population levels for both the Grygla and Kittson County herds to determine hunting license numbers.
- Strategy B. Establish hunting seasons for the Grygla herd to maintain a pre-calving population objective of 30-38 animals, which is based primarily on winter population surveys and other elk observations.
- Strategy C. Establish hunting seasons for the Kittson County herd (excluding the Caribou/Vita subgroup) to maintain a pre-calving population objective of 20-30 animals, based primarily on winter population surveys and other elk observations.
- Strategy D. Coordinate with Manitoba Conservation to determine a population level and hunting management strategy that is socially acceptable to stakeholders in both countries.
- Strategy E. Work with the Minnesota Legislature to modify the “once-in-a-lifetime” elk license provision.
- Strategy F. Establish in MN Rule a system that improves applicants odds of drawing a permit over time.

Objective 6. Provide information to stakeholders, the public, and landowners regarding elk populations and management.

- Strategy A. DNR will work with the MDA to provide annual crop damage payment information to the public via the MDA website.
- Strategy B. When elk are taken using depredation shooting permits, notify the affected landowners of disease testing results. Post all elk disease testing results on the DNR web site.
- Strategy C. Formalize elk population surveys and harvest reports and post them annually on the DNR website.
- Strategy D. Annually post elk management expenditures on the DNR website.
- Strategy E. Work with stakeholders to promote elk-related recreation and the economic opportunities wild elk can provide.

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Table 1. Elk permit allocation and harvest by year and sex.

Year	Bulls		Antlerless	
	Permits	Harvest	Permits	Harvest
Grygla				
1987	2	1	2	1
1996	2	2	7 (1 alternate)	6
1997	5 (2 alternate)	1	5 (2 alternate)	2
1998	4 (2 alternate)	2	0	0
2004	1	1	4	2
2005	1	0	4	0
2006	2	2	6	2*
2007	0	0	6	6
2008	2	2	10	6
Total	19 (4 alternate)	11	44	24
Kittson County				
2008	1	1	10	10

*One of two elk taken was actually a spike bull

Figures

Figure 1. Current elk range in Minnesota

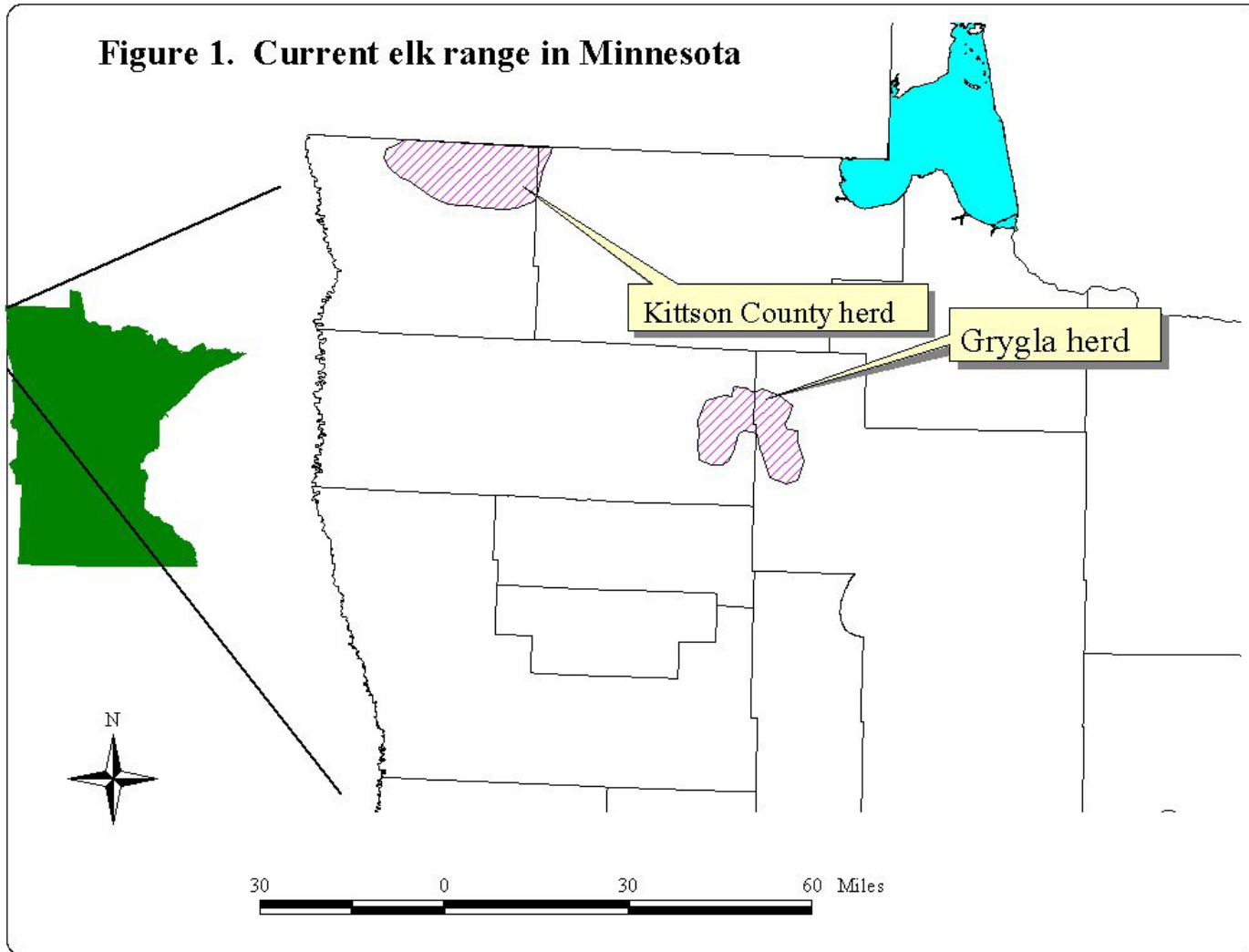


Figure 2. Range of the Grygla elk herd.

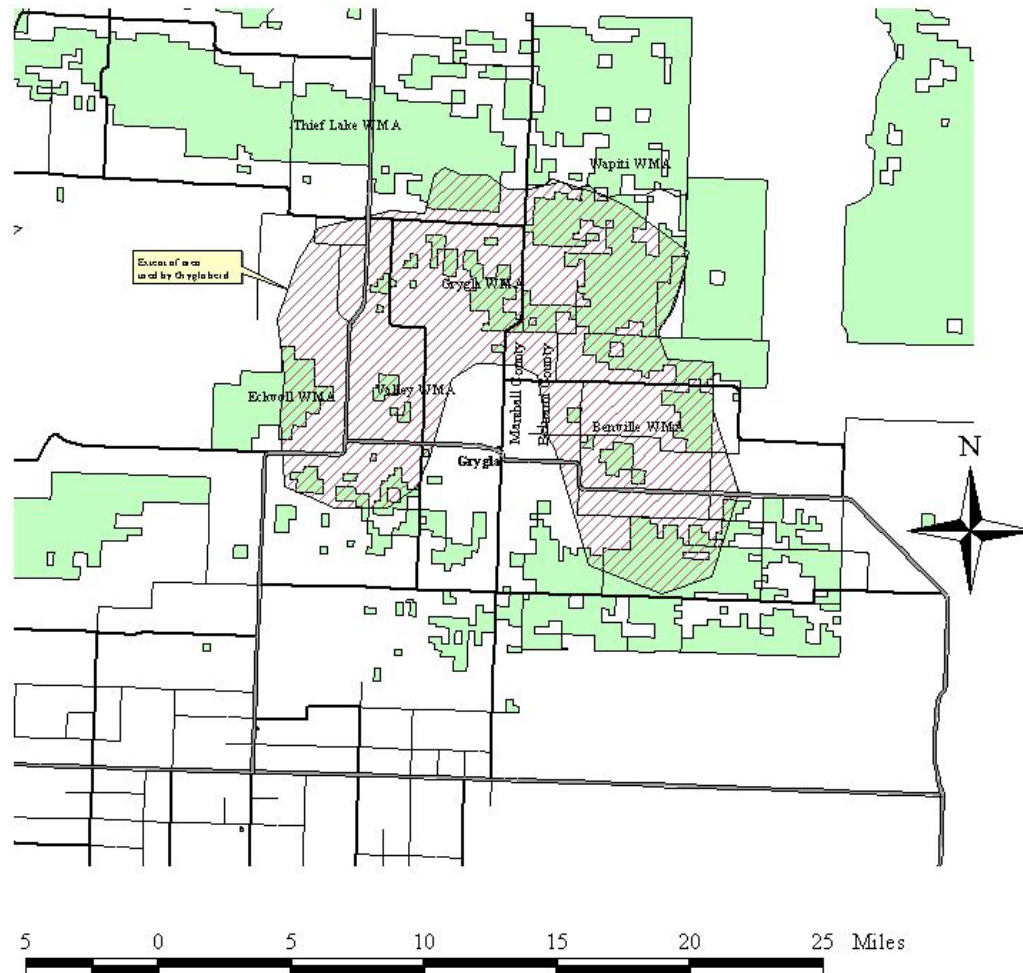


Figure 3. Kittson County herd elk range.

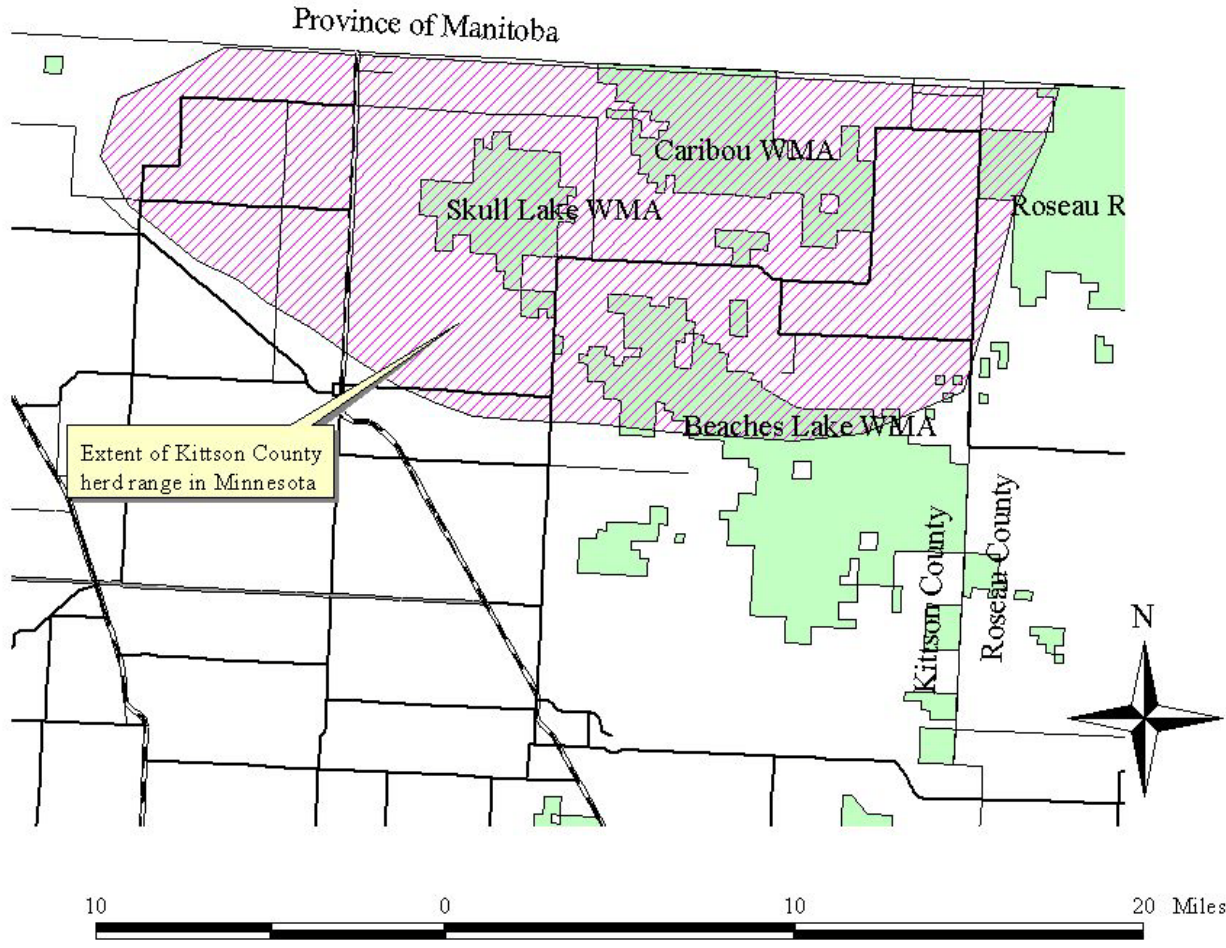


Figure 4. TB positive farms and management zones

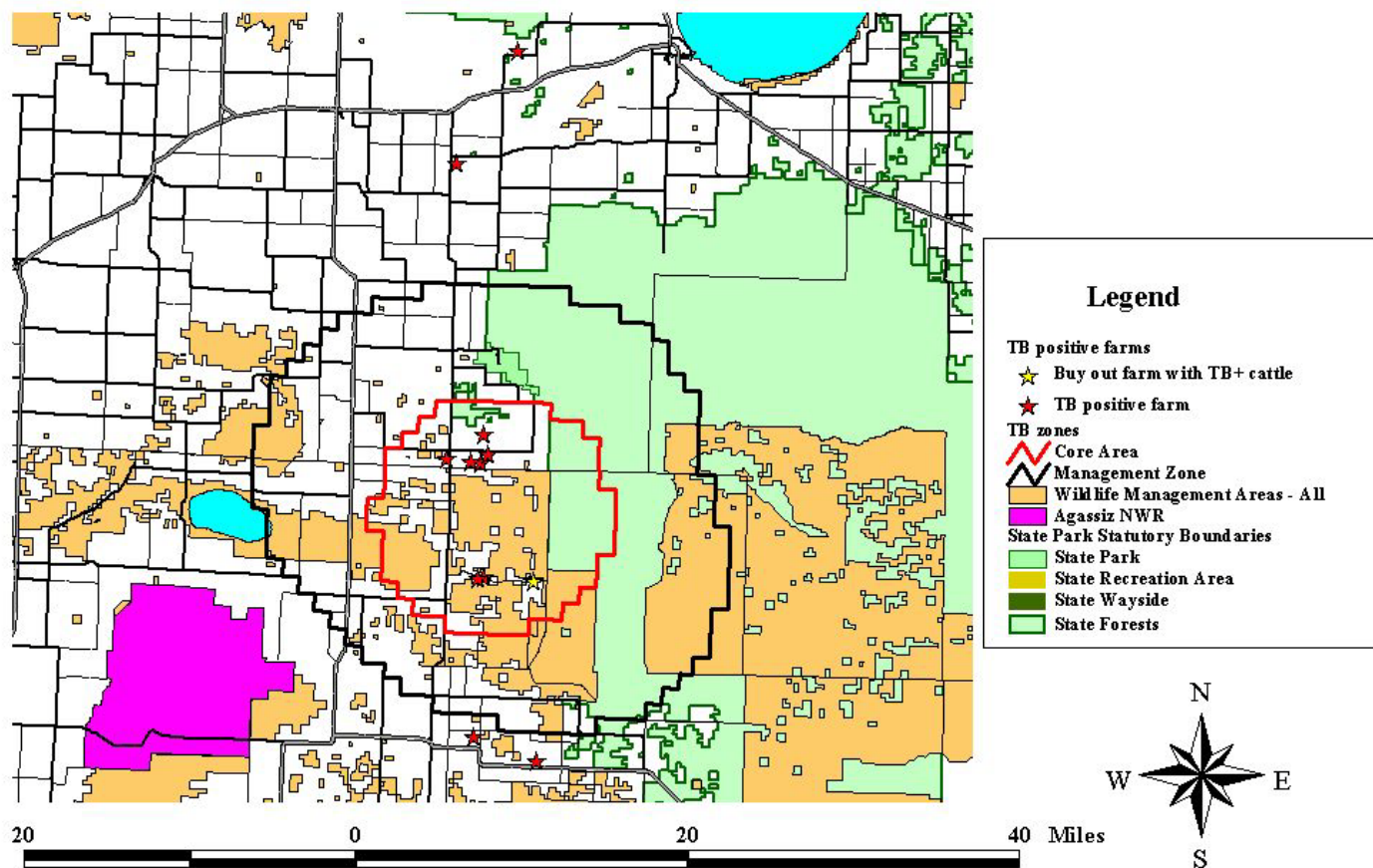


Figure 5. Deer and elk feeding ban area in Minnesota.

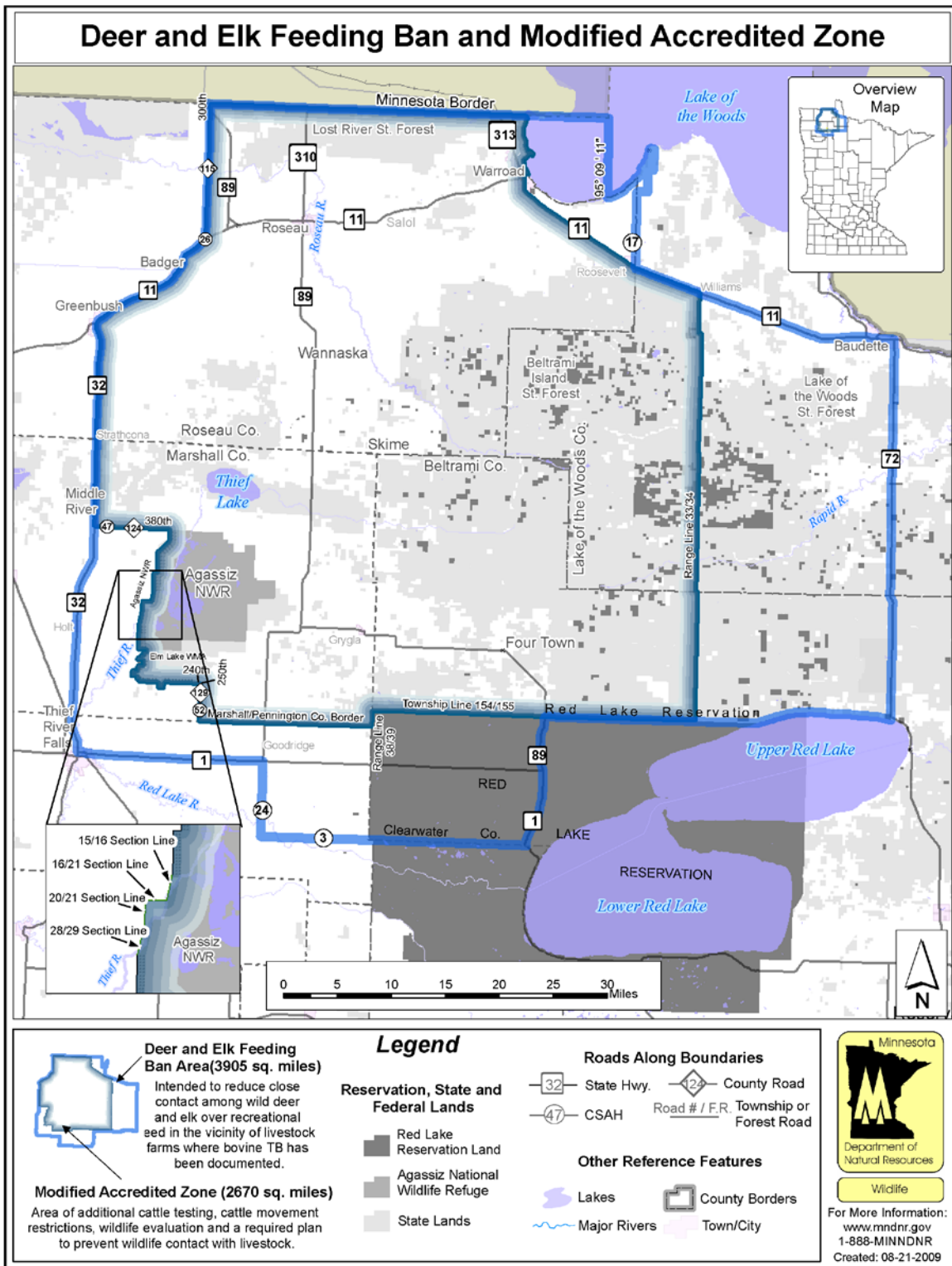


Figure 6. Estimated elk population size

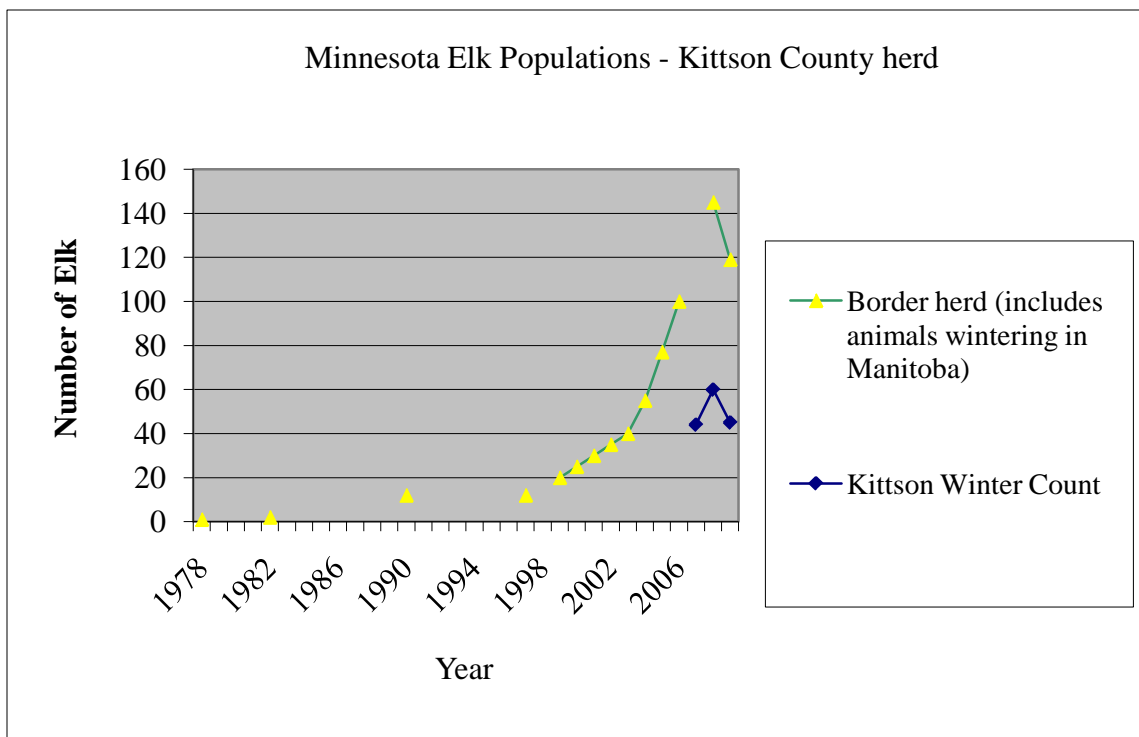
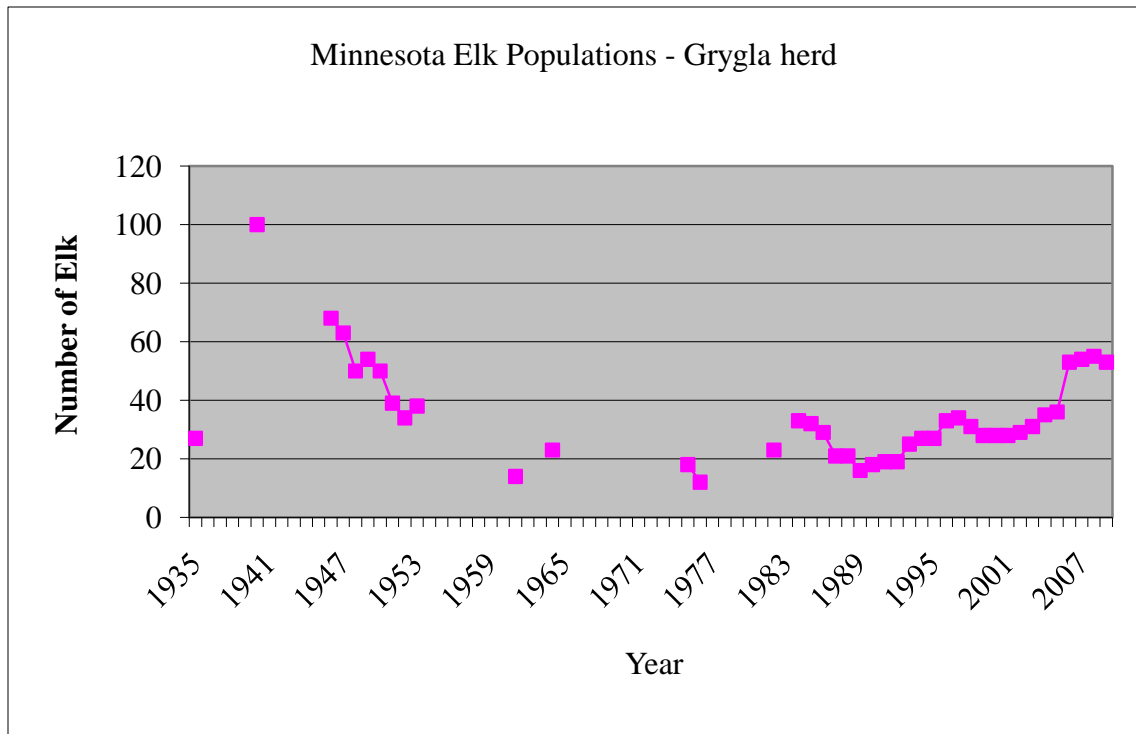


Figure 7. Grygla elk hunting zone.

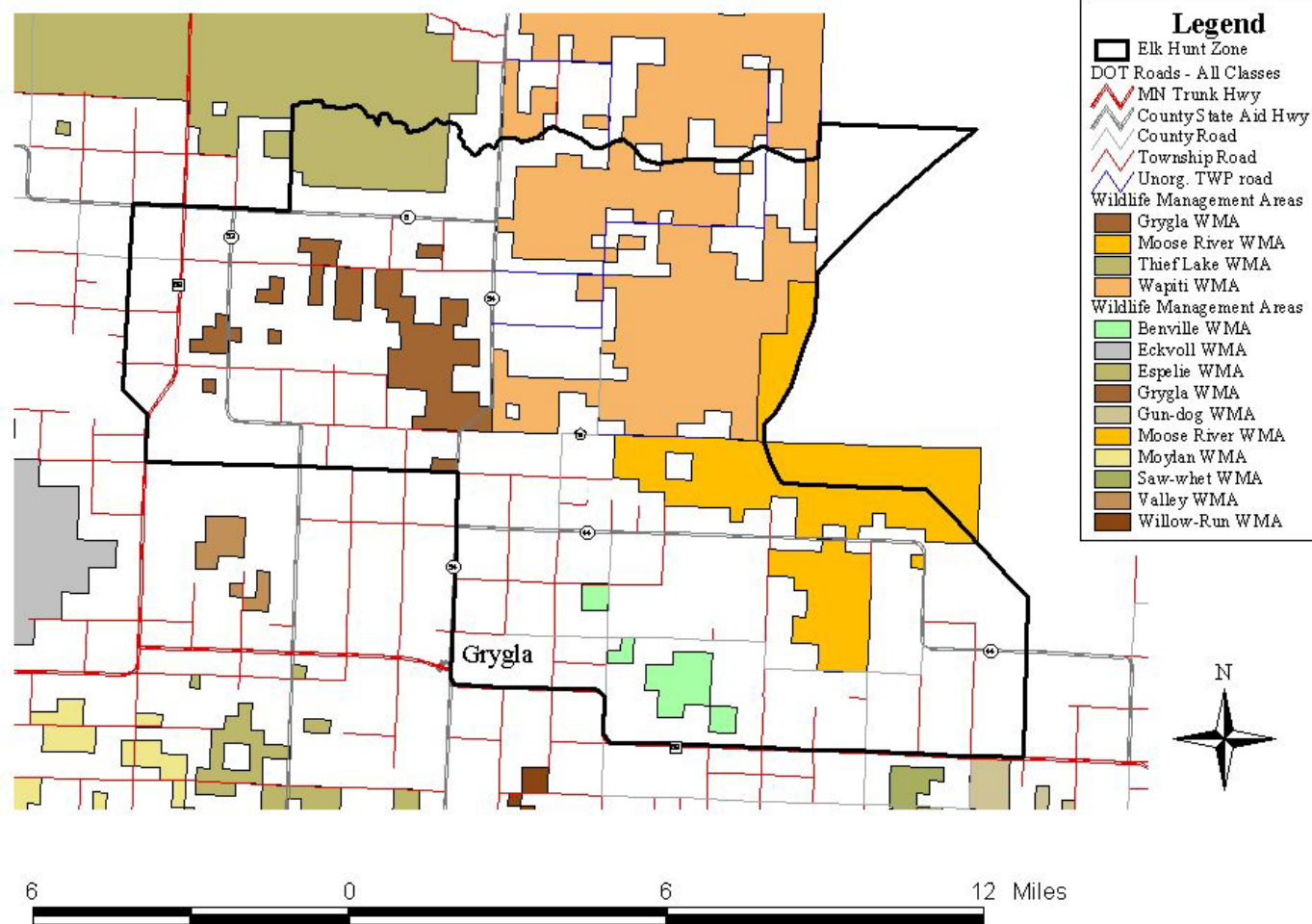
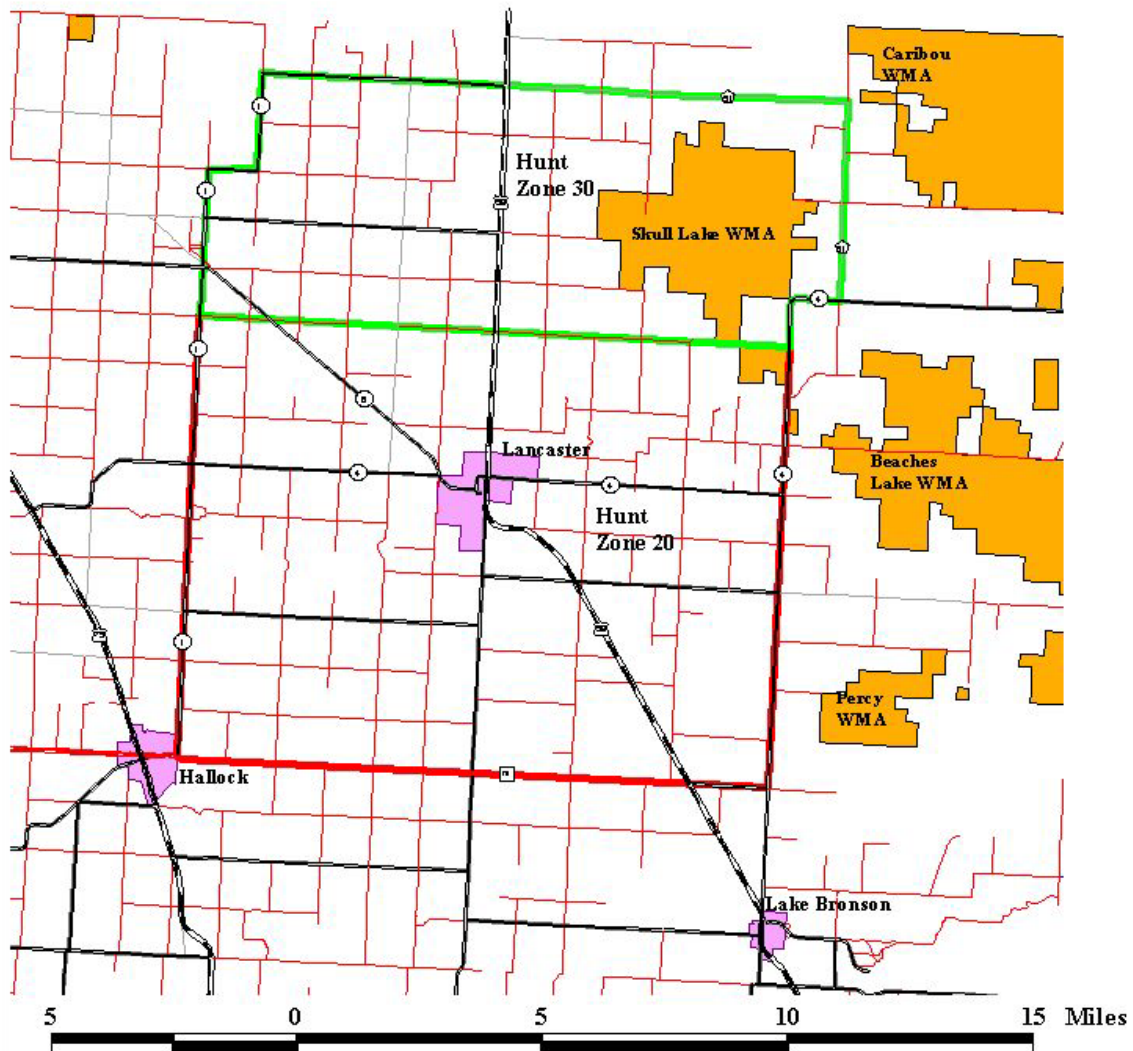


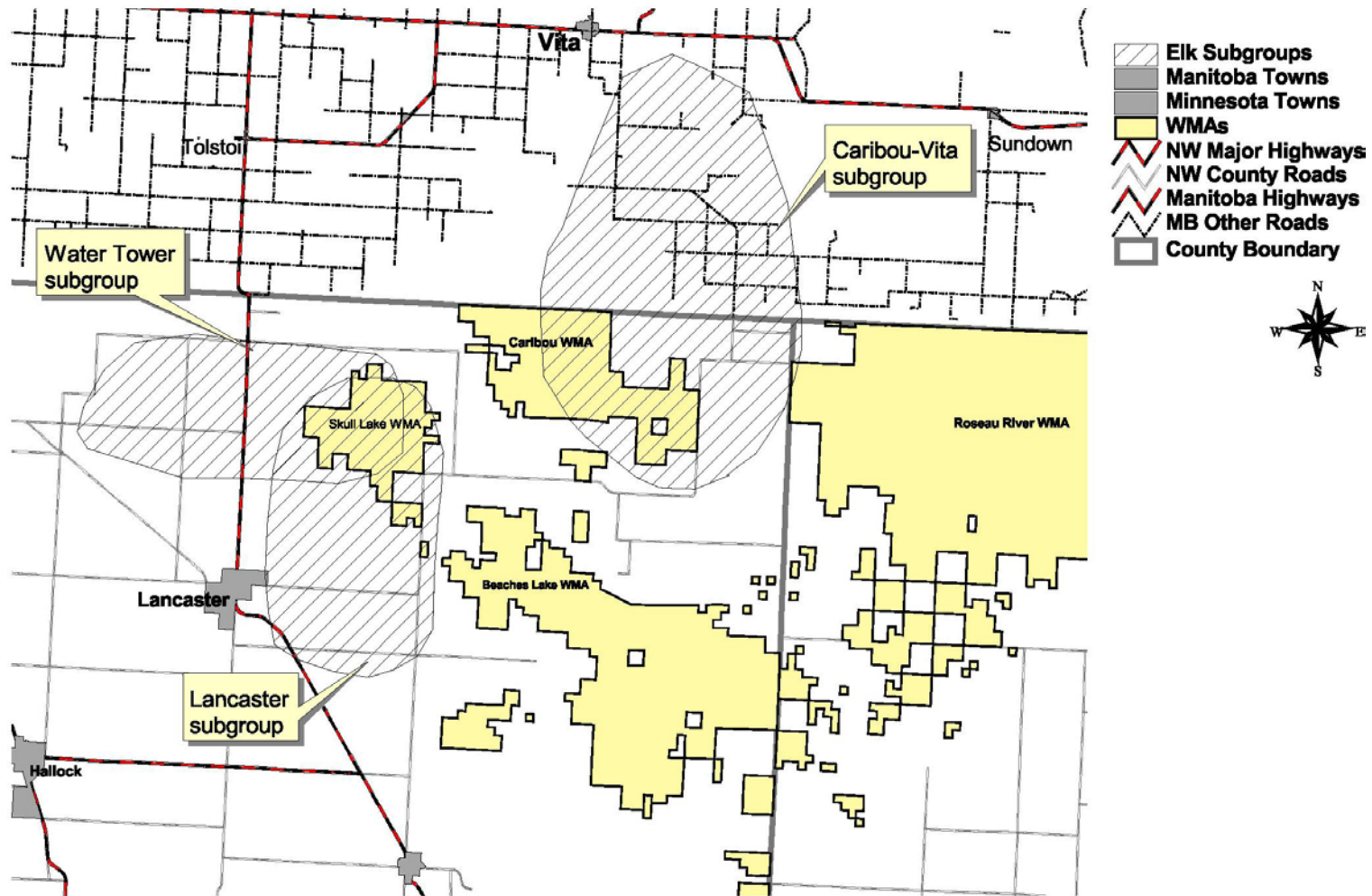
Figure 8. Kittson County elk zones.



Legend

- DOT Roads - All Classes
- US Trunk Highway
- MN Trunk Highway
- County State Aid Hwy
- County Road
- Township Road
- Unorg Twp Road
- Kittson County elk zones
 - 20
 - 30
- Municipal Boundaries
- Wildlife Management Areas

Figure 9. Kittson County Elk Herd Subgroups.



Appendices

Appendix 1. The History of Elk and Elk Management in Minnesota

Minnesota's native elk were originally abundantly distributed across much of the state, occurring everywhere except in native caribou range, but were extirpated by the early 1900's (Hazard 1982). Minnesota's prairie elk were probably the Manitoba subspecies, *Cervus elaphus manitobensis* while the herds on the hardwood forest were likely eastern elk, *C. e. canadensis* (Fashingbauer 1965).

As late as 1841, elk were still common in southern Minnesota, and herds of a thousand or more animals were observed at that time. Elk were reported in Aitkin, Itasca, Roseau and Kittson Counties in the 1890s, in Lake of the Woods County in 1917, and in other parts of northwest Minnesota as late as 1932. Elk were granted complete protection from hunting from in 1893.

In 1913, the Minnesota Legislature appropriated \$5,000 for the re-establishment of the elk population. Fifty-six elk of the Rocky Mountain subspecies, *C. e. nelsoni*, were obtained from Jackson, Wyoming in late 1914 and from north of Yellowstone National Park in 1915. An additional 14 elk, descendants of elk captured in Wyoming, were obtained from the James J. Hill farm in Ramsey County, Minnesota in 1914. These 70 elk were placed in an enclosure in Itasca State Park. Because the health of the animals deteriorated during shipment, only 13 elk remained after one year's time. By 1925, the herd had increased to about 25 animals. Some animals were then provided for display in other state parks, while others were permitted to roam free in Itasca State Park.

In 1929, 8 elk were released in the Stony River District in the western portion of the Superior National Forest. This introduction failed to establish a free-ranging elk herd. In November of 1935, 27 of the remaining Itasca State Park herd were released into northwestern Beltrami County, on the Haug Ridge area of the Red Lake Game Preserve, while seven were kept at Itasca State Park for display (Fashingbauer 1965). Since native elk were observed as late as 1932 in northwestern Minnesota, some native elk may have been present on or near the release area at the time of reintroduction. The Haug Ridge area was within the boundary of the Federal Government's Settler Relocation Program and as a result contained an interspersed of small fields, grass, brush, and timber. The elk population reached 100 animals within 10 years. During the 1940s, elk were observed as far south as Bagley and as far west as Thief River Falls.

Management during the resettlement years was quite intensive, but management efforts diminished after 1940 when the Resettlement Project ended and World War II began. The first documented elk damage to haystacks and standing crops was reported in 1939. As damage continued, poaching became a problem and was considered to be the factor limiting the herd's increase. By 1946, the elk population had declined to 68. By 1949, damage was reported to be severe in the Grygla area. By 1950, the estimated number of elk had dropped to 50 animals. As habitat changed through vegetative succession, the elk continued to move southwest away from the original release site.

In 1975, a farmer experiencing elk damage to crops shot five elk in the Grygla area. In 1976, the DNR developed an elk management plan that set management goals for state lands and addressed crop depredations. Although no special funding was appropriated, elk habitat management has been conducted since the late 1970's on state land including openings maintenance, food plots, winter feeding, brushland shearing, and prescribed burning. Winter feeding to hold elk in areas that minimize agricultural damage has been largely discontinued due to animal disease concerns, and is only used as an emergency measure in some depredation situations.

In August 1984, a legislative hearing was held in Grygla to address the elk crop depredation problem. When the problem was not resolved to the satisfaction of Grygla area farmers, they sought a legislative solution during the 1984-85 session. Consequently, legislation was passed requiring the DNR to remove all elk from Marshall, Roseau, Beltrami, and Pennington Counties by September 1, 1985.

In response, the DNR reviewed several potential elk relocation sites. Because primary criteria for selecting elk habitat included little or no private agricultural land, the Kiwosay Wildlife Sanctuary within the Red Lake Indian Reservation (RLIR) in Clearwater County was selected as the relocation site.

Although baiting elk into a corral during winter was recommended as the most successful method of capture for relocation, the DNR had to first attempt to employ other methods because of the September 1 deadline. Pre-winter baiting, driving with a helicopter, and darting were attempted with limited success. After a large bull was darted and subsequently drowned, the DNR was permitted to delay the relocation attempt until freeze-up when baiting could be used more effectively.

From October 1985 until March 1986, a total of 14 elk was captured by driving, darting, and baiting. Nine of these elk were transported to the Red Lake Indian Reservation. Two of the elk were euthanized because of injuries received during relocation, and two were illegally killed in the spring following release. The remaining 5 elk were observed on the Red Lake Indian Reservation for about a year after their release. These animals likely account for subsequent sightings of elk in the Clearbrook-Gonvick area.

The DNR remained under legislative mandate to remove the elk from the Grygla area, so baiting efforts were initiated again in December 1986. However, on December 12, 1986 the Sierra Club and others were successful in imposing a court injunction on the DNR that enjoined the Department from any further elk roundup attempts. The court ruled that attempts to move the elk would jeopardize the welfare of the elk and could lead to their extirpation. The court ruled that it was the intent of the legislation to move the elk, not to eliminate them.

Legislation was drafted during the 1986-87 legislative session that allowed for an elk hunting

season and financial compensation to farmers who experienced crop damage caused by elk. The bill subsequently passed and the first elk season since 1893 was held in the fall of 1987. At the time (1988), the pre-calving population of the Grygla herd was estimated to be 21 animals. By spring of 1996, the population had increased to 33 and an elk management roundtable was held in Thief River Falls to discuss the draft Minnesota Elk Management Plan and a hunting season proposal. This herd was hunted in 1996-98, and 2004-2009.

Elk were first noted in Kittson and Roseau Counties along the Manitoba border in the early 1980s. These animals were wintering in Manitoba, while calving and spending summers in Minnesota. The Kittson County herd as it is known is divided into three subgroups based on distinctive areas of use (figure 9). These three subgroups are the Water Tower subgroup (north of Lancaster), the Lancaster subgroup (east of Lancaster) and the Caribou/Vita subgroup (located between Caribou, MN and Vita, Manitoba). The Caribou/Vita herd is known to occupy either side of the international border at any given time of year. The extent to which the other two subgroups cross into Canada is unknown. Little is also known regarding the extent of animal interchange between the Caribou/Vita subgroup and the other two subgroups.

Collectively, this herd grew in size relatively quietly, until 2008. Crop depredation issues then again brought Minnesota elk management into the public spotlight, and the DNR reacted by opening a hunting season on these animals for the first time in 2008. The current population is approximately 120 (2009 pre-calving) animals, with one-third considered year-round residents of Minnesota.

Appendix 2: Comments received from the two local elk working groups during their facilitated discussions.

As a result of public input from a meeting held in Greenbush Minnesota on April 16, 2009 to discuss the draft Elk Management Plan, 2 local working groups, one for the Grygla elk herd and one for the Kittson County herd, were formed to provide formal input into the plan. The primary purpose of these workgroups was to insure that persons living within the existing elk range had direct input into the plan.

The Grygla work group was comprised of 12 individuals, and the Kittson County group 15. The work groups were made up of a variety of interests including local farmers, business people, teachers, hunters, county commissioners, and field staff from DNR and U of M Extension. The primary charge for the work groups was to provide recommendations to the DNR regarding elk population goals, shooting permits, and depredation management. Each work group met twice. A professional facilitator managed the discussions. At the first meeting, the groups were provided with information about Minnesota elk by DNR staff, and were asked a series of questions about their views regarding population levels, shooting permits, and depredation management. They were then asked to obtain input on the questions from their constituent groups following the first meeting, and to report back their findings at the second meeting. The groups worked through a consultative consensus process at the second meeting to arrive at recommendations on these topics for DNR to consider.

Recorded comments of the Grygla Elk Work Group.

The following were comments recorded during the power point presentation given at the Grygla Elk Group meeting on June 18, 2009. The comments are broken apart by the questions that were asked in a presentation to the workgroup.

QUESTION 1

Rank the importance of the following depredation management techniques:

	Results
A. Depredation Payments	18%
B. Shooting Permits	16%
C. DNR Technical Assistance and Materials	11%
D. Food Plots on Wildlife Management Areas	18%
E. Food Plots on Private Land	14%
F. Hunting	23%

Comments -

- G1. Page 3. HUNTING HELPS DISPERSE ANIMALS
- G2. Page 3. ELK CONCENTRATIONS INCREASE CLAIMS
- G3. Page 3. EXPAND HUNTING ZONE EAST (THIS HAS BEEN DONE)
- G4. Page 7. ALL TAGS NEED TO BE FILLED
- G5. DO NOT NEED A ZONE WHERE ELK CAN BE SHOT – SHOOT WHEREVER THEY ARE AT – Answered at the meeting

- G6. Page 7. NEED BETTER HUNTER/LANDOWNER RELATIONS TO FACILITATE ACCESS
- G7. Page 7. NO SENSE CRYING ABOUT AN ELK IF YOU DON'T WANT IT SHOT (PROVIDE PERMISSION TO HUNT)
- G8. Page 2. GET FOOD PLOTS AWAY FROM AG FIELDS – THEY ATTRACT ELK
- G9. Page 3. USE ROUND UP READY CROPS FOR STATE FOOD PLOTS – ITS THE ONLY WAY
- G10. Page 2. SOME CROPS ARE FOR SEED PRODUCTION ON CONTRACT – BUYING A PORTION OF THE FIELD WILL NOT WORK DUE TO LOSS OF PRODUCTION AND FAILING TO MEET CONTRACT AMOUNTS; THIS PROBLEM INCREASES WITH INCREASING ELK NUMBERS BECAUSE CONTRACTED SEED PRODUCTION VOLUME MAY NOT BE MET
- G11. ELK WHO FOCUS ON AN AREA NEED TO BE DISPERSED – SHOOTING PERMITS WILL BE A NEEDED TOOL FOR THIS – More group discussion needed
- G12. Page 3. SEPTEMBER HUNTING MAY AID IN CROP DAMAGE REDUCTION
- G13. Page 3. IF NUMBERS REMAIN THE SAME – DEPREDATION PAYMENTS MUST INCREASE TO COVER THE ADDITIONAL ELK (PRESUMABLY ABOVE EARLIER POPULATION LEVELS)
- G14. Page 3. IF MONEY IN THE DEPREDATION FUND RUNS OUT - THEN GROUPS WHO WANTED THE ELK SHOULD PAY FOR DEPREDATION
- G15. TACK ON A LICENSE APPLICATION FEE INCREASE FOR DEPREDATIONS PAYMENT – Parking lot item, internal DNR discussion needed.
- G16. Page 4. THE \$20K DAMAGE CLAIM LIMIT IS AN EASILY ATTAINED FIGURE FOR CROP LOSSES – INCREASE THE AMOUNT – THIS WILL HOWEVER MAKE THE FUND RUNOUT FASTER
- G17. CONSIDER AN ELK HARVEST FEE AND TROPHY FEE FOR ADDITIONAL REVENUE, CHARGE SUCCESSFUL HUNTERS – Parking lot item
- G18. CONSIDER GIVING LANDOWNERS PERMIT TAGS TO PASS OUT – Parking lot item
- G19. ALLOW NONRESIDENTS TO HUNT ELK AND ADVERTIZE & MARKET THIS HUNT TO INCREASE APPLICATIONS AND RAISE MORE REVENUE – Parking lot item
- G20. AUCTION AN ELK PERMIT FOR RESIDENT AND NONRESIDENT HUNTERS – Parking lot item
- G21. Page 3. DO WMA'S OR NON-CROPPED PRIVATE LAND HAVE FOOD PLOT POTENTIAL THAT COULD BE DEVELOPED OR IMPROVED THROUGH BETTER DRAINAGE
- G22. Page 2. CONSIDER GRASS TYPE (PERENNIAL) FOOD PLOTS

- G23. Page 3. WILDLIFE IS SMART – POOR QUALITY CROPS WONT COMPETE WITH GOOD QUALITY CROPS
- G24. Page 3. GET FARMING PRACTICES UP TO STANDARDS ON FOOD PLOTS: MAINTAIN THE DITCHES AND EMPLOY BETTER FARMING PRACTICES

QUESTION 2

Shooting permits for depredation management should be:

	Results
A. Considered acceptable under any population level	40%
B. An option only if population is over goal	20%
C. Used only after other measures listed above have not worked (Q1)	30%
D. Don't know	10%

Comments

- G25. HAVE SHOOTING PERMITS BEEN ISSUED IN THE GRYGLA AREA? – Answered at the meeting
- G26. HOW DOES A SHOOTING PERMIT WORK? – Answered at the meeting
- G27. Page 4. CAN POLICY OF LANDOWNERS NOT GETTING TO KEEP ELK TAKEN ON SHOOTING PERMITS BE CHANGED?
- G28. Page 4. CAN GROUP RECOMMEND SHOOTING PERMITS IN CROPS DURING THE GROWING SEASON?
- G29. Page 3. USE HUNTERS TO TAKE DEPREDATING ELK
- G30. Page 8. CONSIDER ISSUE OF PERMITS BASED ON PERCENT OF HUNTER SUCCESS
- G31. Page 7. GET RID OF ONCE IN A LIFETIME DRAWING FOR ELK PERMITS, GO TO PREFERENCE DRAWING
- G32. Page 6. LET LANDOWNERS PARTICIPATE IN ELK OBSERVATIONS AND POPULATION ESTIMATES

QUESTION 3

Over the next 5 years the Elk population in the Grygla herd should be:

	Results
A. 20 – 30	50%
B. 25 – 35	0%
C. 30 – 40	10%
D. 35 – 45	20%
E. 40 – 50	10%
F. More than 50	10%

Comments

- G33. 20 TO 30 IS WHAT ORIGINAL PLAN CALLED FOR – NOT NEGOTIABLE - More discussion needed
- G34. Page 6. ACTUAL POPULATION IS VERY IMPORTANT – 50 VS 70 (LANDOWNER COUNTED THIS SPRING) FOR POPULATION ESTIMATES IS A BIG DIFFERENCE
- G35. Page 5. PROGRESS TOWARD POPULATION GOAL IS IMPORTANT
- G36. Page 5. COULD USE SHARP SHOOTING TO BRING POPULATION TO GOAL LEVELS – BUT WHAT A WASTE, USE HUNTING AND GET TO GOAL OVER A PERIOD OF YEARS.
- G37. Page 9. MOST DON'T WANT TO SEE ELK GONE FROM THE LANDSCAPE, THEY ARE A UNIQUE FEATURE OF THE AREA, HASN'T BEEN PROMOTED OR MARKETED ENOUGH
- G38. COULD THERE BE CONSEQUENCES TO DNR IF POPULATION GOAL ISN'T MET, E.G., MAKE PAYMENTS FOR DEPREDATION FROM DNR'S BUDGET
- G39. AT 15 TO 20 ELK WE DON'T NEED A SEASON – JUST PAY SOMEONE TO KEEP IT THERE (SHARP SHOOTERS), WHY WOULD WE CARE DO MORE AT SUCH A LOW POPULATION – More group discussion needed
- G40. ELK LOOK GOOD ON ANY FIELD BUT MINE
- G41. Page 3. IF I GET PAID FOR ELK DAMAGE THEN I'M OK WITH ELK: MORE ELK THEN MORE DAMAGE, THEN MORE PAYMENTS
- G42. PREFER NOT TO RECOMMEND POPULATION LEVELS FOR THE BORDER HERD (CARIBOU/VITA) – I DON'T WANT THEM VOTING ON GRYGLA HERD – DON'T KNOW THE SITUATION
- START NEXT MEETING AT 6:30 – CONFLICT AT 6 PM
- SEND OUT COPIES OF ELK STATUTES

QUESTION 4

Over the next 5 years the Elk population in the border (international) herd should be:

	Results
A. 50 – 70	50%
B. 60 – 80	17%
C. 70 – 90	0%
D. 80 – 100	0%
More than 100	33%

Recorded comments of the Lancaster Elk Group.

The following were comments recorded during the power point presentation given at the Lancaster Elk Group meeting on June 16, 2009. The comments are broken apart by the questions that were asked in a presentation given to the workgroup.

QUESTION 1

Rank the importance of the following depredation management techniques:

	Results
G. Depredation Payments	20%
H. Shooting Permits	15%
I. DNR Technical Assistance and Materials	14%
J. Food Plots on Wildlife Management Areas	17%
K. Food Plots on Private Land	14%
L. Hunting	21%

Comments -

- K1. CAN FOOD PLOTS ON PRIVATE LAND BE PAID FOR – Answered at the meeting
- K2. Page 2. FOOD PLOTS ATTRACT ELK THUS CAN CAUSE DEPREDATION TO NEARBY CROPS
- K3. Page 2. HOW MANY MORE FOOD PLOTS CAN BE PLANTED ON DNR LAND
- K4. Page 2. DON'T WANT TO ATTRACT ELK TO AG LAND
- K5. Page 2. STRATEGIC PLACEMENT OF FOOD PLOTS IS IMPORTANT
- K6. WHAT ABOUT TRANSFERABLE LANDOWNER ELK PERMITS – Parking lot
- K7. ARE DAMAGE PAYMENTS AVAILABLE ON HAY CROPS IN THE FIELD (BEFORE PASTURING OR CUTTING FOR BALES) Yes, answered at the meeting
- K8. Page 3. DEPREDATION PAYMENTS CAN BE PREDICTABLE ANNUAL EVENTS, SET UP FUND TO PROVIDE PERMANENT FENCING TO PREVENT ONGOING DEPREDATION TO STORED FORAGE

QUESTION 2

Shooting permits for depredation management should be:

	Results
E. Considered acceptable under any population level	73%
F. An option only if population is over goal	0%
G. Used only after other measures listed above have not worked (Q1)	27%
H. Don't know	0%
I.	
➤ K9. Page 4. SHOOTING PERMITS MUST BE PART OF ANY MANAGEMENT PLAN – more discussion needed	
➤ K10. Page 4. THERE IS NO COMPENSATION FOR SOME FORMS OF DAMAGE LIKE FENCE REPAIR	
➤ K11. Page 4. IF ELK KNOCK DOWN FENCE AND COWS GET OUT, LANDOWNERS COULD BE LIABLE FOR ACCIDENTS/DAMAGE FROM FREE RANGING COWS	

QUESTION 3

Over the next 5 years the Elk population in the Kittson herd outside of the border (Caribou/Vita) herd should be:

	Results
G. 20 – 30	70%
H. 25 – 35	0%
I. 30 – 40	10%
J. 35 – 45	10%
K. 40 – 50	0%
L. More than 50	10%

Note: One member did not vote stating that even A was too many

Comments

- K12. 20-30 FOR POPULATION OUTSIDE OF BORDER HERD IS TOO HIGH (NO OPTION FOR LOWER VOTE) – more discussion needed.
- K 13. Page 3. 25 ELK IN ONE SPOT IS TOO MANY – 5 IN 5 SPOTS IS OK
- K14. Page 3. ELK CONCENTRATIONS ARE THE PROBLEM
- K15. Page 3. ELK ARE HERD ANIMALS BY NATURE
- K16. Page 4. WOLF/ELK INTERACTION MOVE OR LIMIT ELK USE ON FOOD PLOTS OR STATE LANDS – CONSIDER WOLF MANAGEMENT

QUESTION 4

Over the next 5 years the Elk population in the border (international) herd should be:

	Results
E. 50 – 70	82%

F. 60 – 80	0%
G. 70 – 90	9%
H. 80 – 100	9%
More than 100	0%

Note: Considerable discussion that 50 to 70 is too high to start with, see first comment below.

- K17. 8 OF 11 WOULD VOTE FOR LESS THAN 50-70 IN CARIBOU/VITA HERD, 15-25 IS SUGGESTED – more discussion needed
- K18. Page 3. AUGUST TO NOVEMBER IS HERDING TIME, ERGO PROBLEMS START THEN
- K19. Page 5. MNDNR AND MANITOBA DNR NEED TO GET TOGETHER AND DEVELOP MANAGEMENT/HUNT PLAN FOR THE CARIBOU/VITA HERD. EACH AGENCY SAYS THEY CANNOT ACT WITHOUT THE BLESSING OF THE OTHER AGENCY, NOT VERY CREDIBLE FOR TAKING OVER 3 YEARS
- K20. Page 4. SHORT STOP FEEDING SHOULD BE CONSIDERED ON STATE LAND
- K21. Page 4. NEED TO USE SUPERIOR HAY AND ATTRACT THEM TO AREAS WHERE THERE WILL BE NO PROBLEM
- K22. Page 5. Page 9. NEED TO HAVE ADDITIONAL ELK GROUP MEETINGS BEYOND THE TWO SET UP TO WORK ON THE MANAGEMENT PLAN (JUNE 16 AND 29 – 2009), PREFER TO MEET 2-3 TIMES/YEAR
- K23. CONSIDER NON-RESIDENT HUNTING LICENSE TO GENERATE MONEY FOR WINTER FEEDING PROGRAM (MONEY RAISED THROUGH LICENSE SALES SHOULD GO TOWARD ELK MANAGEMENT) – more discussion needed
- K24. Page 2. PROVIDE INFORMATION ON COSTS OF ELK MANAGEMENT IN MINNESOTA
- K25. Page 3. PROVIDE INFORMATION ON ELK DAMAGE PAYMENTS TO THE PUBLIC