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WEST VIRGINIA ELK MANAGEMENT PLAN

2011 – 2015



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INTRODUCTION

Eastern Elk (*Cervus elaphus canadensis*) were once common inhabitants of the eastern United States prior to European settlement. Elk roamed throughout what is now West Virginia, especially in the high mountain regions of the state. Historical records indicate elk were extirpated from West Virginia around 1875, and until recently free roaming elk have not been present in West Virginia. For the past several decades, elk have received protected status in the state. The West Virginia Code (§ 20-1-2) defines elk as a “big game” animal; however, there is currently no hunting season in West Virginia for this species.

In an effort to evaluate the feasibility of restoring elk back to the state, the West Virginia Department of Natural Resources (now known as the West Virginia Division of Natural Resources) developed its first elk reintroduction feasibility study in 1972. More recently, the West Virginia Division of Natural Resources, in cooperation with the Rocky Mountain Foundation, conducted research in 2005 relating to the biological assessment of potential habitat and the social feasibility of restoring elk to the landscape in West Virginia.

The successful reintroduction of elk in Kentucky and the subsequent immigration of elk into West Virginia have elevated the need to develop an effective, science-based elk management plan for West Virginia. The purpose of this document is to provide guidance and direction to the West Virginia Division of Natural Resources as elk pioneer unoccupied habitat in West Virginia. The timeline associated with the development and implementation of the management strategies as outlined in this plan will be determined by the rate of population expansion and growth in the future.

HISTORICAL OVERVIEW OF ELK IN WEST VIRGINIA

Historically, elk were common throughout most of the contiguous 48 states, including all of West Virginia. Large numbers were found in the Ohio and Kanawha river valleys and the higher mountain regions. Elk provided an important source for food, shelter and clothing for American Indians and early settlers. Evidence of their distribution throughout the state is illustrated by the widespread use of elk in place names. However, it should also be noted that early explorers often used the word “elk” to describe white-tailed deer.

Elk population densities declined in West Virginia throughout the 1800’s, as the state became home to European settlers. Subsistence hunting, market hunting and wide scale timbering all contributed to the decline of the elk population in West Virginia and the eastern United States. By the late 1800’s, elk were completely eliminated from West Virginia, with the last native elk records being reported from the headwaters of the Cheat River in Pocahontas County in 1873, and the Webster Springs area of Webster County in 1875.

It is reported that in 1913, fifty (50) elk (*Cervus elaphus nelsonii*) were obtained from the Yellowstone National Park and transferred into an enclosure maintained by the Allegheny Sportsmen’s Association at Minnehaha Springs in Pocahontas County. These animals were

subsequently released into the wild, but this stocking proved to be unsuccessful in reestablishing elk into the state.

ELK BIOLOGY & LIFE HISTORY

Elk are gregarious, herding animals that feed primarily on grasses, forbs and other herbaceous matter during the spring, summer and fall seasons. During winter, elk feed on grasses when available but also utilize shrubs, twigs and tree bark to meet their nutritional needs. Elk are primarily grazers and do not normally compete for food with white-tailed deer (*Odocoileus virginianus*) under ideal habitat conditions. However, the lack of quality grazing areas may intensify competition between elk and white-tailed deer for browse and forage.

Male elk are called “bulls.” Adult bulls stand 5 feet at the shoulder, are approximately 8 feet long and weigh around 700 pounds. Bulls have large antlers that can be five feet long, five feet across and have up to six or more points on a side, with yearling bulls typically having spikes. Female elk are called “cows.” Adult cows stand 4 feet at the shoulder, are approximately 7 feet long and weigh around 500 pounds. Male elk typically reach sexual maturity between 3 and 4 years of age. Pelage varies from a deep copper to a light tan color. The rump patch is light beige, with the legs and neck being darker than the body. The rut, or mating season, takes place in late September and early October. Ovulation in females may begin as early as 1 ½ years of age with most cows breeding during their 3rd year. Females give birth in late spring to a single calf (twins are rare), chestnut in color with cream colored spots and weighing about 35 pounds.

Predation on calves can be a limiting factor in the growth and expansion of elk populations in the eastern United States, as experienced in the restoration area within the Great Smoky Mountains National Park in North Carolina. A significant portion of the West Virginia Elk Management Area has a substantial black bear population, which may negatively impact future elk population growth if the bear population is maintained at present levels. The recently established elk population in bordering Kentucky has experienced a high cow breeding success rate (90%) and calf survival rate (92%).

Elk restored to the eastern United States have not displayed the migratory behavior that is common in the western states. As a result, elk home range sizes are significantly smaller in the eastern states. Elk in Kentucky have exhibited a preference for remaining close to their release sites and the associated reclaimed mined areas. Habitat quality in West Virginia is comparable to that found in Kentucky, and it is believed elk will respond similarly. Based upon this observation and the fact that female offspring often disperse and occupy adjacent and/or overlapping home ranges with their paternal parents, it is anticipated that a passive elk restoration approach will be a long term effort.

OVERVIEW OF 1972 ELK REINTRODUCTION FEASIBILITY REPORT

The feasibility of reintroducing elk into West Virginia was first studied in 1972. Previous elk restoration efforts in Virginia and Pennsylvania were reviewed and considered for

applicability to conditions in West Virginia. The report presented conditions as they existed in the 1970s, evaluating the various limiting factors associated with elk reintroduction, and subsequently determined the feasibility of elk reintroduction in West Virginia. The study concluded that before any effort is undertaken to reintroduce elk into West Virginia, several important factors should be considered:

- Availability of adequate habitat and range.
- Competition with other wildlife species.
- Potential for crop damage conflicts.
- Strong inherited migratory habit.
- Transmission and monitoring of parasites and disease.

The 1972 feasibility report concluded that many limiting factors (e.g., inadequate range, crop damage, competition with deer, brain worms, etc.) would negate the feasibility of reintroducing elk into West Virginia at that time. The report also concluded it would be unlikely that elk could be maintained in sufficient numbers to afford hunting and that the only logical criteria for supporting elk reintroduction would be aesthetics (i.e., to help preserve a beautiful and magnificent animal that once existed as part of West Virginia's natural fauna).

OVERVIEW OF 2005 BIOLOGICAL ASSESSMENT OF POTENTIAL HABITAT FOR ELK IN WEST VIRGINIA

Restoration efforts in Arkansas, Kentucky, Michigan, Oklahoma, Pennsylvania, Tennessee, and Wisconsin have shown that elk can be restored to landscapes heavily impacted by human activity. In 2005, the West Virginia Division of Natural Resources, Wildlife Resources Section contracted with the State University of New York, College of Environmental Science and Forestry to evaluate elk habitat suitability in West Virginia. Funding for the feasibility study was provided by the Rocky Mountain Elk Foundation, and a report entitled "Biological Assessment of Potential Habitat for Elk in West Virginia" (Appendix A) was prepared. The report concluded there are 3 large core regions in West Virginia with the most potential for elk restoration (Figure 1). These areas are identified as: 1) Monongahela region in the eastern mountains of the state; 2) Ohio Hills region in west central West Virginia; and 3) Southern Coal Fields region that borders Kentucky. These regions were selected as having the highest potential based upon: 1) lower human densities; 2) limited road systems; 3) vicinity to existing populations; 4) lower amount of acreage in agricultural crops; and 5) habitat suitability based upon West Virginia GAP land cover analysis. The lack of open areas was identified as the primary limiting habitat factor in elk restoration.

The Ohio Hills region comprised the smallest area (4,049 sq. km.) of the three regions, but exhibited the highest percentage of high quality elk habitat. However, this region also had the highest road density compared to the other regions.

The Monongahela region is the largest region (13,957sq. km.), and exhibits higher habitat quality when compared to the Southern Coal Fields region. However, conflict between elk and

agricultural producers is a significant concern in this region due to the higher percentage of agricultural lands in this portion of the state.

The Southern Coal Fields region is the second largest region (4,633 sq. km.) but exhibits lower habitat quality due to the heavy forested area and poorer habitat diversity. Counties within the Southern Coal Fields region are heavily forested and subsequently open grassland habitat is the limiting cover type. However, mountaintop coal mining has converted large forested areas of steep, rugged terrain into plateaus of gently sloping low quality grasslands and adjacent forest fragments. The final report also concluded the close proximity of Kentucky's elk restoration area made the Southern Coal Fields region a viable consideration for a passive elk restoration approach. Linking restoration areas in multiple states would recognize the mobile nature of elk and aid in natural population processes.

OVERVIEW OF 2005 SOCIAL FEASIBILITY OF RESTORING ELK TO WEST VIRGINIA

In 2005, the West Virginia Division of Natural Resources, Wildlife Resources Section contracted with Cornell University, Department of Natural Resources to evaluate the social feasibility, cost and benefits associated with restoring elk in selected regions of West Virginia. For the purpose of the sociological assessment, only the Monongahela and Southern Coal Fields regions were evaluated. This social feasibility study was funded by the Rocky Mountain Elk Foundation and although considered a separate study was linked to the biological assessment study. A final report entitled "Social Feasibility of Restoring Elk to West Virginia" (Appendix B) was prepared.

A substantial majority (75%) of residents in the Southern Coal Fields region and 67% of residents in the Monongahela region had a positive attitude regarding the idea of elk occurring in their respective regions. Most residents wanted to have elk for viewing, hunting, or for the aesthetic pleasure of knowing elk are in West Virginia after years of absence. The report also concluded that the presence of elk would also have a positive impact on the public's perception of the agency. In addition, it was noted that local stakeholders in cooperation with West Virginia Division of Natural Resources should be involved in the decision making and "co-management" of the elk resource. A small minority of respondents in the Southern Coal Fields region perceived there would be negative impacts associated with restoring elk to West Virginia. Residents in the Monongahela region had concerns regarding crop damage on farms and risk of collisions with vehicles. It was also identified that since communities in the Southern Coal Fields region had limited infrastructure, they might not have the ability to benefit economically from elk-associated tourism.

The feasibility report also concluded that the potential for human/elk conflicts were of concern to the public with an expanding elk population. Free ranging elk are capable of making long range movements and may appear in unsuitable areas resulting in intolerable levels of property and crop damage. Public information and education efforts will be critical in addressing real and perceived problems resulting from human/elk interactions. The impacts associated with the presence of elk will need to be monitored in order to properly address

positive and/or detrimental experiences. The extent of these impacts will aid in determining the social carrying capacity in this region.

ELK RESTORATION EFFORTS AND CURRENT POPULATION STATUS IN SURROUNDING STATES

Pennsylvania has a remnant elk population that has remained stagnant in numbers until recent years. This population is a result of the Pennsylvania Game Commission's reintroduction of 177 Rocky Mountain elk (*Cervus elaphus nelsoni*) between 1913 and 1926. These elk were translocated from Yellowstone National Park, Wyoming to a 10-county area in north-central Pennsylvania (i.e., Blair, Cameron, Carbon, Centre, Clearfield, Clinton, Elk, Forest, Monroe and Potter counties). The Pennsylvania Game Commission opened hunting seasons for elk from 1923 through 1931. Elk were given total protection status after 1931 until recent years. In 1971, the elk population was reported to be around 38 animals and had retreated to the same section where the last native herd was found over 100 years earlier. At that time, it was concluded that Pennsylvania's elk experiment, though partially successful in the past, was doomed to failure. It was determined that the lack of undisturbed range would limit the ability of the species to engage in their usual nomadic wanderings without human harassment and interference. The current Elk Management Area in Pennsylvania is located in the north-central portion of the state (i.e., Elk, Cameron, Centre, Clearfield, Clinton and Potter counties) where 74% of the land is publicly owned. There are currently 865 square miles of elk range in Pennsylvania with a proposed expansion to 3,750 square miles by the year 2016. Limited elk hunting opportunities exist with population density estimates ranging from 500-600 animals.

Kentucky began the first of a series of elk releases into the wild in December 1997, and this reintroduction effort continued through the winter of 2002. Fifteen hundred fifty elk (*Cervus elaphus nelsonii*) were released at 8 different sites in a 16-county restoration zone (Figure 2). Since these initial releases, elk have thrived in Kentucky. Studies indicate that Kentucky's elk population exhibits a 90% breeding success rate and a 92% calf survival rate. The original population target of 7,400 elk was achieved in 2008, 11 years ahead of schedule. Approximately 1,500 hunting permits annually will have to be issued in order to maintain the herd at the 7,400 animal target level. Kentucky boasts the largest free ranging wild elk herd east of Montana.

The Virginia Commission of Game and Inland Fisheries (now known as the Virginia Department of Game and Inland Fisheries) translocated between 140 and 150 Rocky Mountain elk from Yellowstone National Park in 1917 to 11 different locations in Virginia. An additional 193 elk were released between 1917 and 1935. Many of these releases occurred in unsuitable habitat and as a result most releases failed. A report prepared by R.K. Wood in 1943 concluded that a general elk restoration program in Virginia and in the eastern United States was not feasible, but that restoration in wilderness areas of 100,000 acres or more might be accomplished successfully. During 1971, a herd of 50 to 75 elk existed at the Peaks of Otter along the Blue Ridge Parkway, but this herd was extirpated years later. The Virginia Department of Game and Inland Fisheries adopted a regulation allowing for the liberal harvest of elk as they crossed from Kentucky into Southwestern Virginia, because the agency did not want elk to become established in Virginia. Virginia permits elk to be harvested during deer hunting seasons with the use of a

deer tag. From 2000 to 2008, 30 elk have been harvested in Virginia. The current elk population in Virginia is estimated to be between 100 - 150 animals. The Virginia Board of Game and Inland Fisheries has instructed its agency to develop a plan of action for the potential restoration of elk in Southwestern Virginia.

No free ranging elk are known to exist in either Ohio or Maryland at the present time.

WEST VIRGINIA ELK MANAGEMENT PLAN

Goal: **Passively establish and manage a healthy elk population within a seven-county region of southwestern West Virginia that is compatible with biological and sociological conditions and provides recreational opportunities and other benefits for the citizens of West Virginia.**

Objective A: **Establish an Elk Management Area**

Strategy 1: Designate an Elk Management Area with defined geographical boundaries based upon previous feasibility studies and a GIS-based evaluation of various biological and sociological parameters including land cover types, public lands, urban areas, highway systems and land ownership patterns (Table 1).

- The Elk Management Area includes seven (7) counties and/or portions thereof located in southern West Virginia. This area encompasses 2,845 square miles and is defined by the following geographical features: a portion of Boone County (south/west of SR 3); a portion of Lincoln County (south of CR 11 to Branchland, west of SR10 to Midkiff, south of CR 48 and CR 7 to Sias, south of CR 46 to Spurlockville, south of CR 62 to junction of SR 3 (Alkol), south of SR 3 to the Boone County border; Logan County; McDowell County; Mingo County; a portion of Wayne County (from Kentucky state line - south of CR 36 to Radnor, east of SR 152 to junction with CR 30, south of CR 30 and SR 37 (East Lynn), south of CR 25 to Nestlow, south of CR 21 to junction of CR 11 at Lincoln County line); Wyoming County (See Figures 3 & 4).
- The Elk Management Area is located within the Allegheny Plateau region which is dominated by the central hardwood forests and is characterized by dendritic stream patterns. The area is primarily dominated (85%) by deciduous forests (e.g., cove hardwoods, mixed oak forests, etc.). Open land habitat, which includes

agricultural areas and mineral extraction areas (e.g., mountain-top coal removal sites, other types of surface mining, etc.), comprise approximately 15% of the terrain. Public lands comprise 157 square miles (5.5%) of the area.

- Modify the Elk Management Area boundaries as needed to meet management goal. These boundaries should be evaluated on a 5 year basis in coordination with county planning commissions to address potential planned development conflicts.

Objective B: Provide for the passive movement of elk from the Kentucky Elk Management Area to populate the West Virginia Elk Management Area and monitor population growth and expansion.

[**Note:** During the current plan period, an active restoration approach (i.e., relocation of elk from out-of-state sources to West Virginia) is not under consideration. Various active restoration issues (e.g., live animal testing for CWD) will continue to be monitored and other restoration options will be re-evaluated in the future.]

Strategy 1. Monitor elk population growth and range expansion and investigate the potential for developing population indices that accurately reflect herd status.

- During initial years, West Virginia Division of Natural Resources (WVDNR) staff will record elk sightings, damage complaints, road kills, etc. from the public utilizing the West Virginia Elk Sighting Form (Table 2). Ground searching surveys by Wildlife Resources Section staff will also be conducted as needed.
- A web link on the WVDNR's website will be available for the public to report elk sightings and/or nuisance elk problems.
- WVDNR will coordinate with the West Virginia Division of Highways to develop a notification system for reporting road killed elk.
- Elk sighting/bugling survey question will be incorporated into the West Virginia Bowhunter's Survey questionnaire.
- Population sampling techniques will be developed and implemented within the Elk Management Area to evaluate population distribution. Sampling protocol is currently being developed and is scheduled for implementation in 2011.

- Wildlife Resources Section personnel will coordinate with conservation based organizations, state governmental agencies (e.g. West Virginia Department of Environmental Protection) and mineral extraction companies within the Elk Management Area to assist with monitoring efforts.

Strategy 2: Continue to retain a “protected status” on elk within the Elk Management Area until the population reaches a level that will support a limited permit hunting season.

Strategy 3: Initiate educational programs to address the following issues: elk herd establishment, population monitoring, elk viewing, research and management activities.

Strategy 4: Collaborate with surrounding state fish and wildlife agencies relating to elk research and monitoring protocol.

Strategy 5: Implement regulations to assure that an elk population does not become established outside of the Elk Management Area.

- Properly licensed hunters will be allowed to harvest either sex elk during the traditional deer archery, deer muzzleloader and deer firearms seasons in all regions of the state outside the Elk Management Area.
- Depredation permits will be issued when necessary to address elk crop damage problems.

Objective C: Manage a self sustaining elk population within the Elk Management Area at levels compatible with existing habitat conditions, and provide recreational opportunities (e.g. elk hunting and viewing) and other benefits for the state’s citizens.

Strategy 1: The Elk Management Area elk population objective will be one (1) elk per three (3) square miles of elk range (approximately 950 animals). This population objective will be reevaluated every five years.

Strategy 2: Develop an elk harvest management strategy that will be used to set appropriate hunting regulations.

Strategy 3: Identify clearly defined parameters for use in establishing an elk harvest strategy.

Strategy 4: Coordinate efforts with the Law Enforcement Section to develop and implement appropriate elk hunting laws and regulations.

- Modify Legislative Rule Title 58, Series 45 (Hunting and Trapping Rules) to include an elk hunting season, daily bag limit and season limit when an elk season is approved by the Natural Resources Commission.
- Modify Legislative Rule Title 58, Series 50 (Deer Hunting Rules) to address caliber restrictions for elk, etc. or propose a new legislative rule to address all regulatory issues relating to the elk hunting season. Language should include that it is illegal to bait and supplementally feed elk.
- Propose legislation that would allow for a non-refundable application fee when applying for limited elk hunting permits.
- Propose legislation to modify existing West Virginia Natural Resources Laws (Chapter 20-2-22: Tagging, removing, transporting and reporting deer and wild turkey) to include elk.
- Review, modify and/or propose other legislative rules and natural resources law (Chapter 20) relating to elk hunting regulations as deemed appropriate.

- Strategy 5: Purchase, lease, or secure management of additional elk habitat within the Elk Management Area in areas where there is limited public access.
- Strategy 6: Develop programs designed to gain public access to private lands for elk hunting and elk viewing opportunities, which might otherwise be leased or restricted resulting in the privatization of the elk resource.
- Strategy 7: Monitor elk harvest and recreational use and gather biological data required to make sound management decisions.
- Strategy 8: Develop programs to promote the recreational opportunities associated with the state's elk population such as elk hunting and elk viewing opportunities.
- Strategy 9: Work closely with large landholders (e.g., coal and timber companies) to promote habitat enhancement projects for elk, without increasing privatization of the elk resource within the Elk Management Area.
- Strategy 10: Provide technical assistance to private landholders, conservation organizations and public entities interested in managing elk habitat and populations.

Strategy 11: Improve habitat conditions (e.g., develop herbaceous openings etc.) for elk on the Wildlife Management Areas located within the Elk Management Area.

Objective D: Minimize elk/human conflicts to sociological acceptable levels.

Strategy 1: Monitor crop and personal property damage complaints and provide technical assistance to private landowners relating to elk damage.

Strategy 2: Review current legislative rules pertaining to wildlife crop damage and implement recommendations accordingly.

Strategy 3: Wildlife Resources Section and Law Enforcement Section personnel will work with landowners to effectively address nuisance elk/human conflicts.

Strategy 4: Initiate educational programs to address elk/human conflicts (e.g. property damage, crop damage, etc.).

Strategy 5: Conduct human dimensions surveys with landowners and other residents within the Elk Management Area to evaluate public opinions relating to elk population levels and human/elk conflicts.

Strategy 6: Develop a survey protocol to measure elk browsing impacts on forest regeneration and plant communities.

Strategy 7: Allow for management of elk densities on sub-portions of the designated Elk Management Area.

Objective E: Promote public awareness of the elk resource.

Strategy 1: Develop educational programs and literature relating to the passive elk management approach and elk ecology, for civic groups, landowners, governmental entities schools and conservation organizations.

Strategy 2: Disseminate appropriate information relating to elk management through television and radio programs, magazines, newspapers and the WVDNR's website.

Strategy 3: Conduct public, open house meetings within WVDNR Districts IV and V to explain West Virginia's Elk Management Plan.

Strategy 4: Provide technical assistance to WVDNR - Parks Section in attracting elk and promoting public viewing of elk on State Parks in the designated Elk Management Area.

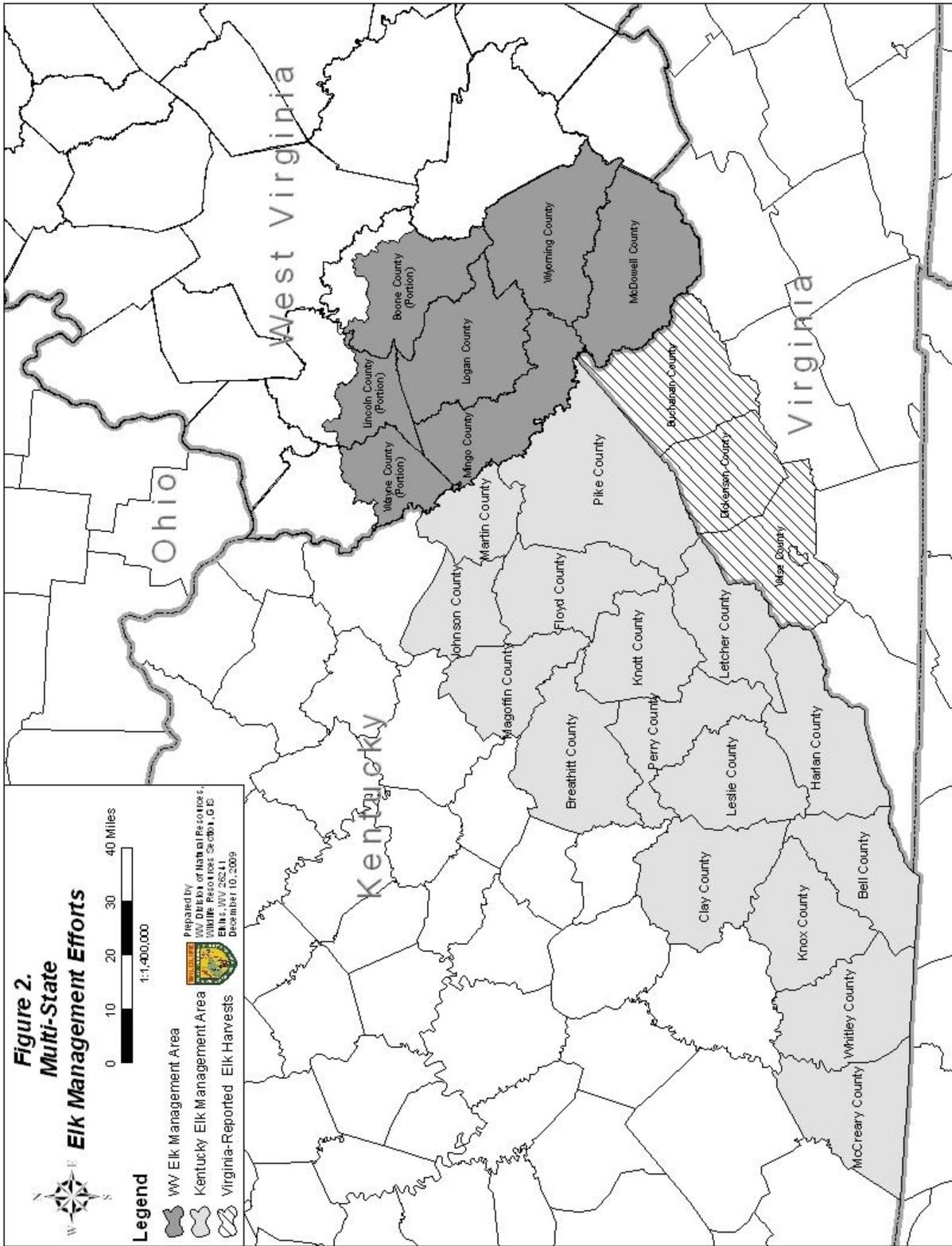
Objective F: Evaluate and monitor health conditions of the elk population

[Note: Elk within the eastern United States have been surveyed for various pathogens; however, population health information is not extensive in this region of the country. Chronic wasting disease, bovine brucellosis, and bovine tuberculosis are high profile infectious diseases that have been recognized in captive and/or wild elk populations. Fortunately, these diseases have not been detected in free-ranging elk in the eastern United States].

- Strategy 1: Develop standardized monitoring protocols to collect appropriate biological samples for disease and herd health testing from hunter harvested and non-seasonal elk mortalities.
- Strategy 2: Monitor the health of the elk population working in close cooperation with the Southeastern Cooperative Wildlife Disease Study and other public governmental entities.
- Strategy 3: Continue to work collaborately with other state fish and wildlife agencies regarding disease monitoring protocols and dissemination of disease testing results.
- Strategy 4: Protect the health and genetic integrity of pioneering wild elk from illegally translocated elk on private lands. Lethal removal of all suspect and known translocated elk or red deer from the designated Elk Management Area will be carried out to protect the health and genetic integrity of the pioneering wild elk.

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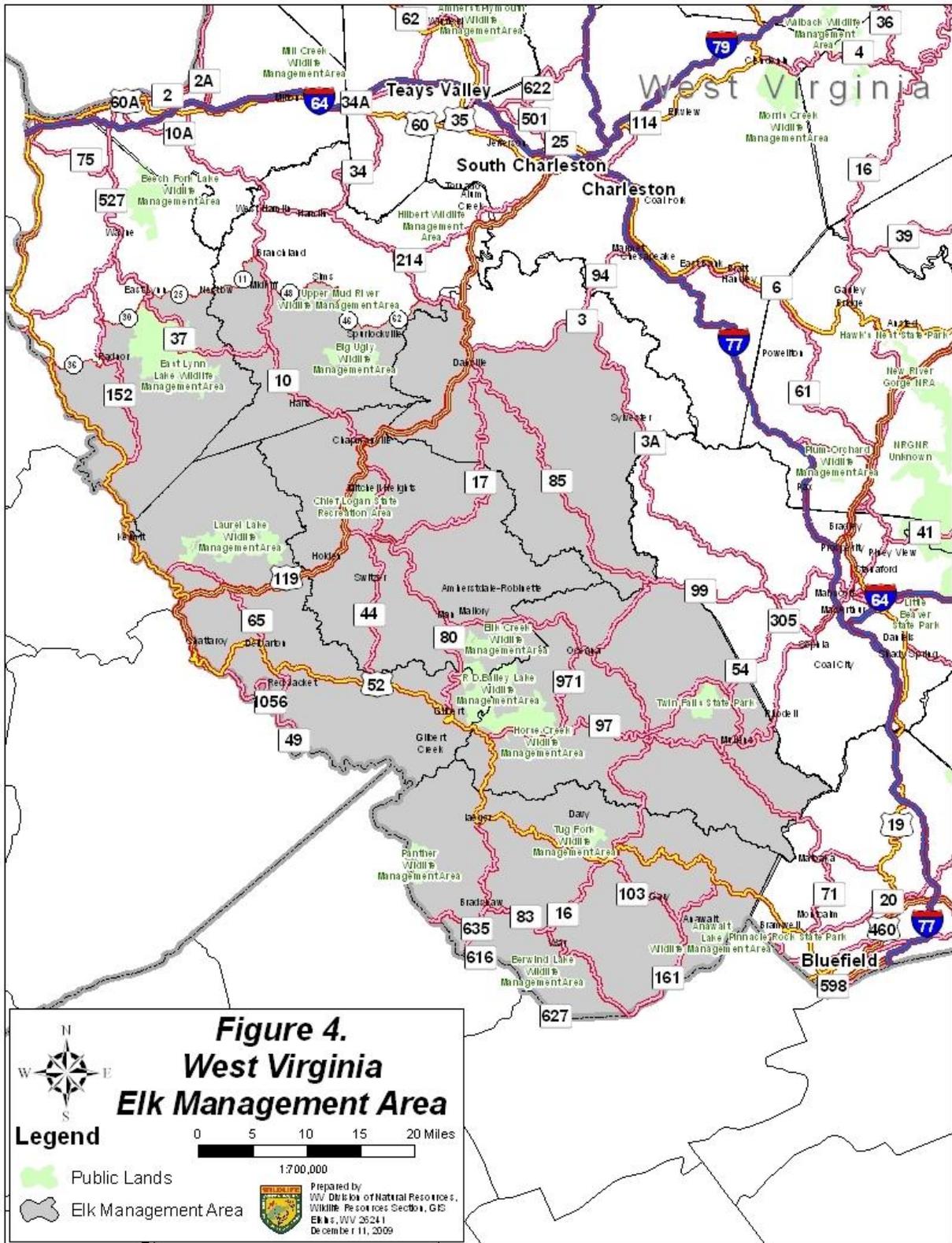


TABLE 1.**HABITAT AND SOCIOLOGICAL PARAMETERS FOR COUNTIES
WITHIN THE WEST VIRGINIA ELK MANAGEMENT AREA**

COUNTY:	SQUARE MILES:	HUMAN POPULATION (per Sq. Mi.):	FORESTED COVER (%):	OPENLAND COVER (%):	LARGE LANDHOLDINGS (% > 500 acre parcels):	PUBLIC LANDS (Sq. Mi.):
BOONE (portion)	366	72	84%	16%	63%	0
LINCOLN (portion)	310	61	84%	15%	8%	10.8
LOGAN	444	99	83%	17%	62%	12.2
MCDOWELL	486	57	88%	12%	65%	24.0
MINGO	403	77	83%	17%	53%	29.9
WAYNE (Portion)	254	53	86%	14%	NA	49.3
WYOMING	495	61	86%	13%	67%	30.5
TOTALS	2,845	69	85%	15%	56%	156.7

TABLE 2. WEST VIRGINIA ELK SIGHTING FORM

DATE:	REPORTED BY:		
COUNTY:	ADDRESS:		
	PHONE #:		
INFORMATION FROM PUBLIC EMPLOYEE _____ OR PRIVATE INDIVIDUAL _____			
LOCATION DESCRIPTION:			
UTM COORDINATES: NAD 83 OR NAD 17 (CIRCLE ONE)	NORTH:	EAST:	
TOTAL NUMBER OF ELK OBSERVED:	NUMBER OF BULLS:	NUMBER OF COWS:	NUMBER OF CALVES:
	ANTLER PTS: (L): (R):		
ELK OBSERVED ALIVE: (CHECK ONE)	GRAZING:	ALONG ROAD:	OTHER (LIST):
ELK OBSERVED DEAD: (CHECK ONE)	ILLEGAL:	VEHICLE:	CROP DAMAGE:
	OTHER (LIST):		
COMMENTS:			