

**UTAH STATEWIDE
ELK MANAGEMENT PLAN**



**UTAH DIVISION OF WILDLIFE RESOURCES
DEPARTMENT OF NATURAL RESOURCES**

UTAH DIVISION OF WILDLIFE RESOURCES STATEWIDE MANAGEMENT PLAN FOR ELK

I. PURPOSE OF THE PLAN

A. General

The statewide elk management plan provides overall guidance and direction for Utah's elk management program. This plan briefly describes general information on elk natural history, management, habitat, and population status. This statewide elk management plan was revised by a 20 person advisory committee. The committee was diverse and had representation from: the Utah Wildlife Board, 5 Regional Advisory Councils, Brigham Young University, Rocky Mountain Elk Foundation, Sportsmen for Fish and Wildlife, Utah Bowman's Association, US Forest Service, Bureau of Land Management, Utah Farm Bureau, Cooperative Wildlife Management Unit Association, Utah Guides and Outfitters, Utah State Legislature, private landowners, livestock permittees, public at large, and Utah Division of Wildlife Resources (UDWR). This group met five times from June 2 to August 11, 2015. The committee identified components of the last elk plan that were working well and areas that could be improved upon, and then developed goals, objectives, and strategies to address those management issues.

B. Dates Covered

The elk plan was approved by the Wildlife Board on December 2, 2015 and will be in effect until December 2022. On Sept. 1, 2020 the statewide elk committee reconvened and conducted a mid-plan review to review and address issues identified by the Utah Wildlife Board and DWR. The recommendations of the committee were taken into account, and the plan was updated to reflect those changes in November 2020.

II. SPECIES ASSESSMENT

A. Natural History

Elk (*Cervus elaphus*) are members of the cervid family along with deer, moose, and caribou. Elk are the same species as European red deer, even though visually they are quite different. North American elk are also commonly called wapiti to distinguish them from European red deer. Wapiti is the Shawnee name for elk and means "white rump" or "white deer." There are six recognized subspecies of elk in North America with all of the elk in Utah of the subspecies known as Rocky Mountain elk (*C. e. nelsoni*). In 1971, the Rocky Mountain elk was designated as Utah's state animal.

Elk males, females, and young are known as bulls, cows, and calves, respectively. Calves are generally born as singles (twins are extremely rare) after a gestation period of approximately 8–8.5 months. Calves are normally born from mid May until early June and weigh approximately 13 pounds at birth. Elk are gregarious animals and, as such, often gather into large nursery bands of cows and calves in early summer. During this time, it is common to see groups of several hundred elk. Within a few weeks those nursery bands disperse into smaller groups across the

summer range.

The antlers of bulls begin to grow as soon as the old antlers are shed in late winter or early spring. Bulls generally segregate from cows and calves through the summer antler growing period and often band together in small groups during this time. The velvet that covers and provides nourishment to the growing antlers begins to shed in early August. In Utah, the rut or breeding period for elk begins in early September and continues until mid October with the peak of the rut typically occurring in mid to late September. In early September, bulls begin to bugle and gather cows into harems of approximately 10–20 females. Breeding bulls vigorously defend their harems from other “satellite” bulls who attempt to steal cows for themselves.

After the rut, bulls leave the cows and calves and either become reclusive or band together with other bulls. It is common to see large groups of bulls in the late fall and winter. In late spring, cows seek solitude for calving. At this time, yearlings from the previous year are often aggressively driven away by the cows and forced to find new home ranges. As new calves are born, the cycle of life begins again.

B. Management

1. UDWR Regulatory Authority

The Utah Division of Wildlife Resources operates under the authority granted by the Utah Legislature in Title 23 of the Utah Code. The Division was created and established as the wildlife authority for the state under section 23-14-1 of the Code. This Code also vests the Division with necessary functions, powers, duties, rights, and responsibilities associated with wildlife management within the state. Division duties are to protect, propagate, manage, conserve, and distribute protected wildlife throughout the state.

2. Past and Current Management

Elk along with bighorn sheep were probably the most common game animals in Utah prior to settlement times. Indians, trappers, and pioneers all used elk as a source of food and clothing. Unrestricted hunting eliminated most of the elk in Utah by the end of the nineteenth century. Because of the low elk numbers, elk hunting seasons were closed in Utah in 1898.

Large scale transplant efforts are a major reason for the reestablishment of elk in Utah. Interstate transplants of elk occurred from 1912 to 1925 to reestablish elk to their historical ranges. During that period, elk were transplanted from Yellowstone National Park and released on the Fishlake, Oquirrh Mountains, Mount Timpanogos, Mount Nebo, Logan Canyon, and Manti units. A few elk were also captured from Montana and released in Smithfield Canyon during that period. In addition to the interstate transplant efforts, elk have also been captured and transplanted to and from source herds within Utah. Those transplants occurred in the late 1970s and 1980s and were mainly released on the eastern and southern Utah mountain ranges.

Elk herds in Utah were managed by the Board of Big Game Control from 1925 until 1996. In 1996, the Board of Big Game Control was abolished and replaced with five Regional Advisory

Councils and a Wildlife Board that regulate the management of all wildlife in Utah.

Elk were hunted under a limited entry hunting system until 1967 when the Board of Big Game Control adopted an “open bull” hunt strategy on most large elk units. Smaller elk units continued to be managed as “restricted permit” or “limited entry” type hunts. That hunting strategy continued until 1989 when a “yearling only” regulation was initiated on the two largest elk herds, the Manti and Fishlake. Yearling only was later replaced with a “spike only” regulation and expanded to other units.

Elk herds in Utah are currently managed under a combination of general season (spike and any bull) and limited entry hunting regulations. The any bull units are located primarily in northern Utah and are generally on units with large amounts of private land, large wilderness areas, or units with very low elk populations. Spike hunting is used on most limited entry units and is intended to reduce bull:cow ratios, while still allowing for trophy quality bulls. Any bull and spike hunts are designed to provide hunting opportunity. In 2014, UDWR issued nearly 41,000 general season permits (14,300 any bull, 15,000 spike, and 11,500 archery). The harvest rate on those hunts is fairly low with success rates in 2014 averaging 17.0%, 13.4%, and 11.1% for the any bull, spike, and archery hunts respectively.

Limited entry hunting is managed for an average age of harvested bulls (Figure 1). Those age objectives are based on the premise that in order to achieve a given average age of harvest, a certain age structure must be present in the population. The higher the age class objective, the more the age structure will be shifted towards older animals, and as such, the greater the likelihood of a hunter harvesting a larger trophy animal. In general, over the past 5 years bulls in units that are managed for opportunity (4.5-5.0 or 5.5-6.0 years old) have exceeded the age objective and permits have been increased. Bulls in older age class units (6.5-7.0 and 7.5-8.0 years old) have been at or below the age objective and permits have been reduced. As a result, ages are trending upward on older age class units. From 2009 - 2014, that statewide average age for bull elk has been between 6.1 and 6.5 (Table 1).

C. Habitat

Elk are a generalist ungulate, and have a varied diet which consists of grasses, forbs, and shrubs. The percentage of each food type can vary based on availability. This flexible diet allows elk to live in a variety of habitat types including all of Utah’s mountains as well as some of the low deserts (Figure 2). Although elk inhabit most habitat types in Utah, they prefer to spend their summers at high elevations in aspen conifer forests. Elk will spend the winter months at mid to low elevation habitats that contain mountain shrub and sagebrush communities.

Elk in Utah are more closely tied to aspen than any other habitat type. Aspen stands provide both forage and cover for elk during the summer months and are used for calving in spring. For several decades, aspen has been declining throughout the West with overgrazing, lack of disturbance (e.g., logging, fire), and extended drought all being listed as potential reasons for the decline. If the declines in aspen continue, it will reduce the amount of potentially suitable habitat available for elk and, as such, reduce the number of elk those habitats can support.

Water is also an important component of elk habitat, and the lack of sufficient water distribution could limit the number of elk we can have in certain areas of Utah. In Utah, Jeffrey (1963) found that elk on summer range preferred areas within 0.33 miles of a permanent water source. Other studies have shown elk use of summer range declined markedly beyond 0.5 mile from water (Mackie 1970, Nelson and Burnell 1975).

D. Population Status

Elk are well established throughout Utah with the current statewide population estimated at approximately 81,000 animals (Figure 3). From 1975 to 1990, the elk population in Utah grew rapidly from an estimated 18,000 elk to 58,000 elk (average annual growth rate = 1.08). This rapid increase was largely due to low population levels and the abundance of available habitat (i.e., the population was well below carrying capacity). From 1990 to 2005, population growth slowed down considerably through the use of antlerless harvest designed to reduce population growth rates, as well as reduce populations in areas with poor range conditions due to drought. Although most elk populations are currently at or near the population objective (Table 2), elk populations have increased in many areas of the state due to increases in population objectives, difficulties with obtaining harvest on private lands that manage for elk, and movements of elk from tribal lands to public lands during winter. As such, this plan provides additional harvest strategies to obtain adequate harvest, in needed areas, on local units.

III. ISSUES AND CONCERNS

A. Habitat

Healthy and productive elk herds require high amounts of quality habitat. Crucial elk habitat is continually being fragmented or lost due to human expansion and development. Urbanization, road construction, OHV use, and energy development impact elk habitat, and proper planning and mitigation are essential to maintaining and improving elk habitat and migration routes. Additionally, elk summer ranges such as aspen habitat has been gradually replaced by conifers due to fire suppression, and winter ranges that were once dominated with shrubs and perennial grasses have been replaced by annual grasses or invasive weeds that are not beneficial to elk.

The UDWR has a long history of restoring and enhancing elk habitat in Utah. The habitat section, habitat council, watershed restoration initiative, and many conservation partners have provided leadership and funding to improve elk habitats. These projects have included pinyon-juniper removal, controlled burns, reseeding efforts after wildfires, conifer thinning, etc., which have allowed for increased perennial grasses, forbs, and shrubs to be established for the benefit of elk and other wildlife. Water catchments (i.e., guzzlers) and other developments have also been installed that benefit elk, cattle, and other big game species in Utah. Since 2005, UDWR and our partners have treated over 650,000 acres of elk habitat (350,000 acres of habitat improvement projects and 300,000 acres of fire rehabilitation). These efforts will continue to support elk populations throughout the state.

B. Population Size and Elk Distribution

The statewide elk management plan does not set a population objective for elk in Utah; rather, population objectives are established in unit plans and the summation of those objectives becomes the statewide objective. The current population objective for elk statewide is 70,965 (Table 2). Local committees or other forms of public input are used when changing a population objective for a given unit. Population estimates are obtained by conducting aerial surveys every 3 years as snow conditions and budgets allow. Population models include data on bull and cow harvest, survival, and calf production, are also used to estimate elk populations for a given unit and are updated annually.

Properly managing the distribution and number of elk within units is a key priority for UDWR. In most units, managing to a population objective is easily attained by issuing antlerless elk permits to public hunters. However, in some units, particularly those with large amounts of private or tribal lands, managing to the population objective has been challenging because elk quickly learn to use sanctuary or refuge areas that receive little hunting pressure during hunting seasons (Mangus 2009). Throughout this planning process, the statewide elk committee wanted to provide UDWR biologists as many management tools as possible to properly distribute elk and reach population objectives on individual units.

In addition to antlerless permits available through the public draw, antlerless elk control permits have been issued on units where the population objective is 0 or where elk harvest has been difficult to obtain. This strategy allows a hunter with a buck, bull, or once-in-a-lifetime permit to purchase a cow elk permit at a reduced price and harvest a cow within the season dates of their hunt in a specified boundary. Antlerless elk control permits have been successful because additional hunters are not added to the field, and it provides more hunting opportunities and increased harvest. Moving forward, additional strategies should be utilized on units that are over objective including increasing the number of cow elk permits a hunter can obtain annually, over-the-counter permits, and private-lands-only permits. These hunt strategies should provide hunting pressure and harvest in desired areas so elk can be better distributed throughout the unit. Also, private landowners can more easily harvest elk on their property, which may increase tolerance of elk in some areas.

C. Bull Hunting

This plan provides for opportunity and quality bull elk hunting in Utah. Opportunity hunts include spike and any bull elk permits and are needed to reduce bull to cow ratios. Harvesting bulls on these units allows for increased hunting opportunities and increased calf production in future years because more cows can be retained in the population. Spike hunting occurs on most limited entry units whereas any bull hunting occurs on units that are primarily dominated by private lands, units with low elk populations, wilderness areas or other large refuge areas such as tribal lands or national parks/monuments.

Limited entry hunts are designed for increased quality. On traditional limited entry units harvested bulls are managed to a desired age objective (Figure 1). The elk committee defined characteristics of lower age and higher age objective units and assigned all elk units to an age objective category (Table 1). In general, lower age objective units (4.5-5.0 and 5.5-6.0) have high populations of elk which allows for hunters to draw limited entry permits more frequently,

thus reducing point creep. These units also have high amounts of interchange with neighboring units, many roads, easy access to elk, and are in close proximity to urban areas. Higher age class objective units (6.5-7.0 and 7.5-8.0) have lower populations of elk, low amounts of interchange with neighboring units, few roads, difficult access to elk, and are in relatively remote parts of the state. The committee also considered other factors when assigning age objectives to units including point creep, management strategies of neighboring states and tribes, dynamics of private lands, and unit histories.

During the mid-plan review of 2020, underperforming and underutilized areas were identified at the direction of the Utah Wildlife Board and bulls on those units/areas will be hunted using a different strategy focused on primitive weapons to provide quality hunting experiences where hunters are likely to be less selective and have lower success due to the limited range of the allowed weapons. These primitive weapon limited entry units will utilize a September archery hunt followed by another primitive weapons hunt that allows the use of handgun, archery, muzzleloader, shotgun with no optical sights. These are defined in rule as HAMS hunts (R657-5-48) and are intended to provide increased limited entry hunting opportunities.

D. Poaching

Poaching is not considered to be a major problem in Utah; however, it is extremely difficult to determine the true extent to which elk are being poached in the state. Although poaching has not resulted in overall declines in elk population numbers in Utah, poaching of mature bulls can be significant and has reduced hunter opportunity in some localized areas. Units that are most susceptible to poaching typically have small isolated elk populations and issue very few bull elk permits. High grading of bulls may also be occurring on some units where hunters kill one bull elk and then abandon it to look for a larger bull. Continued law enforcement efforts are needed to maintain hunting opportunity.

E. Predator Management

Utah's elk populations have increased dramatically in Utah since 1970 even with presence of several predator species (e.g., mountain lion, black bear, and coyote). Although mountain lions may display strong patterns of selection for elk calves (Clark et al. 2014), along with black bears and coyotes occasionally preying on elk, there are no known instances of predators causing elk herd declines in Utah. Predator management occurs in some elk herd units due to declining or depressed mule deer populations on shared ranges, and also occurs when deer herds are chronically below population objectives (UDWR 2011a). In some instances, elk herds may have benefited by this predator management that was initiated for deer and other ungulate species.

Although wolves are not currently established in Utah, there is concern that wolves could impact elk populations and elk hunting opportunities. Recent studies in surrounding western states have implicated predation by wolves as a reason for localized elk herd declines, particularly in areas with poor to marginal habitat quality (Hamlin and Cunningham 2009). To deal with the potential establishment of wolves in Utah, UDWR in conjunction with the Wolf Working Group developed a wolf management plan that was passed by the Utah Wildlife Board in 2005 and was recently revised in 2014 (UDWR 2014).

F. Disease Issues

Similar to other wild ungulates, elk are susceptible to a wide variety of viral, bacterial, and parasitic diseases. In Utah, the two most concerning diseases include brucellosis (*Brucella abortus*) and chronic wasting disease (CWD). Other diseases and parasites either documented or considered a concern to elk include bluetongue virus (BTV), epizootic hemorrhagic disease (EHD), and elaeophora (*Elaeophora schneideri*).

Brucellosis is an infectious bacterial disease that causes late term abortions, non-viable calves, and sterility in adult cattle (Godfroid et al, 2011). Brucellosis can also infect humans (Godfroid et al., 2011). Transmission most commonly occurs when an animal licks or ingests infected fetal materials, aborted fetuses, uterine discharges, or contaminated feed or water (Godfroid et al., 2011). Depending on environmental conditions, such as cool temperatures and moisture, the bacteria can remain viable in uterine discharges and the aborted fetus for prolonged periods of time (Crawford et al. 1990). Brucellosis is thought to be self-limiting in free-ranging elk populations because of their secretive nature during parturition and the fact that most female elk quickly consume fetal materials after birth (Thorne 2001). However, this has not been the case for elk of the Greater Yellowstone area where feed ground practices that concentrate elk during the period when abortions are most likely have allowed the disease to persist and increase in prevalence (Thorne 2001). This finding has also been reported in Idaho, where the prevalence of brucellosis antibodies is two to four times higher in elk that use feed grounds (Etter and Drew 2006).

In the late 1960's, controversy began to surface in Utah regarding the status of brucellosis in elk. The origination of Utah elk from the Greater Yellowstone Area caused much concern in the agricultural community, given the findings of brucellosis in those herds in the early 1930's (Tunncliff and Marsh 1935). Moreover, the proximity and potential exchange of elk in Utah with possible brucellosis positive elk from Wyoming has also caused concern. In response, the UDWR has agreed to monitor the disease status of elk at Hardware Ranch on an annual basis and a trapping and testing program was initiated in 1969. Between 1969 and 1971, blood samples were collected from 101 elk, all of which were sero-negative for brucellosis (Follis 1972).

Serological testing of elk populations has continued on an annual basis in northern Utah and includes elk that use feed grounds on private property in Rich County, Hardware Ranch, and the Millville Face in Cache County. Further, hunter harvested antlerless elk from Rich and Cache County are tested through a voluntary participation program. To date, no elk in the state of Utah has ever been classified as a suspect or reactor (UDWR unpublished data).

CWD is a contagious, slow-acting, and fatal degenerative disease known to affect members of the cervid family including elk (Williams and Young 1982, Miller et al. 1998, Miller et al. 2000, Williams et al. 2002). Chronic Wasting Disease affects the central nervous system, resulting in weight loss, deterioration of body condition, and eventually death (Williams and Young 1982, Williams and Young 1992, Spraker et al. 1997, Williams et al. 2002). Chronic Wasting Disease was first documented in Utah in a hunter-harvested mule deer in late 2002 and has since then been found in three distinct geographic areas: the North Slope and South Slope Units near

Flaming Gorge and Brush Creek, the La Sal Mountains Unit, and the Central Mountains Unit near Fountain Green and the Spencer Fork Wildlife Management Area.

Surveillance for CWD in Utah includes hunter-harvest surveillance in areas known to have positive mule deer and targeted surveillance focusing on the removal of sick or symptomatic animals. To date, two elk have tested positive for CWD in Utah; one hunter harvested elk from the La Sal Mountains in 2009, and one female elk with neurological symptoms that was euthanized by UDWR personnel in 2014 near Vernal. Further, CWD was documented in two captive elk ranches in Utah in 2014, one in the Southeastern Region, and one in the Northern Region. The elk ranch in the southeastern region was subsequently depopulated, and 38% of the elk on the ranch tested positive. Chronic Wasting Disease in captive cervid facilities are of great concern to the health of Utah's wild elk. Licensing and CWD surveillance on captive elk ranches is overseen by the Utah Department of Agriculture and Food (UDAF), but the responsibility for removal of wild cervids within the ranches lies with UDWR. Close collaboration with UDAF, and enforcement of existing regulations is critical to prevent the spread of CWD from captive elk ranches.

G. Access Management

The use of off highway vehicles (OHVs) in Utah has dramatically increased in recent years. OHV registrations increased more than 3-fold from 1998 to 2006 (from 51,686 to 172,231) and that trend continues to increase (Smith 2008). Uncontrolled use of OHVs can cause damage to elk habitat and disturbance to elk during critical phases of their life cycle. Shed antler gathering and the associated human disturbance on crucial winter ranges, especially with the use of OHVs, can cause undue stress on elk during a time when they must conserve energy. State and federal land management agencies are currently struggling with issues involving the use of OHVs on public land. Those agencies acknowledge OHVs as a legitimate use of public land, but also recognize the potential problems associated with uncontrolled activity. As such, these agencies have developed or are currently working on travel management plans to help minimize the impact of OHVs on wildlife and their habitat.

H. Depredation Issues

Depredation of private croplands continues to exist in some areas despite careful management of elk populations. In some localized areas depredation can be a significant problem. UDWR has committed substantial resources to address depredation concerns, and there are numerous programs designed to assist land owners with depredation situations. Harvesting elk on private lands can ease frustrations of private landowners and better distribute elk into more favorable portions of a unit. Depredation problems need to be addressed within the sideboards of state code, rule, and policy, and in a timely and efficient manner so that landowners will better tolerate migratory populations of elk.

I. Private Land/ CWMU Issues

The value of private lands to the elk population cannot be overstated. Many crucial elk habitats throughout the state are privately owned, and some of those private rangelands have been

converted to housing developments, recreational properties, or other uses that result in a loss of elk habitat. As such, programs that provide incentives for private landowners to manage their properties to benefit elk and other wildlife species are essential to the success of the state's elk management program (e.g. CWMU, Landowner Association, and Walk-In Access programs). In some areas of the state, obtaining adequate cow harvest on private lands has been challenging, and reviewing current incentive programs and additional management options (e.g. private-lands-only permits, over-the-counter permits) will be necessary as elk management challenges continue to evolve. Additionally, the Utah Watershed Restoration Initiative has worked with numerous cooperating landowners to provide funding and other resources to accomplish vegetation treatments on both private and public lands to benefit elk and other wildlife species, as well as livestock.

J. Winter Feeding

Supplemental feeding is often viewed by the public as a viable solution to a lack of suitable winter range. However, there is evidence that the potential harm created by feeding elk may outweigh the limited benefits (WAFWA 2013). Winter feeding programs are generally costly and can cause problems for elk including behavioral changes, range destruction, and expansion of disease problems. Recent research conducted in Utah has shown that elk feeding programs in Utah can be reduced or eliminated without creating new problems (Mangus 2009).

Although there are negative consequences of winter feeding, it is also recognized that feeding may be necessary to sustain elk populations in emergency situations. It may also be necessary to temporarily feed elk to reduce depredation problems or to keep elk from impacting deer populations in extreme conditions. For instance, elk are fed at Hardware Ranch each winter to keep elk from moving on the urban interface. These elk are also physically examined, disease tested, and an outreach opportunity for the public to view and enjoy elk.

In Utah, winter feeding of big game is currently guided by the winter feeding policy (UDWR 2011*b*). Under this policy, feeding is discouraged except under extreme circumstances. With the discovery of CWD in Utah, the feeding policy was updated to state that "the Division will not participate in any emergency big game feeding program that occurs within the known range or use area of any big game population where CWD, brucellosis or tuberculosis has been detected."

K. Competition

Competition occurs when two species use the same limited resource, and one of the two suffers in some way because of that use (WAFWA 2003). Competition can potentially take place between elk and other ungulates such as horses, livestock, or deer. Competition most often occurs where habitat is limited such as on crucial winter ranges or on the summer ranges of some drier units.

Concern has been expressed by some that elk populations are responsible for declines in deer herds over the past few decades. Direct competition is possible during a hard winter when forage is limited because elk can successfully shift to a diet largely comprised of browse, causing a high degree of diet overlap with mule deer (Frisina et al. 2008). Additionally indirect

competition, such as spatial and behavioral differences between elk and deer, may occur for fawning/calving habitats (Stewart et al. 2002). The extent of competition between elk and deer in Utah is unknown and that information is difficult to collect and quantify. Deer herd declines have occurred in areas with few or no elk, and deer herd increases have occurred in areas with large elk populations. Currently, elk and deer populations are thriving in Utah largely because of light winters and favorable amounts of precipitation during growing seasons.

There is also concern that elk and livestock compete for the same forage on shared ranges. Ranges where elk coexist with mule deer and livestock should be closely monitored to prevent over use and competition. Additionally, habitat improvement projects should be focused in those areas to reduce competition and improve range conditions for all species.

L. Research and Elk Movements

Understanding the movements of elk, factors that influence movements of elk, and potential barriers are needed to properly align management unit boundaries with biological groups of elk (Petersburg et al. 2000). Elk frequently move away from hunting pressure, which can make managing to a consistent population objective difficult in units with high amounts of migration. In southern Utah, individual elk that were radio-collared on the Mt Dutton unit have been observed on 4 neighboring units (UDWR unpublished data). This can cause concern for both biologists and hunters because elk on a given winter range may have been on a neighboring unit during the fall hunting seasons. As a result UDWR, BYU, and many conservation groups have provided direction and funding to conduct research on elk movements on the Wasatch and surrounding units. Additionally, information on body condition and survival estimates of elk will be collected, which will aid in population modeling efforts.

Increased knowledge of elk movements can also aid in reducing elk-vehicle collisions. DWR and our partners have worked to identify migration routes and locations where elk are commonly hit on roadways. This information has allowed us to know where to place underpasses and fences to increase elk survival. These studies have also provided data on the types of underpass structures these animals will use (Cramer 2014). Although costly, these efforts are helping to prevent future collisions, increase public safety, and minimize elk mortalities.

IV. USE AND DEMAND

Elk have become one of the most sought after big game animals in Utah. Geist (1998) in Deer of the World says the following of red deer, the elk of the old world:

“It adorns coats of arms, crests and monuments and is the deer of legends, poetry, and songs. Castles were built in its honor and to display its antlers, and throughout history its hunting and management generated passions that transcended life, death, and reason...”

Sportsmen are no less passionate about elk and elk hunting in Utah today. Hunter demand and interest for limited entry permits has always been high (Table 3). In 2014, a total of 53,334 hunters applied for 2,868 limited entry permits, resulting in 1:16.1 draw odds for residents and 1:43.4 for nonresidents. Draw odds have been relatively stable over the past 8 years when

comparing total hunters with permits available; however, some hunts have more favorable draw odds than others. For instance, nearly 60% of all limited entry elk hunters apply for the early season rifle hunt, resulting in added point creep for those hunts. Also, units managed for older age class bulls are more difficult to draw compared to lower age class units.

In addition to limited entry permits, Utah sold 40,807 general season elk permits for spike and any bull hunts in 2014. Although the number of general season elk permits has remained relatively constant over the past five years, the permits have been selling out earlier each year, indicating the demand for general season elk hunting in Utah.

Elk are also a high interest watchable wildlife species. Nearly everyone enjoys seeing and hearing elk in the wild. Units which produce large bulls are especially attractive not only to hunters but to wildlife watchers as well. Many thousands of hours and considerable money is expended each year in elk watching activities. For instance, 15,000 – 20,000 people attend Hardwar Ranch annually to view elk. As elk populations and habitats are properly managed, elk viewing and recreating activities will be enhanced for years to come.

VI. STATEWIDE MANAGEMENT GOALS AND OBJECTIVES

A. Population Management Goal: Improve management of Utah's elk populations.

Population Objective 1: Maintain healthy elk populations at biologically and socially sustainable levels.

Note: The statewide population objective is the sum of objectives contained in unit plans.

Strategies:

A. Elk Population Objectives

- a) Set population objectives and manage elk populations at appropriate spatial scales that account for migration patterns.
- b) Establish local advisory committees to review individual herd unit management plans when considering a change (increase or decrease) in the herd size objective.
 - i) Committees will be established following approval of the statewide elk plan.
 - ii) Committees will consist of the UDWR unit biologist and regional wildlife manager as facilitators, two local sportsman's representatives, and one representative from each of the following (if applicable): Farm Bureau, Cattlemen's Association, Wool Growers Association, Bureau of Land Management, USDA Forest Service, local elected official, RAC member, CWMU Association, Sportsmen for Fish and Wildlife, Mule Deer Foundation, Rocky Mountain Elk Foundation, tribal representative, local land owner or land owner association representative and other affected stakeholders. Recommendations from these committees will be reviewed by UDWR and presented to the Regional Advisory Councils and Wildlife Board for public input and approval.
 - iii) Committees shall be provided with the results of habitat projects completed in the previous five years, planned projects for the next three years, UDWR range trend data, and any other applicable information.
- c) On units where population decreases are necessary, UDWR will recommend short-term population objectives in unit management plans or increases in antlerless elk permits.

B. Population Management

- a) Utilize antlerless harvest as the primary tool to manage elk populations within herd size objectives and to target specific areas where range concerns or depredation problems exist.
- b) Properly manage elk populations to minimize competition with mule deer on crucial mule deer range.
- c) If drought related conditions and high elk densities are negatively impacting habitat, recommend additional antlerless elk permits at the August Wildlife Board meeting.
- d) During severe winters, aggressively use antlerless elk harvest (public hunters and DWR removal) to minimize conflicts.
- e) Consider using over-the-counter cow elk permits to provide additional harvest and hunting pressure in areas of conflict.

- f) On units over objective where cow harvest is difficult to obtain, allow for cow harvest using a general season muzzleloader bull elk permit (similar to general season archery elk hunt).
 - g) Encourage innovative ideas from regional biologists to manage towards population objectives.
- C. Monitoring Elk Populations and Elk Habitat
- a) Monitor all elk populations by helicopter survey on a three year rotational basis to evaluate herd size, calf production, herd composition, and habitat use, as conditions and budgets allow.
 - b) Evaluate herd size and population trends on an annual basis.
 - c) Implement research studies where needed to close information gaps.
 - d) Continue to support the interagency big game range trend study of crucial ranges throughout the state.
 - e) Monitor range condition, utilization, and trends annually as manpower and budget allow.
- D. Predator Control
- a) Utilize the Predator Management Policy where needed to help achieve objectives for elk populations, including the management of wolves if necessary.
- E. Disease Control
- a) Investigate and manage disease outbreaks that threaten elk populations including CWD and brucellosis.
 - b) Promote management practices that minimize disease risks such as discouraging baiting/feeding, conducting CWD surveillance, and assisting Department of Agricultural in monitoring elk farms/ranches for compliance.
 - c) Follow the emergency big game winter feeding policy, and avoid unnecessary feeding of elk.

Population Objective 2: Foster support among stakeholders for Utah's elk management program.

Strategies:

- A. Landowner Incentives
- a) Continue to provide incentive programs for landowners that will encourage elk populations on private land such as the CWMU, Landowner Association, and Walk-In Access programs.
 - b) Address all depredation problems in a timely and efficient manner to increase landowner tolerance of elk populations in accordance with current laws, rules, and policies.
- B. Habitat Acquisition and Restoration
- a) Identify and support the acquisition of property (fee title or conservation easements) from willing sellers that would better accommodate current population numbers or allow for increased elk populations.
 - b) Identify future habitat restoration projects with stakeholders.
 - c) Increase tolerance of public land grazers not enrolled in a CWMU or LOA by conducting habitat projects that will benefit livestock and wildlife.

C. Public Outreach and Enforcement

- a) Educate the public on the use and validity of population modeling in wildlife management.
- b) Increase communication and understanding between UDWR and stakeholders regarding elk distributions, population estimates, hunt recommendations, and management decisions.
- c) On units with high amounts of social conflict, create elk committees during unit plan revisions and/or hold open houses to obtain public input.
- d) Enforce existing laws that protect resources on public and private lands.

Population Objective 3: Achieve a proper distribution of elk on private and public lands.

Strategies:

A. Antlerless Permits

- a) Create a private-lands-only permit to encourage and target cow elk harvest on private lands.
- b) Increase the number of general season cow elk a hunter may annually harvest, but only allow for 1 cow elk permit to be obtained through the public draw system.
- c) Use depredation permits and vouchers, public hunters, and/or UDWR removal to harvest resident elk on agricultural lands or where elk are creating conflicts.
- d) Issue antlerless-elk-control permits on units that are over objective, in areas with limited access, units with low population objectives, or where hunter crowding is an issue.
- e) Coordinate season dates and permit numbers to distribute elk appropriately within a hunt unit and to achieve adequate harvest in areas of concern.

B. Landowner Assistance Programs

- a) Investigate an incentive program for landowners not enrolled in the CWMU or LOA programs to qualify for a special drawing for bull elk permits/vouchers based on cow harvest. This program should be used on units exceeding their population objective.
- b) Review and modify eligibility requirements for existing landowner incentive programs (LOA, CWMU, WIA) as needed to increase cow elk harvest and/or improve elk distribution during hunting seasons.
- c) Secure easements to increase hunter access to elk on public and private lands from willing participants.

B. Habitat Management Goal: Conserve and improve elk habitat throughout the state.

Habitat Objective 1: Maintain sufficient habitat to support elk herds at population objectives and reduce competition for forage between elk and livestock.

Strategies:

- A. Elk Habitat Classification and Assessment
 - a) Identify and characterize elk habitat throughout the state.
 - b) Provide information to educate counties, municipalities, and developers to promote zoning that benefits elk.
- B. Habitat Management
 - a) Coordinate with land management agencies and private landowners to properly manage and improve elk habitat, especially calving and wintering areas.
 - b) Work with state and federal land management agencies to use livestock as a management tool to enhance crucial elk ranges.
- C. Watershed Restoration Initiative
 - a) Increase forage production by annually treating a minimum of 40,000 acres of elk habitat.
 - b) Coordinate with land management agencies, conservation organizations, private landowners, and local leaders through the regional Watershed Restoration Initiative working groups to identify and prioritize elk habitats that are in need of enhancement or restoration.
 - i) Identify habitat projects on summer ranges (aspen communities) to improve calving habitat.
 - ii) Encourage land managers to manage portions of forests in early succession stages through the use controlled burning and logging. Controlled burning should only be used in areas with minimal invasive weed and/or safety concerns.
 - iii) Promote let-burn policies in appropriate areas that will benefit elk, and conduct reseeding efforts post wildlife.
- D. Habitat Acquisition
 - a) Acquire additional, important elk habitat from willing sellers to offset habitat loss.
 - b) Support programs, such as conservation easements, that provide incentives to private landowners to keep prime elk habitat managed as rangeland.
- E. Public Support
 - a) Educate the public on the value of the general license, conservation, and expo permits for funding elk habitat improvement projects.
 - b) Continue to support the conservation permit and habitat enhancement programs that provide crucial funding for habitat improvement efforts.

Habitat Objective 2: Reduce adverse impacts to elk herds and elk habitat.

Strategies:

- A. Road Management
 - a) Seek to maintain less than 2 miles of roads per square mile within crucial elk habitat.
 - b) Work cooperatively with UDOT, county, state, and federal agencies to limit the impacts of roads on elk.

- c) Support the establishment of multi-agency OHV plans developed on a county or planning unit level to prevent resource damage and protect crucial elk habitat.
- B. Energy Development
- a) Coordinate with land management agencies and energy development proponents to develop an effective mitigation approach for oil, gas, and mining proposals and large scale developments (e.g., solar, wind, and recreation) which have the potential to impact crucial elk habitat.
 - b) Encourage energy development companies to avoid and minimize the impact of disturbance and use Best Management Practices that promote the conservation of wildlife resources.
- C. Noxious Weed Control
- a) Work with land management agencies and county weed boards to control the spread of noxious and invasive weeds throughout the range of elk in Utah.

C. Recreation Management Goal: Enhance recreational opportunities for hunting and viewing elk throughout the state.

Recreation Objective 1: Maintain a diversity of elk hunting opportunities.

Strategies

- A. Opportunity Emphasis - General Season Units
 - a) Provide the following statewide general season permits:
 - i) 15,000 spike bull permits. If harvest success is > 20% statewide, permits will be reduced to 14,000 the following year. Permits will be reinstated to 15,000 if harvest success is < 20% statewide.
 - ii) Unlimited any bull permits.
 - iii) Unlimited archery permits valid on both spike and any-bull units.
 - b) Allow for multi-season hunting opportunities on general elk units.
 - c) Continue to allow general season archery hunters to harvest a cow elk with their bull permit.
 - d) Provide hunting opportunities that will encourage youth participation and maintain family hunting traditions.
 - e) Seek opportunities to expand youth hunting on any-bull units.
- B. Quality Emphasis – Traditional and Primitive Weapons Limited Entry Units
 - a) Provide varied levels of limited entry elk hunting quality (Figure 1, Table 1).
 - i) Maintaining 4 categories of age class harvest objectives for traditional limited entry.
 - ii) Provide additional limited entry opportunity by having primitive weapon units/areas with September rut archery seasons followed by a HAMS seasons.
 - b) Accurately monitor the age of harvested bull elk by collecting a statistically valid sample of teeth from all seasons on all limited entry units. Provide incentives to encourage hunters to submit teeth or implement mandatory tooth submission if necessary.
 - c) Recommend traditional limited entry bull permits on each unit based on the 3-year average and trend of age data. Permit recommendations should make progress towards the age objective.
 - d) Recommend limited entry bull permits on primitive weapons units to increase opportunity while maintaining success rates in the range of traditional limited entry archery hunt 30%-50% (or while maintaining an average age of harvested bull elk in the 4.5-5 year range).
 - e) On traditional limited entry units permits for the 3 weapon types based on the following percentages: 25% for archery, 60% for rifle, and 15% for muzzleloader. On some units those percentages may vary to fulfill a management need.
 - f) On primitive weapon limited entry units allocate permits with 50% in the September archery hunt and 50% to the HAMS hunt.
 - g) On appropriate traditional limited entry units, provide a mid season (overlaps with general season spike hunt) and/or late season rifle elk hunt to increase hunting opportunity or improve hunter distribution.

- i) On these units, the percent of rifle permits in the early season rifle hunt will not exceed 60%, unless there is a management-related need.
 - h) On suitable traditional limited entry units, offer 3% of bull elk permits for multi-season hunting opportunities. These permits will be subtracted from the any weapon permit allocation.
- C. Hunting Access
- a) Continue to support programs that provide incentives for private landowners to manage for elk and elk habitat (e.g. CWMU, Landowner Association, and Walk-In Access programs).
 - b) Identify and support the acquisition of leveraged pieces of property (such as Wilcox Ranch and Book Cliffs Initiative) that control access to or management of larger tracts of public land for the purpose of increasing hunting and wildlife viewing opportunities.
 - c) Support the responsible use of OHV's in specified areas during hunting seasons.
 - d) Assist state and federal agencies with the development of travel management plans.
- D. Law Enforcement
- a) Direct law enforcement to reduce illegal activities.

Recreation Objective 2: Increase opportunities for viewing elk while educating the public concerning the needs of elk management and the importance of habitat.

- A. Education
- a) Use social media and other media outlets to promote interest and emphasize the importance of elk habitat and population management.
 - b) Promote public tours, elk viewing days, and spring range rides on crucial elk winter ranges to demonstrate the importance of elk habitat and population management.
- B. Partners
- a) Work with partners (conservation organizations, state and federal agencies, etc.) to increase outreach efforts that promote elk conservation, habitat, and management.
 - b) Highlight the importance of the conservation permit program, expo permits, watershed restoration initiative, and license and permits sales for funding efforts to improve elk habitat.

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Figure 1. Age objective units for elk units, 2020.

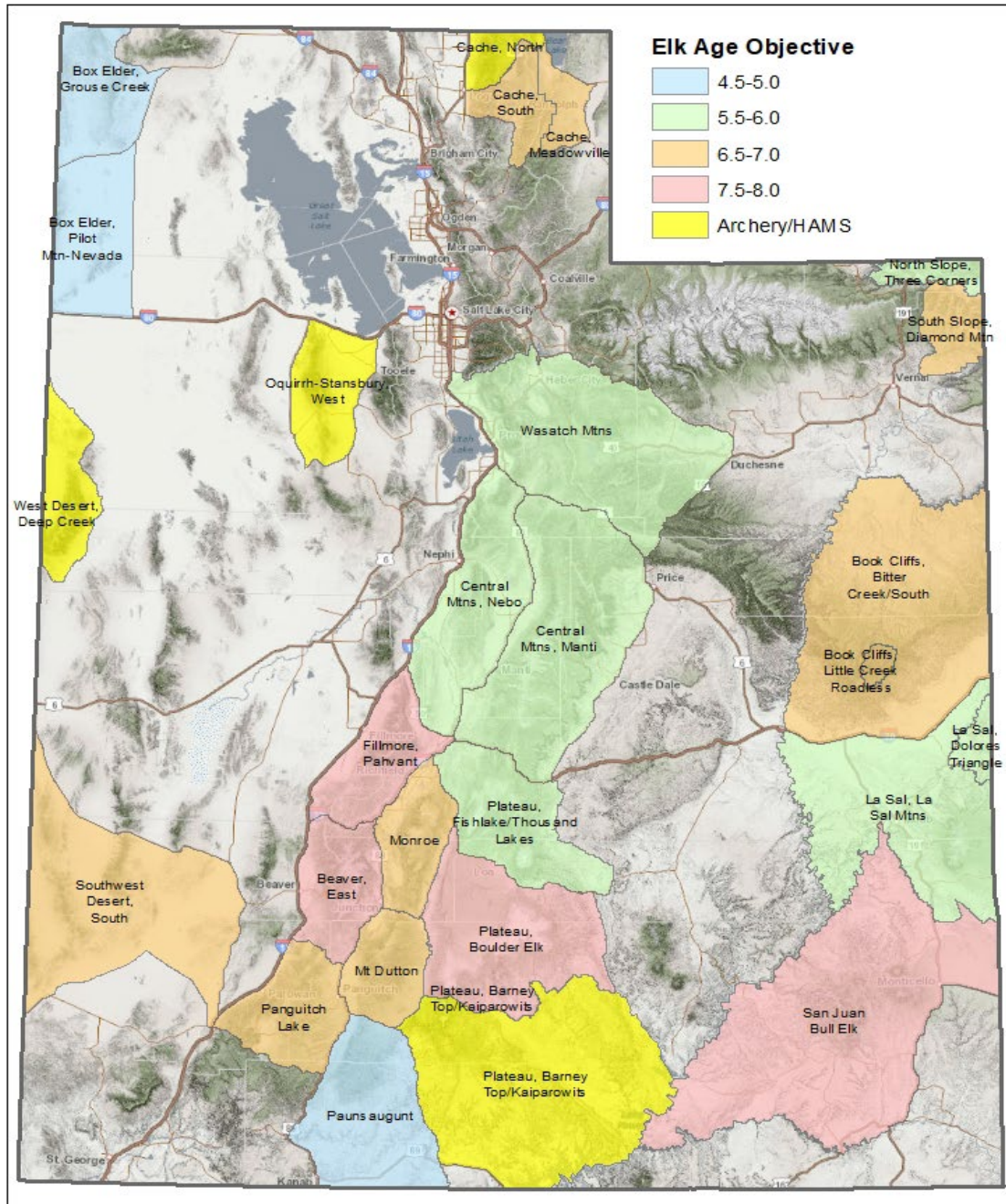


Figure 2. Elk habitat, Utah 2015.

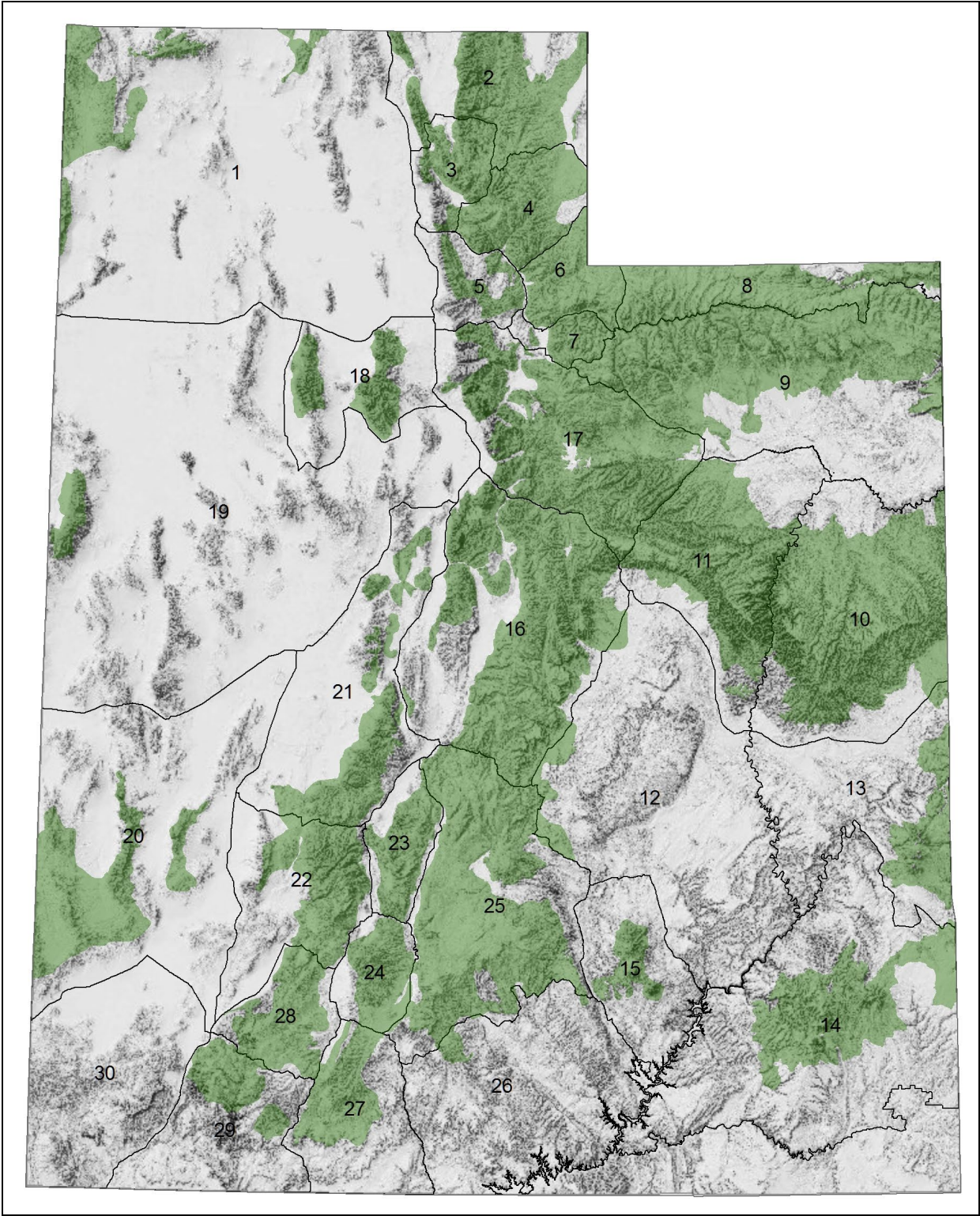


Figure 3. Statewide post-season elk population estimates, Utah 1975–2014.

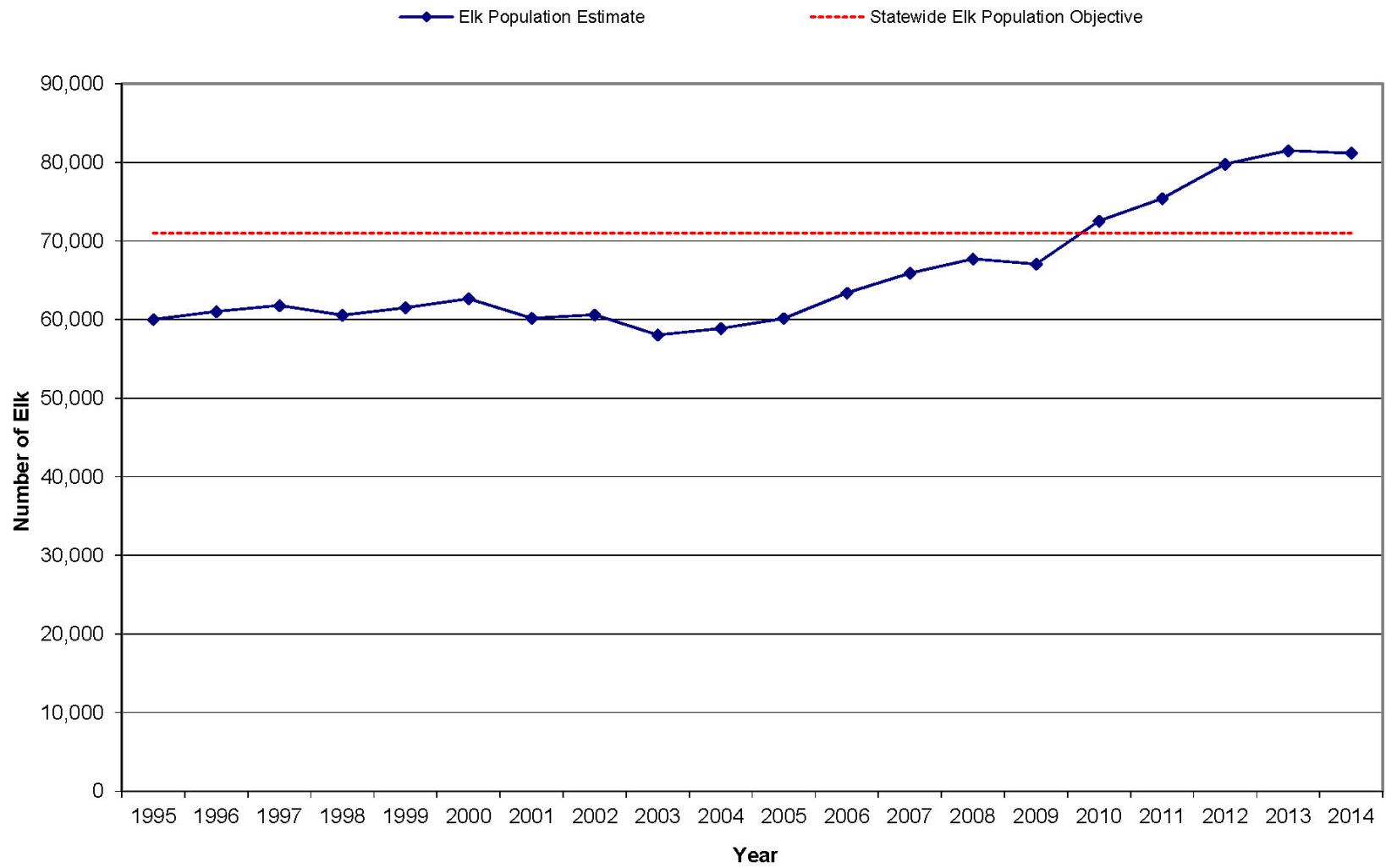


Table 1. Age objectives and average age of harvested bull elk by management unit, Utah 2011–2019.

Unit	2020 Age Objective	Year									3-year average
		2011	2012	2013	2014	2015	2016	2017	2018	2019	
Beaver	7.5-8.0	6.7	6.7	6.8	7.9	6.9	7.7	8.0	7.6	7.9	7.8
Book Cliffs, Bitter Creek/South	6.5-7.0	6.4	7.1	7.3	7.9	7.5	7.8	6.2	6.4	6.0	6.2
Book Cliffs, Little Creek**	6.5-7.0	6.6	7.1	7.3	7.9	7.5	7.3	7.1	7.0	7.0	7.0
Box Elder, Grouse Creek	4.5-5.0	4.8	6.3	5.2	5.3	5.5	5.7	5.2	6.0	5.5	5.6
Box Elder, Pilot Mountain*	4.5-5.0	5.3	6.5	—	6.7	6.5	6.1	6.7	5.3	7.7	6.5
Cache, Meadowville**	6.5-7.0	5.7	5.5	5.3	4.6	4.8	4.7	4.9	5.1	5.5	5.2
Cache, North	---	4.1	4.9	4.1	3.3	3.5	5.0	4.3	4.6	4.4	4.4
Cache, South*	6.5-7.0	5.8	5.9	5.8	5.4	5.5	4.7	5.0	5.7	5.9	5.5
Central Mountains, Manti	5.5-6.0	6.1	6.2	6.2	6.1	5.9	6.3	6.0	6.4	6.3	6.3
Central Mountains, Nebo**	5.5-6.0	6.1	5.8	6.2	5.6	6.0	5.3	5.8	5.8	5.7	5.8
Fillmore, Pahvant	7.5-8.0	6.9	6.9	7.3	7.6	7.8	8.1	7.9	7.6	6.5	7.3
La Sal, La Sal Mountains	5.5-6.0	6.7	6.0	6.8	6.5	6.6	6.3	5.7	5.9	5.7	5.8
Monroe*	6.5-7.0	6.0	6.6	6.6	7.1	7.8	7.8	6.4	6.7	7.3	6.8
Mount Dutton*	6.5-7.0	5.0	5.4	6.1	6.0	5.9	6.0	6.1	6.9	5.8	6.2
Nine Mile, Anthro	---	7.4	6.0	6.1	4.7	5.2	8.1	6.8	8.5	5.1	6.8
North Slope, Three Corners	5.5-6.0	6.0	6.0	6.3	5.9	5.7	5.4	5.0	4.7	6.0	5.2
Oquirrh-Stansbury	---	5.6	6.1	6.0	6.2	4.9	6.1	4.4	5.8	5.4	5.2
Panguitch Lake*	6.5-7.0	5.5	5.6	5.8	5.8	5.4	5.9	5.1	6.1	6.7	6.0
Paunsaugunt	4.5-5.0	4.9	4.9	6.5	5.3	4.9	4.8	4.5	4.8	4.8	4.7
Plateau, Boulder	7.5-8.0	7.4	7.4	7.6	7.9	7.3	8.2	7.3	8.2	7.5	7.7
Plateau, Fish Lake / 1000 Lake	5.5-6.0	6.1	6.1	6.3	5.9	6.0	6.0	6.0	5.9	6.0	6.0
San Juan	7.5-8.0	7.4	7.3	7.3	8.3	8.1	8.2	7.4	8.3	7.6	7.8
South Slope, Diamond Mountain	6.5-7.0	6.0	6.5	5.8	6.6	6.8	7.7	7.0	7.3	6.9	7.1
Southwest Desert, South	6.5-7.0	7.5	7.3	7.6	7.6	6.8	7.8	6.3	7.2	7.3	6.9
Wasatch Mountains	5.5-6.0	6.5	6.3	6.9	6.8	6.6	6.7	6.4	6.3	6.2	6.3
West Desert, Deep Creek*	7.5-8.0	7.5	6.5	7.2	6.8	5.9	7.2	6.4	5.4	5.8	5.9
Statewide average		6.1	6.3	6.5	6.4	6.2	6.6	6.1	6.3	6.2	6.2

**indicated a change in age objective from the original 2015 management plan

*indicates a change in age objective from the 2009 management plan.

Table 2. Elk herd population estimates and objectives by unit, Utah 2006–2014.

Unit	Population Objective	Year								
		2006	2007	2008	2009	2010	2011	2012	2013	2014
Beaver	1,050	875	850	800	850	1,100	1,100	1,150	1,175	1,100
Book Cliffs	7,500	3,900	4,500	4,650	4,100	4,200	4,270	4,000	4,800	5,500
Box Elder	675	380	400	425	425	500	550	700	700	700
Cache	2,300	2,050	1,750	2,200	2,350	2,350	2,400	2,500	2,200	2,300
Central Mountains, Manti	12,000	10,000	10,000	10,600	11,100	11,700	12,500	12,700	12,300	12,500
Central Mountains, Nebo	1,450	1,375	1,550	1,550	1,150	1,150	1,100	1,200	1,200	1,400
Chalk Creek	2,400	2,150	2,090	1,900	2,000	3,950	4,600	4,200	4,200	4,300
East Canyon	1,000	2,125	1,650	1,275	1,000	2,400	3,000	3,100	3,000	3,100
Fillmore	1,600	1,350	1,900	1,500	1,500	1,550	1,450	1,400	1,350	1,350
Henry Mountains	0	25	30	25	20	20	20	25	25	25
Kaiparowits	25	25	25	25	25	50	25	25	25	25
Kamas	850	600	570	600	800	1,100	1,100	1,175	1,100	1,000
La Sal	2,500	2,100	2,500	2,300	2,300	2,500	2,400	2,300	2,450	2,350
Monroe	1,800	1,000	1,000	1,050	1,200	1,300	1,400	1,400	1,300	1,250
Morgan-South Rich	3,500	4,500	3,800	4,400	3,800	3,500	5,000	5,000	5,000	4,100
Mt. Dutton	1,500	1,270	1,400	1,500	2,000	1,750	1,800	2,150	1,900	1,900
Nine Mile, Anthro	700	1,000	1,050	1,320	1,450	1,400	1,450	850	900	950
Nine Mile, Range Creek	1,600	2,100	2,100	2,180	2,100	1,700	1,700	1,700	1,550	1,400
North Slope, Summit	300	280	280	300	300	335	340	500	850	875
North Slope, Three Corners	500	1,075	830	800	650	550	550	400	600	600
North Slope, West Daggett	1,300	1,015	1,000	1,100	1,200	1,200	1,100	1,300	1,600	1,800
Ogden	800	700	780	780	620	650	600	600	2,000	2,100
Oquirrh-Stansbury	900	600	750	725	650	600	600	950	850	850
Panguitch Lake	1,100	870	950	1,000	800	775	850	1,000	1,100	1,100
Paunsaugunt	140	25	30	50	100	140	150	175	175	175
Pine Valley	50	50	50	50	50	50	50	50	50	75
Plateau, Boulder	1,500	500	900	1,500	1,800	1,500	1,350	1,600	1,700	1,700
Plateau, Fish Lake / Thousand Lakes	5,600	4,350	4,800	5,700	5,200	5,100	4,800	5,100	5,600	5,400
San Juan	1,300	1,100	1,400	1,400	1,200	1,600	1,500	1,300	1,100	1,200
San Rafael	0	30	20	30	60	60	60	25	25	20
South Slope, Vernal / Diamond Mountain	2,500	3,030	2,770	2,700	2,800	2,800	2,700	3,100	2,500	2,300
South Slope, Yellowstone	5,500	5,600	5,600	5,600	5,900	5,900	5,900	7,500	7,500	7,500
Southwest Desert, Indian Peaks	975	1,205	1,120	1,150	1,150	975	975	1,100	1,250	1,300
Wasatch Mountains, Avintaquin	1,600	1,250	1,300	1,400	1,400	1,950	1,900	1,750	1,900	1,900
Wasatch Mountains, Currant Creek	1,200	1,200	1,600	1,500	1,400	2,250	2,200	3,750	3,500	3,000
Wasatch Mountains, West	2,600	3,185	3,850	3,000	3,000	3,500	3,500	3,400	3,400	3,400
West Desert, Deep Creek	350	175	185	100	100	100	60	250	250	250
Zion	300	300	500	500	480	275	325	325	350	340

Statewide Totals	70,965	63,365	65,880	67,685	67,030	72,530	75,375	79,750	81,475	81,135
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Table 3. Drawing odds of obtaining a limited entry bull elk permit, Utah 1998–2014.

Year	Residents			Nonresidents		
	Applicants	Permits	Odds	Applicants	Permits	Odds
1998	21921	789	1 in 27.8	1931	60	1 in 32.2
1999	24146	831	1 in 29.1	2788	65	1 in 42.9
2000	27398	789	1 in 34.7	3278	63	1 in 52.0
2001	31068	831	1 in 37.4	4622	70	1 in 66.0
2002	34141	862	1 in 39.6	5539	76	1 in 72.9
2003	34707	978	1 in 35.5	6270	86	1 in 72.9
2004	38275	1272	1 in 30.1	8044	106	1 in 75.9
2005	39238	1533	1 in 25.6	9021	118	1 in 76.4
2006	40869	1805	1 in 22.6	9401	147	1 in 64.0
2007	43681	2065	1 in 21.2	10930	163	1 in 67.1
2008	41822	2352	1 in 17.8	8949	215	1 in 41.6
2009	40925	2526	1 in 16.2	10666	239	1 in 44.6
2010	41208	2743	1 in 15.0	10694	266	1 in 40.2
2011	38637	2767	1 in 14.0	10093	260	1 in 38.8
2012	38995	2586	1 in 15.1	10434	271	1 in 38.5
2013	40424	2552	1 in 15.8	10723	256	1 in 41.9
2014	42013	2607	1 in 16.1	11321	261	1 in 43.4