DRAFT 10/9/03

UTAH DIVISION OF WILDLIFE RESOURCES
STATEWIDE MANAGEMENT PLAN FOR MULE DEER

I. PURPOSE OF THE PLAN

A. General

This document will provide overall guidance and direction for Utah's management program for mule deer for five years from the date of approval by the Utah Wildlife Board. This plan briefly describes general information on mule deer natural history, management, habitat, and population status. It also discusses issues concerning mule deer management in Utah. Goals, objectives and strategies for managing mule deer populations are then identified. The plan will be used to help set priorities for mule deer management programs and will provide overall guidance for individual unit management plans.

B. Dates Covered

This plan was approved November 13, 2003 and will be in effect for five years from this date.

II. SPECIES ASSESSMENT

A. Natural History

Mule deer *(Odocoileus hemionus)* are part of the deer or cervid family along with moose, elk and caribou. A unique feature of the cervid family is that the males of the species grow boney antlers that are shed each year. Mule deer are named such because of their large ears which resemble those of mules. The scientific species name *hemionus* means half mule. Mule deer occur throughout the western U.S. with as many as 11 subspecies described (deVos, 2003).

Mule deer males, females and young are known as bucks, does, and fawns respectively. Fawns are born as singles or more commonly as twins after a gestation period of approximately 7 months. Fawns are normally born during the month of June with an average fawning date in Utah of June 20 (Robinette et. al., 1977). Fawns grow rapidly and are large enough by late fall to survive Utah's cold, snowy winters.

The antlers of bucks begin to grow as soon as the old antlers are shed in late winter. Bucks will generally live apart from the does and fawns through the summer antler growing period (Geist, 1998). The velvet which covers and provides nourishment to the growing antlers begins to shed in early September. The rut or breeding period for mule deer peaks in mid-November in Utah. At this time, bucks will seek out and "tend" several does waiting for them to come into estrus. During the peak of estrus does are receptive for only few hours or less than a day. If not bred during the first estrus cycle, does will go through another cycle in about 4 weeks (Wallmo 1978).

After the rut, bucks become reclusive again until the time of antler shedding which occurs in late winter. During the early spring, bucks will rejoin the herds of does and fawns attempting to blend in with the rest of the antlerless population. In late spring, the does seek solitude for fawning. At this time, the yearlings from the previous year are aggressively driven away by the does and forced to find new home ranges sometimes many miles away. As the new fawns are born the cycle of life begins again.

B. Management

Mule deer were common in Utah at settlement times although not as abundant as today (Rawley, 1985). Unrestricted harvest of deer occurred until after the turn of twentieth century. It was not until 1908 that steps were taken to increase and protect the state's small deer herd (Rawley 1980). From 1908 through 1913, the hunting season on deer was closed. In 1913, the legislature enacted a buck only law which remained in effect until 1950. However, as the deer herd increased game managers realized the need for antlerless harvest in order to keep the deer herds in balance with their habitat. The first limited harvest of does began in 1934 on four separate herd units.

In 1951, the state adopted an either sex hunting strategy to help control the rapidly expanding deer population. Multiple permits, multiple seasons, and extra permits for antlerless deer were common in the 1950s and early 1960s. Deer harvest peaked in Utah in 1961 when over 132,000 deer were harvested (Figure 1). As the number of hunters and permits increased, deer populations were gradually reduced to where they were more in balance with available forage and habitat. Extra permits and antlerless harvest were gradually reduced through the mid 1960s and early 1970s.

By the mid 1970s it was apparent to managers that the deer herd was in decline and was below the capacity of the habitat in many areas. In 1975, the state adopted a statewide buck only hunting strategy. In 1976, a symposium was held to discuss the decline of mule deer in the west (Workman and Low, 1976). Under buck only hunting the deer herd went through a series of boom and bust cycles depending on annual production. The peak harvest of buck deer in the state occurred in 1983 when 82,552 buck were harvested during the general season. Hunter numbers also peaked in 1983 with 228,907 hunters participating in the general season deer hunt (Figure 2).

Following several years of drought and an unusually hard winter in 1992-93 it was evident that Utah's deer herd could no longer sustain unlimited hunting opportunity. So in 1994, buck deer permits were capped for the first time. A total of 97,000 general season buck permits, divided into five hunting regions, have been available each year since 1994. However, due to difficulties in monitoring over-the-counter permit sales, buck hunter numbers exceeded 97,000 permits in some years. Permit sales have been held closer to the 97,000 cap since going to a drawing in 2000.

The first statewide deer management plan was approved by the Board of Big Game Control in 1995. Individual management plans were then developed for 53 deer management units and approved by the Board in 1996. Unit management plans were revised in 1998 following a reduction in the number of deer units from 53 to 30. Unit management plans were again revised

in 2001 to incorporate new objectives and habitat information. The 1995 statewide management plan remained in effect until this plan was approved. Unit plans will be revised upon approval of this plan.

C. Habitat

Mule deer are adaptable to a wide variety of habitats throughout their range (Wallmo, 1981). In North America, they live from the northern boreal forests to the hot deserts of the southwest and from the coastal rain forests to the great plains. In Utah, mule deer are found in nearly all of the state although they are less abundant in the desert areas (Figure 4). The Wasatch Mountains which run through the center of the state provide a good combination of summer and winter range for mule deer. The Colorado Plateau and Great Basin mountain ranges also provide good habitat.

Although mule deer occur in a wide variety of habitat types, there are many similarities in diet and habitat composition. Deer eat a wide variety of plants including browse, forbs and grasses. Deer are especially reliant on shrubs for forage during the critical winter months. Fawn production is closely tied to the abundance of succulent, green forage during the spring and summer months. Vegetative communities also vary throughout the range of mule deer. However, mule deer habitat is nearly always characterized by areas of thick brush or trees interspersed with small openings. The thick brush and trees are used for escape cover while the small openings provide forage and feeding areas.

Mule deer do best in habitats that are in the early stages of plant succession. That is, they prefer habitats where plants are young and emerging as opposed to habitats where the trees and shrubs are old and stable. This is best described in the WAFWA (2003) publication on mule deer which states: "Mule deer thrive in early successional habitats, where forbs, grassy plants and shrubs dominate. These environments are not as stable as forest habitats, and they rely on fire or some other type of disturbance to return them to an early successional stage. If they are not disturbed, they become more stable plant communities dominated by large trees and large shrubs. Tree-dominated habitats offer mule deer a place to retreat from severe weather, but these areas offer little in the way of food. That is why it is important to provide a mosaic or pattern of habitats that can provide food, cover and water".

One of the major problems facing mule deer populations in Utah is that many of our critical deer ranges are late successional plant communities dominated by old trees and old shrubs. Many critical deer winter ranges are covered with shrubs which are 30-40 years of age or are being replaced by grasslands. Many forest aspen habitats are being replaced by conifers that provide little forage for mule deer. In order for mule deer herds to recover in Utah, it is essential that extensive habitat work be completed to revert critical habitats back to young, vigorous, shrub-dominated communities.

D. Population Status

The 2002 post-season population estimate for mule deer in Utah was 280,000 deer, far below the long term management objective of 426,000 deer. The statewide deer herd slowly increased for

several years after the disastrous winter of 1992-93. However, the herd has decreased since 2000 due to severe drought conditions (Figure 3).

In 2003, Utah was in the fifth year of an extended drought. Utah recorded the driest year on record and the hottest month on record (July) in 2002. The hottest month record was broken again in July of 2003. This drought has resulted in poor fawn production and damage to the vegetation on many critical mule deer winter ranges. In order for this downward trend in the mule deer population to reverse, it will be necessary to return to more normal precipitation and weather patterns. Extensive work will also need to be done to rehabilitate drought damaged mule deer ranges.

II. ISSUES AND CONCERNS

A. Habitat

The size and condition of mule deer populations are primarily determined by the quantity and quality of their habitat. Loss and degradation of habitat are thought to be the main reasons for mule deer population declines over the last few decades (Workman and Low, 1976). Critical mule deer habitat is continuously being lost in many parts of Utah and severely fragmented in others due to human expansion and development. Urbanization, road construction, OHV use, and energy development have all resulted in loss or degradation of mule deer habitat. Mitigation for loss of mule deer habitat due to human causes is critical to maintaining and improving deer populations in the state.

The quality of mule deer habitat is the major factor in determining herd size. Habitat quality for mule deer has declined in Utah over the past forty years. Deer herds irrupted in the 1940's and 1950's in response to abundant shrub growth on mule deer ranges throughout the state. Many shrub-dominated rangelands have gradually been converting to either tree-dominated communities or grasslands due to a variety of conditions. The conversion to grassland has been accelerated in recent years due to drought, fire, invasive weed species and other causes. Fawn production and deer populations have declined in response to weather conditions and habitat changes. Deer herd recovery in Utah will require the reconversion of thousands of acres of winter range to healthy, shrub-dominated communities.

B. Population Objectives

Considerable controversy exists over herd size and buck:doe objectives in deer herds throughout the state. Sportsmen would certainly like to see deer herds return to the levels of the 1950's. However, range conditions will not allow herds to expand beyond the capacity of the habitat.

Sportsmen have also been increasingly concerned about buck:doe ratios and the numbers of bucks available to hunters in each herd unit. There has been a noticeable shift in recent years by the public to a deer management program that provides more older age class bucks in the harvest. This demand for larger bucks and an accompanying decline in the deer herd has resulted in a more restrictive hunting management program.

C. Predator Management

Predators are often identified as one of the main causes for mule deer herd declines in Utah. However, predator-prey relationships are complex and not always easily understood. There are often many factors which can negatively effect deer populations including predation. The complex relationship between predators and habitat is described by Geist (1999). "Inevitably predators are blamed for declining mule deer populations, in particular when the survival of fawns is low. There is no doubt that today's predators are effective in killing deer. However, predation is not independent of poor habitat quality. Such translates itself less as a reduced birth rate, but as fawns born too small, too poorly developed and too weak to be viable. Here predators take fawns that have a low chance of survival anyway. Improved habitat quality, which leads to better growth and larger body size in deer, is also expected to lead to large, vigorous fawns that are more difficult for predators to catch."

Mountain lions, coyotes and in some areas black bears are the primary predators of mule deer in Utah (Smith 1983). Proper management of these species can help deer populations which are well below population objectives and habitat capabilities. However, to be effective predator management must be of sufficient intensity and duration to significantly reduce predator populations. Predator management is probably not warranted on units which are near objective or where predation has not been shown to be a significant problem.

Predator management in Utah is guided by a predator management policy. This policy specifies that predator management can occur on units which are performing well below population objectives providing a predator management plan is written and approved (Appendix 1). "Triggers" have also been identified and adopted by the Wildlife Board as to when an evaluation will be conducted to determine if a predator management plan should be written.

D. Disease Issues

The impact of disease on mule deer populations in Utah is not well understood. Deer mortality studies in Utah have implicated many diseases as potentially detrimental to deer herds. These disease include; blue tongue (BTV), epizootic hemorrhagic disease (EHD) , pneumonia, enterotoxemia, chronic wasting disease, and others (Zwank, 1979 and Karpowitz, 1984). The impacts of disease on mule deer populations is often difficult and expensive to assess. Treatment options are often impractical or impossible.

Surveillance and research of disease issues is an important part of proper deer management. As stated in WAFWA (2003) publication on mule deer: "it is important that entities with management authority for mule deer make a more serious commitment to disease research. Only when large scale die-offs occur do diseases become an important issue for wildlife management agencies. By then, it is often too late to do anything more than document the mortalities"

E. Access Management

The use of off highway vehicles (OHV) in Utah has dramatically increased in recent years. In

2003, there were more than 160,000 OHVs registered in Utah for use on public lands. Uncontrolled use of OHVs can cause damage to mule deer habitat and disturbance to deer populations. Federal land management agencies are currently struggling with significant issues involving use of OHVs on public land. These agencies recognize OHV use as a legitimate use of public land, but they also recognize the potential problems associated with uncontrolled use. OHV use needs to be carefully planned and managed to prevent destruction of critical mule deer habitat and disturbance during critical seasons.

There is also an increased demand for more walk-in and horseback only access areas in the state. Limiting areas to foot and horse travel can limit hunter pressure, reduce harvest and increase buck:doe ratios. Opportunities should be sought to provide additional foot and horseback access only areas.

F. Depredation

Depredation of private croplands continues to exist despite reductions in deer populations. In some areas depredation can be a significant problem for deer herd recovery. DWR has committed substantial resources to address depredation concerns. There are numerous programs designed to assist land owners with depredation situations. Depredation problems need to be addressed in a timely and efficient manner so that landowners will better tolerate migratory populations of mule deer.

G. Private Land/ CWMU Issues

The value of private lands to the overall deer population cannot be overstated. Many critical mule deer habitats throughout the state are privately owned. Unfortunately, some of these private rangelands have been converted from mule deer habitat to housing developments, recreational properties, or other uses. Therefore, programs which provide incentives to private landowners to manage their properties for mule deer and other wildlife are critical to the success of the state's deer management program. Programs such as the Cooperative Wildlife Management Unit program and private landowner permit program currently provide incentives for landowners to manage for healthy habitat and deer population on their properties.

H. Winter Feeding

Supplemental feeding is often viewed by the public as a simple solution to a lack of forage on critical deer winter ranges. However, there is abundant evidence that the potential harm created by feeding mule deer can far outweigh the limited benefits (WAFWA, 2003). Winter feeding programs are generally very costly and can cause problems for mule deer including behavioral changes, range destruction, and expansion of disease problems.

However, the WAFWA publication on mule deer also states that "in very limited and extreme situations" it may be necessary to feed deer to sustain a base population. The publication warns that if a feeding program is undertaken to "be prepared to pay a hefty price for success. Supplemental feeding helps mule deer make it through a severe winter if the feeding is started

early, long before mule deer show signs of malnutrition or starvation. To effectively feed mule deer requires a three to four month commitment".

Winter feeding of mule deer in Utah is currently guided by a winter feeding policy (Appendix 2). Under this policy feeding is discouraged except under extreme circumstances. With the discovery of chronic wasting disease in Utah, the feeding policy should be reexamined and become even more restrictive.

I. 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 occur between deer and other ungulates such as livestock or elk. Competition would most likely occur where habitat is limited such as critical winter ranges or on the summer ranges of some drier units.

There is little evidence to support that elk or livestock are responsible for declines in mule deer populations. However, grazing by livestock or other ungulates can greatly impact mule deer habitat and populations (deVos, et. al. 2003). Critical ranges where elk or livestock coexist with mule deer should be closely monitored to prevent over use and competition.

IV. USE AND DEMAND

Mule deer are the most important game animal in Utah. Hunter demand and interest has always been high. From 1960 to 1993, no fewer than 150,000 hunters participated in the annual mule deer hunt. Over 200,000 hunters participated in the deer hunt each year from 1977 to 1992, except for 1984. In 1994, hunter numbers were capped at 97,000 due to a declining deer population. Demand for permits has been higher in the southern and southeastern regions of the state since the capped was introduced.

Not all deer herds in the state were reaching the population objective of 15 bucks per 100 does in 2002 (tables 1-4). If deer herds continue to decline and fawn production remains poor, it will be increasingly difficult to achieve buck:doe ratio objectives. This may require a further reduction in permits available to hunters. If weather patterns return to normal and habitat improvement projects are successful it may be possible to maintain or increase permits in future years.

Mule deer are also a high interest watchable wildlife species. Nearly everyone enjoys seeing deer in the wild. Many thousands of hours and considerable money is expended each year in deer watching activities. Units which produce large bucks are especially attractive not only to hunters but wildlife watchers as well.

V. CONCLUSION

Mule deer are the most abundant big game animal in Utah and are of high interest to sportsmen and others. The deer herd has been in a state of decline for over thirty years. There are many

factors contributing to this decline especially the loss and degradation of habitat. Other factors such as predation and disease are intensified when habitat quality is reduced. If deer herds are to recover in Utah, weather patterns will need to return to normal and extensive habitat work will need to be done to rehabilitate critical deer ranges. It is vital that the DWR, federal agencies, sportsmen organizations, and others work together in an effort to protect and improve mule deer habitat if we hope to maintain or improve deer populations.

Population Management Goal: Expand and improve mule deer populations throughout the state within habitat capabilities and in consideration of other land uses.

Population Objective 1: By 2008, increase the statewide deer populations by 40,000 deer to a post-season herd size of 320,000.

Implications: Meeting this objective will require a return to normal precipitation patterns and implementation of the strategies in this plan. If precipitation does not return to normal and habitat objectives are not met, it unlikely the herd will expand beyond the current level of 280,000 deer.

Strategies:

- Review individual herd unit management plans and revise where necessary to provide consistency with this plan.
- Support all habitat objectives and strategies in this plan to protect and improve mule deer habitat.
- Manage predators on all units that are chronically below objective according to current predator management plans and "trigger" guidelines. (Appendix 1).
- Investigate and manage disease outbreaks that threaten deer populations. Adopt a specific management plan for chronic wasting disease.
- Utilize antlerless harvest as the primary tool to manage deer populations in specific areas where range concerns or depredation problems exist.
- Continue to monitor all deer populations annually to evaluate fawn production, herd composition, and habitat utilization.
- Develop and standardize a reliable population model to evaluate herd size and population trends over the long term.
- Support efforts to minimize highway mortality such as fencing and highway passage structures.
- Implement research studies on specific herd units that are chronically below population objective to identify problems and recommend solutions.
- Support incentive programs for landowners that will encourage deer populations on private land such as the CWMU and landowner permit programs.
- Address all depredation problems in a timely and efficient manner to increase landowner tolerance of migratory deer populations.
- Support law enforcement efforts to reduce illegal taking of deer.

Population Objective 2: By 2008, achieve post-season buck:doe ratios based on a three-year average as follows:

General Season Public Land Units (Table 1) - Regional average of 15 to 20 bucks per 100 does

General Season Private Land Units (Table 2) - Minimum 15 bucks per 100 does

Limited Entry Units (Table 3) - 25-35 bucks per 100 does

Premium Limited Entry Units (Table 4) - Minimum 35 bucks per 100 does and an average age of harvested bucks of 5.0 years.

Implications: In 2002, buck:doe ratios were below 15 bucks per 100 does in three regions (Table 1). Four limited entry units and both premium limited entry units were also below objective. Implementation of these objectives may require a reduction of both general season and limited entry permits available to the public until fawn production improves and herd growth is realized.

Strategies:

- Evaluate current distribution of general season permits in each region based on deer populations and the amount of land accessible to the public.
- Set buck permit numbers for each hunt region or unit at a level which will allow buck:doe ratio objectives to be met.
- Implement additional management strategies as necessary to reduce harvest of bucks if buck:doe objectives are not being met. These options include shortened seasons, weapon restriction and vehicle access management.
- Support hunting programs that will minimize harvest while maintaining hunting opportunity such as primitive weapons hunts and the dedicated hunter program.
- Avoid setting hunting seasons that would allow the harvest of bucks during the breeding season.
- Support law enforcement efforts to reduce illegal harvest of bucks.

Habitat Goal: Conserve and improve mule deer habitat throughout the state with emphasis on critical mule deer ranges.

Habitat Objective 1. Maintain mule deer habitat throughout the state by protecting existing critical habitats and mitigating for losses due to human impacts.

Implications: Loss of critical mule deer habitat will need to be minimized to achieve population objectives. Mitigation is essential for loss or degradation of all critical habitats due to human impacts.

Strategies:

- Identify and characterize critical mule deer habitats throughout the state.
- Work with land management agencies and private landowners to recognize and properly manage critical mule deer habitats, especially fawning and wintering areas.
- Minimize human disturbance in existing critical mule deer habitats.
- Mitigate for losses of critical habitat due to human impacts and energy development.

- Acquire additional critical mule deer habitats to offset loss of habitat due to human encroachment.
- Support programs that provide incentives to keep private rangelands as deer habitat.
- Support the establishment of multi-agency OHV plans developed on a county level or planning unit level to prevent resource damage and to protect critical mule deer habitat.
- Limit the negative effects of roads by reclaiming unused roads, properly planning new roads, installing highway passage structures, and implementing road closures during periods stressful to deer population.

Habitat Objective 2. Improve the quality of forage and vegetation for mule deer on 200,000 acres of critical range by 2008.

Implications: Habitat will need to be improved on at least 200,000 acres of critical deer range in order to meet population objectives. If habitat projects cannot be completed because of insufficient budget, environmental restrictions, or poor climatic conditions, population objectives will not be met.

Strategies:

- Continue to support the division range crew in monitoring the long-term trend of critical deer ranges throughout the state.
  Conduct an annual evaluation of range conditions to monitor range condition and trend.
- Work with land management agencies to identify and prioritize habitats that are in need of improvement (Figure 5).
- Initiate broad scale vegetative treatment projects to improve mule deer habitat with emphasis on drought damaged sagebrush winter ranges.
- Support and provide guidance for the director=s habitat initiative which emphasizes improving sagebrush-steppe and riparian habitats.
- Seek opportunities to improve aspen communities on summer ranges which provides critical fawning habitat.
- Encourage land managers to manage portions of forests in early successional stages.
- Discourage the practice of winter deer feeding programs which can cause habitat degradation. Feeding of deer will be in accordance to division policy (Appendix 2).
- Properly manage elk populations to minimize competition with mule deer on critical ranges.
- Work with land management agencies to properly manage livestock to enhance critical mule deer ranges.
- Continue to support the conservation permit and habitat enhance programs which provide critical funding for habitat improvement efforts.

Recreation Goal: Provide a diversity of high-quality hunting and viewing opportunities for mule deer throughout the state.

Recreation Objective 1: Maintain a hunting program for mule deer that encourages a variety of quality hunting opportunities while maintaining population objectives.

Implications: Current hunting programs can be maintained if population objectives are met. If the deer herd continues to decline, it is likely that hunting opportunity will become more restrictive and recreational opportunities will be limited.

Strategies:

- Continue to provide three hunt unit categories (general season, limited entry and premium limited entry) in approximately the current distribution to provide a variety of hunting opportunities.
- Provide opportunities for primitive weapon hunts to provide diverse recreational opportunities.
- Establish season lengths that will provide adequate hunting opportunity without negatively affecting deer population objectives.
- Provide hunting opportunities that will encourage youth participation and maintain family hunting traditions.
- Support hunting programs that will provide incentives to reduce harvest while maintaining hunting opportunity such as the dedicated hunter program.
- Support hunting programs that will allow landowners and the public to equitably benefit from deer using private land such the CWMU and landowner permit programs.
- Support the responsible use of off-highway vehicles in specified areas during hunting seasons.
- Promote the establishment of foot and horseback only access areas to provide a diversity of hunting opportunities

Recreation Objective 2. Increase opportunities for viewing of mule deer while educating the public concerning the needs of deer and the importance of habitat.

Implications: Increased viewing opportunities for mule deer should be should be accompanied by efforts to educate the public on mule deer and mule deer habitat. Education should be a component of all viewing opportunities.

Strategies:

- Install interpretive signs in mule deer viewing areas emphasizing the importance of habitat.
- Produce written guides and brochures to educate the public on how and where to view mule deer and the importance of critical habitats.
- Promote public tours and spring range rides on critical deer winter ranges to demonstrate the importance of winter range to mule deer.
- Work with the media to promote interest and educate the public concerning mule deer and their habitat needs.

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Table 1. General season public land units - buck:doe ratios and objectives

General Season Public Land Units	Objective	2000	2001	2002	3 Yr Ave.
Northern Region					
Box Elder		14	12	13	13
Cache		16	12	12	13
Kamas		21	22	21	21
North Slope		18	15	14	16
Average	**15-20**	**17**	**15**	**15**	**16**
Northeast Region					
North Slope		18	15	14	16
South Slope		12	12	9	11
Nine Mile, Anthro		ND	ND	12	12
Wasatch Mtns., NE Region		19	19	14	17
Average	**15-20**	**16**	**15**	**12**	**14**
Southeast Region					
Ninemile, Range Creek		29	17	17	21
San Rafael		ND	ND	ND	
La Sal Mountains		9	14	11	11
San Juan, Abajo Mountains		16	17	12	15
Central Mountains, Manti		16	13	12	14
Average	**15-20**	**18**	**15**	**13**	**15**
Central Region					
Central Mountains, Nebo		12	19	15	15
Wasatch Mountains, Central Region		17	20	14	17
Oquirrh/Stansbury		17	14	10	14
Average	**15-20**	**15**	**18**	**13**	**15**
Southern Region					
Southwest Desert		31	30	24	28
Fillmore, Pahvant		16	18	18	17
Beaver		19	19	12	17
Monroe		15	17	18	17
Mount Dutton		16	13	14	14
Plateau, Fishlake/Boulder		17	15	18	17
Kaiparowits		ND	ND	ND	
Panquitch Lake		15	15	12	14
Zion		15	15	12	14
Pine Valley		29	22	20	24
Average	**15-20**	**19**	**18**	**16**	**18**

Table 2. General season private land units - buck:doe ratios and objectives

General Season Private Land Units	Objective	2000	2001	2002	3 Yr Ave.
Ogden	15	19	21	18	19
Morgan-South Rich	15	31	46	53	43
East Canyon	15	18	22	37	26
Chalk Creek	15	25	21	42	29
Average	**15**	**23**	**28**	**38**	**30**

Table 3. Limited entry units - buck:doe ratios and objectives

Limited Entry Units	Objective	2000	2001	2002	3 Yr Ave.
Cache, Crawford Mountain	25-35	21	15	10	**15**
South Slope, Diamond Mountain	25-35	24	27	22	**24**
Book Cliffs	25-35	44	38	33	**38**
La Sal, Dolores Triangle	25-35	24	19	17	**20**
San Juan, Elk Ridge	25-35	38	24	25	**29**
West Desert, Vernon	25-35	24	18	28	**23**
Fillmore, Oak Creek	25-35	33	29	25	**29**
Plateau, Thousand Lake	25-35	19	17	19	**18**

Table 4. Premium limited entry units - buck:doe ratios and objectives

Premium Limited Entry Units	Objective	2000	2001	2002	3 Yr Ave.
Henry Mountains	35+	43	36	46	42
Henry Mountains (Age Objective)	5.0			4.7	
Paunsaugunt	35+	38	39	37	38
Paunsaugunt (Age Objective)	5.0			4.4	

Figure 1. Trends in deer harvest, 1950-2002.

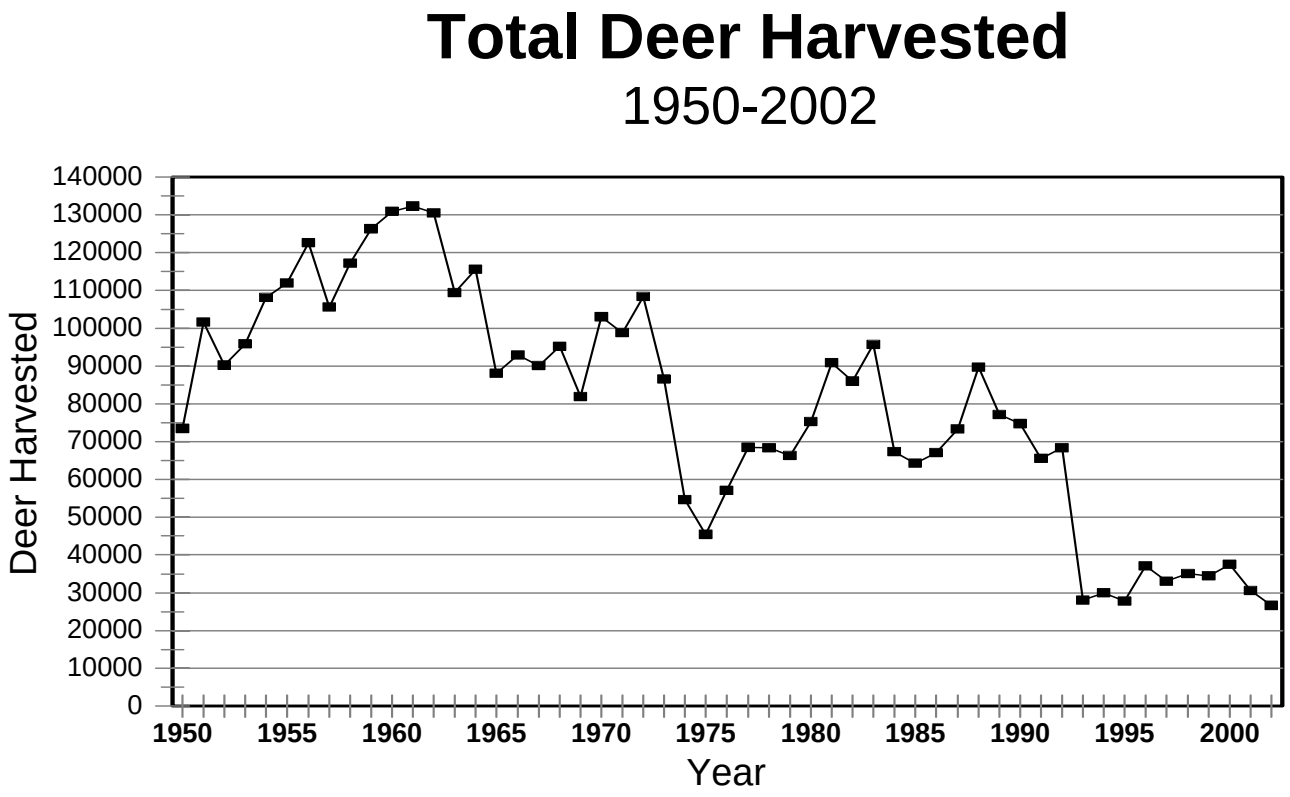


Figure 2. General season hunters afield and buck harvest, 1970-2002

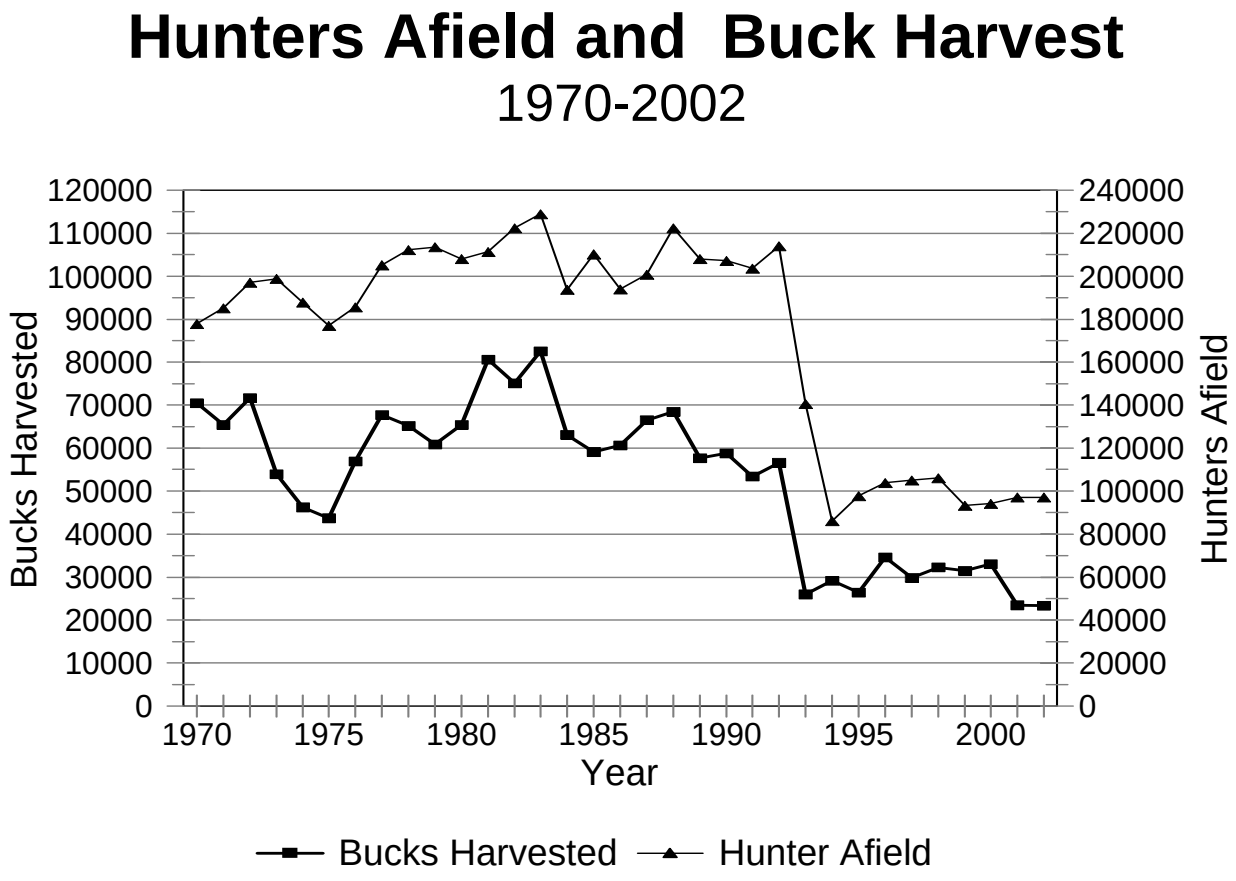


Figure 3. Deer herd size estimates, 1992-2002.

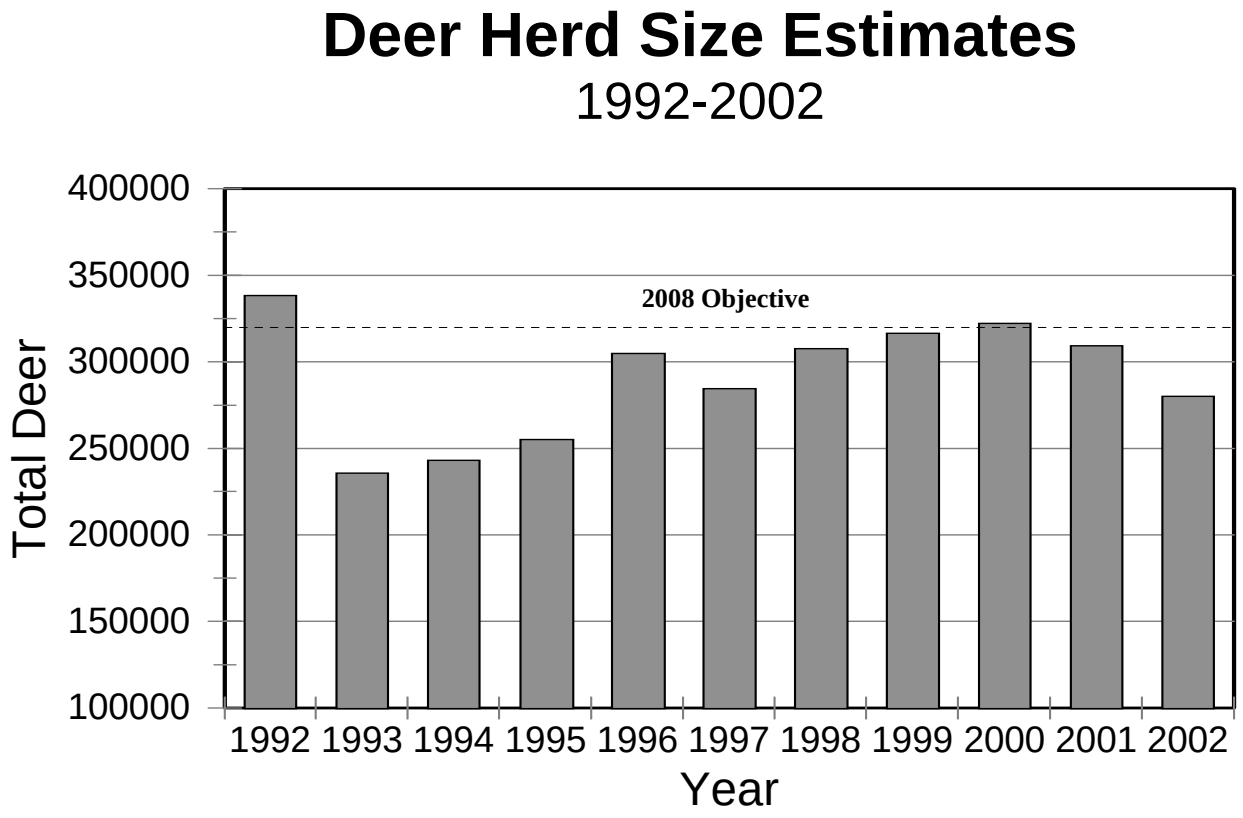


Figure 4. Mule deer habitat in Utah.

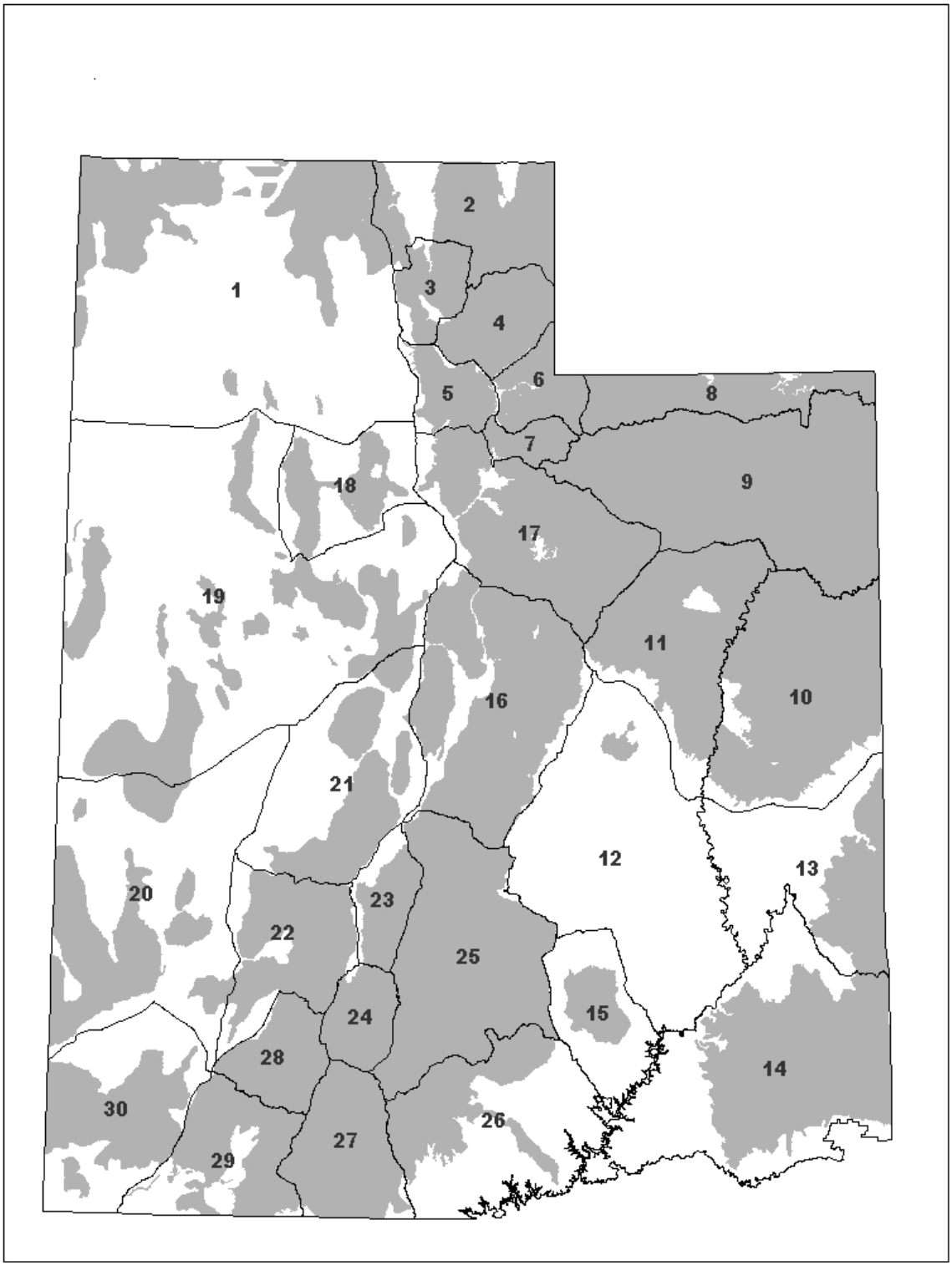
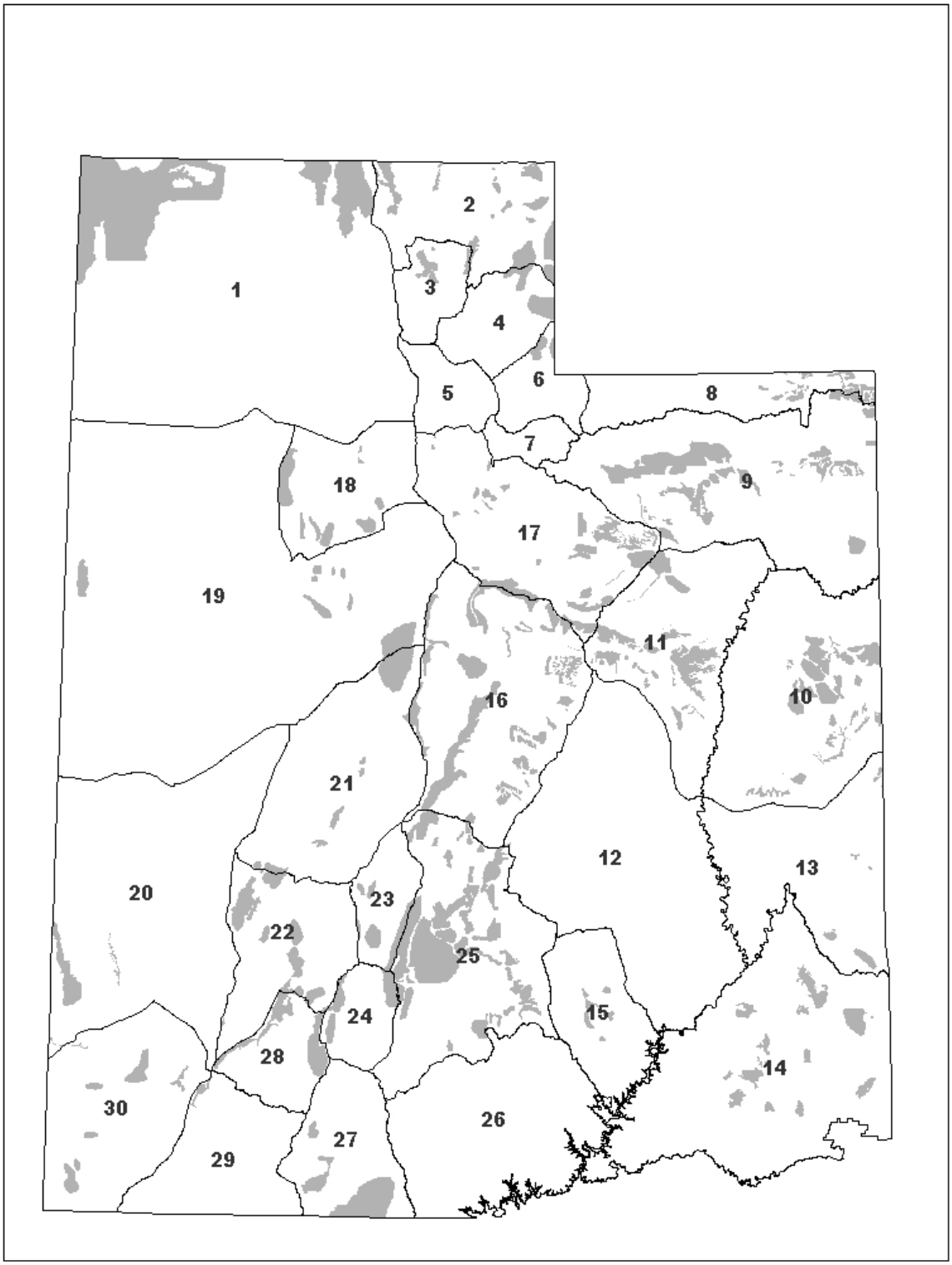


Figure 5. Critical mule deer winter ranges in need of improvement, 2003.



Appendix 1. Predator management policy

STATE OF UTAH DIVISION OF WILDLIFE RESOURCES ADMINISTRATION	NO. W1AG-4	NO. PAGES 4
	EFFECTIVE DATE August 18, 1999	
	APPROVED Wildlife Board, August 18, 1999	
SUBJECT: MANAGING PREDATORY WILDLIFE SPECIES		
DISTRIBUTION: ALL DIVISION EMPLOYEES		

I. PURPOSE

The division recognizes the need to efficiently and effectively manage predators. The division recognizes predator management to be a viable and legitimate wildlife management tool that must be available to wildlife managers when needed. However, the division also recognizes that predator management is controversial both publicly and professionally. The purpose of this policy is to provide the division direction in managing predator populations.

II. POLICY

Predator populations, as with all wildlife in Utah, will be managed to assure their future ecological, intrinsic, scientific, educational and recreational values, and to limit conflicts with human enterprise and values. When predator populations are believed to be inhibiting the ability of the Division to attain management objectives for other wildlife populations and the division decides to implement predator management actions, the management actions will be directed by a predation management plan.

Predator populations will be managed through habitat manipulation, sport hunting, depredation control and other programs. Wildlife managers and administrators implementing predator management options will consider the ecological relationships that will be affected. Management decisions will be consistent with objectives or management plans for prey base, habitat, and other biological and social constraints.

The division is not responsible for managing coyotes and raccoons that are under the jurisdiction of the Utah Department of Agriculture (UDA). However, the division may invoke predator management actions affecting coyote and raccoon populations when wildlife management objectives are not being met and predation by these species is a contributing factor. Thus, the monitoring of these species will be accomplished in accordance with a plan jointly developed and approved by the Division, UDA, and United States Department of Agriculture-Wildlife Services (USDA-WS).

The division, when and where feasible, will rely on sportsmen to take predators. Circumstances requiring predator management efforts by USDA-WS or the division will be considered as needed. Management programs to reduce predator populations will be:

1. Confined to specific treatment areas;

2. Targeted toward specific species and the offending animal whenever practical; and

3. Initiated only after preparation of a predator management plan containing an explanation why predator management is necessary, measurable objectives, expected results, and criteria to determine when to discontinue predator management actions.

This policy does not invalidate existing predator management policies and procedures used to administer livestock depredation issues.

III. DEFINITIONS

A. **"Predation"** means the act of an individual animal killing another live animal, normally for food as a means of maintaining its life.

B. **"Predator"** means any wild animal species subsisting, wholly or in part, on other living animals through its own efforts. For the purpose of this policy, predators only include terrestrial wildlife species.

C. **"Predator management"** means the application of professional wildlife management technology to enhance and otherwise affect the relative abundance of specific or total animal numbers which many include judicious taking.

D. **"Prey"** means any animal hunted or caught for food.

E. **"Take"** means to hunt, pursue, harass, catch, capture, possess, angle, seine, trap, or kill wildlife species.

IV. PROCEDURES

The division will not support any public fund-raising contests, or similar activities, involving the taking of predators which may portray hunting in an unethical fashion, devalue the predator or be offensive to the general public.

Managers must recognize the role of predators in an ecological and conservation context. The effects of removing one predator species may result in a population increase of another predator species. The actions by the division must be based on the best available scientific information.

Valid concerns for human heath and safety exist. Predator management must consider the need to avoid human injury, loss of life or sickness. Threats to public health and safety that require immediate intervention by division personnel will take precedence over any other possible option and will be directed by the regional supervisor.

A. Predator Management May Occur But Is Not Limited To The Following Circumstances:

1. In localized areas where introductions or transplants of potentially vulnerable wildlife species (e.g., bighorn sheep, wild turkeys, Utah prairie dogs, and black-footed ferrets) has occurred or is imminent,. Control should be intensive and of sufficient duration to allow transplanted animals and their progeny to become established and to become self sustaining.

2. Situations where prey populations are unable to meet management goals and objectives due to predation. For example, where survival or recruitment of wildlife populations is chronically low and below management plan objectives and where there is evidence that predation is a significant factor. Predator control will not be implemented to compensate for other problems such as habitat deficiencies and natural population cycles of the prey species.

3. On wildlife waterfowl management areas, especially those which were acquired for and are primarily managed for specific species.

B. Options

Three options are available to the division for to remove predators and are listed in order of preference:

1. Licensed or permitted hunters or trappers will take predators in the seasons provided;

2. Designated individuals, including WS agents, will systematically take a specified number of predators in a selected geographic area; or

3. Division personnel will take predators <u>in a selected geographic area</u>.

Predator Management Plans must consider options other than just lethal removal. Various kinds of habitat manipulation can sometimes negate or minimize the effect of predators, including constructing nesting islands and providing cover plantings. Preventative actions are important in reducing conflicts with predators; therefore, the division will cooperate with federal and state agencies, counties and other to promote activities on public and private lands that will limit predator impacts. Such activities may include the maintenance of clean camps, information and education efforts, livestock husbandry practices and other agricultural practices.

C. Predator Management Plans

All predator management plans will be reviewed by the wildlife section chief and regional supervisor. Predator management plans must be approved by the director. Predator management plans will be reviewed and evaluated annually.

The predator management plan will be prepared using the following outline:

1. Definition of the area;

2. Definition of the problem - discuss hunting factors, habitat quality, and hunting strategies;

3. Establish measurable objectives including evaluation criteria;

4. Identify strategies and management actions including
    a. predator control - species, method
    b. habitat enhancement
    c. hunting strategies; and

5. Identify when to stop management actions.

V. REVISION DATE

This policy shall be reviewed on or before August 18, 2004.

Appendix 1 (continued). Predator management policy.

Predator Management Plan
Criteria to Initiate Consideration of a Unit Predator Plan
Adopted by Wildlife Board (4/20/2000)
Clarified on 1/18/2001

1. When a transplant or reintroduction of wildlife susceptible to predation (e.g. bighorn sheep, black-footed ferret, or pronghorn) will occur in the next year.

2. When deer or pronghorn populations on a management unit or subunit are below 65% of management objective.

3. When deer or pronghorn populations on a management unit or subunit are below 75% of objective and are stable to decreasing for 3 consecutive years.

4. When bighorn sheep populations are below viable levels (i.e. less than 125 individuals), or less than objective and stable to decreasing for 3 consecutive years.

In addition:

When a population is chronically below a unit management plan objective, that objective will be critically reviewed as it relates to carrying capacity of the habitat.

Appendix 2. Big game winter feeding policy.

STATE OF UTAH **DIVISION OF WILDLIFE RESOURCES** **WILDLIFE**	**NO. W5WLD-2**	**NO. PAGES 4**
	EFFECTIVE DATE **December 19, 2000**	
	APPROVED **Wildlife Board December 19, 2000**	
SUBJECT: **BIG GAME WINTER FEEDING**		
DISTRIBUTION: **ALL DIVISION EMPLOYEES**		

I. PURPOSE

The purpose of this policy is to establish the procedure and guidelines for supplemental winter feeding of big game. The intent of this policy is to provide emergency feed for big game animals during those periods of critical stress and not as a sustaining program which would carry larger game populations than the range can normally support.

II. POLICY

Continual supplemental winter feeding of big game is not a part of the Division's routine management program because we recognize that these populations should be maintained under natural conditions and by natural available forage. However, the Division also realizes that there are times when unusual weather conditions can create critical times of stress when winter forage becomes extremely limited, unavailable, or animals are forced into areas threatening public safety. Furthermore, we recognize that by providing the proper feed, only during these times of critical stress, the Division may improve the survival of those animals that may have otherwise succumbed to starvation.

The implementation of widespread feeding, that supports higher population levels than healthy habitat can provide forage for, is not only prohibitively expensive, but involves serious risks in terms of disease and habitat degradation (see Attachment). Under certain circumstances, supplemental winter feeding can be used as a tool to help accomplish the following especially in the short-term:

1. control big game (primarily elk & deer) damage on agricultural programs, e.g. dairies, feed lots, orchards, until a better long-term solution can be sought;

2. promote public safety by pulling animals away from highways and urban areas;
3. maintain parent stocks of big game populations; and
4. relieve stress on populations in short-term severe emergencies.

Division feeding programs will be instituted only after specific recommendation of the chief of the wildlife section, with final approval from the director. Authorization for feeding will occur on a site-by-site basis only.

III. PROCEDURES

A. Approval Procedure

Division feeding programs will be allowed only in accordance with a feeding proposal prepared by the region, reviewed by the Wildlife Chief, and approved by the Director. Generally, these will be confined to those situations described in the previous section.

B. Feeding Proposal

A feeding proposal must address the following issues:

1. Why feeding is necessary (emergency / unusual circumstances).
2. Number of animals and length of time.
3. Estimated cost.
4. If feeding is planned on Federally Administered land, permission must be obtained and weed-free material may be required.
5. Desired benefits.
6. Extent of monitoring.
7. Describe outreach actions to be taken to explain to public what is being done, why, and planned future actions.
8. Future actions to prevent the need from reoccurring, e.g. hunts, fencing, habitat improvement projects, etc.

C. Division Discourages Private Feeding Programs

The division strongly discourages private individuals and/or organizations from entering into feeding programs, except in extreme emergencies. In such emergencies, the public will be asked to join with the division in emergency feeding.

D. Funding

The Utah Legislature, during the 2000 session, added $5 to each general season elk license; earmarked, in part, for emergency big game feeding. However, in the event of any extensive feeding initiative, funding for big game emergency winter feeding programs will, of a necessity, be sought outside the standard division budget.

IV. REVISION DATE

This policy shall be reviewed on or before December 19, 2003.

Additional Information

For more information along with a significant scientific literature summary please refer to:

"Feeding Wildlife...Just Say No". 2000. A Wildlife Management Institute Publication. *Contact: WMI Publications, P.O. Box 34646, Washington, D.C. 20043 Telephone: (202) 371-1808*

W5WLD-2.pol

Appendix 2 (continued). Big game winter feeding policy.

Winter Feeding Policy Attachment

Winter feeding is not the simple act of kindness that many perceive it to be, and in fact, can be a great detriment to the welfare of Utah's big game herds if not considered carefully.

Health problems associated with animals concentrating in feeding areas include higher incidences of eye and respiratory infections. Reproduction in some herds that are fed every winter; such as the Jackson, Wyoming elk herd, is dramatically lower than Utah's herds-at least partly due to communicable disease. Utah's big game are most arguably some of the healthiest in the West and the Division would like to keep them that way.

Range damage occurs in areas around feeding sites because animals continue to eat other forages even when they are being fed. Where this feeding occurs every year, natural winter forage is often overused and may never recover.

Depredation on nearby private lands can be caused or intensified by establishing feeding sites since animals concentrate and usually increase each year.

Intense competition for food in limited space at feeding sites often causes higher death rates for fawns and calves than under more natural dispersed conditions.

Expense is extremely high in feeding programs in comparison to the relatively few animals it may help. For example, the costs for feeding elk in Wyoming range from $50-$75 per elk; not including overhead and equipment expenses. Costs for feeding deer in Colorado was calculated to be around $175 per deer in 1985.

Why private citizens are discouraged to feed–

The Division generally discourages private citizens from feeding big game because it is difficult to obtain feed that will actually sustain wild game. For instance, deer will readily eat hay but can actually starve if that is the only feed they have. Also, once a feeding program is begun, animals must be fed until they are ready to move back to natural forage.

Keeping big game wild–

Supplemental feeding can create significant behavior alterations like disruption or abandonment of long-term migration patterns. And though nature may seem cruel, it is perfectly normal for 10-15 percent of deer and elk to not survive a mild winter; more die during a harsh winter. Animals ill-equipped to survive succumb to starvation, accidents, predators, exposure, disease, or parasites. Feeding may save a few from starvation but does little or nothing to halt losses from other causes.