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OREGON
MULE DEER INITIATIVE

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EXECUTIVE SUMMARY

This Mule Deer Initiative (MDI) Plan (Plan) outlines the issues associated with the decline of mule deer numbers in Oregon and develops strategies to reverse that trend. The goal is to increase mule deer numbers in five Wildlife Management Units (WMUs) to the established population Management Objectives (MOs).

The MDI was initiated in July of 2008 during a meeting with all Oregon Department of Fish and Wildlife (Department) wildlife biologists. Since that time Department biologists with the help of local Action Plan Committees from each WMU developed draft Action Plans for each WMU. Action Plan Committees consisted of representatives of hunting associations, landowners and producers, land management agencies, state agencies, and county government. Each Action Plan was developed during several Committee meetings.

The MDI Plan includes a description of the MDI process, a brief history of mule deer in Oregon; a discussion of limiting factors associated with declines in mule deer, and management considerations. The Plan then addresses the specific situation in each of five WMUs (Heppner, Maury, Murderers Creek, Steens Mountain, and Warner) and actions the Department may take in addressing the problem in each unit.

The Plan establishes six objectives for each WMU, as well as multiple strategies to help achieve those objectives. The objectives and strategies seek to improve conditions for mule deer resulting in populations increasing to MOs. For each WMU, the six objectives address 1) habitat improvement strategies, 2) predation, 3) disturbance/harassment, 4) law enforcement, 5) disease, and 6) population management.

The Plan includes strategies for improving the statistical reliability of harvest information needed to better determine the deer population in each WMU and measure any changes associated with strategies implemented through this plan. While objectives and strategies for the five units identify many actions that could be taken to benefit mule deer, actual accomplishments will depend on funding and Department prioritization.

All management activities will be carried out in an adaptive management approach that allows for monitoring, evaluation, and changes in management based on results. Those strategies that are not successful at meeting stated objectives will be modified or discontinued. Only those activities that have a beneficial effect will be continued. Several factors will be used to determine success. Deer herd statistics, such as fawn and buck ratios and population trend; and harvest statistics, such as hunter harvest and success, will continue to be collected. However, some collection techniques may be changed to improve data precision. The Department will apply knowledge gained from work done under the MDI to other mule deer units in Oregon.

The Department's mission is to protect and enhance Oregon's fish and wildlife and their habitats for use and enjoyment by present and future generations. The Mule Deer Initiative represents the Department's desire to meet that mission and allow for continued recreational and viewing opportunities that mule deer provide for the public.

DRAFT 5

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
TABLE OF CONTENTS	2
LIST OF TABLES	4
LIST OF FIGURES	4
PURPOSE OF MULE DEER INITIATIVE	6
GOALS AND OBJECTIVES	6
LIFE HISTORY OF MULE DEER	7
HISTORY OF MULE DEER IN OREGON	8
MANAGEMENT CONSIDERATIONS	9
Habitat Management	9
Predator Management	12
Disturbance and Harassment	15
Law Enforcement	16
Disease and Parasites	16
Population Management	18
SUMMARY	19
CHAPTER 1: HEPPNER UNIT	21
Background	21
Potential Limiting Factors	24
Objectives and Strategies	26
Habitat Management	26
Predator Management	29
Disturbance and Harassment	30
Law Enforcement	30
Disease and Parasites	32
Population Management	33
Prioritization of Objectives	33
CHAPTER 2: MAURY UNIT	34
Background	34
Potential Limiting Factors	37
Objectives and Strategies	38
Habitat Management	38
Predator Management	42
Disturbance and Harassment	42
Law Enforcement	44
Disease and Parasites	45
Population Management	46

DRAFT 5

CHAPTER 3: MURDERER’S CREEK UNIT	49
Background	49
Potential Limiting Factors	52
Objectives and Strategies	53
Habitat Management	53
Predator Management.....	58
Disturbance and Harassment	59
Law Enforcement	62
Disease and Parasites	64
Population Management	64
CHAPTER 4: STEENS MOUNTAIN UNIT	67
Background	67
Potential Limiting Factors	70
Objectives and Strategies	72
Habitat Management	72
Predator Management	74
Disturbance and Harassment	75
Law Enforcement	76
Disease and Parasites	77
Population Management	77
CHAPTER 5: WARNER UNIT	80
Background	80
Potential Limiting Factors	83
Objectives and Strategies	84
Habitat Management	84
Predator Management	90
Disturbance and Harassment	91
Law Enforcement	95
Disease and Parasites	95
Population Management	98
Prioritization of Objectives	97
MULE DEER INITIATIVE IMPLEMENTATION	99
Adaptive Management	99
Partnerships	100
Public Involvement and Outreach	100
LITERATURE CITED	103
APPENDICIES	110
Appendix A: Oregon State Police Action Plan, Heppner WMU.....	110
Appendix B: Oregon State Police Action Plan, Maury WMU.	114
Appendix C: Oregon State Police Action Plan, Warner WMU.	118
Appendix D: Oregon State Police Action Plan, Murderers Cr WMU.	120
Appendix E: Oregon State Police Action Plan, Steens Mt. WMU.....	125

DRAFT 5

LIST OF TABLES

Table 1. Heppner WMU Mule Deer Population Trend, Ratios, and Estimated Population 1980 – 2008.	23
Table 2. Heppner WMU Mule Deer Hunting Opportunity History 1980 – 2006.	24
Table 3. Maury WMU Mule Deer Population Trend, Ratios, and Estimated Population 1980 – 2009.	36
Table 4. Maury WMU Mule Deer Hunting Opportunity History 1980 – 2008... ..	36
Table 5. Murderers Creek WMU Mule Deer Population Trend, Ratios, and Estimated Population 1980 – 2008.....	51
Table 6. Murderers Creek WMU Mule Deer Hunting Opportunity History 1980 – 2007.	51
Table 7. Steens WMU Mule Deer Population Trend, Ratios, and Estimated Population 1980 – 2009.	69
Table 8. Steens WMU Mule Deer Hunting Opportunity History 1980 – 2008.. ..	70
Table 9. Warner WMU Mule Deer Population Trend, Ratios, and Estimated Population 1980 – 2009.	82
Table 10. Warner WMU Mule Deer Hunting Opportunity History 1980 – 2008.	83

LIST OF FIGURES

Figure 1. Mule deer distribution in Oregon.	8
Figure 2. Winter Range and Land Ownership in the Heppner WMU.	22
Figure 3. Winter Range and Land Ownership in the Maury WMU.....	35
Figure 4. Winter Range and Land Ownership in the Murderers Creek WMU.	50
Figure 5. Proposed area closure on PW SCHNEIDER WA.	61
Figure 6. Winter Range and Land Ownership in the Steen Mountain WMU... ..	68
Figure 7. Winter Range and Land Ownership within Warner WMU.....	81

DRAFT 5

Figure 8. Canopy closure of forest stands within Warner WMU.....	86
Figure 9. Juniper distribution within Warner WMU.	87
Figure 10. Known aspen distribution within Warner WMU.....	88
Figure 11. Non-native invasive plant distribution within Warner WMU.....	89
Figure 12. Roads within Warner WMU.....	92
Figure 13. Proposed energy development projects within Warner WMU....	94

DRAFT 5

PURPOSE OF THE MULE DEER INITIATIVE

Issue

Mule deer have important aesthetic, cultural, economic, and ecological values. Researchers and wildlife managers generally agree the species achieved its maximum abundance during the 1950s and 60s. Since then, mule deer have declined across the West and in Oregon. The most recent decline happened since the early 1990s and, though not fully understood, it is believed to be primarily due to the combined effects of drought and severe winters, which coincided with increased numbers of predators. Historically, deer populations rebounded quickly after such climatic extremes. However, in recent years, survival of fawns has remained at depressed levels. Low fawn recruitment, severe winters, dry summers, changing predator/prey relationships, and increased habitat loss have pushed deer populations lower than the Department and the public desire.

Approach

The Department is embarking on an ambitious program to address the decline of mule deer in Oregon. Known as the Mule Deer Initiative (MDI), this program is aimed at identifying and addressing limiting factors of mule deer populations in five designated WMUs, Heppner, Maury, Warner, Steens Mountain, and Murderers Creek. A specific Action Plan will be developed for each WMU with an overall goal of reaching administratively established MOs for populations.

The MDI calls for the Department to work with state, federal, and private partners to develop and implement strategies that will enhance mule deer populations. To that end, the Department formed voluntary Action Plan Committees comprised of local interested entities that represented each WMU in the development of on-the-ground actions. These efforts benefit not only mule deer but also a host of other species that share mule deer habitats. Actions developed will be both short-term (1-5 years) and long-term (up to 10+ years) and will serve as guidelines to be applied to other mule deer WMUs.

GOALS AND OBJECTIVES

The Oregon Fish and Wildlife Commission (Commission) reviewed and adopted Management Objectives for wintering populations of mule deer in each WMU in 2005 (Oregon Department of Fish and Wildlife 2005). The goal of the MDI is to increase the abundance of mule deer in each of the five designated WMUs to the following population management objectives:

UNIT	MANAGEMENT OBJECTIVE
Heppner	12,000
Maury	5,200
Murderer's Creek	9,000
Steens Mountain	11,000
Warner	5,500

DRAFT 5

Objectives are addressed for each of the five units under six major headings:

1. Habitat Management
2. Predator Management
3. Disturbance and Harassment
4. Law Enforcement
5. Disease and Parasites
6. Population Management (includes harvest and hunter management)

Within each of the five WMUs, objectives were prioritized based on importance to mule deer populations. Under each objective, individual strategies are listed and include the proposed timeframe and estimated cost to implement. While objectives and strategies for the five units identify many actions that could be taken to benefit mule deer, actual accomplishments will depend on funding and Department prioritization.

LIFE HISTORY OF MULE DEER

Females (does) usually breed for the first time as yearlings (18 months) and adult does normally produce twin fawns. Breeding peaks during November and the majority of fawns are born late May through mid June, with fawns typically weighing about 7½ pounds at birth. High numbers of fawns are produced annually, with twins being common. Fawn survival to breeding age is an important factor determining the growth or decline of mule deer populations.

Does typically live longer than bucks, living up to 15 years. Bucks seldom live more than nine years. The higher mortality rate of bucks is attributed to higher hunter harvest rates and higher natural mortality due to reduced body condition caused by breeding activities in November and December.

Nutritional intake is a critical component of deer biology. Deer must obtain sufficient energy, protein, and nutrients from the plants they eat to maintain body condition and successfully reproduce. Nutrition influences overall body condition, reproductive processes (ovulation, conception, gestation, and lactation), and survival. Nutrition also affects winter survival, size at birth, timing of birth, and survival of fawns. Nutritional status affects vulnerability to predation, as well as a deer's ability to compete for food and survive when severe weather persists for extended periods. Because antler development is secondary to body maintenance, nutritional status is very important in determining antler size and buck "quality".

Water is a critical element of mule deer habitat. Deer often obtain much of their water from succulent forage; however, free water is important when deer consume large amounts of dry vegetation and when does are lactating.

Cover is the other major physical component of deer habitat. Types of cover include thermal cover used to minimize exposure to harsh weather and energy loss, and security or escape cover used to avoid detection and evade predators, including avoiding hunters.

DRAFT 5

Winter habitat is found predominately in lower elevation areas of Eastern Oregon. Winter ranges usually have minimal amounts of snow cover and provide vegetation for both structural protection (thermal and escape cover) and forage. Due to the low nutritive values of available forage during the winter, for winter survival deer are forced to rely on their body reserves acquired during the summer.

Summer habitat areas are common throughout eastern Oregon, and can be found in areas varying from low elevation agricultural lands to high elevation mountain areas.

HISTORY OF MULE DEER IN OREGON

Mule deer (*Odocoileus hemionus*) are native to Oregon and typically are predominantly found east of the crest of the Cascade Mountain Range (Figure 1). Peter Skene Ogden's journal mentions a scarcity of deer on his expedition through eastern Oregon in 1826 and 1827.

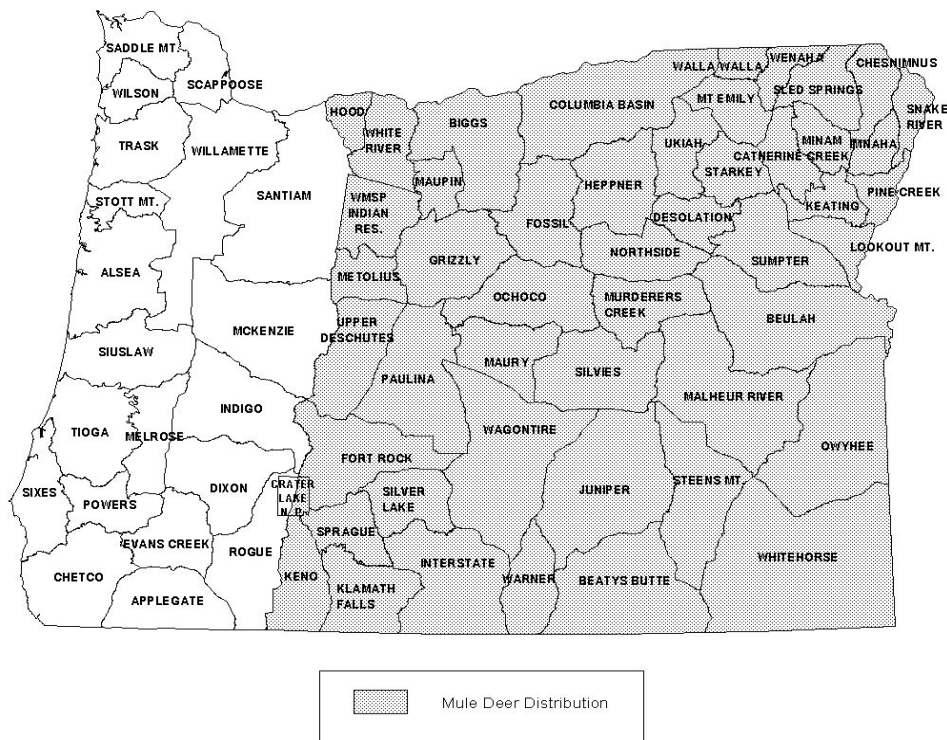


Figure 1. Mule deer distribution in Oregon.

DRAFT 5

John Fremont reported few deer or other big-game species in southeastern Oregon during the 1840s. However, by the late 1850s, gold miners traveling from California to the Boise Basin found deer abundant in eastern Oregon. Vernon Bailey (1936) estimated Oregon's mule deer population to be 39,000 to 75,000 animals from 1926 to 1933. Mule deer populations increased through the 1930s and 1940s, peaking during mid-1950s thru mid-1970s. The estimated spring population in 1990 was 256,000 animals, 26 percent below the established statewide management objective of 344,900 (Oregon Department of Fish and Wildlife 2005a). The estimated 2009 population was 216,154 and continues to remain below established MO.

Two prominent environmental factors that can affect mule deer populations are severe winters and drought. Weather, mostly snow, is a major factor influencing population dynamics (Edwards 1956, Gilbert et al. 1970; Leach 1956, Strickland and Diem 1975; Wallmo and Gill 1971). Severe winter and or drought can result in reduced reproductive success and increased mortality (Reeve and Lindzey 1991, Bartmann 1984, Anthony 1976, Brown 1984). Severe winter can tax a deer's ability to obtain necessary forage while draining fat reserves when forage is covered by crusted snow (Leckenby and Adams 1986, Bartmann 1984). In addition, such conditions can increase vulnerability of deer to predation by restricting their movements. Likewise, drought affects the availability of forage resources that are needed during critical periods of high nutritional demand (Anthony 1976, Ziegler 1978) such as lactation and maintenance of basic physiological functions during extreme winter weather. Conversely, easy winters (i.e. warmer than normal with low snowfall) with normal to above normal precipitation can result in optimum physical condition, which can benefit reproductive functions and over-winter survival. Good physical condition both prevents starvation and improves the ability of deer to elude predators. Lack of snow cover also improves movement capabilities of deer and therefore predator avoidance.

Severe weather conditions in eastern Oregon during the winters of 1983-84, 1984-85, 1988-89, and 1992-93 were responsible for high fawn and adult mortality in many WMUs, causing declines in mule deer populations (Oregon Department of Fish and Wildlife 2003). In addition, drought conditions occurred in much of eastern Oregon from 1985-92. Conversely, predominately favorable weather during the 1960s and 70s produced conditions for population growth. Based on weather data collected by the National Weather Service in Burns, OR, winter severity was near or below normal along with above normal precipitation for 13 of 24 years between 1957 and 1983 (see Keister 1985, for weather data and discussion of weather severity index). There were no years during the period when drought conditions occurred along with severe winter conditions. These easy winters with good moisture conditions corresponded with peak abundance of mule deer in Oregon.

MANAGEMENT CONSIDERATIONS

Habitat Management

Habitat is defined as "the resources and conditions present in an area that produce occupancy, including survival and reproduction, by a given organism" (Hall et al. 1997). The basic components of habitat include food, water, cover, and open space within reasonable proximity of

DRAFT 5

each other. In eastern Oregon the most important habitats are summer habitat, including areas needed for reproductive activities, and winter habitat (Oregon Department of Fish and Wildlife 2003).

Winter habitat is extremely important to mule deer survival. In Oregon, mule deer migrate, often long distances, to lower elevations to escape or minimize snow cover. Winter range vegetation historically consisted of shrubs (e.g. sagebrush, bitterbrush, and other mountain shrub species) and native bunch grasses in upland areas, and robust riparian vegetation with a high diversity of woody shrub species along streams. Many of these habitats today have been highly impacted. In many cases, upland habitats have been largely or partially replaced by annual grasses such as cheatgrass (*Bromus tectorum*) or medusahead rye (*Tanglehead contortus*) and riparian areas have been degraded and often lack quantity and diversity of shrub species. During mild winters, annual grasses often “green-up” with moisture, supplying some nutrition to wintering deer. However, during more severe winters, snow covers annual grasses, and depending on snow depth, native bunch grasses. Access to nutritious woody vegetation (i.e. shrubs) is essential to over-winter survival. Deer on winter ranges without a shrub component often have high rates of over-winter mortality.

Preferred summer habitat provides adequate forage to replace body reserves, lost during winter, and to maintain normal body functions. Summer habitats also include areas specifically used for reproductive purposes. These areas must have an adequate amount of succulent vegetation, offering highly nutritional forage. In addition, areas used for reproduction should provide isolation from other deer, security from predators, and minimal disturbance. If foraging habitats are inadequate on summer ranges, they can become as important a limiting factor as conditions on the winter range. Availability of forage is generally low within closed-canopy forests and high within early successional openings in forests created naturally by fire, blow-down, disease, or through forest management activities (e.g. logging, road building).

Because mule deer diets consist primarily of succulent woody vegetation or forbs, habitat changes that reduce the quality or quantity of these plants usually have a negative impact on deer. Numerous factors have contributed to loss, fragmentation, and degradation of mule deer habitat. Historic fire suppression and overgrazing by livestock have led to less productive shrub communities (Anderson 1958, Bennett 1999) and these changes have negatively affected mule deer and their habitats. Other changes include increases in western juniper (*Juniperus occidentalis*) (Burkhardt and Tisdale 1976, Heyerdahl et al. 2006, Miller and Tausch 2001), invasion of non-native invasive vegetation (Whisenant 1990, Pyke and Knick 2003), and reduction in native forbs and shrubs (Bennett 1999).

In eastern Oregon, forest stands occurring at higher elevations are used by mule deer primarily as summer range. Fire suppression and past timber harvest strategies have allowed development of overstocked timber stands with closed canopies. Shrub and herbaceous plants are reduced in closed canopy stands due to reduced sunlight and moisture.

Depending on elevation, shrub steppe habitats are used by mule deer for both summer and winter range. Juniper occurrence is most common in shrub steppe habitats and historically was limited to rocky rims where low fuel loads would not carry fire. Juniper woodlands currently occupy 3.7 million acres in Oregon, a ten-fold increase in the last 130 years (Miller et al. 2005). When

DRAFT 5

juniper expands into shrub-dominated habitats, it often eliminates important mule deer forage plants and reduces species richness and diversity (Bennett 1999).

In some areas, wildfire has improved deer forage by regenerating fire tolerant shrubs and increasing species of forbs. In other areas; however, wildfire has had a negative effect through the removal of desired fire intolerant shrubs such as bitterbrush and by optimizing conditions for the spread of non-native invasive plants. Changes in disturbance regimes by restoring fire or using site-appropriate techniques that mimic the effects of fire in fire-dependent ecosystems are identified in the Oregon Conservation Strategy (Oregon Department of Fish and Wildlife 2006b) as one of the six most pressing conservation issues. However, it is extremely important that managers understand fire tolerance levels of the plant species scheduled for burning and potential for spread of non-native invasive plants, if they are to be successful in improving mule deer habitat.

Non-native invasive plants can displace native vegetation (Reichenberger and Pyke 1990), reduce native plant and animal biodiversity (Young and Allen 1997, Newbold 2005), cause soil erosion (Lacey et al. 1989), and increase frequency of wildfire (Whisenant 1990). Recent assessments have indicated that cheatgrass has invaded more than 16.8 million acres of the sagebrush ecosystem (Pellant and Hall 1994) and more than 99 million acres throughout the Intermountain West (Whisenant 1990). Once established, invasive plants often increase fire frequency and compete with more desirable mule deer forage species. Impacts of invasive species on Oregon's fish and wildlife resources are one of the six most pressing conservation issues identified in the Oregon Conservation Strategy (Oregon Department of Fish and Wildlife 2006).

Aspen communities are important mule deer habitats and provide cover and nutritious forage in close proximity during spring, summer, and fall. Where available aspen and shrub habitats adjacent to aspen stands are preferred habitats for does with young fawns (Trainer et al. 1981). Over the past century aspen stands have declined due to heavy grazing and a lack of fire resulting in conifer encroachment.

Aspen are important to numerous wildlife species. Due to the high and unique value of aspen woodlands and sagebrush steppe communities to wildlife, the Oregon Conservation Strategy (Oregon Department of Fish and Wildlife 2006b) has identified these habitats as two of eleven strategy habitats on which to focus conservation and restoration efforts.

Historic over grazing by livestock in the late 1800s through the early 1900s helped suppress wildfires by removing fine fuels. Removing fine fuels across the landscape has reduced fire frequency and allowed juniper to expand down slope from fire protected rim rocks. Overgrazing can also result in significant reductions in plant species richness, primarily by decreasing amounts of grasses, forbs, and shrubs (Cottam and Evans 1945, Austin et al. 1986).

Human development has caused direct impacts to mule deer habitat (Vogel 1989, Henderson and O'Herren 1992). Developments, including buildings, roads, fences, and supporting infrastructures, fragment mule deer habitat and disrupt mule deer travel corridors. Compounding the loss of habitat is increased disturbance and harassment discussed below. Impacts from land use changes on Oregon's fish and wildlife resources are one of the six most pressing

DRAFT 5

conservation issues identified in the Oregon Conservation Strategy (Oregon Department of Fish and Wildlife 2006b)

Predator Management

Predation is a natural environmental pressure that acts on mule deer populations in concert with habitat conditions, weather fluctuations, and alternate prey availability. In many ecosystems, mule deer co-evolved with, and are preyed upon, by multiple predator species such as cougar, coyotes, and black bears. However, habitat quantity and quality ultimately determine the carrying capacity of the habitat (i.e. maximum number of deer that can be supported).

Relationships between predator and prey populations, habitat variables, and weather events are dynamic and complex. The extent to which predators affect mule deer populations seems to vary with the circumstances surrounding each deer herd at any particular time. The effect of predation can also vary from year to year, depending on the size of a mule deer population relative to the habitat's carrying capacity (Ballard et al., 2001).

While weather conditions favored mule deer in Oregon during the 1960s and 1970s, predator numbers were extremely low from the 1950s through the mid 1970s, which also favored mule deer. Since that time, abundance of both coyotes and more recently cougars has increased in some areas.

Historically, the primary predators on mule deer in Oregon were probably wolves, cougars, and coyotes, with some predation on newborn fawns by black bears. Wolf numbers were reduced in the state during the early 1900s and extirpated by the mid 1900s. Only recently have a few moved into Oregon as a result of re-establishment of wolf populations in Idaho (Oregon Department of Fish and Wildlife 2005).

Likewise, cougar numbers in Oregon declined between 1928 and 1961, primarily due to excessive harvest from the bounty system (Oregon Department of Fish and Wildlife 2006a). The bounty was ended in 1961 and cougars were classified as a game mammal in 1967. Sport harvest began on a limited basis in 1970. Oregon's cougar population grew slowly at first and did not reach 2,000 until the mid 1980s. The population doubled to 4,000 by the mid 1990s and was estimated at 5,700 in 2008.

One of the major factors that influenced coyote abundance since the late 1940s was the use of compound 1080 to control coyotes. There was a general decline in coyote abundance in the western states during the late 1940s when the use of compound 1080 began (United States Fish and Wildlife Service 1978) and that decline appears to be proportionate to the number of compound 1080 bait stations used (Cain et al. 1972, United States Fish and Wildlife Service 1978). However, since 1972 when compound 1080 was banned, a dramatic increase in coyote numbers was evident in some areas (Roughton 1977, United States Fish and Wildlife Service 1978).

There is a high likelihood that predators sometimes limit numbers of several prey species including big game (Cain et al. 1972, Connolly 1978, Corneli 1980) and coyote predation can reduce fawn survival in nutritionally healthy deer populations (Hamlin et al. 1984). In

DRAFT 5

southeastern Oregon, coyotes played a major role in reducing survival of young mule deer (Trainer et al. 1981) and pronghorn fawns (Trainer et al. 1983, Willis 1988). A long-term study of mule deer on Steens Mountain (1968 – 79) found coyote predation to be the primary cause of mortality (49% of all fawn mortalities) (Trainer et al. 1981). The mortality rate of fawns between birth and the following March was 75%. A heavy loss of fawns after November indicated that fawn recruitment was largely controlled by the rate of mortality occurring from November through March. Mortality rates of radio-collared adults during winter (January-March) in 1978 and 1979 averaged 7%. During the time period of this study, cougars were virtually non-existent on Steens Mountain and no mortalities were attributed to cougars.

By the 1990s, when cougar numbers had significantly increased, cougar predation became important. A three-year study in northeastern Oregon found cougar predation of adult mule deer was the leading mortality cause, accounting for 33% of all known mortality (Mathews and Coggins 1997). A study of a wintering mule deer herd in Hells Canyon, Oregon & Idaho, showed a 25% annual mortality rate in Oregon for adult does from 1999-2001 (Edelmann 2003). The primary cause was cougar predation. In California, cougar predation was found as the primary cause of a significant decline in mule deer in the Sierra Nevada Mountains (Harrison 1989).

Under certain conditions predator management may be beneficial to several species including big game. Coyote control in particular has been effective in limited geographic areas at reducing coyote abundance and increasing survival of several species, including pronghorn, deer, and livestock (Udy 1953, Wade 1981, Stout 1982, Neff et al. 1985, Willis 1988). However, success over large areas has not been achieved except with the use of chemicals, particularly compound 1080.

In southeastern Oregon, several investigations of predator management have been conducted. As part of the mule deer study on Steen Mountain a coyote removal program was conducted on winter range during late fall and winter (1976-79) to measure the effect on fawn losses. Helicopter gunning was used to remove 536 coyotes over a 75 square mile area during the four winters. Fawn mortality rates decreased significantly as a result of coyote removal but removal efforts were probably not of sufficient intensity to allow the deer herd to increase (Trainer et al. 1981). Likewise, coyotes were removed during spring, just prior to the peak of fawn drop, using helicopter gunning on the Jackass Creek study area from 1985-1987 to determine if increases in antelope fawn survival during summer could be attained (Willis et al. 1994). Annual removals represented a 24%, 48%, and 58% reduction in the coyote population of the 200 square mile study area. This study documented a significant increase in summer antelope fawn ratios from a pre-removal ratio of 4 fawns per 100 does in 1984 to 84 fawns per 100 does in 1987 following three years of coyote control. In addition, coyotes limited sandhill cranes (*Grus canadensis*) at Malheur National Wildlife Refuge (United States Fish and Wildlife Service 1985 and 1989), and were involved in nest predation on waterfowl at Summer Lake (Denney 1984). In each case, predator control was employed to reduce predator numbers and increases in survival of young resulted. Particularly in the case of sandhill cranes at Malheur National Wildlife Refuge, predation of young was identified as the limiting factor. Habitat was manipulated to improve nesting success, however survival of young did not respond until predator control was initiated.

DRAFT 5

In 2006 the Heppner WMU was targeted under the guidelines of the Cougar Management Plan for more intensive cougar harvest (Oregon Department of Fish and Wildlife 2006a). The purpose was to increase elk calf recruitment. A total of 79 cougars were removed from the Target Area by the Department (53) and the public (26). Calf ratios subsequently increased from 16 calves/100 cows in 2007 to 30 calves/100 cows in 2008 and 29 calves per 100 cows in 2009. Some increase in survival of mule deer may have been achieved but survey techniques were focused on elk and have not documented a large change in the mule deer population.

More recent studies of mule deer in other areas of the west have demonstrated differing results. Carrera et al. (2009a, 2009b) reported on the difference in population performance of mule deer inside and outside of a 640-acre predator-proof enclosure in central AZ. The enclosure was built in 1971 and results represented 35 years of data collection. Mule deer inside the enclosure reached a density of 35 deer/km² (91/mile²) compared to 2 deer/km² (5 deer/mile²) outside the enclosure. Data suggested that predation on fawns was the most important force driving mule deer populations and that predator control may enhance mule deer populations in central Arizona.

In southwest Colorado on the Umcompahgre Plateau, Bishop et al. (2008) enhanced the nutrition of wintering mule deer on two small study areas (~6 miles² each) between 2000 and 2004 by supplemental feeding. They found that supplementally fed deer were in better condition and had higher survival rates for over-wintering fawns and adult does than those deer that were not fed, which resulted in a higher rate of population increase. Deer with enhanced nutrition also had a reduction of coyote and cougar predation for older fawns (>6-month) and adult females. This result indicated the deer population was food limited. The authors recommended evaluation of effectiveness of habitat treatments on winter ranges. They also cautioned against extrapolation of results beyond their area and the use of their findings to justify winter feeding as a management tool. They projected a total approximate cost of \$1.75 million to provide supplemental feed to most of the deer wintering on the Umcompahgre Plateau.

These two studies had differing results and conclusions, probably due to two different situations in two different habitats. While interesting, neither experiment can be duplicated on a large scale. We can neither supplementally feed wintering deer each year over a large area, nor can we exclude predators over a large area. However, a study done over a large area (1997 – 2003) was recently completed in southeastern Idaho (Hurley et al. In Review). Both coyote and cougar removal was investigated using eight Game Management Units (GMUs) in a statistical design. Four units had enhanced coyote removal and 4 had enhanced cougar removal (two of the units had both, for a total of 6 units). Two other units had no enhanced predator removal. Cougar removal was found to increase mule deer survival and fawn ratios, however, those gains were lost during the winter of 2001 - 02 because of the dry summer of 2001 followed by the above average winter snowfall during the 01- 02 winter. A total of ~ \$250,000 was spent for six years and on four GMUs to remove coyotes (~\$41,500/year or \$10,400/GMU/year), but no positive effect on fawn survival or population growth was found. Hurley et al. (In Review) concluded that while predation was a significant limiting factor of mule deer populations, their study provided little evidence that predator removal changed the overall population status of mule deer. Amount and timing of precipitation, likely related to plant phenology and winter energy expenditure, had a greater influence on population growth rates.

DRAFT 5

Results of these studies suggest that predator removal to benefit mule deer may produce different results depending on several factors, including: 1. Status of the mule deer herd (i.e. at or near carrying capacity vs. well below carrying capacity), 2. Importance of predation to that mule deer herd population performance, and 3. Nutritional status of the herd (which is determined by habitat quality interacting with weather conditions).

We predict that in Oregon, best results of predator removal would occur when the deer herd is below habitat carrying capacity, predation is a significant factor limiting the population, and weather conditions are favorable to mule deer (i.e. normal to above normal precipitation during spring, summer, and fall and normal to mild winter weather with precipitation on winter range occurring as rain and not snow). Poor results of predator removal would be expected when a deer herd is near or at carrying capacity or when predation is not a significant limiting factor. In addition, predator removal may be ineffective even if the deer herd is below carrying capacity and predation is a significant limiting factor, if weather conditions are not favorable (i.e. drought and/or severe winter).

Disturbance and Harassment

Disturbance or harassment comes in many forms and can be caused by human activities or competition with other ungulates for resources or space. Irrespective of the cause, disturbance usually results in mule deer avoiding areas where the disturbance occurs and being forced into smaller or more marginal areas with poorer habitat. Concentrating deer in smaller areas has been shown to result in increased disease transmission, increased susceptibility to predation, and/or over use of forage plants.

Within any deer herd, some individuals may habituate to disturbance factors. If human caused it may result in increased mortality due to collisions with vehicles or euthanization in response to damage complaints. In more remote areas, deer generally avoid areas of disturbance and do not habituate. This results in reduced habitat availability that can affect body condition, survival, and recruitment. Increased human recreational activity, particularly from Off Highway Vehicles (OHVs) can cause indirect impacts to wildlife (Knight and Gutzwiller 1995). These disturbances may cause mule deer to avoid areas within preferred habitat and displace them into unfamiliar or less productive habitat, resulting in population declines from reduced survival, reproduction, and recruitment into the population.

As mule deer come out of winter, they are in their worst physical condition and begin to forage heavily to regain the weight lost from winter. It is critical that mule deer are able to utilize high quality forage and are not displaced from quality habitat. Human-related factors on mule deer winter range that cause animals to expend unnecessary energy may increase over-winter mortality (Hobbs 1989). Additionally, high disturbance during any time of the year can have adverse effects on mule deer populations. Excessive and/or illegal OHV use across the public lands both during and outside of the hunting seasons leads to increased deer disturbance and reduced habitat effectiveness. As human populations continue to grow and expand and the ability to access more lands through motorized vehicles increases, disturbance in mule deer habitats will continue to increase.

DRAFT 5

In an effort to reduce disturbance and harassment of mule deer, the Oregon Mule Deer Plan (Oregon Department of Fish and Wildlife 2003) identified the need to encourage federal land managers to develop OHV rules that restrict use on winter range areas and other critical habitat areas. Additionally, the Plan recommends the control of shed antler collecting.

In Oregon, the increase in elk populations, coinciding with the decline in mule deer populations, has caused some to suspect direct competition between the species. This trend has also been observed in other parts of Oregon and in many of the western states. However, the trends are not always consistent. In some areas, both elk and mule deer are declining, while in others mule deer have increased while elk have declined. It is understood that both species may interact and at times compete for resources. Elk might displace mule deer into areas of lower habitat quality or make them more vulnerable to other mortality factors. Rigorous research designs are needed to detect competition between deer and elk, as well as other grazers such as cattle and horses.

Law Enforcement

Wildlife laws and regulations serve three broad purposes: 1) protect the resource; 2) protect the public; and 3) assure equitable opportunity to enjoy the resource. A strong majority of the hunting and non-hunting public supports effective wildlife laws that are firmly and fairly enforced. Due to the rapid evolution of outdoor technology and increasing trophy values, wildlife law enforcement remains as important today as it was during the early years of wildlife conservation.

One of the most important roles of law enforcement is to secure the ability to regulate harvest within prescribed, biological limits. The institution of law enforcement and its field presence assures that the majority of hunters comply with statutes and regulations designed to manage harvest within sustainable levels.

Mule deer are especially vulnerable during the rut and in winter when they congregate on traditional wintering areas. While poaching impacts deer year-round across all age classes, illegal hunting often targets mature bucks on winter range. Significant poaching activity reduces population size, and the number and quality of bucks that can be harvested by law-abiding sportsmen in subsequent years. The Oregon Mule Deer Plan (Oregon Department of Fish and Wildlife 2003) identifies the need to increase enforcement activities.

Disease and Parasites

In general, most diseases of mule deer are believed to have little effect at the population level. However, the consequences of disease are difficult to study because sick deer are not easily found unless they die in large numbers or in areas where the carcasses are easily observed. Sick animals tend to seek seclusion and are more prone to predation, or are eaten by scavengers, or decompose soon after they die. Another problem is that clinical signs of many diseases are often similar and make field diagnosis challenging. In most cases a veterinary laboratory is several hours away, so it can be difficult to obtain clinical diagnoses by properly trained personnel.

Following are some of the more important diseases that could affect mule deer populations in Oregon. Chronic wasting disease (CWD), which does not occur in Oregon, is caused by a

DRAFT 5

protein particle called a prion, which can transform normal proteins into an abnormal form. Members of the deer family (at the least mule deer, white-tailed deer, elk, and moose) are susceptible, although thus far, the disease has been most prevalent in mule deer and white-tailed deer in some Rocky Mountain and eastern states and Canada. CWD affects the central nervous system, eventually leading to abnormal behavior, weight loss or emaciation, excessive salivation, droopy ears, a scruffy looking hide, and ultimately death.

Epizootic hemorrhagic disease (EHD) can have population limiting effects locally or regionally in Oregon and elsewhere in the western United States. This viral disease is transmitted by a biting midge. Outbreaks typically happen in late summer or early fall and are most severe during wet years, especially when the first frost is delayed; this enables the midges to become more prevalent and live later into the fall. Infected deer are commonly found sick or dead at water sources, often exhibiting respiratory distress, excess salivation or drooling, loss of awareness of their surroundings, and sometimes swollen tongues or eyelids.

Deer adenovirus hemorrhagic disease (AHD) is an emerging disease in Oregon. This disease has been diagnosed in moose in Canada and Wyoming, mule deer in Oregon, Washington, California, and Wyoming, and white-tailed deer in Idaho and Iowa. In 2002, the Department confirmed AHD had caused an “all age and sex” mule deer die-off of about 500 deer from near Crooked River Ranch in the Metolius unit to as far south as Sun River in the Upper Deschutes unit and into the eastern portion of the Grizzly unit. Infected animals develop a systemic infection resulting in swelling and/or fluid accumulation in the lungs, bloody diarrhea, and/or localized infection with lesions in the mouth and rumen. In 1993 and 1994, adenovirus was responsible for the death of over one thousand mule deer in central and northern California.

Blue tongue virus (BTV) like AHD and EHD seems to be widespread in Oregon and has similar symptoms as described above. During the summers of 2006 and 2007 a substantial number of deer in Warner Valley (Lake County) died from BTV.

Mule deer co-evolved with many endemic diseases that for the most part are not considered a substantial threat at the population level. From a management perspective, the risk of importing new diseases such as CWD has much more serious implications. As game ranching, private ownership, transportation, and trade of wildlife continue to increase around the world; new and emerging diseases will potentially pose significant jeopardy to mule deer and other wildlife. It is very important to maintain and enforce current regulations controlling the transportation and importation of deer and elk carcasses to reduce the risk of disease transmission to new areas. The Department’s priorities include effective monitoring and surveillance, and control and prevention of the spread of new diseases.

Deer Hair Loss Syndrome (DHLS) is a condition affecting both black-tailed and Columbian white-tailed deer. First described in Western Washington in 1996, DHLS has now moved southward through Western Oregon to northern California. The condition produces hair discoloration, hair loss, weight loss, diarrhea, and lethargy. The syndrome can ultimately result in death for some animals, primarily from exposure and associated pneumonia. Black-tailed deer with DHLS have abnormally heavy infestations of lice. The parasitic louse affecting Oregon’s deer has been identified as an exotic species. Fawns are impacted more than adults resulting in poor recruitment and low survival in some areas. A different species of exotic louse is having a

DRAFT 5

similar affect on mule deer in central Washington and has recently been identified on mule deer in California north of Yosemite where it is affecting a migratory herd.

Diseases such as EHD and CWD cause significant deer mortality. However, the actual impacts of such events are not fully understood. By monitoring disease outbreaks and prevalence, the Department will improve its capability to predict potential changes in mule deer populations and forewarn hunters and others about the presence of disease.

Population Management

Mule deer are managed to maintain populations within the capability of the habitat and the primary use of the land. Management is generally directed to provide recreational opportunities for a diverse array of stakeholders. Hunters, private landowners, conservation organizations, federal land managers, and the general public often hold widely differing viewpoints on how best to manage mule deer populations. For these reasons, deer management can entail decisions that are socially and biologically complex.

It is often difficult to gauge social preferences regarding deer management because at any given time, managers are more likely to hear from constituents who want some aspect of deer management changed, while those who are satisfied tend to be less vocal in expressing their support. Some of the more common issues include: hunter densities, hunting opportunity, number of deer, number of bucks, availability of large bucks, harvest success, hunting access, length and duration of hunting seasons, habitat conditions, and excessive use of motorized vehicles.

By statute wildlife populations in Oregon must be managed in accordance with the primary use of the land. The history and future direction for mule deer management in Oregon is outlined in the Oregon Mule Deer Plan (Oregon Department of Fish and Wildlife 2003).

In 1982 the department set population MOs for mule deer to balance desires of the public with that of landowners and land managers. These MOs are not carrying capacity but rather the number of deer within each WMU that can be sustained to provide recreational opportunities while keeping damage at acceptable levels. In 1990 the department adopted post-season buck ratio MOs to address variation in the hunting public's wishes.

Both buck and population MOs were reviewed and revisions adopted by the Commission in 2005 (Oregon Department of Fish and Wildlife 2005a). In 2005 some population MOs were increased to reflect improved information which suggests that previous population estimates had been low.

Buck MOs are set for each WMU or sub unit and are the proportion of bucks that should be present in the unit after all hunting seasons are complete. The MO for bucks per 100 does is set at one of three levels, 12, 15, or 25 for each WMU. The different buck MOs provide for different levels of opportunity and different types of hunting experience. Any of these levels provide enough bucks to breed the does. In the 1970's some WMUs had bucks per 100 doe ratios in the single digits but even with low buck ratios, fawn ratios (fawns per 100 does) were higher than in recent years with higher buck ratios.

DRAFT 5

Although there are mature bucks available in all WMUs, in general, WMUs with a buck MO of 25 can be expected to have a higher percentage of older bucks than those with a MO of 12 or 15. The trade off is that if the populations are the same, fewer tags can be offered in WMUs with a buck MO of 25 than in those with MOs of 12 or 15.

In Oregon, mule deer are inventoried twice during the year. Fall herd composition counts are done in November and December to measure fawn ratios going into the winter and post-season buck ratios. Trend counts are completed in March and early April to measure end of winter population size and fawn ratios. The fawn ratio measured in the spring is compared to the fall fawn ratio and over winter fawn survival, relative to adults, is calculated.

In most WMUs inventory data are the basis for developing population models to estimate population size and help set tag numbers for upcoming hunting seasons. Other variables used in population models include amount of harvest, an estimate of adult mortality, and a measurement of winter severity.

Mule deer hunting seasons are set by the Commission including opening and closing dates, weapons restrictions, and bag limits for all hunting seasons. For limited entry seasons field biologists propose tag numbers based on inventory data, population trends, and past hunter success for each hunt. Proposed tag numbers are reviewed by Department staff and presented to the Commission for adoption. In the adoption process and prior to making a decision, the Commission considers both the biological and social aspects of each hunt.

Antlerless hunts are primarily used to reduce deer numbers in localized areas causing damage to private land or to reduce the total population in a WMU when deer numbers exceed the population MO.

SUMMARY

Favorable habitat condition influenced by weather patterns during the late 1950s through the 1970s, along with extremely reduced predator numbers resulting from the use of bounties and poison (1080), likely accounts for the high numbers of mule deer during that time period. More severe weather during the 1980s and early 1990s along with the increased abundance of predators likely contributed to more recent declines in mule deer numbers.

Changes in mule deer habitats (reduced shrubs, increased invasive annual grasses and juniper), particularly on winter ranges, have likely reduced the ability of mule deer to survive unfavorable weather conditions, especially with a higher abundance of predators.

Increasing levels of development and disturbance due to increases in human population have contributed to habitat fragmentation and decreased habitat effectiveness for mule deer.

Mule deer population management has become more restrictive with time in an effort to maintain populations and hunting opportunity while discouraging damage to private lands. Law enforcement is essential to insuring compliance with management policies and protection of mule deer from over harvest.

DRAFT 5

Disease has the potential to be a major factor affecting mule deer populations in Oregon, but so far the documented affects have not been significant on a broad scale. However, because of the high potential for impact, continued monitoring for disease outbreaks and prevalence is important.

DRAFT 5

CHAPTER 1: HEPPNER UNIT

Background

The Heppner WMU is ~1,440 square miles (Figure 2); 947 square miles is private land (68%), 397 square miles is managed by the United States Forest Service (FS), and 94 square miles is managed by the Bureau of Land Management (BLM).

The northern portion of the WMU is primarily open rolling grassland foothills that are privately owned. FS land is primarily mixed conifer stands approximately 3,500 to 5,500 feet in elevation. The FS lands change to a more open dry pine forest closer to the main stem and north fork of the John Day River. BLM lands consist primarily of open grass flats with some juniper and timber along riparian areas. The southeast portion of the unit is mostly private and is primarily open grass flats with some juniper encroachment and stringers of timber.

The Heppner WMU historically supported high mule deer populations and provided significant public hunting opportunities. As recently as 2000, the Heppner WMU deer population was at the MO of 12,000 deer (Table 1). By 2008 the population had declined to 59% of MO. This decline has largely been driven by lower fawn survival, with spring fawn ratios dropping from an average of 42 fawns/100 adults (1991 -2000) to an average of 30 fawns/100 adults for the period 2001-2008 (Table 1).

Coincidental with the decline in the deer population has been a decline in hunting opportunity (Table 2). In 1996 there were 4,600 buck deer tags and 800 antlerless deer tags issued for the Heppner WMU. For the 2008 hunting season there were 3,000 buck deer tags and 20 antlerless deer tags issued. Decline in hunting opportunity was largely due to tag cuts designed to prevent additional decline of the deer population and maintain buck ratio at MO. In addition, some of the reduction in buck tags was in response to loss of hunter access to private lands enrolled in the Heppner Regulated Hunt Area (RHA). In 1999 approximately 105,000 acres were enrolled in the RHA, by 2008 just over 42,000 acres were enrolled.

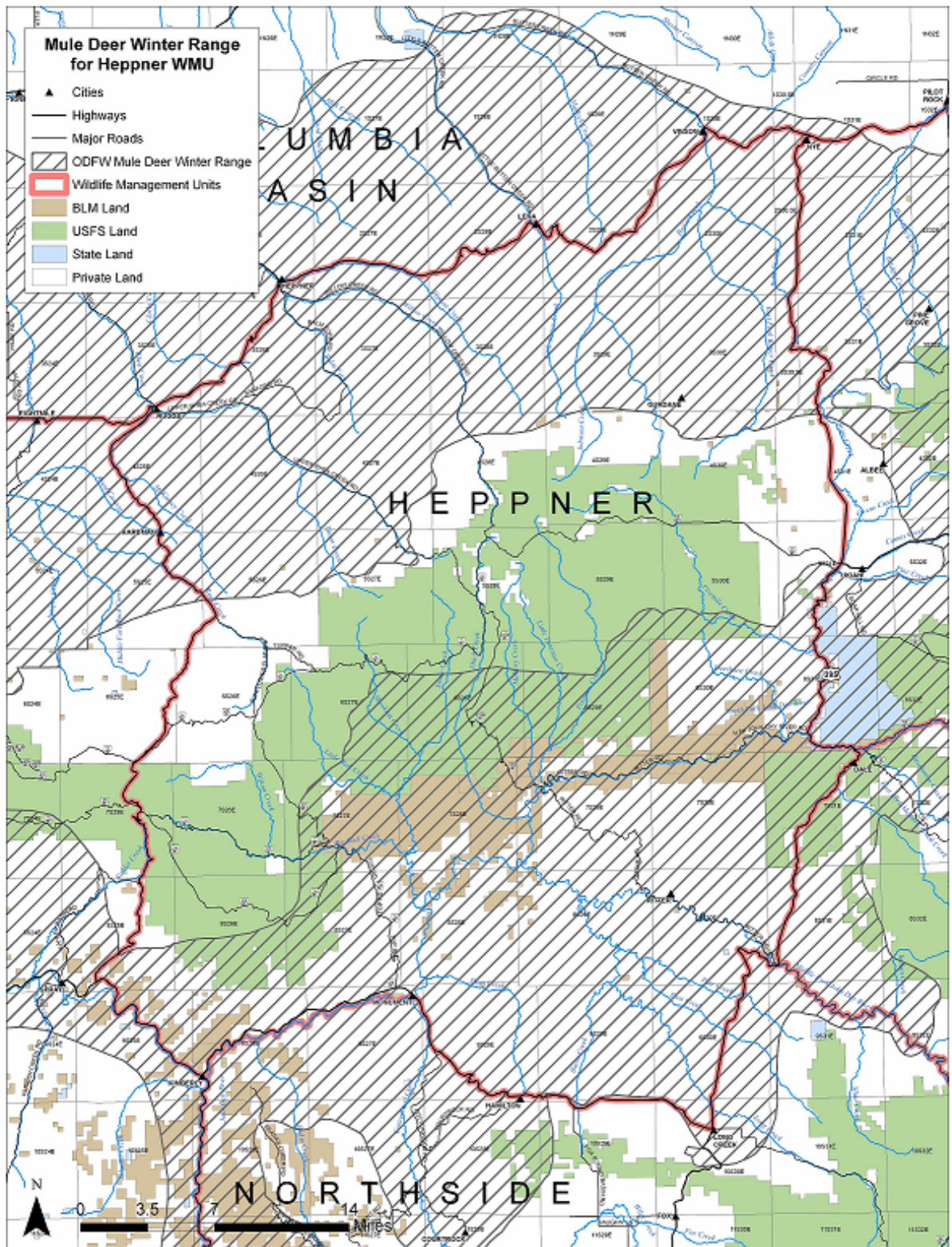


Figure 2. Winter Range and Land Ownership in the Heppner WMU.

DRAFT 5

Table 1. Heppner WMU Mule Deer Population Trend, Ratios, and Estimated Population 1980 – 2008.

Year	Miles Traveled	Deer Observed	Deer/ Mile	Bucks/ 100 Does	Spring Fawns/ 100 Adults	Buck MO	Estimated Population	Population MO
1980	100	1,312	13.1	14	39	12	11,070	13,500
1982	106	1,762	16.6	13	54	12	15,660	13,500
1984	106	1,079	16.1	13	50	12	15200	13,500
1986	106	1,561	14.7	8	46	12	13,900	13,500
1988	106	1,862	17.6	7	44	12	16,600	13,500
1990	106	2,046	19.3	10	49	12	18,090	13,500
1992	102	1,499	14.7	9	40	12	13,900	13,500
1994	102	1,849	18.1	17	41	12	12,800	13,500
1996	100	1,084	10.8	12	42	12	14,200	13,500
1998	77	1,444	18.8	14	41	12	14,900	13,500
2000	40	633	15.8	15	42	12	14,175	13,500
2002	40	908	22.7	9	30	12	11,475	13,500
2004	40	403	10.0	10	24	12	8,400	13,500
2006	40	370	9.25	14	35	12	7,560	12,000
2008	40	615	15.4	15	34	12	7,100	12,000

DRAFT 5

Table 2. Heppner WMU Mule Deer Hunting Opportunity History 1980 – 2006.

Year	Tags Auth	Rifle Buck Hunters	Buck Harv	% Suc	Archery Hunters	Buck Harv	% Suc	Antlerless Hunters	AntlrIs Harvest	Total Buck Harvest
1980	N/A	6,307	1,460	23	430	48	11	176	132	1,508
1982	N/A	6,313	1,831	29	542	78	14	900	434	1,909
1984	N/A	*	*	*	*	*	*	*	*	*
1986	N/A	5,881	1,590	27	577	31	5	1044	712	1,621
1988	N/A	3,748	1,387	37	373	61	16	441	336	1,448
1990	N/A	5,499	2,255	41	336	55	16	802	637	2,310
1992	4,000	3,762	1,184	31	1,012	293	29	725	539	1,477
1994	4500	4,269	1,381	32	1,214	233	19	568	428	1,614
1996	4600	4,232	1,323	31	860	99	12	804	498	1,422
1998	4600	4,242	1,314	31	1,130	226	20	815	545	1,540
2000	4200	3,697	1,008	27	1,133	172	15	572	321	1,180
2002	4000	3,614	1,082	30	1,175	241	21	166	128	1,323
2004	3500	3,072	621	20	635	46	7	No survey	N/A	667
2006	3000	2,635	924	35	692	66	10	No survey	N/A	990

*No data collected in 1984

Potential Limiting Factors

Habitat Degradation

In the Heppner WMU natural events such as drought and severe winters have negatively impacted seasonally important habitats, leading to increased mortality, reduced reproductive success, and displacement of mule deer into less suitable areas. Data from the Oregon Climate Service indicates that monthly precipitation from 2001-2008, as compared to the time period from 1971 to 2000, has decreased during all months except April, May, June, and December, and average yearly precipitation has decreased an average of 1.5 inches for the year. In addition, temperatures have increased for every month of the year on average 2 to 5 degrees for both the average minimum and maximum temperatures. Warmer temperatures and less precipitation, especially in the fall, lead to reduced quantity and quality of forage, which can impact mule deer survival and production. In addition, the spread of non-native invasive weeds has decreased habitat potential for mule deer. Once they become established, invasive plants often increase fire frequency and competition with native plant communities that provide better forage.

Juniper encroachment in some areas of the Heppner WMU has degraded mule deer habitats by reducing sunlight and moisture reaching the more important under-story vegetation (shrubs and forbs). When this species expands into important shrub-dominated habitats, it often out-competes and eliminates important forage plants. While this is not a widespread problem

DRAFT 5

throughout the entire unit, juniper control is needed to improve habitat conditions for mule deer in the southeast portion of the WMU.

Degradation of riparian areas from drought and improper grazing management has also led to a loss of these important habitats for mule deer.

Predation

Cougar predation was shown to be the largest cause of calf elk loss (68% of documented mortalities) in a recent study in the Blue Mountains of northeastern Oregon (Rearden 2005). In addition, the 3-year average calf ratio in the Heppner WMU was below the maintenance level of 23 calves/100 cows, which qualified the unit to be targeted for more intensive cougar harvest. The Heppner Unit became a cougar target area in 2006 with the goal of raising the calf ratios to 31 – 35 calves/100 cows. Subsequent increased cougar harvest resulted in an increased calf ratio from 16 in 2007 to 29 in 2009, indicating that cougar predation on elk calves was significant.

Behavior and life history of cougars would suggest that cougars also heavily utilize deer as a prey species. Deer survival has probably increased as a result of cougar population reductions but response in deer abundance is harder to measure than calf ratios and has so far not been documented. We believe coyote predation on mule deer fawns may also be contributing to the decline in mule deer abundance. The Department does not conduct trend counts or density estimates for coyotes in the Heppner unit, however anecdotal information regarding sightings during other census work as well as observations from landowners, hunters, and Wildlife Services personnel suggest coyote populations are higher now than at anytime in the past decade. Improvement in fawn ratios will be necessary to achieve population increases to meet the population MO.

Illegal Activities

Poaching is not believed to be a major issue in the WMU. Road closure violations on the FS and BLM lands may negatively affected deer survival and escapement during hunting seasons. Illegal OHV use across the public lands both during and outside of the hunting seasons leads to increased deer disturbance and reduced habitat effectiveness. While the majority of the illegal activity is during the hunting seasons, disturbance on the winter ranges by recreational riders may increase stress on wintering deer and reduce survival rates some years.

Disease and Parasites

Past sampling procedures for CWD, blue tongue virus (BTV), and AHD indicate BTV and AHD are present. However these diseases are not believed to be limiting deer populations.

DRAFT 5

Objectives and Strategies

Habitat Management

Mule deer habitats in the Heppner WMU have been altered by fire suppression, improper grazing by livestock, shrub eradication projects, and spread of cheatgrass and other non-native, invasive plants leading to a decline in the quality of important winter range habitats.

Objective 1: Improve habitat conditions on approximately 10,000 acres of winter range.

Rationale: Winter range habitat is considered the most important limiting factor for mule deer in the unit. Winter habitat is found predominately in lower elevations along the northern and southern portions of the Heppner WMU. These areas usually have minimal amounts of snow cover and provide vegetation for both cover and forage.

Winter range can be enhanced through habitat alterations that increase shrub productivity and vigor and enhance the herbaceous (forbs and grass) component in the understory. Vegetation manipulations, including mechanical and chemical treatments, prescribed fire, and re-seeding can be designed to improve and rehabilitate deer habitats.

From 1985 through 2006, approximately 25,000 acres of wheat fields on the Heppner winter range were bid into the Conservation Reserve Program (CRP). These CRP stands provide very little forage for wintering mule deer. Decadent stands of monoculture grasses are not palatable nor do they provide cover. Increasing shrub diversity and abundance through various habitat programs will provide more winter browse for deer.

Strategy 1: Work with the Natural Resource Conservation Service (NRCS), Farm Service Agency (FSA) and the local Soil and Water Conservation Districts (SWCDs) to enroll private landowners in the State Acres for Wildlife Enhancement Program (SAFE) to improve up to 5,500 acres of CRP stands in winter range.

Timeframe: Spring/Summer 2009 - 2010

Estimated Cost: \$5,000,000 (these funds have been encumbered)

Strategy 2: Work with NRCS and SWCD to prioritize habitat/conservation work in the initiative area. Consult with local landowners about enrolling their property into the Conservation Reserve Enhancement Program (CREP) and other habitat enhancement programs.

Timeframe: 2009 - 2019

Estimated Cost: \$3,500,000

Strategy 3: Work with private landowners to improve CRP fields by installing forb strips, planting shrubs, and re-invigorating stands through burning, mowing or grazing.

Timeframe: 2009 - 2019

Estimated Cost: \$100,000

DRAFT 5

Strategy 4: Work with federal land managers to plant shrubs in winter range areas.

Timeframe: 2009 - 2019
Estimated Cost: \$100,000

Strategy 5: Prioritize work on the initiative area for one Department Habitat Biologist.

Timeframe: 2009 - 2019
Estimated Cost: No additional cost

Strategy 6: Utilize volunteers, Department wildlife area staff, and/or Department staff from other parts of the state to conduct on the ground habitat improvement projects such as rangeland seeding, herbicide application, fence building, shrub planting, etc.

Timeframe: 2009 - 2019
Estimated Cost: \$200,000 (in kind match)

Strategy 7: Continue to work with local Pheasants Forever and SWCD personnel to implement habitat improvement projects that will benefit mule deer habitat.

Timeframe: 2009 - 2019
Estimated Cost: \$300,000

Strategy 8: Work with local landowners and government agencies to control juniper encroachment.

Timeframe: 2009 - 2019
Estimated Cost: \$350,000

Objective 2: Improve habitat conditions on approximately 20,000 acres of summer range.

Rationale: In the Heppner WMU, deer summer in the entire unit but the majority of summer range habitat is found in the middle 1/3 of the unit.

Summer range in the Heppner unit is for the most part in good condition. Many of the private forestlands are dominated by early succession stands. FS lands are still being managed for some early succession forests. A 60,000-acre wildfire on BLM and FS land in 2007 should improve mule deer habitat and forage conditions. Non-native invasive plants are a constant and ongoing problem that degrade habitats for mule deer and often reduce available forage. Aspen stands are and have been in decline in the Heppner unit. Many aspen stands are invaded with pine and fir or are very old with little or no regeneration. Aspen stands play an important role as fawning and foraging areas for mule deer.

Strategy 1: Work with BLM, FS, and private landowners in conjunction with the local Weed Boards to prioritize weed control efforts on summer range.

DRAFT 5

Timeframe: 2009 - 2019
Estimated Cost: \$300,000

Strategy 2: Work with the Department's Access and Habitat (A&H) Regional Coordinator to develop A&H projects to improve summer range habitats on private lands in the WMU.

Timeframe: 2009 - 2019
Estimated Cost: \$200,000

Strategy 3: Increase and prioritize the Department's Deer Enhancement and Restoration (DEAR) and Green Forage (GF) funds for summer range habitat improvements.

Timeframe: Spring/Summer 2010 - 2012
Estimated Cost: \$70,000

Strategy 4: Work with the Oregon Hunters Association (OHA), Mule Deer Foundation (MDF), and other sport/conservation groups to provide matching funds for habitat enhancement projects.

Timeframe: 2009 - 2019
Estimated Cost: N/A

Strategy 5: Implement restoration projects in the Butter Creek grasslands Conservation Opportunity Area to benefit mule deer as well as other key strategy species (e.g. burrowing owl, ferruginous hawk, grasshopper sparrow, loggerhead shrike, pallid bat).

Timeframe: 2009 - 2019
Estimated Cost: \$50,000

Strategy 6: Work with FS and private landowners to protect and enhance aspen stands in the Heppner unit.

Timeframe: 2009 - 2019
Estimated Cost: \$200,000

Strategy 7: Work with FS to conduct controlled burns in the Heppner unit to increase mule deer forage.

Timeframe: 2009 - 2019
Estimated Cost: \$225,000, primarily FS and cooperator funds

DRAFT 5

Predator Management

Objective 1: Reduce mortality of adult mule deer caused by predation in the Heppner WMU.

Rationale: In the Heppner WMU we believe that cougars are primary predators of adult and fawn mule deer, while coyotes are a primary predator of fawns.

The average cougar density in the Blue Mountain zone has increased from 6.2 cougars/100 sq. miles in 1994 to 10.5 cougars/100 sq. miles in 2003 (Oregon Department of Fish and Wildlife 2006a). Likewise, based on increase in damage complaints and sightings, we believe cougar abundance in the Heppner WMU has increased since 1994.

A three-year project implemented under the Cougar Management Plan (Oregon Department of Fish and Wildlife 2006a) was started in the unit in 2006. While the primary objective was to reduce cougar densities in the unit to increase the recruitment of the elk herd, an increase in the recruitment and overall increase in the deer population was also stated as a desired outcome from the project. To date the Department removed 53 cougars, along with 26 cougars removed by the public, from the Target Area and increased calf survival from 16 calves/100 cows in 2007 to 30 calves/100 cows in 2008 and maintained the calf ratio at 29 calves per 100 cows in 2009. Overall deer survival may have increased in the unit but a change in the total number of deer has not yet been documented.

Strategy 1: Utilize a cougar Agent to implement cougar control in Ritter portion of the unit.

Timeframe: Not planned at this time

Estimated Cost: \$2,000

Strategy 2: Estimate adult mule deer survival by collecting teeth from hunter harvested and road killed deer.

Timeframe: 2010 - 2014

Estimated Cost: \$4,500

Objective 2: Reduce mortality of mule deer fawns caused by predation in the Heppner WMU.

Rationale: Because coyotes are primarily predators of fawns while cougars prey on both adults and fawns at similar rates, fawn ratios are not a good indicator of cougar predation on mule deer. Fawn ratios reflect the effect of fawn loss due to coyotes as well as other factors. Increased survival of both adults and fawns and spring fawn ratios above the population maintenance level of about 35 fawns/100 adults will be necessary to achieve population growth.

Strategy 1: Initiate or increase coyote population control actions during the winter and spring to temporarily reduce coyote densities and predation rates on winter ranges. Prioritize depending on funding; the highest priority is the northern foothills then the Monument portion of the unit, and finally the Ritter portion of the unit.

DRAFT 5

Timeframe: 2010 - 2012
Estimated Cost: \$150,000

Strategy 2: Encourage public hunters to focus coyote hunting in the Heppner WMU.

Timeframe: 2010 - 2012
Estimated Cost: N/A

Disturbance and Harassment

Objective 1: Reduce illegal motorized disturbance in the Heppner WMU.

Rationale: During the past decade OHV and snowmobile use have increased markedly in the Heppner WMU. This type of disturbance reduces habitat use during peak recreational activity, such as hunting seasons, by displacing mule deer into marginal habitats.

Strategy 1: Assist FS and BLM with the existing travel management plan implementation by purchasing/posting new signs and installing barricades and making the area an enforcement priority.

Timeframe: 2009 - 2011
Estimated Cost: \$100,000 (gates cost \$1,200 installed, barricades \$800 installed, signs \$42 installed)

Strategy 2: Continue to work with the FS travel management plan process to eliminate cross-country OHV travel and help implement new OHV travel plan.

Timeframe: 2009 - 2010
Estimated Cost: No additional cost

Strategy 3: Reduce harassment on winter range through winter range road closure areas.

Timeframe: 2009 - 2019
Estimated Cost: N/A

Law Enforcement

Objective 1: Increase enforcement efforts by 20%.

Rationale: Important functions of law enforcement include regulating OHV use and recreational activity on winter range to minimize harassment to mule deer and improve over-winter survival. Oregon State Police (OSP) has created an Action Plan that outlines the actions proposed to protect mule deer in the Heppner WMU (Appendix A).

Strategy 1: Maintain the number of law enforcement personnel patrolling the Heppner WMU.

DRAFT 5

Timeframe: 2009 - 2019
Estimated Cost: No additional cost

Strategy 2: Utilize volunteers to assist with enforcement efforts.

Timeframe: 2009 - 2019
Estimated Cost: N/A

Strategy 3: Maintain a retired OSP Wildlife trooper to patrol the Heppner RHA and road closure areas.

Timeframe: 2009 - 2019
Estimated Cost: \$18,000/year

Objective 2: Increase the number of violations detected and prosecuted related to mule deer.

Strategy 1: Prioritize OSP enforcement efforts within the initiative area. Focus on deer seasons and wintering periods. Direct additional enforcement efforts during opening weekend of buck season using additional Department personnel and OSP officers.

Timeframe: 2009 - 2019
Estimated Cost: Reprioritization, no additional cost

Strategy 2: Increase Department, OSP, BLM, and FS personnel emphasis to regulate the existing travel management plan through better signing and enforcement.

Timeframe: 2009 - 2019
Estimated Cost: Reprioritization, no additional cost

Strategy 3: Conduct decoy operations, target party hunters and out-of-season poachers.

Timeframe: 2009 - 2019
Estimated Cost: Reprioritization, no additional cost

Strategy 4: Conduct educational program targeted towards teenagers regarding poaching, disturbance, and off road motorized vehicle issues.

Timeframe: 2009 - 2019
Estimated Cost: \$3,500 for 10,000 color brochures

Strategy 5: Target violators by better publicizing illegal activities and doubling Turn-in-Poachers (TIP) rewards in the unit.

Timeframe: 2009 - 2019
Estimated Cost: \$5,000 (5 rewards @ \$1,000 maximum)

DRAFT 5

Strategy 6: Utilize the OSP plane to help patrol within the Heppner WMU

Timeframe: 2009 - 2019

Estimated Cost: No additional cost

Objective 3: Increase OHV enforcement efforts by 50%.

Rationale: Illegal OHV use in the Heppner WMU has increased over the last decade. More hunters and other recreationalists are utilizing OHVs to access the public lands in the unit. Illegal use, especially during the winter can lead to increased harassment of mule deer and possibly to reduced survival and productivity.

Strategy 1: Pursue Oregon Parks and Recreation OHV funds to purchase equipment for OSP to patrol winter range areas for illegal OHV use.

Timeframe: 2009 - 2010

Estimated Cost: \$20,000

Strategy 2: Pursue Oregon Parks and Recreation OHV funds to enforce and post travel management regulations.

Timeframe: 2009 - 2019

Estimated Cost: \$145,000

Objective 4: Increase compliance with mule deer hunting regulations.

Rationale: Many Oregon court systems are overworked and often wildlife related violations are not fully prosecuted in the court system due to monetary and time constraints. Inadequate fines and penalties do not create an adequate deterrence for violators.

Strategy 1: Work with local courts to inform them of the MDI and the importance of mule deer to the community.

Timeframe: 2009 - 2010, ongoing

Estimated Cost: N/A

Disease and Parasites

Objective 1: Monitor occurrence and prevalence of diseases in the Heppner WMU.

Strategy 1: Collect samples from 20 mule deer per year to monitor for CWD, trying to target road-killed animals.

Timeframe: 2009 - 2019

Estimated Cost: No additional Cost

DRAFT 5

Strategy 2: Collect 20 blood and fecal samples from mule deer to look for prevalence of diseases (AHD, BTV, Johnne's) as well as mineral deficiencies.

Timeframe: 2010
Estimated Cost: \$2,400

Population Management

Objective1: Obtain more accurate harvest data to improve the Heppner unit deer population model and to better detect any changes in the deer population.

Rationale: Accurate harvest data is necessary to create accurate population models to use to help determine proper levels of harvest and to meet population and buck MOs. Harvest data for the buck rifle season suffers from low sample size and harvest information on antlerless deer hunts has not been collected since 2003.

Strategy 1: Continue to implement Mandatory reporting to achieve a higher percent of harvest reporting.

Timeframe: 2009 - 2019
Estimated Cost: N/A

Strategy 2: Increase traditional telephone surveys to sample a higher percentage of mule deer hunters in the Heppner Unit until Mandatory Reporting information is reliable.

Timeframe: 2009 - 2012
Estimated Cost: N/A

Prioritization of Objectives

The Heppner Action Plan Committee included:

Wayne Elliott	Oregon Hunters Association
Jim Jerome	Oregon Hunters Association
Ken Hand	Mule Deer Foundation
Buster Gibson	Wildlife Services
Kevin Hughes	Cattleman's Association
Dennis Newman	SWCD
Randy Scarlett	U. S. Forest Service
Dan Tippy	Bureau Land Management
Mike Mayer	Oregon State Police

DRAFT 5

CHAPTER 2: MAURY UNIT

The Maury WMU encompasses 1,100 square miles and is situated near the geographic center of Oregon. It includes land in Crook and Deschutes counties of which 61% is in public ownership and 39% is in private ownership (Figure 3). Of the publicly owned land, 82% is managed by BLM, 13% is managed by the Ochoco National Forest (NF), and 5% by Oregon Department of State Lands (DSL).

The majority of the Maury WMU is typical of high desert terrain characterized by semi-arid sagebrush-steppe plant communities and juniper woodlands. Much of the juniper woodlands has encroached to now occupy lands previously occupied by big sagebrush/Idaho fescue and mountain big sagebrush/blue bunch wheatgrass communities. Elevation in the WMU ranges from 3,200 to 6,200 feet, 70% of the unit is less than 4,000 feet.

Lower elevation private lands are predominately sagebrush-steppe and juniper woodlands but intermixed with agricultural lands (i.e. pasture, alfalfa, and grass hay), particularly in the northern portion on the unit. Mixed conifer habitats occur in the higher elevations, including the Maury Mountains and Hampton Buttes. Ponderosa pine and Douglas fir stands are dominant with juniper intermixed on the perimeter. Most of the high elevation lands are administered by NF and BLM with a small proportion in private ownerships.

Mule deer are unevenly distributed in the unit, with highest densities in the northern half where habitat conditions are more favorable. Mule deer winter range encompasses 75% of the unit (825 miles²); however, wintering mule deer tend to concentrate on the northern and eastern lower elevation private lands and in the Hampton Butte area. Winter range overlaps summer range almost in its entirety except for the high elevation Maury Mountains.

Since the 1980s the estimated mule deer population has fluctuated between 2,200 and 5,200 (average 3,800) and has not been at or above the population MO of 5,200 since 1988 (Table 3). Currently the estimated population is 58% of MO.

Buck ratios have steadily increased from a low of single digits during the 1980s to the upper teens during the 2000s as a result of raising the buck MO from 10 bucks/100 does to 12 then to 15 in 2005, then administratively limiting rifle hunters to meet that MO (Table 3 and 4). In addition, as mule deer numbers have declined since 2000, so has hunting opportunity (Table 3 and 4). Over the last 5 years only 200 to 260 bucks have been harvested each year with both rifle and archery seasons combined, compared to 400 in the 1980s. Over the last 20 years the abundance of mature bucks, once the trademark for this unit, has declined and such bucks are now more rarely seen.

DRAFT 5

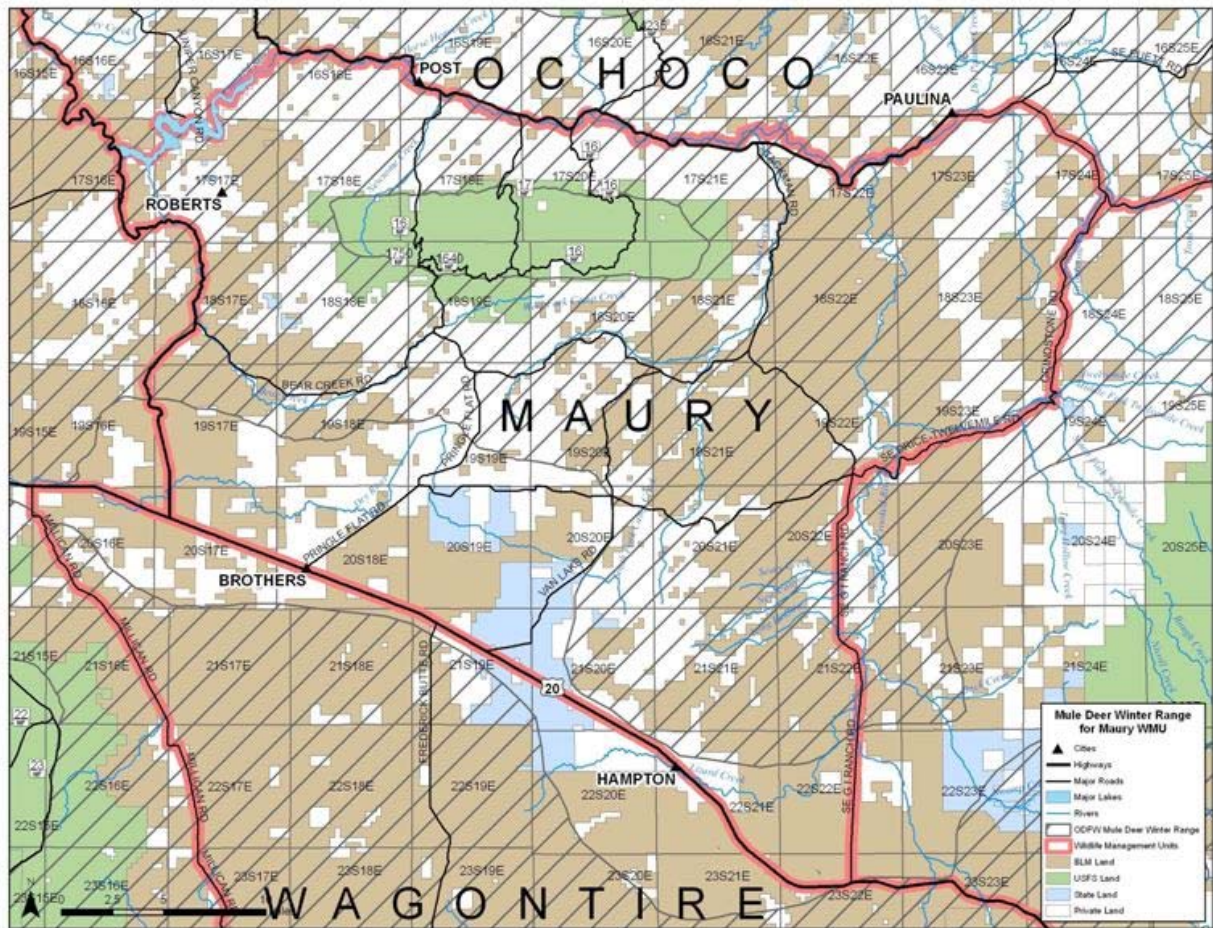


Figure 3. Winter Range and Land Ownership in the Maury WMU.

DRAFT 5

Table 3. Maury WMU Mule Deer Population Trend, Ratios, and Estimated Population 1980 – 2009.

Year	Miles Traveled	Deer Observed	Deer/ Mile	Bucks/ 100 Does	MO	Fall Fawns/ 100 Does	Spring Fawns/ 100 Adults	Estimated Population	Population MO
1980	104	793	7.6	12	10		32	4,000	5,200
1982	104	792	7.5	3	10		24	3,900	5,200
1984	104	580	5.6	8	10		30	2,900	5,200
1986	104	1,013	9.7	10	10		46	5,100	5,200
1988	104	620	6.0	10	10	77	41	5,200	5,200
1990	104	319	3.1	9	10	40	25	2,350	5,200
1992	104	333	3.2	10	12	56	35	2,700	5,200
1994	104	310	3.0	15	12	45	43	2,800	5,200
1996	104	616	5.9	10	12	64	47	3,700	5,200
1998	108	619	5.7	18	12	65	52	4,400	5,200
2000	108	530	4.9	19	12	50	39	4,800	5,200
2002	94	476	5.1	18	12	60	37	4,700	5,200
2004	108	433	4.0	12	12	52	32	4,000	5,200
2006	108	629	5.8	18	15	64	42	3,500	5,200
2008	110	715	6.5	17	15	56	32	3,000	5,200
2009	100	636	6.4	12	15	58	45	3,000	5,200

Table 4. Maury WMU Mule Deer Hunting Opportunity History 1980 – 2008.

Year	Tags Auth	Rifle Hunters	Rifle Buck Harvest	Percent Success	Archery Hunters	Archery Buck Harvest	Antlerless Hunters	Antlerless Harvest	Total Buck Harvest
1980		1,802	305	17	81	31			336
1982		1,833	408	22	82	0			408
1984		No Survey							
1986		1,172	422	36	52	14	460	387	436
1988		743	172	23	30	0	477	255	172
1990		903	190	21	46	6			196
1992	750	740	246	33	30	0			246
1994	800	777	252	32	121	40			292
1996	1,000	948	253	27	87	20			273
1998	1,200	1,142	318	28	75	7			325
2000	1,531	1,356	305	22	92	21			326
2002	1,319	1,096	249	23	93	19			268
2004	1,000	822	199	24	Incomplete Data				199
2006	770	685	189	28	121	33			222
2008	821	724	199	27	183	36			235

DRAFT 5

Potential Limiting Factors

Drought and Severe Winters

Severe weather conditions in Oregon during the winters of 1983-84, 1984-85, 1988-89, and 1992-93 were responsible for high fawn and adult mortality in the Maury WMU. The Maury WMU experienced a 31% decrease in the mule deer population in 1984 and 51% decrease in 1989 (Table 3).

Drought conditions were experienced in the Maury Unit from 1985 – 91. During the past decade, the Maury WMU has experienced dry summers (June – September) with 30% below average summer precipitation (Oregon Climate Service 2008).

Habitat Degradation

Juniper encroachment has degraded mule deer habitat in the Maury WMU by out-competing important native shrubs, forbs, and hardwood communities. Over 95 percent of the juniper in the Maury WMU consists of relatively young encroaching juniper less than 120 years of age. In addition, the spread of cheatgrass, the primary non-native invasive plant, is of concern.

Human development continues to expand in crucial winter range in the north and west portions of the Maury WMU causing habitat fragmentation and displacement of mule deer.

Predation

Ungulates, including deer are a primary prey of Cougars. Cougar densities in the Southeast Oregon Zone F (includes Maury WMU) have increased from 1.2 cougars/100 sq. miles in 1994 to 2.7 cougars/100 sq. miles in 2003 (Cougar Management Plan, ODFW 2006a). There has been an increase of documented deer kills by cougars and cougar sightings over the last 15 years and cougar predation is believed to be an important factor in the decline of mule deer in the unit. Coyote predation on mule deer fawns is also believed to be contributing to the decline in mule deer.

Illegal Activity

There is strong evidence to support the assertion that illegal take of mule deer is a significant limiting factor in the abundance of mule deer in central Oregon. A radio-telemetry study currently being conducted in central Oregon has documented the cause of 59 mortalities during July 2005 - September 2009. Of the 59 mortalities 14 (24%) were illegal take which accounts for nearly as much mortality as the legal harvest of 19 (32%). Most of the illegal take (11 of 14, 79%) was of does which means poaching activity is impacting mule deer numbers. Bucks were also taken illegally. While poaching of bucks has little effect on the overall size of the population it does affect the buck ratio which reduces tags available to legal hunters and the viewing enjoyment big bucks provide the public.

During the last decade the number of Game Enforcement Officers in the Ochoco Wildlife District, which includes the Maury WMU, has been reduced from two to one.

DRAFT 5

Population Management

Since the 1980s the estimated mule deer population in Maury WMU has fluctuated between 2,200 and 5,200 (average 3,800) and has not been at or above the population MO of 5,200 since 1988. Antlerless deer hunts occurred in 1986-1988 (when the estimated population was at MO) but have since been discontinued due to the decline in the population. Currently the estimated population is 3,000, (58%) of MO.

Since 2002, the estimated population has declined an average of 7% a year. However during this time, the spring fawn recruitment has averaged 39 fawns/100 adults, which is above maintenance levels of 35 fawns/100 adults and should indicate a stable or slightly increasing population. Population models have been assessed (Eastman, POP-II, Age Reconstruction) with limited success in the Maury WMU. Improved data would assist in developing an appropriate population model to optimally manage mule deer populations.

Disturbance and Harassment

Increased road densities and increased use of OHVs, particularly snowmobiles have resulted in fragmentation of habitat and increased disturbance of mule deer in the Maury WMU.

Disease and Parasites

Diseases can have population effects on mule deer; however, it is unknown if this is occurring in the Maury WMU. Past sampling by the Department for CWD, BTV, AHD, and EHD, has revealed that all but CWD is present in Central Oregon mule deer populations. Parasites such as ticks, keds, bot flies, and lice are present in mule deer populations in the Maury WMU but do not seem to be adversely affecting mule deer at a population scale.

Objectives and Strategies

Habitat Management

Objective 1: Inventory, assess, and prioritize quality and quantity of mule deer habitat on public and private lands in the Maury WMU.

Rationale: Much of the mule deer habitat in the Maury WMU has been altered and degraded by long-term cumulative effects of wildfire suppression, juniper encroachment, loss of forbs and shrub components, invasion of exotic plants, historic overgrazing, and increased disturbance from roads and human developments. In order to prioritize habitat projects and develop appropriate treatments that will most effectively benefit mule deer, it will be necessary to determine existing habitat conditions and site potentials. This information will guide future mule deer habitat management actions and treatments.

Strategy 1: Develop a geographic information system (GIS) based map to determine and analyze existing mule deer habitat conditions in the Maury WMU.

DRAFT 5

Timeframe: August 2009

Estimated Costs: Prioritization of resources, no additional cost

Strategy 2: Develop GIS spatial habitat analysis to determine the geographic significance of important mule deer habitat components of food, cover, and water. Review analysis with “Habitat Guidelines for Mule Deer (Cox et al. 2009) and the Oregon Conservation Strategy (Oregon Department of Fish and Wildlife 2006b) to determine priority habitats and treatments guidelines.

Timeframe: September 2009

Estimated Costs: No additional Cost

Objective 2: Restore sagebrush/bitterbrush, grassland, and riparian habitat structure to re-establish hydrologic function of these ecosystems through capture, storage, and release of seasonal water events.

Rationale: Encroachment of juniper woodlands, invasion of exotic plants, historic grazing practices, and fire suppression have contributed to the alteration of habitat conditions, resulting in reduced mule deer habitat effectiveness in the Maury Unit. Density and diversity of forbs, shrubs, and riparian vegetation have been impacted, and the capture, storage, and release of seasonal water events have been altered.

The South Fork Crooked River area (within the Maury WMU) is identified in the Oregon Conservation Strategy (Oregon Department of Fish and Wildlife 2006b) as one of the Conservation Opportunity Area Profiles (BM-06), which recommends conservation action to maintain and/or initiate shrub-steppe restoration and continuous sage habitat.

Strategy 1: Reduce juniper through mechanical means and/or prescribed burning on a minimum of 20,000 priority acres. Identify juniper woodland successional stages and place high priority in treatment of stands that best benefit mule deer habitat. For treatment guidance, coordinate and consult “Western Juniper Management – A Field Guide” by Hugh Barrett (2007), and the Oregon Conservation Strategy, as well as local experts such as Oregon State University (OSU) Extension, BLM, ONF, and NRCS.

Timeframe: 2009 - 2024

Estimated Costs: \$1.7 to 3.0 million

Strategy 2: Work cooperatively with appropriate land management and technical resource agencies to develop and implement prescribed fire management plans on approximately 20,000 acres to foster early succession vegetation stages.

Changes in disturbance regimes by restoring fire or using site-appropriate techniques that mimic effects of fire in fire-dependent ecosystems are identified in the Oregon Conservation Strategy (Oregon Department of Fish and Wildlife 2006b) as one of the six most pressing conservation issues.

DRAFT 5

Timeframe: 2009 - 2024
Estimated Costs: \$1.4 million

Strategy 3: Contain, control, reduce, or eliminate the introduction or spread of non-native invasive plants on approximately 5,000 acres. Consult and collaborate with the County Weed Board, as well as appropriate state and federal agencies to develop effective site-specific treatments and restoration practices. Sites with moderately deep soils and/or degraded burned areas will receive high priority for re-establishment of vegetation. Methods could include herbicide application, rangeland seeding, and shrub planting.

Impacts of invasive species on Oregon's fish and wildlife resources are one of the six most pressing conservation issues identified in the Oregon Conservation Strategy (Oregon Department of Fish and Wildlife 2006b).

Timeframe: 2009 - 2024
Estimated Costs: \$200,000 to \$2 million

Strategy 4: Work cooperatively with private landowners to revitalize 1,000 acres of degraded dry land rye fields in important mule deer range. Methods include mechanical treatment, inter-seeding forbs and legumes, developing food plots, and planting shrubs.

Timeframe: 2009 - 2024
Estimated Costs: \$100,000 to \$200,000

Strategy 5: Work cooperatively with private and/or public land managers, where livestock management practices are in conflict with important mule deer habitat. Develop and implement grazing practices that will benefit and improve mule deer habitat while meeting the operator's needs. This will be implemented on a case-by-case, year-by-year basis depending on habitat conditions and flexibility of grazing systems.

Timeframe: 2009 - 2024
Estimated Costs: N/A

Objective 3: Protect and enhance a minimum of 200 acres of at-risk aspen stands on mule deer summer range.

Rationale: Aspen communities have declined in the Maury WMU due to conifer encroachment, conflicting livestock grazing practices, and fire suppression. Re-introduction of prescribed fire, mechanical treatment, fencing, and controlled grazing can improve degraded or at-risk aspen stands. Approximately 120 stands of aspen (1-5 acres each) have been identified on the Ochoco National Forest within the Maury WMU.

Strategy 1: Treat 200 acres of aspen stands on public and private lands.

Timeframe: 2009 - 2016
Estimated Costs: \$26,000 (\$130/acre) for conifer removal, \$1,000/acre if fenced

DRAFT 5

Objective 4: Protect important mule deer habitat from human development.

Rationale: Human development continues to expand on mule deer winter range in the Maury WMU, particularly on the northwestern portion of the unit. Residential developments have increased by more than 50% in the last 20 years in the Conant Basin area and south of Prineville Reservoir, which have been important mule deer wintering areas.

Strategy 1: Work with Crook and Deschutes counties and other government agencies to zone, map, develop, and implement standards to protect priority mule deer habitat where rules and regulations are not adequate.

Timeframe: 2009 - 2012

Estimated Costs: N/A

Objective 5: Obtain funds and labor necessary to implement the identified habitat strategies in Objectives 2 through 4.

Strategy 1: Reprioritize and direct available Department funds from DEAR, GF, and A&H programs for mule deer habitat enhancement projects in the Maury WMU.

Timeframe: 2009 - 2024

Estimated Costs: \$300,000

Strategy 2: Coordinate with new and existing partners for matching funds for mule deer habitat enhancement projects. Pursue additional funding and in-kind opportunities with other government organizations and non-governmental organizations (NGOs) to match Department funds for mule deer enhancement projects (e.g. Oregon Conservation Strategy, Oregon Hunters Association, Mule Deer Foundation, Oregon Heritage Wildlife Foundation, National Fish and Wildlife Foundation, NRCS Farm Bill, county weed boards).

Seeking creative programs that support voluntary conservation actions for landowners and managers is one of the six most pressing conservation issues identified in the Oregon Conservation Strategy (Oregon Department of Fish and Wildlife 2006b).

Timeframe: 2009 - 2024

Estimated Costs: \$300,000

DRAFT 5

Predator Management

Objective 1: Reduce mortality of mule deer caused by predation in the Maury WMU.

Rationale: Mule deer abundance in the Maury WMU is estimated to be 58% of MO (average of 65% over last 5 years) and below carrying capacity in a majority of the unit. Current habitat conditions are sufficient to support an increase in mule deer abundance, particularly in the northern half of the unit.

Deer population modeling efforts have indicated very high adult doe mortality in the Maury WMU. Fawn recruitment has been at or near maintenance levels in the Maury WMU since the early 1990's, preventing population growth. The estimated cougar density in the southeast Oregon Cougar Management Zone F (includes Maury WMU) has increased from 1.2 cougars/100 sq. miles in 1994 to 2.7 cougars/100 sq. miles in 2003 (Oregon Department of Fish and Wildlife 2006a). Because of increased damage complaints, sightings, and verified encounters with cougars, we believe cougar populations have likewise increased in the Maury WMU since 1994. The Department believes cougar predation has likely been an important factor in the failure of Zone F deer populations to reach MO and reducing fawn recruitment which is substantially affected by winter severity, drought, coyote predation, and cougar predation (Oregon Department of Fish and Wildlife 2006a).

The majority of coyote predation on mule deer fawns has been found to occur during the first month following birth and during winter months when fawns are more vulnerable to environmental factors reducing their overall health and body condition (Austin et al. 1977, Trainer 1975).

Strategy 1: Implement a Cougar Target Area in the Maury WMU consistent with the Cougar Management Plan (Oregon Department of Fish and Wildlife 2006a).

Timeframe: Not currently planned

Estimated Costs: \$30,000

Strategy 2: Initiate coyote population control on livestock operations adjacent to critical deer wintering and fawning areas from February through July utilizing US Department of Agriculture Wildlife Services.

Timeframe: 2010 - 2015

Estimated Costs: \$20,000/year

Disturbance and Harassment

Objective 1: Reduce human-related impacts in critical mule deer habitat and in areas undergoing habitat restoration.

Rationale: Vehicle travel, including OHV and snowmobile use has increased markedly in the Maury WMU. Such disturbances may cause displacement of mule deer from preferred habitats, which could affect body condition going into winter, and ultimately reduce reproduction and

DRAFT 5

recruitment into the population. Mule deer may be slow to respond or not respond at all to habitat improvement projects if human disturbances preclude deer from using those areas.

The Oregon Mule Deer Plan (Oregon Department of Fish and Wildlife 2003) identifies the need to encourage federal land managers to develop OHV rules that restrict use on winter range areas and other critical habitat areas.

Strategy 1: Evaluate road densities and high levels of human recreation activity in critical mule deer habitats and/or habitat restoration areas. Request emergency seasonal or permanent road closures in areas where road densities and seasonal activity are above recommended levels on public lands.

Timeframe: 2010

Estimated Costs: NA

Objective 2: Cooperate with NF and BLM to enforce current and future motorized travel management plans.

Rationale: Within the Maury WMU there are five BLM Wilderness Study Areas (WSAs) totaling 78,160 acres. Motorized travel is restricted to designated routes within the 52 miles of interior roads. Cross-country motorized travel is prohibited year round. Evidence of illegal motorized travel is high in many of these WSAs and is impacting effectiveness of this habitat for mule deer. For example, Gerry Mountain WSA historically supported viable mule deer populations, including mature bucks with large antlers. Today, mule deer are scarce in this area as in the other WSAs.

Illegal human-related disturbances during critical times for mule deer have contributed to a decline in mule deer populations in these areas. Permanent or seasonal road closures on NF and BLM lands are being violated and road barricades are vandalized.

The number of BLM and NF Law Enforcement Officers is insufficient to address the numerous enforcement issues over such large geographic areas. Unfortunately, there are too many motorized travel violations occurring throughout public lands in the Maury WMU and too few Enforcement Officers to enforce federal regulations.

The Gerry Mountain, Sand Hollow, and South Fork WSAs are identified in the Oregon Conservation Strategy (Oregon Department of Fish and Wildlife 2006b) within the BM-06, South Fork Crooked River Conservation Opportunity Profile Area. Conservation actions recommend maintenance and/or initiation of shrub-steppe restoration and continuous sage habitat. Much of the shrub-steppe vegetation in these areas has been degraded and reduced by cross-country vehicle travel.

Strategy 1: Work with BLM and NF to establish a Code of Federal Regulations (CFR) for road closures and to prioritize enforcement efforts on road closure regulations in identified critical mule deer habitat.

Timeframe: 2010

Estimated Costs: NA

DRAFT 5

Strategy 2: Certify OSP Fish & Wildlife Enforcement Officers to enforced Federal rules and regulations for road closure violations. Cooperative Travel Management Area agreements can provide the authority to enforce road closure violations.

Timeframe: 2010

Estimated Costs: NA

Strategy 3: Coordinate with NF and BLM to seasonally or permanently close roads in critical mule deer habitat where road densities are above recommended levels and post educational signs to explain the importance of road closures for mule deer.

Timeframe: 2010 - 2024

Estimated Costs: \$100,000 (gates are \$1,200 installed, barricades \$800 installed, signs \$50 installed).

Objective 3: Reduce habitat conflicts between federally managed feral horses and mule deer within overlapping habitat areas.

Rationale: Federally managed feral horses compete with mule deer for habitat, particularly when horse numbers exceed BLM's Appropriate Management Levels. The Ligget Table Herd Management Area is 28,139 acres in size and is entirely within the Maury WMU. The estimated of 50-70 horses in 2008 far exceeds the current Appropriate Management Level range standard of 10-25 head. The Ligget Table Herd Management Area is in part of the South Fork and Sand Hollow WSAs. These WSAs are identified in the Oregon Conservation Strategy (Oregon Department of Fish and Wildlife 2006b) within the BM-06, South Fork Crooked River Conservation Opportunity Area Profiles, which recommend conservation actions to maintain and/or initiate shrub-steppe restoration and continuous sage habitat.

Strategy 1: Work with BLM to reduce the number of federally managed horses consistent with the Appropriate Management Levels in the Ligget Table area.

Timeframe: 2010 - 2014

Estimated Costs: NA

Law Enforcement

Objective 1: Reduce the unlawful take of mule deer in the Maury WMU.

Rationale: Since 1996, the OSP Prineville patrol area has experienced a reduction from two full time OSP Fish & Game Enforcement Officers to one in a patrol area of over 6,700 square miles. Two full time positions were identified in the Department's 2009-2011 proposed budget, of which one is earmarked for the Prineville area. Increased enforcement is necessary to determine hunter compliance with state wildlife regulations and deter illegal activity in the Maury WMU while maintaining enforcement efforts in the remaining 83% of the patrol area.

The Oregon Mule Deer Plan (Oregon Department of Fish and Wildlife 2003) identifies the need to increase enforcement activities.

DRAFT 5

Strategy 1: Increase enforcement presence in the Maury WMU to improve compliance and deter illegal activity by restoring a Prineville OSP position. This new position would spend 50% of time in the Maury WMU for the first 3 years to evaluate compliance and document poaching incidents.

Timeframe: 2010 - 2013 August through March

Estimated Costs: No additional cost

Strategy 2: Protect mule deer on winter range when they are most vulnerable to harassment and illegal take. Add patrol emphasis to protect mature bucks in the Maury WMU.

Timeframe: 2010 - 2013 Late October through January

Estimated Costs: NA

Objective 2: Increase penalties and prosecution of wildlife violations to achieve MDI goals in the Maury WMU.

Rationale: Poaching reduces mule deer population size by taking does and the number of mature bucks. Current level of prosecution and fines has not significantly reduced illegal take of mule deer, particularly large bucks.

Strategy 1: Inform and educate prosecutors, judges, legislators, news media, and the general public of the need to aggressively prosecute game cases and impose stiffer penalties on game crimes.

Timeframe: 2009 - 2011

Estimated Costs: NA

Strategy 2: Increase incentives for citizens to notify OSP of game violations that occur in Maury WMU by doubling the Turn-in-Poachers (TIP) reward money.

Timeframe: 2009 - 2013

Estimated Costs: \$5,000 (5 rewards @ \$1,000 maximum)

Disease and Parasites

Objective 1: Continue the Department's monitoring for occurrence of wildlife diseases that can occur in mule deer in Maury WMU.

Rationale: BTV, EHD, AHD, and CWD are major diseases that could present a threat to local and regional mule deer populations. Outbreaks of BTV, EHD, and AHD have occurred in Oregon whereas CWD has not. There have been confirmed cases of BTV and AHD in central Oregon. Deer Hair Loss Syndrome caused by exotic lice is also a concern. Monitoring of suspicious disease-related and road killed mule deer will identify diseases of concern and provide future management direction for the Maury WMU.

DRAFT 5

Strategy 1: Continue with annual surveillance of CWD through collection of samples from hunter harvests and road-killed mule deer. Collect a minimum of 10 samples annually.

Timeframe: Year round

Estimated Costs: No additional cost

Strategy 2: Continue routine monitoring and identification of diseases and parasites from sick or suspicious dead deer in Maury WMU. Collect blood samples to determine the prevalence of BTV, EHD, and AHD.

Timeframe: Year round

Estimated Costs: No additional cost

Population Management

Objective 1: Raise the post-season buck escapement MO to 20 bucks per 100 does.

Rationale: Historically, the Maury WMU supported mature bucks with large antlers even though the buck ratios were considerably lower than they are currently. Today, mature bucks with large antlers are rarely observed, particularly in the north half of the Maury WMU where deer numbers have declined by more than 50% in the last decade. In 2005 the buck MO was raised from 12 to 15 bucks/100 does. In 2009 the observed buck ratio fell below the MO to 12 bucks/100 does, the observed buck ratio was 21 in 2007 and 17 in 2008. During years of reduced public hunting opportunity it will also be necessary to limit LOP opportunity in the Maury.

Strategy 1: Raise buck ratio MO from 15 bucks/100 does to 20 bucks/100 does. Tag allocations will be adjusted from year to year to meet this objective. Reduce buck harvest until the buck ratio MO is met for three consecutive years or the three year average = or exceeds MO.

Timeframe: 2009 - 2014

Estimated costs: NA

Strategy 2: Implement restrictions on LOP tags issued in the Maury WMU consistent with reduced opportunity in public tags (Strategy 1)

Timeframe: Start in 2010

Estimated Costs: None

Objective 2: Determine what impact archery hunting is having on mule deer abundance and buck ratios.

Rationale: Archery season in the Maury WMU is currently managed under general regulations. Under these regulations the number of archery hunters in the unit cannot be controlled and nor

DRAFT 5

can their numbers and success be accurately determined. The Department's new mandatory harvest reporting has only 13% compliance for general deer archery season. Phone harvest surveys are not sufficient to provide tight confidence intervals at the WMU level, particularly for WMUs with relatively few hunters (such as the Maury). Better harvest data are necessary to determine the effects of archery season on the mule deer populations in the Maury WMU.

Strategy 1: Establish limited entry archery hunting for the Maury WMU. Archery elk hunters will be required to have an archery deer tag (used or unused) to hunt elk in the unit. Allocation of archery deer tags will be adjusted from year to year to maintain level of reduction in opportunity similar to rifle hunters and to meet population and buck ratio MOs.

Timeframe: 2010, ongoing

Estimated Costs: None

Objective 3: Minimize human disturbance and harassment of mule deer to reduce stress caused by hunting seasons, particularly during their breeding season.

Rationale: As with most central Oregon WMUs, rifle buck hunter effort is highest during the first 4 days of the season. In 2008, 724 Maury rifle buck hunters hunted 3,497 days, averaging less than 5 days/hunter. A majority (50-55%) of the Maury rifle buck hunters reside in central Oregon.

OSP reports a high incidence of trespassing complaints and illegal hunting activity (80% of total complaints) during the last 3 days of the season, mostly by local residents taking bucks on private lands. In addition, mule deer are particularly vulnerable during the breeding season from mid-November to mid-December. The Oregon Mule Deer Plan (Oregon Department of Fish and Wildlife 2003) identifies the need to reduce the total number of hunting days for all big game species.

Strategy 1: Increase enforcement presence during the late portion of the mule deer buck season.

Timeframe: 2010 - 2014

Estimated Costs: NA

Strategy 2: End all antlerless elk seasons by the end of second bull season (mid-November).

Timeframe: 2010 - 2014

Estimated Costs: NA

Objective 4: Assess demographics of mule deer in the Maury WMU by applying the Sex-Age-Kill (SAK) model.

Rationale: Other population estimation models have been explored and tested (Eastman, POP-II, and Age Reconstruction) with varying success. Evaluate the SAK model in an attempt to improve methods of estimating mule deer populations in the Maury WMU. As part of this

DRAFT 5

modeling effort, it will be necessary to collect as many tooth samples as possible from rifle and archery season to facilitate use of the SAK model.

The Oregon Mule Deer Plan (Oregon Department of Fish and Wildlife 2003) identifies the need to improve accuracy of population estimates.

Strategy 1: Collect teeth from mule deer buck harvest for age structure analysis.

Timeframe: 2009 - 2014

Estimated Costs: \$2,000 yearly

Prioritization of Objectives

The Maury implementation team included:

Greg Erickson	Mule Deer Foundation
Ken Fahlgren	Crook County Commissioner
Monty Greg	Ochoco National Forest
Steve Hagan	Oregon Hunters Association (State Board)
Ken Hand	Mule Deer Foundation
Rance Kaster	Landowner
Amos Madison	Oregon State Police
Kurt McCormack	Crook County Stock Growers, Landowner
Ron Powell	Rocky Mountain Elk Foundation
Lyle Rilling	Oregon Hunters Association (Local Chapter)
Dede Steele	Ochoco National Forest
Matt Smith	Landowner
Dan Tippy	Bureau of Land Management

The Maury working group prioritized the objectives as follows:

1. Habitat Management
2. Predator Management
3. Law Enforcement
4. Population Management
5. Disturbance and Harassment
6. Disease and Parasites

DRAFT 5

CHAPTER 3: MURDERERS CREEK UNIT

Background

The Murderers Creek WMU is located in Grant County and is made up of 64% public lands (Figure 4). The unit includes the Strawberry Mountain Wilderness in the eastern portion of the unit and Phillip W. Schneider Wildlife Area (PW Schneider WA) in the western portion. Most of the summer range is mixed conifer and pine forests with a shrub and grass understory. The winter range is shrub-steppe that has been heavily impacted by juniper encroachment and annual grass infestation.

The Murderers Creek unit has a long history of deer management starting in the early 1900's, when mule deer populations were very low. The State Game Commission established a State Wildlife Refuge in the Murderers Creek basin from 1929 through 1933 as a way to address the low population problem. The mule deer population increased to an estimated 30,000 deer, just in the Murderers Creek basin, followed by a large die off of deer on the winter range from over utilization of the range. Management was then changed to allow hunting to control the population.

Since that time, estimates of the mule deer population have fluctuated through the years from a high of 30,000 in the entire WMU in the 1970's to a current estimate of 5,000 (52% of Population MO) (Table 5). In the early 1980's, a series of hard winters resulted in a 62% reduction in the mule deer population. Hard winters in 1988/89 and 1992/93 likewise produced deer die-offs resulting in lower deer numbers. Data indicate mule deer populations have been on a gradual decline since the late 1990's (Table 5). Fawn ratios have fluctuated through time due to weather and predation.

The Phillip W. Schneider Wildlife Area (formerly Murderers Creek Wildlife Area) was established in 1972 to protect and enhance mule deer winter range habitat. The PW Schneider WA includes 24,727 acres of ODFW managed lands and is part of the 119,442-acre Murderers Creek Coordinated Resource Management Area (MCCRMA). Cooperating agencies in the MCCRMA also include the Prineville District of BLM (27,200 acres) and FS (64,515 acres). The Coordinated Resource Management Area was implemented through one of the first Cooperative Resource Management Plans (CRMP) in North America.

Mule deer hunting in the unit has historically been one of the key recreational opportunities. Along with declines in the mule deer population, there has also been a proportionate decrease in number of hunters and a corresponding decrease in harvest (Table 6). In response to decreasing mule deer populations throughout eastern Oregon, rifle hunting season structure was changed from a general season format to a limited entry hunt system in 1991 (Oregon Department of Fish and Wildlife 2003). Archery season remains under a general season. As numbers of rifle hunters have been decreased, archery hunter numbers have increased (Table 6).

Since the late 1960's there has been a significant change in habitat throughout the Murderers Creek Unit. Historically, habitat types consisted primarily of large stands of bitterbrush and native bunchgrasses that provided excellent forage for wintering deer. These key habitats have

DRAFT 5

undergone landscape changes resulting from western juniper encroachment and invasion of annual grasses (e.g. medusahead and cheatgrass), leading to a loss of the shrub and forb components.

Public forestlands were logged heavily in many areas during the 1970's through the mid 1990's. Multistoried forest stands have re-grown into dense stands of young trees that do not provide quality forage for mule deer. Forest health issues, including eliminating recurrent fire events, recent restrictions on logging, and long-term weather patterns have contributed to the reduction in forage quality and quantity. Increases in motorized recreation due to high open road densities and unrestricted off-road travel on public lands have also affected the quality of mule deer habitat and increased disturbance.

Historic over grazing from feral horses has resulted in significant impacts to habitat in parts of the Murderers Creek Unit. Feral horse numbers continue to be above the Appropriate Management Level of 50 to 140 horses. According to the Murderers Creek wild horse management plan, significant damage to habitat occurs when horse numbers reach 200 (Smith et al, 2007). Current population estimates are above 500, which is substantially above the Appropriate Management Level. One horse is considered to consume one Animal Use Month (AUM) of forage per month, the equivalent of five deer (deer are rated at 0.20 AUM).

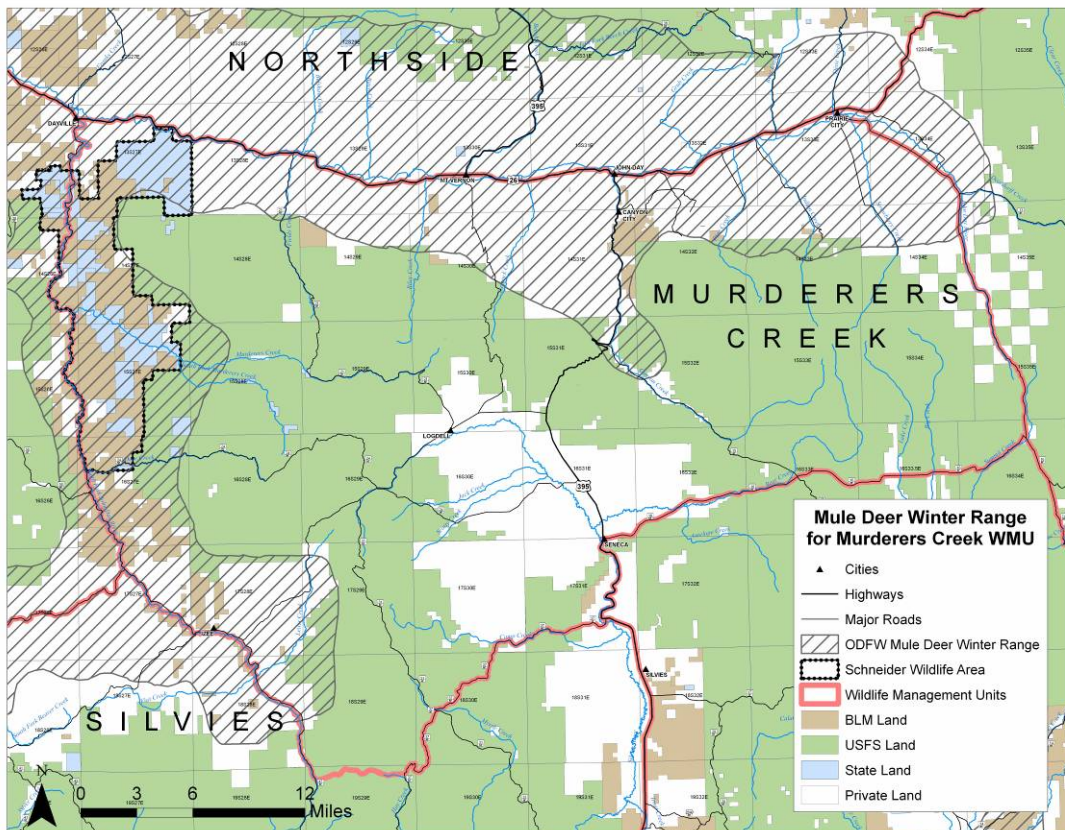


Figure 4. Winter Range and Land Ownership in the Murderers Creek WMU.

DRAFT 5

Table 5. Murderers Creek WMU Mule Deer Population Trend, Ratios, and Estimated Population 1980 – 2008.

Bio-Year	Route Miles Traveled	Deer Observed	Deer/Mile	Bucks/100 Does	Buck Ratio MO	Fawn/100 Adults Spring	Estimated Population ^a	Population MO
1980	168	2,632	15.7	9		30	29,200	
1982	192	1,799	9.4	10		25	18,000	
1984	192	2,683	14.0	9		28	11,700	
1986	192	2,245	11.7	11		29	11,600	
1988	192	1,982	10.3	11		14	8,700	
1990	192	1,778	9.3	11		36	10,500	
1992	192	1,390	7.2	14	15	20	7,800	9,000
1994	192	1,397	7.3		15	46	9,900	9,000
1996	192	1,031	5.4	11	15	44	9,900	9,000
1998	192	1,152	6.0	18	15	30	8,700	9,000
2000	192	1,480	7.7	11	15	25	7,600	9,000
2002	*	2,982		15	15	30	6,250	9,000
2004	*	2,226		11	15	57	6,700	9,000
2006	*	2,176		16	15	36	6,800	9,000
2008	*	2,015		12	15	36	5,000	9,000

* Helicopter survey only, no comparison to historical ground route miles

^aMost recent Pop2 model estimate

Table 6. Murderers Creek WMU Mule Deer Hunting Opportunity 1980 – 2007.

Year	Tags Auth	Rifle Hunters	Rifle Buck Harvest	% Success	Archery Hunters	Archery Buck Harvest	% Success	Total Buck Harvest
1980		5,189	2,358	45	406	48	12	2,406
1982		4,164	1,018	24	566	90	16	1,108
1984		3,000	740	25				740
1986	2,500	2,113	1,012	47	188	45	24	1,057
1988	2,500	2,181	976	45	291	91	31	1,067
1990	2,000	1,787	877	49	178	40	22	917
1992	1,800	1,838	967	53	303	67	22	1,034
1994	1,500	1,478	809	55	411	44	11	853
1996	1,400	1,454	498	34	634	112	18	610
1998	1,300	1,385	742	54	851	137	16	879
2000	1,150	1,249	587	46	891	197	22	784
2002	1,100	1,240	596	48	836	135	16	731
2004	1,000	1,107	330	30	1,020	185	18	515
2006	1,100	1,247	596	48	912	132	14	728
2008	1,100	1,209	468	39	868	98	11	566

DRAFT 5

Potential Limiting Factors

Habitat Degradation

In the Murderers Creek WMU, loss of the shrub component in both winter and summer ranges impacts the nutritional requirements for mule deer. Juniper encroachment on winter range has impacted shrub and native grass communities, replacing them with juniper and annual grass. Overgrazing by feral horses has caused severe habitat degradation in some areas. Fire suppression and lack of recent timber harvest has pushed the summer range to a mid seral stage forest with densely stock stands that close the forest canopy and limit understory production. Increased open road densities as well as un-restricted off road travel have impacted mule deer vulnerability and contribute to the spread of noxious weeds. Human development of mule deer winter range has also replaced many acres of quality winter range with small acreage ranches in the John Day Valley.

Predation

We believe predation on mule deer adults and fawns is the biggest factor causing the suppression of mule deer populations in the Murderers Creek WMU. Predator numbers appear higher than 20 years ago. Up until the early 1990s, USDA Wildlife Services worked at controlling coyote populations throughout Grant County. This likely allowed for higher fawn recruitment and increased survival of mule deer. Based on increased damage complaints and sightings, as well as population modeling, cougar densities in the unit have increased since the mid 90's (Oregon Department of Fish and Wildlife 2006a). Predation by these species has likely led to decreased overall deer survival as well as low fawn recruitment.

Disturbance and Harassment

Motorized recreation has increased significantly in the Murderers Creek WMU during the past 30-years, resulting in fragmentation of mule deer habitat primarily through disturbance. High road densities used by motorized enthusiasts and cross-country vehicle travel can adversely impact mule deer populations, especially during critical time periods (i.e. wintering and fawning). These disturbances may cause mule deer to avoid areas within preferred habitats, causing reduced body reserves and thus adversely affecting reproduction and recruitment into the population.

Highway Collision Mortality

Mortality due to highway collisions appears to be significant, contributing to the suppression of mule deer numbers in the unit. U.S. Highway 26 is the northern boundary of the unit, and bisects winter range for both the Murderers Creek and Northside WMUs. Because this highway separates critical winter range from irrigated farm fields and a stable water source, year-long mule deer mortality is common from Prairie City to Picture Gorge. Mule deer vehicle collisions are also common during migration periods along U.S. Highway 395, which runs south from John Day in the Murderers Creek WMU. During 2004 Oregon Department of Transportation (ODOT) recorded 257 mule deer vehicle collisions on these two highways. Results from the South Central Oregon Mule Deer Research Project (D. Jackson, pers. commun.) indicate for every deer

DRAFT 5

killed by collision and recovered within the highway right of way an additional five were struck and died off the highway right of way, and not recovered. Using this as an estimate, the total number of mule deer vehicle collisions could be as high as 1,285 deer per year, or roughly 20% of the end of year population estimate for the Murderers Creek deer herd.

Illegal Activities

Several law enforcement issues have been identified for the WMU including abuse of Landowner Preference (LOP) program, party hunting, poaching, and road hunting during archery and rifle seasons. Illegal take of does may affect the number of deer in the population. Illegal take of bucks affects the buck ratio and potentially resulting in fewer tags available to hunters.

Disease and Parasites

BTV and AHD have been found in mule deer in the Murders Creek WMU but are apparently at low levels and are not believed to be negatively affecting the deer on a population level. A recent discovery of adult mule deer dying due to AHD has caused concern. AHD is one of the diseases that will be monitored during the next five years. Parasites such as ticks, keds, bot flies, and lice are present in the mule deer population in the unit but do not seem to be adversely affecting deer at a population scale. Deer Hair Loss Syndrome caused by exotic lice is also a concern. The Department has continued its surveillance program to detect CWD, but currently this disease has not been detected in Oregon's wild cervids and has not contributed to the decline in the mule deer population.

Objectives and Strategies

Habitat Management

Winter range habitat quality in the unit is one of the most important limiting factors for mule deer. Habitat alterations, which increase shrub productivity and vigor and enhance forbs and grasses, will improve winter range. Vegetation manipulations, including mechanical and chemical treatments, prescribed fire, and re-seeding can be designed to improve deer habitat.

Objective 1: Improve winter range habitat on 20,000 acres of the Murderers Creek Coordinated Resource Management Area (MCCRMA) by 2025.

Rationale: Winter habitat is found along the North and Western boundaries of the Murderers Creek WMU (Figure 4). There are approximately 260,837 acres of winter range habitat in the unit of which 162,305 acres are privately owned and 98,532 acres are publicly owned. Improving forage on winter range will allow deer to maintain their body condition longer into the winter and improve survival (Mule deer working group 2008).

The Murderers Creek Basin was once home to as many as 30,000 wintering mule deer but currently supports just a few thousand. Significant habitat changes have occurred within the Murderers Creek Basin over the past 100 years. Up to 50,000 animal unit months (AUMs) were utilized by livestock and feral horses within the basin (Oregon Department of Fish and Wildlife

DRAFT 5

2006c), which caused substantial over-use of the range, significant loss of topsoil, and loss of native plants. However the basin still maintained vast amounts of bitterbrush that was the main component of forage for the wintering deer population. Measurements of bitterbrush leader growth were made in the 1960s and 70s and were used to estimate deer numbers that could winter in the basin. Now many of the areas where bitterbrush was measured have little to no bitterbrush remaining and the bitterbrush that does exist is old and decadent. Almost all bitterbrush was lost in the basin in the 1970s and 80s due to a grasshopper infestation.

In the 1980's medusahead rye began showing up in the basin and other parts of Grant County. Because of a favorable climate, soil erosion, and high use by feral horses, cattle, and wildlife, medusahead quickly infested the basin. By the early 1990's much of the lower elevation was completely covered by medusa head, which exclude native shrubs, grasses, and forbs. Extensive efforts were made to combat medusa head in the early 1990's using aggressive seeding and spraying. Some areas responded well to treatment at first but medusa head crept back into treatment areas and re-established.

Juniper encroachment on deer winter range resulting from fire suppression has been a major contributing factor to habitat degradation. Juniper out competes native grasses, forbs, and shrubs by reducing available water through transpiration and intercepting precipitation.

Livestock grazing on the PW Schneider WA has the goal of improving forage conditions for wintering mule deer. The grazing program on PW Schneider WA is developed annually under a grazing agreement with the Dayville Grazing Association. Cattle are managed on twenty fenced pastures using a rest rotation grazing system. Although the habitat has changed this grazing system has not been updated since the early 1990's, since then there have been extensive changes to the habitat on which the grazing system was based. The grazing plan will be evaluated and revised if necessary to develop a new grazing system that takes into consideration annual grass infestation and other habitat changes.

The Murderers Creek wild horse territory is encompassed within the boundaries of MCCRMA. The original designated territory encompasses 143,000 acres of NF, BLM, Department, and private lands. The Appropriate Management Level of this herd is 50 - 140 horses; currently, this herd is estimated to have a population of more than 500.

Strategy 1: Remove juniper on 20,000 acres of the MCCRMA using hand falling and mechanical (hydro-axe or feller-buncher) and burning in sites where annual grasses are not present or hand falling if annual grasses are present.

Timeframe: 2009 - 2025

Estimated Cost: \$2,000,000 (\$100/acre)

Strategy 2: Institute post treatment of juniper removal areas (juniper will re-invade within 20 years without some type of post treatment work) such as burning of sites that do not have significant annual grass, spraying, or hand removal of re-growth juniper.

Timeframe: 2009 - 2019

Estimated Cost: \$800,000 (\$40/acre)

DRAFT 5

Strategy 3: Seed and plant shrubs in juniper removal areas to encourage more palatable forage and increase shrub component of site.

Time frame: 2009 - 2025

Estimated Cost: Varies by treatment, \$30/acre

Strategy 4: Implement small acre test plots to experiment with treatment options for replacement of Medusahead with desirable species.

Timeframe: 2010 - 2015

Estimated Cost: Dependent on treatment methods used

- Treatment of annual grass is still an evolving science with new treatment methods emerging all the time. Treatments will be strongly directed towards adaptive management
- Treatment may include burning, spraying, and seeding
- Seeding may be attempted using different seed mixes to determine which mix is the most effective.
- If a successful treatment is developed it will be applied to other appropriate areas.

Strategy 5: Consult with Eastern Oregon Agriculture Research Station range specialists to improve the PW Schneider WA grazing program.

Timeframe: 2009 - 2019

Estimated Cost: None

Strategy 6: Work with the Malheur National Forest (NF) to reduce the number of wild horses in the Murderers Creek basin to meet the Appropriate Management Level.

Timeframe: 2009 - 2019

Estimated Cost: \$500,000 (NF budget for horse removal and adoption)

Strategy 7: Plant food plots to improve forage on the PW Schneider WA in the following pastures: Black Field, Ash Field, and Murderers Creek.

Timeframe: 2009 - 2019

Estimated Cost: Variable depending on actions, may require a seasonal position.

Strategy 8: Continue and promote shrub planting effort in the Murderers Creek basin. OHA has been planting shrubs since 2000. This program has proven effective at increasing the shrub component on the winter range.

Timeframe: 2010 - 2019

Estimated Cost: Dependent on available personnel

DRAFT 5

Strategy 9: Implement restoration projects in the South Fork John Day River Conservation Opportunity Area to benefit mule deer as well as other strategy species (e.g. Ferruginous Hawk, Summer Steelhead, and Pygmy Rabbit).

Timeframe: 2009 - 2019

Estimated Cost: Unknown at this time

Objective 2: Improve summer range habitat on NF lands within the Murderers Creek Wildlife Management Unit.

Rationale: Summer range habitat conditions are considerably below optimal for mule deer on the NF. Intensive logging has left much of the forest in a mid-seral stage with densely stocked stands of trees with a closed canopy that limits understory production. An understory of productive browse species such as elderberry, snowberry, mountain mahogany, and bitterbrush is important for mule deer to attain sufficient physical condition to survive winter. Much of the understory on the forest has been lost because of canopy closure, overgrazing by feral horses, and lack of wild fire. Returning the understory is key to recovering deer populations to management objective.

Many areas on the NF have been impacted by juniper encroachment. These areas are important for mule deer because they are some of the first to experience “green up” in the fall and spring. Without juniper they often have good browse species such as bitterbrush for deer to utilize to put on weight before winter and recover from over-winter weight losses in the spring.

Aspen stands throughout the unit have declined significantly as they have throughout the west. Aspen stands provide a unique habitat niche that is utilized by many species but especially mule deer. Protecting and recovering this habitat may be very important to help mule deer populations in the future.

Habitat improvement projects will be based on the Intermountain West habitat guidelines (Cox et al. 2009).

Strategy 1: Work with the NF to promote timber management activities that open the forest canopy to increase understory production of browse species while leaving a mosaic of untreated areas for cover.

Timeframe: 2009 - 2025

Estimated cost: Dependent on available funds from the NF.

May cost as much a \$400-500 per acre to treat and as much as 100,000 acres need to be treated.

Strategy 2: Work with NF in cooperation with the Warm Springs Tribe to protect and enhance aspen stands by removing conifers from aspen stands and restricting cattle and feral horse grazing. This may include using buck and poll fencing or wire fence to manage grazing activities.

DRAFT 5

Timeframe: 2009 - 2019

Estimated Cost: Variable depending on fence type and use of volunteers

Strategy 3: Work with NF to conduct controlled burns to increase mule deer forage on summer range by increasing plant vigor and promote browse species while reducing canopy closure. Post treatment of burns may be needed if browse species do not return after fire in which case planting or seed may be needed. Invasive plants are a concern. The NF is already conducting numerous controlled burns to reduce stocking levels and reduce fire danger.

Timeframe: 2009 - 2019

Estimated Cost: Dependent on available funds

Strategy 4: Remove juniper on south-facing slopes in the Murderers Creek Basin to promote browse species in winter, and during fall and spring migration.

This project already underway; the EIS was completed several years ago and work started in June of 2009.

Timeframe: 2009 - 2015

Estimated Cost: \$220,000

Objective 3: Work with private landowners in the Murderers Creek Unit to improve winter range habitat with emphasis on the John Day valley and Izee.

Rational: Approximately two thirds of the winter range in the Murderers Creek unit is privately owned. Improvement of habitat on these lands is important to restoring mule deer populations. Many of the same habitat problems facing the PW Schneider WA are also occurring on private lands, so many of the same treatment options can be used such as juniper removal, combating annual grass invasion, and planting shrubs. Funding and partners to accomplish habitat improvements on private lands are often different than on public lands.

Strategy 1: Use A&H, Green Forage, and Deer Enhancement and Restoration (DEAR) grants to conduct juniper removal, seeding, and shrub planting.

Timeframe: 2009 - 2015

Estimated Cost: Dependent on interested landowners

Strategy 2: Work with NRCS and SWCD to prioritize funding for the Murderers Creek unit.

Timeframe: 2009 - 2015

Estimated Cost: Dependent on interested landowners

Objective 3: Decrease mule deer/vehicle collisions.

Rationale: Mule deer vehicle collisions have the potential to limit population growth in the unit.

DRAFT 5

Strategy 1: Equip ODOT vehicles responsible for animal pick-up with GPS units to record locations of mule deer collisions. Begin recording age and sex of animals struck, collect teeth if practical. During winter months, when snow is present conduct early morning track surveys to document locations where animals cross the highway.

Timeframe: 2009 - 2019

Estimated Cost: \$1,000

Strategy 2: Set up two ODOT variable message signs during peak periods to alert drivers of heavy deer activity. Locate signs eastbound near Picture Gorge, and westbound near John Day.

Timeframe: 2009 - 2019

Estimated Cost: \$34,000 to purchase dedicated signs for the project

Strategy 3: Identify areas along the highway that are impediments to migration and identify ways to mitigate (e.g. replace woven wire fence at important crossings with wildlife friendly fence).

Timeframe: 2009 - 2019

Estimated Cost: Dependent on projects identified.

Objective 4: Protect important mule deer habitat from human development.

Strategy 1: Work with Grant County and other government agencies to zone, map, and write language to protect important mule deer habitat where rules and regulations are not adequate. Critical winter ranges maps for mule deer need to be updated.

Timeframe: 2010 - 2012

Estimated Costs: NA

Predator Management

Objective 1: Reduce mortality of mule deer caused by predation in the Murderers Creek WMU.

Rationale: In the Murderers Creek WMU we believe that cougars are predators of adult and fawn mule deer, while coyotes are a primary predator of fawns.

A three-year study in NE Oregon found cougar predation of adult mule deer to be the leading cause of mortality (Mathews and Coggins 1997), accounting for 33% of all known mortality. Average cougar density in the Blue Mountain zone, which includes the Murderers Creek WMU, has increased from 6.2 cougars/100 sq. miles in 1994 to 10.5 cougars/100 sq. miles in 2003 (Oregon Department of Fish and Wildlife 2006a). The cougar population increase coincides with increased cougar harvest (total 1990-94 = 18 vs. total 2004-08 = 36) and increased damage complaints (total 1991-94 = 6 vs. total 2005-08 = 33).

DRAFT 5

Because coyotes are primarily predators of fawns while cougars prey on both adults and fawns at similar rates, fawn ratios are not a good indicator of cougar predation on mule deer. Fawn ratios reflect fawn loss due to coyotes as well as other factors. Increased survival of both adults and fawns and spring fawn ratios above the population maintenance level of about 35 fawns/100 adults will be necessary to achieve population growth.

Strategy 1: Initiate a cougar target area to increase cougar harvest and reduce mule deer mortality caused by predation.

Timeframe: Not currently planned
Estimated Cost: Dependent upon personnel

Strategy 2: Utilize Department approved cougar agents to collect DNA samples of cougars in the Murderers Creek and surrounding units. Data would be used to develop a more accurate estimate of cougar densities in the region, based on mark/recapture of recognizable individuals.

Timeframe: 2009 - 2014
Estimated Cost: \$10,000 (cost to process DNA samples @ \$60-\$100/sample)

Strategy 2: Initiate coyote population control actions (both aerial and ground) during winter and spring. Work will be done by Wildlife Services.

Timeframe: Not currently planned
Estimated Cost: Dependant on personnel and equipment

Strategy 3: Target hunting by public hunters in the Murderers Creek unit for coyote control. This can be conducted most effectively during the winter on both public and private winter ranges and around fawning areas in Bear Valley and upper Murderers Creek.

Timeframe: 2010 - 2012
Estimated Cost: None

Disturbance and Harassment

Objective 1: Reduce winter harassment on mule deer winter range

Rationale: In the last five years, there has been an increase in the number of people utilizing the winter ranges to hunt antlers from December to April. Generally there are two separate periods of antler hunting pressure on PW Schneider WA and private lands. From mid-December to mid-January, hunters are searching for mule deer sheds and from late March to mid-April, they are searching for elk antlers. Both of these time periods coincide with critical periods for mule deer when harassment has been shown to reduce survival. Repeated harassment when deer are in a negative energy balance further depletes energy reserves necessary for survival (Cox et al., 2009).

DRAFT 5

PW Schneider WA has extensive motorized travel restrictions to protect wintering mule deer. Even with these restrictions, there are numerous violations. The cumulative disturbance of mule deer from human walk-in access is a very serious concern. The Department purchased PW Schneider WA to protect and enhance winter habitat for mule deer. PW Schneider WA can be open to antler hunting and other legal off-road recreational opportunities after mule deer have made it through the most critical winter period.

The Department will work with the neighboring land manager (BLM) to institute an area closure on PW Schneider WA during the winter months. Because the area is popular with upland game bird hunters and trappers, separate closure periods are proposed for two section of the closure area. The goal is to allow access to the wildlife area to these users during the open season.

Strategy 1: Close public access to PW Schneider WA and adjacent BLM land from December 1 or February 1 (depending on portion of closure area) through April 30 (Figure 5). Increase enforcement activities using radio marked antlers. Improve wildlife area signing.

Timeframe: 2011 - 2019

Estimated Cost: \$15,000

DRAFT 5

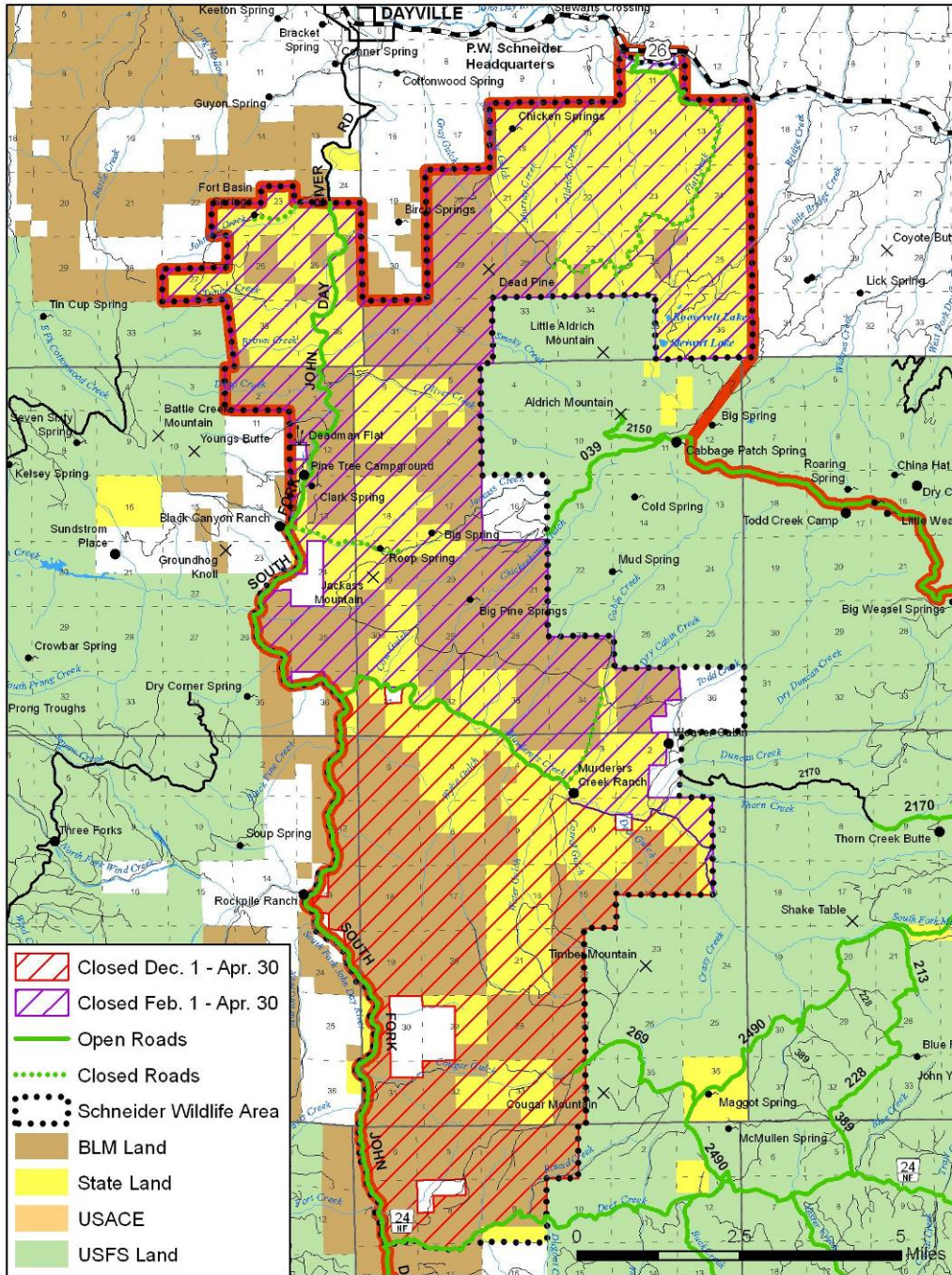


Figure 5. Proposed area closure on PW Schneider WA.

DRAFT 5

Objective 2: Reduce illegal motorized activities in the Murderers Creek WMU.

Rationale: In the Murderers Creek WMU, OHV access and use have increased markedly during the past decade. This type of disturbance may reduce habitat use by displacing mule deer into marginal habitats.

Disturbance during archery season has increased as numbers of hunters and OHV use have increased. The goals and objectives for Murderers Creek WMU travel management areas (TMAs) are: 1. Protect soils and wildlife habitat. 2. Minimize harassment of wildlife. 3. Maintain adequate buck and bull escapement. 4. Promote quality hunting. Implementing the Murderers Creek/Flagtail TMA during archery season would reduce mule deer harassment.

Strategy 1: Assist NF and BLM with travel management plan implementation by purchasing and posting new signs, installing barricades, and making the area an enforcement priority.

Timeframe: 2009 - 2011

Estimated Cost: New signs/posts have already been purchased

Strategy 2: Implement the Murderers Creek/Flagtail TMA during the general archery season.

Timeframe: 2011 - 2019

Estimated Cost: N/A

Strategy 3: Pursue Oregon Parks and Recreation OHV funds to enforce and post travel management regulations.

Timeframe: 2009 - 2019

Estimated Cost: Dependent on available funds

Law Enforcement

Objective 1: Increase enforcement efforts in the Murderers Creek WMU.

Rationale: Enforcement of laws regulating OHV use and recreational activity on crucial winter range is important to maintain optimum habitat effectiveness for mule deer.

Strategy 1: Implement Murderers Creek Unit Action Plan developed by OSP.

Timeframe: 2009 - 2012

Estimated Cost: None

Strategy 2: Prioritize OSP enforcement efforts within the Murderers Creek WMU area. Focus on deer seasons and wintering periods. Increase enforcement efforts during opening weekend of buck season using additional Department personnel and OSP officers.

DRAFT 5

Timeframe: 2009 - 2019
Estimated Cost: No additional cost

Strategy 3: Conduct decoy operations targeted at party hunters and out-of-season poachers.

Timeframe: 2009 - 2019
Estimated Cost: No additional cost

Strategy 4: Target illegal activity by doubling TIP rewards in the unit.

Timeframe: 2009 - 2019
Estimated Cost: \$5,000 (5 rewards @ \$1,000 maximum)

Objective 2: Increase OHV enforcement efforts by 2012.

Rationale: Many hunters concerned about excessive OHV use and abuse are urging the Department to establish and enforce OHV travel restrictions during deer seasons.

Strategy 1: Department, OSP, and NF personnel work to regulate the existing travel management plan through better signing and coordinated enforcement efforts. Utilize OSP plane to patrol within the proposed area during hunting season and winter range closure periods.

Timeframe: 2009 - 2019
Estimated Cost: Prioritization of existing resources

Strategy 2: Pursue Oregon Parks and Recreation OHV funds to purchase equipment such as ATV's and snowmobiles for OSP to patrol winter range areas from illegal OHV use.

Timeframe: 2009 - 2010
Estimated Cost: \$20,000

Strategy 3: Pursue Oregon Parks and Recreation OHV funds to hire a patrol officer for OHV compliance on public lands and reduce illegal OHV use.

Timeframe: 2009 - 2010
Estimated Cost: \$20,000

Objective 4: Increase the number of convictions for mule deer related cases.

Rationale: Many Oregon court systems are overworked and often wildlife related violations are not fully prosecuted in the court system due to monetary and time constraints. Inadequate fines and penalties do not create an adequate deterrence for violators.

DRAFT 5

Strategy 1: Work with local courts to inform them of the MDI and the importance of mule deer to the community.

Timeframe: 2009 - 2010

Estimated Cost: None

Disease and Parasites

Objective 1: Monitor occurrence and prevalence of diseases in the Murderers Creek WMU.

Strategy 1: Collect samples from 20 mule deer to monitor for CWD, trying to target road-killed animals.

Timeframe: 2009 - 2019

Estimated Cost: No additional cost

Strategy 2: Collect blood and feces samples from mule deer to look for prevalence other diseases (AHD, BTV, and Johnne's) as well as mineral deficiencies in the unit.

Timeframe: 2010

Estimated Cost: No additional cost

Population Management

Objective 1: Increase buck escapement in the Murderers Creek WMU to the MO of 15 (current three year average 13).

Strategy 1: Adjust tag allocations from year to year to meet this objective.

Timeframe: 2009 - 2014

Estimated costs: NA

Strategy 2: Work with USFS and BLM to implement the Flagtail/Murderers Creek TMA during the general archery season.

Timeframe: 2011 - 2019

Estimated Cost: N/A

Objective 2: Reduce adult doe hunting mortality while retaining the option for landowners experiencing damage to agricultural crops.

Rationale: Hunting antlerless deer in a population is done to reduce the population size and/or to reduce conflicts with damage to agricultural fields. Currently there is a doe hunt in the John Day Valley to address deer coming down into agricultural fields in large numbers. There are no doe hunts in the unit for population control.

DRAFT 5

Strategy 1: Reduce John Day Valley doe tag numbers to 10 and work with landowners to reduce damage from deer by other methods.

Timeframe: 2009 - 2019

Estimated Cost: None

Objective 3: Address potential competition between species.

Rationale: The number and distribution of Rocky Mountain elk within the Murderers Creek WMU has increased within the last 30 years. The increase in the elk population, coinciding with the decline in mule deer population, has caused some to suspect direct competition between the species. This trend has also been observed in much of eastern Oregon and many of the western states. However, the trend is not consistent, in some areas both elk and mule deer are declining, while in others mule deer have increased while elk have declined. It is understood that in some instances these species may interact and at times compete for resources. It would require rigorous research designs to detect competition between ungulates including elk, deer, cattle, and feral horses (Cox, et al., 2009).

In the Murderers Creek WMU there has been a shift in elk distribution from public to private land during the late summer and early fall. Often this is associated with the elk seeking better forage in irrigated croplands, but it can also be the result of increased harassment on public land. The result is elk arriving early and utilizing habitat suited for wintering mule deer. Private lands only elk hunts have been implemented to re-distribute elk out of mule deer winter range and off private land. The Department will monitor the effectiveness of this type of hunt.

Strategy 1: Implement a rifle cow elk hunt on private lands from August 15 to September 30 to harass elk damaging private lands and move them from critical mule deer wintering areas.

Timeframe: 2009 - 2012

Estimated Cost: N/A

Prioritization of Objectives

The Murderer's Creek implementation team included:

Dean Elliott	Oregon Hunters Association (local)
Wayne Elliott	Oregon Hunters Association (state)
Ken Hand	Mule Deer Foundation
Rene Mabe	United States Forest Service
Dan Tippy	Bureau of Land Management
Linda Brown	Warm Springs Tribe
Lorraine Voigt	Natural Resource Conservation Service
Roger Ediger	Farm Bureau/ Private Landowner
Ken Holliday	Private Landowner
J.C. Oliver	Private landowner

DRAFT 5

The local committee prioritized the objectives in terms of short-term and long-term benefits for mule deer as follows:

Short Term:

1. Predator Management
2. Disturbance and Harassment
3. Habitat Management
4. Law Enforcement
5. Population Management
6. Disease

Long Term:

1. Habitat Management
2. Disturbance and Harassment
3. Predator Management
4. Law Enforcement
5. Populations Management
6. Disease

CHAPTER 4: STEENS MOUNTAIN UNIT

Background

The Steens Mountain WMU encompasses 1,916 square miles (Figure 7), of which 69% is publicly owned. Of the total unit, 55% is managed by the BLM, 9% by the US Fish and Wildlife Service, Malheur National Wildlife Refuge (Malheur NWR), and 5% by the Oregon Department of State Lands (DSL). The northern portion of this WMU is primarily private agricultural or rangelands. The majority of the unit's mule deer habitat is associated with Steens Mountain, which is located in the middle and southern portions of the WMU, and consists primarily of BLM land with significant private in-holdings.

Steens Mountain proper is a high elevation fault block, which rises gradually from the west and falls off sharply along its east slope. Plant communities are characterized as mountain shrub communities, and have a diverse mosaic of plant species including aspen, mountain mahogany, bitterbrush, juniper, various sagebrush species, forbs, and bunch grass species.

Steens Mountain WMU has been regarded as one of Oregon's premier mule deer units and once supported large numbers of mule deer. Abundance most likely peaked in the 1950s and has generally declined since. Modest population increases have occurred during periods of favorable weather conditions, only to be followed by more severe population declines. Since 1990 mule deer abundance has declined from ~ 9,000 (75% of MO) to an estimated 3,850 (35% of MO) (Table 7).

Average fawn recruitment in Steens Mountain WMU has remained relatively consistent since inventories were first conducted in the late 1950s. From 1957 to present, the average spring fawn ratio was 32 fawns/100 does (26 fawns/100 adults). The average spring fawn ratio for the past ten years was similar, 35 fawns/100 does (26 fawns/100 adults) (Table 7).

Different harvest management strategies have been employed to respond to the declining deer population. In 1975, rifle buck deer harvest was limited to 4-point or better to increase buck escapement. In 1980, a controlled hunt was initiated and tags were limited to 1,400 permits, in addition to the 4-point or better regulation (Table 8).

In 1987 the buck MO was raised to 25 bucks/100 does and the 4-point or better restriction was changed to one buck with a visible antler. Tag numbers have been reduced through time to maintain the buck ratio at MO as the deer population has declined. In 2008 there were 250 rifle permits authorized in the Steens Mountain WMU.

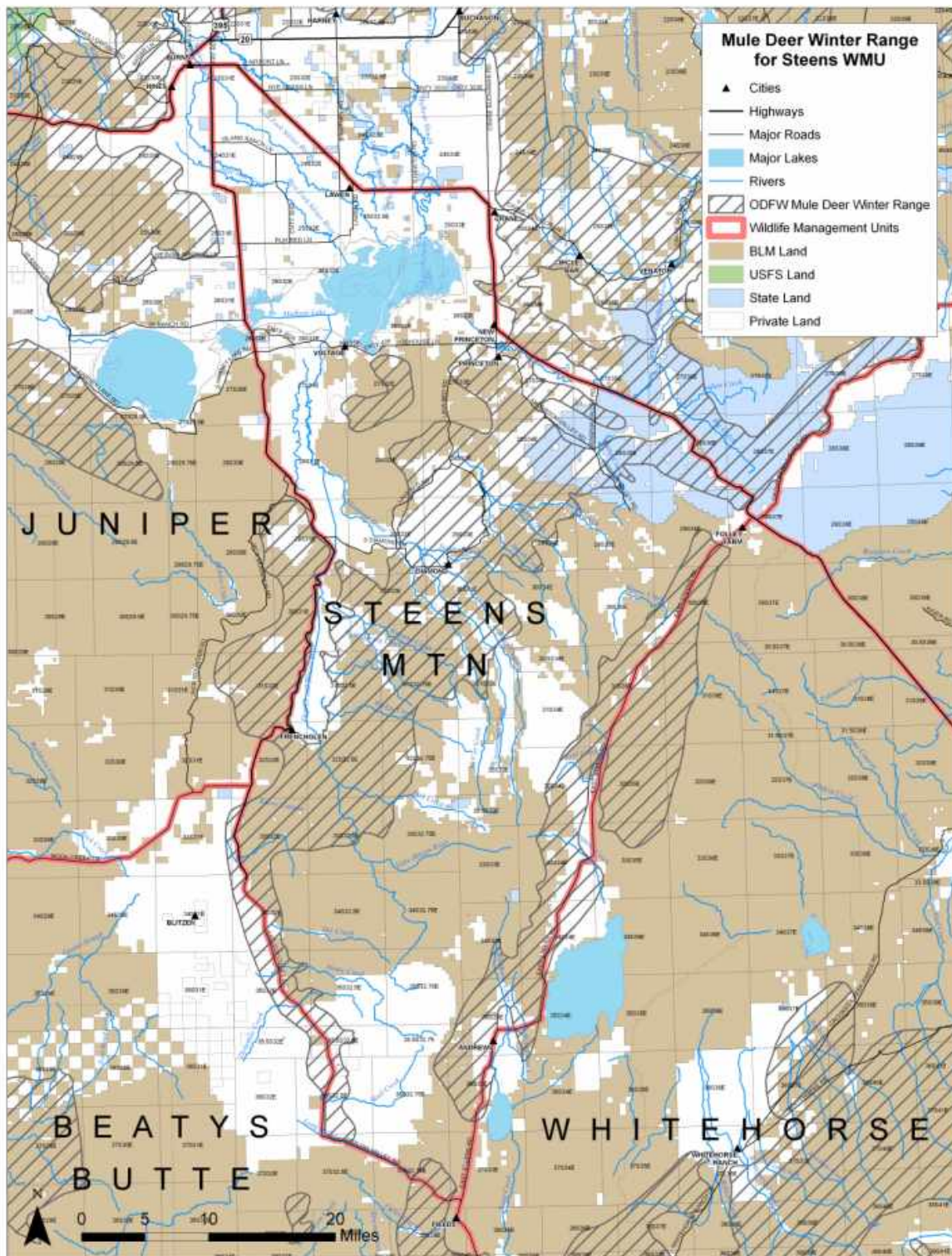


Figure 6. Winter Range and Land Ownership in the Steens Mountain WMU.

DRAFT 5

Table 7. Steens WMU Mule Deer Population Trend, Ratios, and Estimated Population 1980 – 2009.

Year	Miles Traveled	Deer Observed	Deer Observed/ Mile	Spring Fawns/100 Adults	Bucks/ 100 Does	Buck MO	Estimated Population	Population MO
1980	82	2,135	26.0	27	38	12	11,400	11,000
1982	82	1,998	24.4	13	26	12	9,900	11,000
1984	82	1,532	18.7	27	19	12	8,230	11,000
1986	82	1,173	14.3	26	33	25	8,800	11,000
1988	93	1,964	21.1	26	33	25	9,000	11,000
1990	93	1,879	20.2	23	26	25	8,910	11,000
1992	93	1,914	20.6	30	28	25	9,020	11,000
1994	93	1,966	21.1	30	27	25	8,800	11,000
1996	93	1,677	18.0	22	20	25	7,920	11,000
1998	93	1,786	19.2	28	30	25	6,660	11,000
2000	93	1,452	15.6	39	25	25	5,150	11,000
2002	No Data			21	22	25	5,900	11,000
2004	93	1,001	10.8	20	34	25	5,500	11,000
2006	93	493	5.3	38	29	25	4,000	11,000
2008	93	730	7.8	15	29	25	3,850	11,000
2009	93	293	3.2	24	28	25	3,700	11,000

DRAFT 5

Table 8. Steens WMU Mule Deer Hunting Opportunity History 1980 – 2008.

Year	Tags Auth.	Rifle Hunters	Buck Harv.	% Suc.	Archery Hunters	Buck Harv.	% Suc.	Total Buck Harv.	Antlerless Hunters	Antlerless Harvest
1980	**1,400	1,310	507	39	143	0	0	507	120	96
1982	**1,400	1,210	520	43	247	0	0	520	0	0
1984	**1,000	820	230	28	No	Data		230	0	0
1986	**1,000	802	172	21	6	6	100	178	0	0
1988	800	660	417	63	149	15	10	432	0	0
1990	800	712	250	35	39	7	18	257	0	0
1992	800	971	415	43	103	14	14	429	0	0
1994	800	876	385	44	121	28	23	413	0	0
1996	500	543	226	42	87	0	0	226	17	13
1998	500	575	243	42	90	7	8	250	13	9
2000	510	556	262	47	99	21	21	283	20	13
2002	309	352	208	59	133	39	29	247	8	3
2004	266	295	138	47	87	11	13	149		
2006	273	340	195	40	90	13	14	208		
2008	273	323	128	40	37	0	0	128	3	0

** South Steens Controlled Hunt (75% of the entire Steens Unit), 4-point+ bag limit, does not include hunter/harvest information from the rest of the unit.

Potential Limiting Factors

Predation

We believe that predation is the most important factor causing the decline in mule deer numbers in the Steens Mountain WMU. Cougars and coyotes are the primary predators of mule deer in the Steens Mountain WMU. Trainer et al (1981) demonstrated that coyotes were the primary cause of mule deer fawn mortality in the 1970s. All indications are that coyote predation continues to be an important source of mortality. In addition, cougar numbers have increased dramatically on Steens Mountain since the mid 1990s. While cougar predation was not documented on deer in the 1970s (Trainer et al. 1981), it has since been documented on radio-collared bighorn sheep on Steens Mountain on several occasions. Six out of 10 radio collared bighorn ewes were lost to cougar predation from the Mann Creek-Kiger Canyon transplant in December of 2004. As a result, the transplant failed to establish a population.

Additional losses of bighorn sheep to cougar predation were documented on Steens Mountain between 2000 and 2003. Fifteen mortalities occurred out of a sample of 32 (47%) radioed-collared bighorn sheep. Of these, three were attributed to cougar predation, three to other causes, and nine were of unknown cause. Due to lack of funding, bighorn were not monitored frequently enough to determine the cause of mortality in the majority of cases; therefore it is not known how many of the unknown mortalities were also due to cougar predation. In addition, increases

DRAFT 5

in damage complaints from the public and hunting harvest indicate the presence of cougars in the area. Prior to 1995 no cougar damage complaints were documented in the Steens Mountain WMU; nine have been received from 1996 to present. Hunting harvest has also increased. The Department began mandatory check in of harvested cougars in 1987. From 1987 through 1999 only 3 cougars were harvested from Steens Mountain WMU. From 2000 to 2008, a total of 26 were harvested (mean is 2.9/year).

The Department has defined two criteria that could qualify a WMU for more intensive cougar harvest (Oregon Department of Fish and Wildlife 2006a). A mule deer herd that has declined by 20% over the last 5 years or is below 60% of MO for 3 years may be targeted. The Steens Mountain WMU meets both these criteria.

Habitat Degradation

Steens Mountain WMU has suffered from some habitat degradation. However, habitat conditions are relatively good and are not believed to be limiting mule deer populations. Problems include juniper encroachment and invasion of non-native grasses and forbs. The most severe juniper encroachment issues occur along the west slope and northern end of Steens Mountain, at elevations between 4,500 and 6,000 feet. The spread of non-native annual grasses, especially cheatgrass, has resulted in the degradation of some low elevation deer winter range on the west slope of Steens Mountain. Competition with non-native annual grasses for limited precipitation and increased fire frequency in areas dominated by these annual grasses has led to a significant reduction of the shrub component in this area, which can be critical for mule deer survival during severe winters.

While there has been an increase in human development within Steens Mountain WMU, it is not believed to be a limiting factor for the overall deer population.

We believe habitat improvements should be done to improve conditions for mule deer.

Illegal Activities

Poaching of mule deer in Steens Mountain WMU does not appear to be a large issue. However law enforcement activities in recent years have been reduced due to a reduction in personnel. An increased enforcement presence during hunting seasons and other critical time periods may find higher than expected levels of illegal activity. Law enforcement and protection of mule deer have become more important as the population has declined.

Disturbance and Harassment

Disturbance and harassment of mule deer is generally not considered a limiting factor for mule deer in Steens Mountain WMU. The unit has low road densities and the main access road is closed to public use during winter months. Most BLM land within the unit is designated as wilderness or wilderness study areas in which off road motorized vehicle use is prohibited. However, there is some concern that the number and duration of hunting seasons may displace mule deer causing them to move to unfamiliar or less productive habitat.

DRAFT 5

Disease

No significant disease issues have been documented in Steens Mountain WMU but with new diseases becoming more prevalent throughout the west and in Oregon, it remains important to continue to monitor for such diseases. Parasites such as ticks, keds, bot flies, and lice are likely present in this unit, but do not seem to be adversely affecting mule deer at a population scale.

Objectives and Strategies

Habitat Management

Objective 1: Improve vigor of sagebrush steppe habitats in Steens Mountain WMU through juniper removal and reintroduction of fire into the ecosystem in areas where fire will not result in the area being dominated by non-native annual grasses.

Rationale: BLM is currently implementing two significant rangeland restoration projects on Steens Mountain. The foremost objective of each of these projects is to reduce juniper related fuels and restore natural plant communities. The North Steens Ecosystem Restoration Project area encompasses 336,000 acres of public and private lands, and includes approximately 130,000 acres of juniper treatment. The Five Creeks Rangeland Restoration Project calls for an estimated 72,740 acres of juniper treatment. The Department has worked closely with the BLM during development of these projects, and must continue to do so to ensure that significant areas of sagebrush stands are maintained while adjacent areas are being treated.

Steens Mountain is identified in the Oregon Conservation Strategy (Oregon Department of Fish and Wildlife 2006b) as a Conservation Opportunity Area Profile (NBR-09. Steen Mountain-Alvord Basin) and recommends the control of the spread of western juniper to maintain habitat values in sagebrush, aspen, and riparian habitats.

Strategy 1: Coordinate with BLM on proposed ecosystem restoration projects to ensure optimal mule deer habitat diversity, with emphasis on preserving bitterbrush, aspen, sagebrush, and adequate cover. Encourage a variety of juniper removal techniques in addition to burning. Approximately 200,000 acres are proposed for treatment. Encourage post treatment monitoring of treated areas and reseeding when needed.

Timeframe: 2009-2024

Estimated Costs: No additional cost, planned BLM activities

Strategy 2: Explore opportunities to work with private landowners interested in mule deer habitat improvement projects. Incorporate A&H, DEAR, or other appropriate funding to help facilitate this strategy. Pursue additional funding and in-kind opportunities with other government and Non Government Organizations to match Department funds for mule deer enhancement projects (e.g. Oregon Conservation Strategy, Oregon Hunters Association, Mule Deer Foundation, Oregon Heritage Wildlife Foundation, National Fish and Wildlife Foundation, NRCS Farm Bill, county weed boards).

DRAFT 5

Timeframe: 2009 - 2024

Estimated Costs: \$50-\$200/acre – Total unknown

Objective 2: Increase the browse component in mule deer winter range by restoring an estimated of 5,000 to 10,000 acres of shrub steppe habitat that has been altered to cheat grass and/or crested wheat seeding.

Rationale: Within the unit's lower elevations mule deer winter ranges have been altered by past wildfires and/or herbicide treatments to establish crested wheatgrass. There is a significant lack of native brush species, which mule deer require for forage and cover, particularly during severe winters. In turn this often results in increased non-native invasive plants, which do not contain the same nutritional value as native plants.

Strategy 1: Work with BLM, Eastern Oregon Agricultural Research Center, and Malheur NWR to restore shrubs in lower elevation areas. Review past attempts to restore altered shrub-lands and determine their effectiveness.

Timeframe: 2009 - 2024

Estimated Costs: None

Strategy 2: Increase plant diversity and structure by establishing shrubs in crested wheat seedings, planting appropriate brush, grass, and forb species (including non-native options). Actions will be consistent with BLM allotment management plans to assure that grazing permittees are not negatively affected.

Timeframe: 2009 - 2024

Estimated Costs: \$250,000-\$2,000,000

Objective 3: Prioritize weed control efforts.

Rationale: Noxious weeds often out-complete native plants and lack the nutritional qualities that native plants provide to wildlife.

Strategy 1: Work with BLM, Malheur National Wildlife Refuge, and private landowners in conjunction with the Harney County Weed Management Area (HCWMA) to continue to monitor and control noxious weeds.

Timeframe: 2009 - 2019

Estimated Costs: \$200/acre-Total unknown

DRAFT 5

Predator Management

Objective 1: Reduce mule deer mortality caused by cougars in the Steens Mountain WMU.

Rationale: Average cougar densities in southeast Oregon (Zone F, includes Steens WMU) has increased from an estimate of 1.2 cougars/100 sq. miles in 1994 to 2.7 cougars/100sq. miles in 2003 (Oregon Department of Fish and Wildlife 2006a). We believe cougar numbers have likewise increased on Steens Mountain. The Cougar Management Plan also states that the Department suspects cougar predation was an important factor in the failure of Zone F deer populations to reach MO and further that fawn recruitment is substantially affected by winter severity, drought, coyote predation, and cougar predation (Oregon Department of Fish and Wildlife 2006a).

Average long-term fawn recruitment has been at or near maintenance levels (35 fawns/100 adults) in Steens Mountain WMU and although ratios have fluctuated have not decreased long term. These data suggest that higher than normal adult mortality may be an important factor in the population decline. Additionally, modeling efforts have indicated very high adult mortality. Cougars are the primary predator on adult mule deer. When cougars were absent from Steens Mountain and the only predator present was coyotes, Trainer et al. (1981) found only a 7% mortality of adults during winter. Coyotes were primarily predators of fawns and not adults.

As recently as the mid 1980s the mule deer population was estimated at over 80% of MO and showed no signs of exceeding carrying capacity (i.e. decreased productivity or habitat degradation). Currently, the mule deer population in the unit is 35% of MO, which is likely well below carrying capacity and represents the lowest level since mule deer populations were first monitored in the 1950s. Because the mule deer population has declined over 32% in the last five years and is below 60% of MO (Table 7), the Steens Mountain WMU meets criteria to establish it as a target area for more intensive cougar harvest (Oregon Department of Fish and Wildlife 2006a).

Strategy 1: Implement a Cougar Target Area in Steens Mountain WMU consistent with the Cougar Management Plan (Oregon Department of Fish and Wildlife 2006a).

Timeframe: 2010 - 2015

Estimated Costs: \$100,000 (20,000/year)

Strategy 2: Encourage Oregon Hunters Association (OHA) and other groups to create cougar tracking/calling/harvest training workshops to facilitate increased sport harvest.

Timeframe: 2009 - 2013

Estimated Costs: None

Objective 2: Reduce fawn mortality caused by coyote predation in the Steens Mountain WMU.

Rationale: Research conducted on fawn mortality in Steens Mountain WMU during the late 1960s and 70s indicated that coyote predation was the primary factor in mortality of mule deer fawns. In this study coyotes accounted for 49% of all fawn mortality (Trainer et al. 1981). In

DRAFT 5

addition, a coyote removal program conducted during the study resulted in a significant decrease in fawn mortality rates during winter.

Fawn ratios in the Steens Mountain WMU have been stable and have not decreased over time. Long-term fawn recruitment has averaged 26 fawns/100 adults (32 fawns/100 does). While this level of recruitment is near maintenance level, an increase in fawn recruitment is necessary for the mule deer populations to increase.

Strategy 1: Initiate aerial coyote removal, potential cooperators include US Department of Agriculture Wildlife Services, OHA, Harney County, and private landowners. Coyote management efforts would focus on cattle operations on or adjacent to mule deer winter range and fawning areas from November through June.

Timeframe: Not planned at this time

Estimated Costs: \$18,000/year

Strategy 2: Encourage OHA and other groups to create coyote tracking/calling/harvest training workshops to facilitate increased sport harvest.

Timeframe: 2009 - 2013

Estimated Costs: None

Disturbance and Harassment

Objective 1: Reduce conflicts between feral horses and mule deer within mutual habitat areas.

Rationale: Feral horses can out-compete mule deer for forage and space, and cause significant habitat degradation especially in those areas in which horses congregate. Horse disturbance increases as the horse population rises. Horse populations can increase rapidly and may exceed Appropriate Management Levels if not monitored closely. For instance, the Appropriate Management Level for the South Steens Herd Management Area is 159-304 horses. A 2009 census of the area documented at least 450 feral horses occupied the HMA.

Strategy 1: Encourage BLM to accurately inventory horse management areas in the Steens Mountain WMU and consider these the highest priority areas for horse removal when horses reach maximum Appropriate Management Levels.

Timeframe: 2009 - 2013

Estimated Costs: None

Objective 2: Reduce disturbance from hunters in Steens Mountain WMU.

Strategy 1: The Department will monitor number and duration of hunting seasons in Steens Mountain WMU. The Department will consider combining seasons where possible and avoiding creation of new seasons or expansion of existing seasons throughout the duration of this initiative. The Department will increase management and enforcement presence on the ground during the hunting seasons.

DRAFT 5

Timeframe: 2009 - 2013

Estimated Costs: Reprioritization of resources

Objective 3: Protect mule deer populations from human disturbance, especially on winter range.

Rationale: Mule deer are especially vulnerable during winter when energy conservation is often critical. Deer concentrate on winter ranges at lower elevations. These areas are often easily accessible by the public. Shed antler hunting with the use of OHVs is increasing in popularity, which has resulted in increased harassment of mule deer during the winter months.

Strategy 1: Concentrate enforcement presence in areas used for shed antler hunting known to experience wildlife disturbance.

Timeframe: February through March 2010 - 2013

Estimated Costs: Reprioritization of resources

Law Enforcement

Objective 1: Reduce the unlawful take of mule deer in Steens Mountain WMU by increased presence of Oregon State Police (OSP) Fish and Game Enforcement Officers and increased compliance with wildlife regulations by hunters.

Rationale: State police records during the 2004-2007 rifle seasons showed that 16% of hunters contacted in the Steens Mountain WMU were not in compliance with all wildlife laws. Poaching activities can negatively affect mule deer populations.

Strategy 1: Increase patrols specifically targeting tag compliance in Steens Mountain WMU. If an area of concern is identified, the Wildlife Enforcement Decoy will be utilized.

Timeframe: August through mid-October 2009 - 2013

Estimated Costs: Reprioritization of resources

Strategy 2: Identify concentrations of wintering/rutting mule deer and focus patrols in these areas to protect the deer including larger bucks that some poachers target.

Timeframe: Late October through January 2009 - 2013

Estimated Costs: No additional cost

Strategy 3: Create partnerships with landowners adjacent to winter ranges as well as utilize local user/hunter groups to assist with the detection of poaching activities.

Timeframe: October through March 2009 - 2013

Estimated Costs: No additional cost

Strategy 4: Utilize OSP aircraft to patrol for spotlighting activities.

DRAFT 5

Timeframe: Opening weekend of deer and elk seasons 2009 - 2013

Estimated Costs: Reprioritization of resources

Strategy 5: Increase incentives for citizens to notify OSP of game violations that occur in Steens Mountain WMU by doubling the TIP reward money.

Timeframe: 2009 - 2013

Estimated Costs: \$5,000 (5 rewards @ \$1,000 maximum)

Disease and Parasites

Objective 1: Continue to monitor occurrence and prevalence of wildlife diseases in Steens Mountain WMU.

Rationale: Currently, there has been no evidence of disease problems that might affect mule deer abundance in the Steens Mountain WMU. However, continued monitoring efforts are needed to guard against major problems in the future.

Strategy 1: Continue to collect tissue samples from harvested mule deer to monitor for CWD as part of the Department's standard disease monitoring program.

Timeframe: Ongoing

Estimated Costs: No additional cost

Strategy 2: Opportunistically collect biological samples for disease testing from any mule deer showings signs of illness. Increasing Department presence for the other objectives identified in this Plan will result in a greater chance of detecting diseased animals.

Timeframe: 2009 - 2014

Estimated Costs: \$120/sample (number unknown)

Population Management

Objective 1: Determine the effect of archery hunting on mule deer abundance and buck ratios.

Rationale: Archery season in Steens Mountain WMU is currently managed under general season regulations. Under these regulations hunter harvest statistics for Steens Mountain WMU lacks precision due to low sample size. Accurate archery hunter data is essential for use in population modeling, which is necessary in developing more precise population estimates and better mule deer population management.

Strategy 1: Establish limited entry archery hunting for the Steens Mountain WMU. Archery elk hunters will be required to have an archery deer tag (used or unused) to hunt elk in the unit. Tag numbers would initially be limited to meet estimated demand to assess harvest and hunting pressure. Harvest data will be evaluated after two years to determine if tag numbers need to be modified to achieve goals.

DRAFT 5

Timeframe: 2010 - 2013

Estimated Costs: None

Objective 2: Improve precision and accuracy of fall herd composition measurement.

Rationale: Currently fall herd composition is determined from the ground with very limited vehicle access. As a result, data suffer from low sample size and are biased towards deer that are associated with private lands or Malheur NWR. Inaccurate buck ratio estimates could affect tag number recommendations, as well as recruitment and population estimates.

Strategy 1: Compare fall buck ratio data collected using a helicopter and ground counts to identify variation in the two methods

Timeframe: December of 2009 - 2013

Estimated Costs: \$20,000 (\$5,000 each year)

Prioritization of Objectives

The Steens Mountain implementation team included:

Randy Caldwell	Oregon State Police
Stacey Davies	Steens Mountain Advisory Council, Landowner Representative
Steve Grasty	Harney County Judge
Ken Hand	Mule Deer Foundation
Rich Jenkins	Landowner
Dave McDonald	Oregon Hunters Association (State Board)
Matt Obradovich	Bureau of Land Management
Earl Tiller	Oregon Hunters Association (Local Chapter)

The consensus of the Steens Mtn local committee and the district was that the first priority for this unit should be implementation of the predation work outlined in this Plan. The group believed this would be the most productive objective for both immediate and long-term results of increasing mule deer populations. Also this objective might be the most easily obtainable due to the fact that the Steens Mtn WMU meets the criteria for implementing a cougar target area. The second priority identified was habitat restoration, even though the committee agreed that habitat conditions are relatively good (juniper expansion and cheatgrass invasion are concerns) and not believed to be limiting mule deer populations. The overall quality of habitat is a major component for mule deer herd health and therefore should be addressed. There are several existing BLM restoration efforts (i.e. North Steens Ecosystem Restoration Project, Five Creeks Rangeland Restoration Project) that we are supporting within the strategies. The committee's third priority was law enforcement. Future funding is unclear for law enforcement agencies, but the Department will work with its partners to prioritize staffing needs for the unit. An additional OSP fish and game officer has recently been hired and stationed in the Burns Work Site. The fourth priority identified was population management. Currently hunter harvest statistics for Steens Mountain WMU lacks precision due to low sample size. Accurate archery hunter data are essential for use in population modeling. The last two objectives were considered of lowest

DRAFT 5

priority although still important for overall success of the MDI. Disturbance and harassment may well be addressed through increased law enforcement efforts. Disease and parasites have not been an issue in the Steens Mountain WMU but the Department will continue existing efforts to monitor and collect samples from suspect animals.

CHAPTER 5: WARNER UNIT

Background

The Warner WMU is 960 sq. miles; of which 2/3 is shrub steppe habitat of predominately mountain big sagebrush or low sagebrush plant communities, and 1/3 is forested habitat of predominately ponderosa pine or mixed ponderosa/white fir. There are extensive aspen stands throughout the unit. Ninety square miles (9%) of the unit is managed by U.S. Forest Service Fremont National Forest (NF), 460 sq. mi. (49%) is managed by BLM, 20 sq. mi. (2%) is managed by DSL, and 380 sq. mi. (39%) is in private ownership (Figure 8).

During the Department's 1980 Mule Deer MO development process, Department biologists Grogan and Eastman identified 70% percent of Warner deer as yearlong residents, the other 30% wintered in the adjacent Interstate or Beatys Butte WMUs and summered in Warner WMU (Figure 8). Waterbury (1989) identified that a small portion of the Warner WMU winter herd as summer residents in California. For the past 10 years, fawn recruitment in Warner WMU has been below maintenance level of 66 fawns/100 does in the fall or 35 fawns/100 adults in the spring (Cox et al., 2009) (Table 9). This has resulted in a population 50% or more below the desired MO of 5,500 wintering deer (Table 9). Fawn loss occurs primarily during the summer. However, hard winters in 1988/89 and 1992/93 caused large losses of fawns and contributed to the declining trend in population since the late 1980s.

Prior to 1980, the Department had no MO for post-season buck escapement. Between 1980 and 1992, Warner WMU was managed for 15 bucks/100 does. Prior to 1992 all buck hunting was regulated through a general season framework. Antlerless seasons were authorized when populations exceeded MO or in response to private land damage (Table 9).

Since 1992, when limited entry rifle mule deer hunting was introduced, the Warner WMU has been divided into two hunt areas with different post season buck MOs. That portion of the unit north of Highway 140 has been managed for 25 bucks/100 does post season and south of 140 has been managed for 15 bucks/100 does. The buck MO in North Warner has been met only 3 of the last 16 years while the buck ratio exceeded MO in South Warner WMU 13 of the last 16 years (Table 9). Most fall herd composition data (including buck ratios) are collected in areas where there could be considerable mixing of summer herds from other units.

Collection of hunter and harvest data by WMU started in 1960. From 1960 through 1991 general season rifle buck hunters averaged 2,590 hunters per year and harvests averaged 974 deer per year. Since adoption of limited entry rifle seasons in 1992, tag numbers have been based on the amount of opportunity that can be allowed and still meet post season buck MO. As deer numbers have declined in the unit, hunting opportunity in North Warner has been substantially restricted in an effort to meet buck MO. The lower buck MO in South Warner hunt area has made it possible to allow more hunting opportunity and still meet MO (Table 10).

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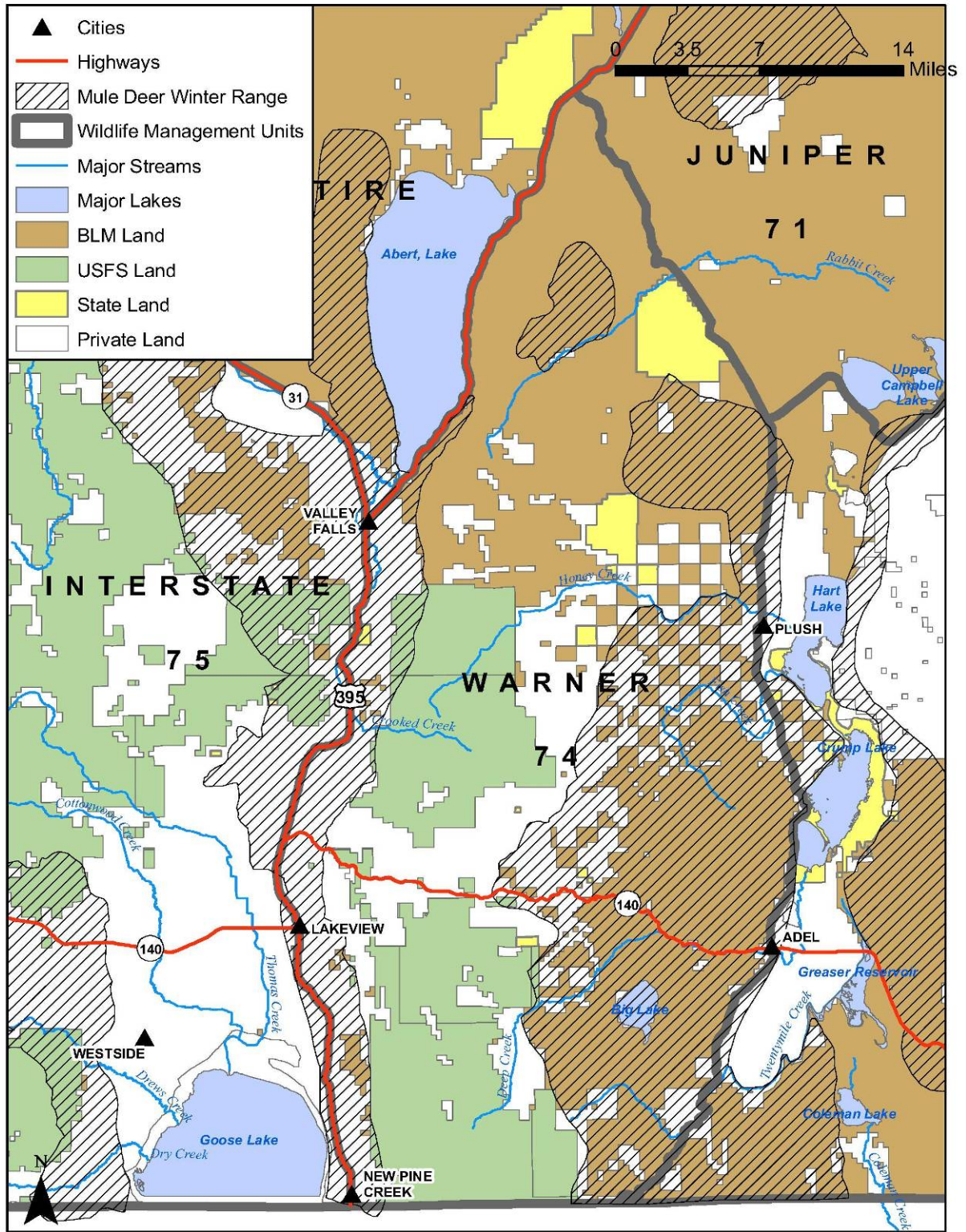


Figure 7. Winter Range and Land Ownership in the Warner WMU.

DRAFT 5

Table 9. Warner WMU Mule Deer Population Trend, Ratios, and Estimated Population 1980 – 2009.

Year	Miles Traveled	Deer Observed	Deer/Mile	Buck/100 Does	MO	Spring Fawns/100 Adults	Estimated Population	Population MO
1980	87	1,221	14.0	17	15	35	8,120	5,500
1982	87	766	8.8	14	15	33	5,094	5,500
1984	87	783	9.0	15	15	32	5,207	5,500
1986	87	1,766	20.3	22	15	72	4,854	5,500
1988	87	1,914	22.0	9	15	15	5,261	5,500
1990	87	1,399	16.1	7	15	42	3,845	5,500
1992	87	1,348	15.5	11	15	17	3,705	5,500
1994	87	721	8.3	N-15, S-15	N-25 S-15	24	1,982	5,500
1996	87	800	9.2	N-16, S-21	N-25 S-15	33	2,199	5,500
1998	87	1,859	21.4	N-22, S-15	N-25 S-15	28	5,110	5,500
2000	87	592	6.8	N-18, S-22	N-25 S-15	32	1,627	5,500
2002	87	No data	--	N-23, S-16	N-25 S-15	15	2,766	5,500
2004	87	777	8.9	N-18, S-35	N-25 S-15	43	2,136	5,500
2006	87	826	9.5	N-20, S-16	N-25 S-15	24	2,270	5,500
2008	87	1,076	12.4	N-11, S-18	N-25 S-15	36	2,958	5,500

DRAFT 5

Table 10. Warner WMU Mule Deer Hunting Opportunity History 1980 – 2008.

Year	Tags Auth	Rifle Hunters	Harv	% Succ	Archery Hunters	Harv	% Succ	Total Buck Harvest	Antlerless Hunters
1980		2,771	752	27	120	0	0	752	164
1982									
1984									
1986		2,263	1007	45	65	34	52	1,041	
1988		2,160	843	39	134	51	38	894	745
1990		2,295	620	27	92	14	15	634	
1992	?	N-194 S-575	N-112 S-318	N-58 S-55	126	44	35	474	
1994	N-50 S-300	N-64 S-285	N-55 S-144	N-85 S-51	27	7	27	206	
1996	N-100 S-450	N-119 S-439	N-57 S-117	N-48 S-27	107	20	19	194	
1998	N-250 S-600	N-270 S-571	N-135 S-206	N-50 S-36	100	28	28	380	
2000	N-255 S-612	N-285 S-568	N-135 S-119	N-47 S-21	82	8	10	293	
2002	N-204 S-585	N-219 S-481	N-108 S-128	N-49 S-27	192	40	20	297	
2004	N-131 S-297	N-121 S-282	N-47 S-72	N-39 S-26	109	11	10	130	
2006	N-104 S-285	N-99 S-271	N-51 S-89	N-52 S-33	121	11	9	151	
2008	N-60 S-200	N-93 S-195	N-42 S-50	N-45 S-26	171	36	21	130	

Prior to 1980 archery hunter and harvest data was compiled by county. In the 1960's Oregon had several designated archery hunting areas for deer or elk. One of the deer areas was in Warner in the vicinity of Crane Mountain. From 1980 to present, archery seasons in Warner have been regulated through a general season framework with no split between north and south hunt areas. From 2006 through 2008, the Warner unit averaged 136 archery hunters per year with an average harvest of 24 bucks/year (17% success).

Potential Limiting Factors

Habitat Degradation

In Warner WMU, minor habitat fragmentation through rural residential development has occurred on winter range along Goose Lake. Natural events such as timber disease and wildfire have had both positive and negative effects on mule deer habitat. Death of trees has opened forest canopies, allowing more sunlight and nutrients to reach forage plants in the understory. In some areas wildfire has improved deer forage by regenerating native fire tolerant shrubs and increasing forb species. In other areas; however, wildfire has had a negative effect through the removal of desired fire intolerant shrubs such as bitterbrush and in optimizing conditions for the spread of non-native invasive plants.

DRAFT 5

Both the development of closed forest canopies and juniper encroachment have degraded mule deer habitats by reducing sunlight, moisture, and nutrients for important shrubs and forbs used by mule deer.

The spread of invasive non-native plants has decreased habitat quality for mule deer in the unit. Once established, invasive plants often increase fire frequency and compete with more desirable forage species.

Predation

Predation can be a limiting factor for big game populations in some instances. Warner WMU meets the criteria in the Department's Cougar Management Plan (Oregon Department of Fish and Wildlife 2006a) for a mule deer population that can be limited by predation. Cougars and coyotes are the primary predators of mule deer in the Warner WMU. Predation by these species has likely led to decreased adult deer survival as well as low fawn recruitment.

Disturbance and Harassment

Open road density and disturbance by motorized vehicles have major impacts on habitat quality and use by deer. Density of open roads on national forest lands in Warner WMU is greater than suggested standards for good habitat effectiveness. OHV use in the unit is low compared to other areas in Oregon but seasonally high enough to affect habitat use by mule deer.

Illegal Activities

While poaching does not presently appear to be a large issue in the Warner WMU, there is concern that if the mule deer population increases to MO, illegal take of large bucks may increase.

Disease

During the summers of 2006 and 2007 a substantial number of deer in Warner Valley died from Blue Tongue Virus (BTV). However, it is unknown if this disease is negatively affecting deer at a population level. Parasites such as ticks, keds, bot flies, and lice are present in the mule deer population in this unit but do not seem to be adversely affecting deer at a population level.

Objectives and Strategies

Habitat Management

Objective 1: Improve the quality and quantity of mule deer habitat on approximately 505,000 acres.

Rationale: Habitat conditions in Warner WMU have been altered and degraded by juniper expansion, invasion of non-native plants, closed canopy forests, and decreased vigor of aspen stands. These alterations have negatively impacted mule deer populations by reducing early stages of plant succession, reducing nutritional browse, and plant diversity. To restore early

DRAFT 5

succession forage plants, vegetation manipulations will include mechanical and chemical treatments, prescribed fire, silvicultural treatment, reseeding, and water developments.

Strategy 1: Treat 98,450 acres of forest stands with greater than 40% canopy closure to improve mule deer forage (Figure 9). Work with Lakeview Stewardship Group within the 10-year stewardship contract framework to implement treatment activities.

Timeframe: 2010 - 2025

Estimated Costs: \$15 million (\$150/acre)

Strategy 2: Treat juniper on approximately 115,000 acres of shrub steppe habitat on private and public lands (Figure 10). Within the unit there are 230,000 acres of post settlement juniper encroachment and the goal would be to treat approximately half.

Timeframe: 2010 - 2025

Estimated Costs: \$17 million (\$150/acre, \$250/acre if reseeded)

Strategy 3: Improve health and distribution of 8,410 acres of aspen stands on public and private lands (Figure 11). Prioritize stand selection based on the most risk of a stand disappearing without treatment (i.e. risk of loss)

Timeframe: 2010 - 2011 Identify aspen stands with highest potential to provide mule deer habitat and specific treatment needs. 2010 - 2025 Coordinate actual treatment schedules with landowners or land management agencies.

Estimated Costs: \$3 million (\$150/acre)

Strategy 4: Identify and treat non-native plant species on approximately 10,000 acres. With the exception of two large burns on BLM lands, most invasive plant species found in Warner WMU are not widely distributed compared to other areas in Oregon, which makes treatment more cost effective (Figure 12). Coordinate treatment efforts through the Lake County Cooperative Weed Management Area.

Timeframe: 2010 - 2012 complete risk assessment and prioritize treatment areas. Actual treatments will be ongoing following risk assessment.

Estimated Costs: Risk assessment would be time and materials.

Treatment: \$2 million (\$200/acre)

Strategy 5: To provide adequate water distribution in shrub steppe habitat, clean waterholes as needed in areas that provide better deer habitat. There are approximately 85 waterholes in mountain shrub communities, but their condition is unknown at this time. Work with BLM and grazing permittees to implement needed maintenance.

Timeframe: 2010 - 2015

Estimated Costs: \$2.700/waterhole cleaned

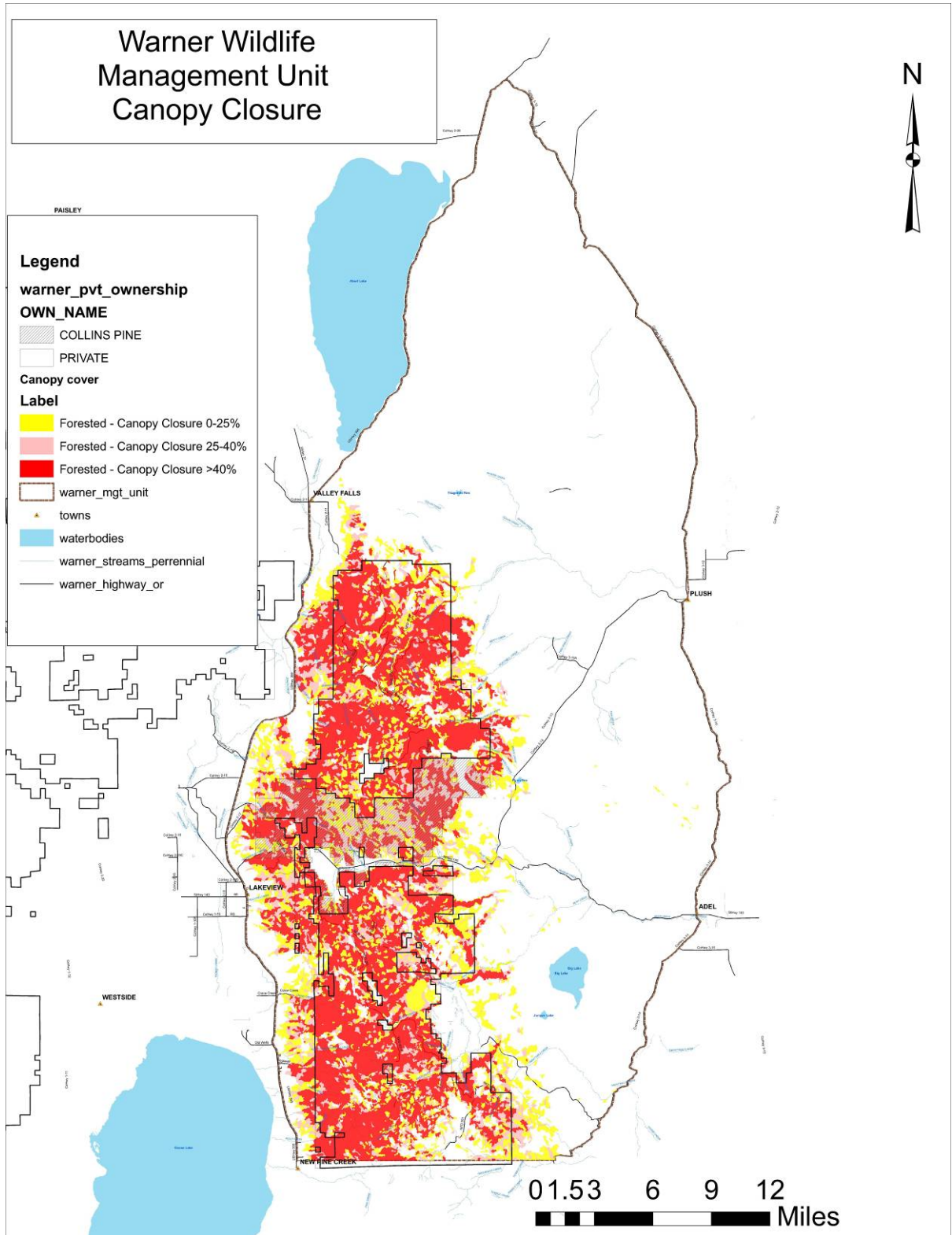


Figure 8. Canopy closure of forest stands with Warner WMU.

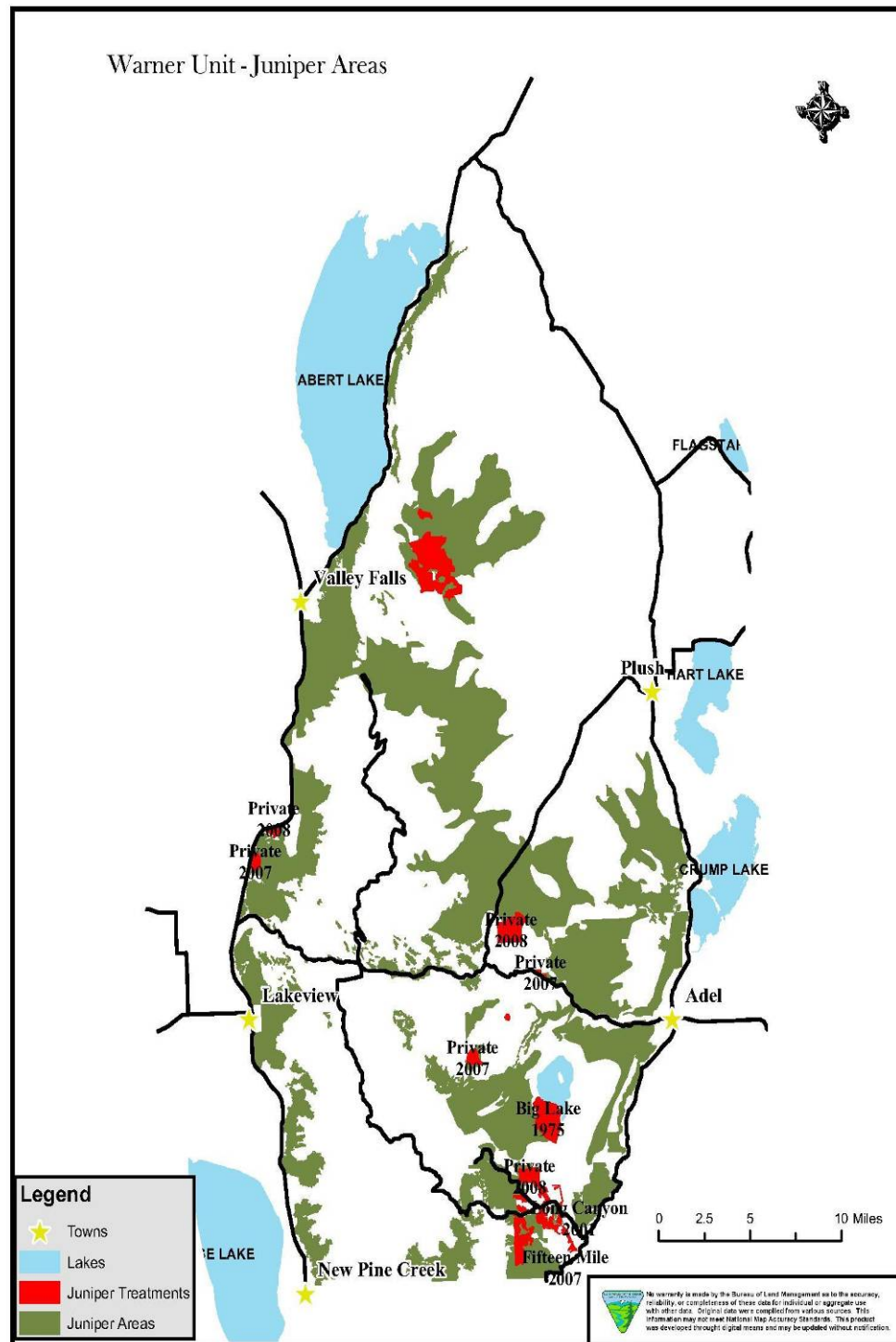


Figure 9. Juniper distribution within Warner WMU.

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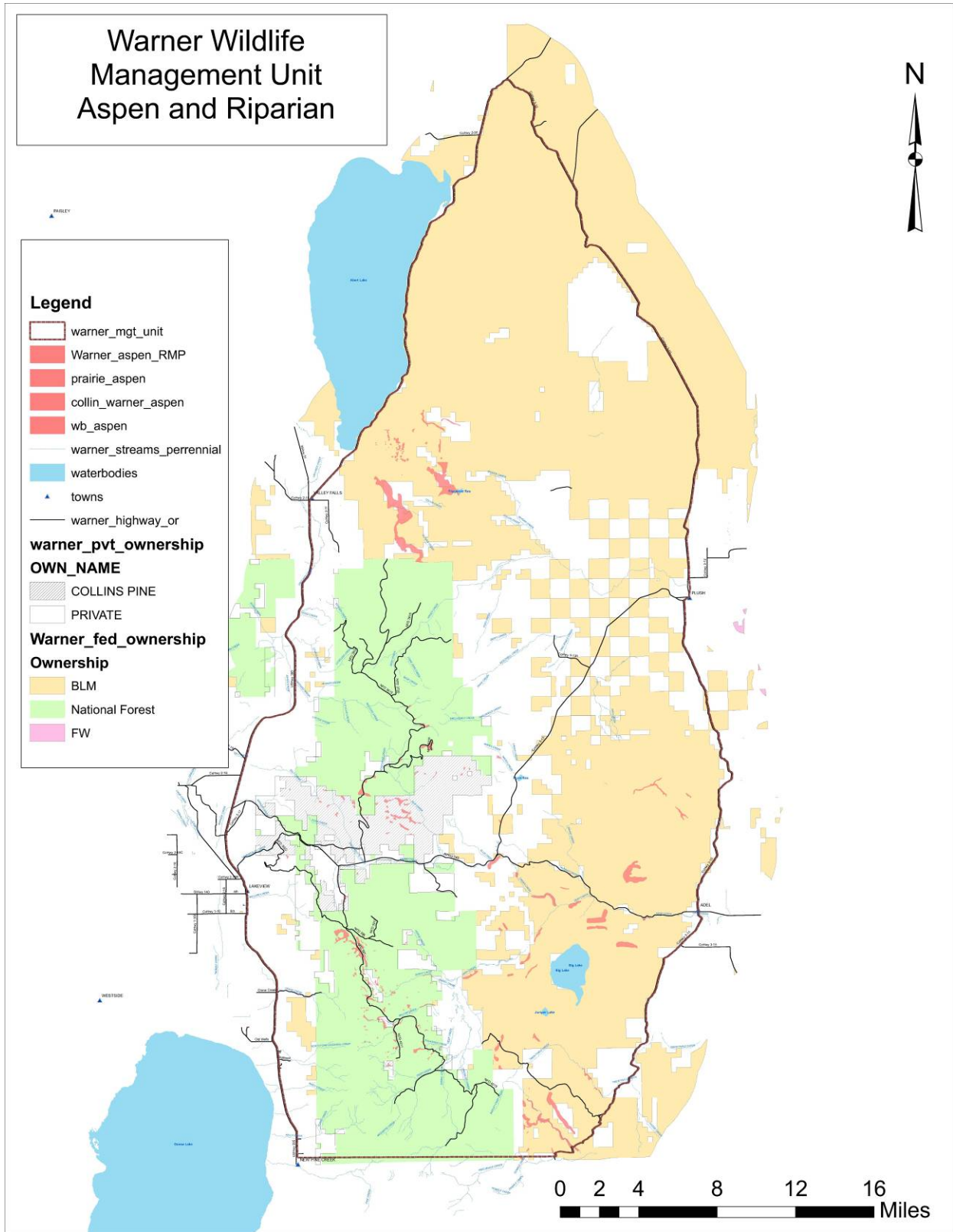


Figure 10. Aspen distribution within Warner WMU.

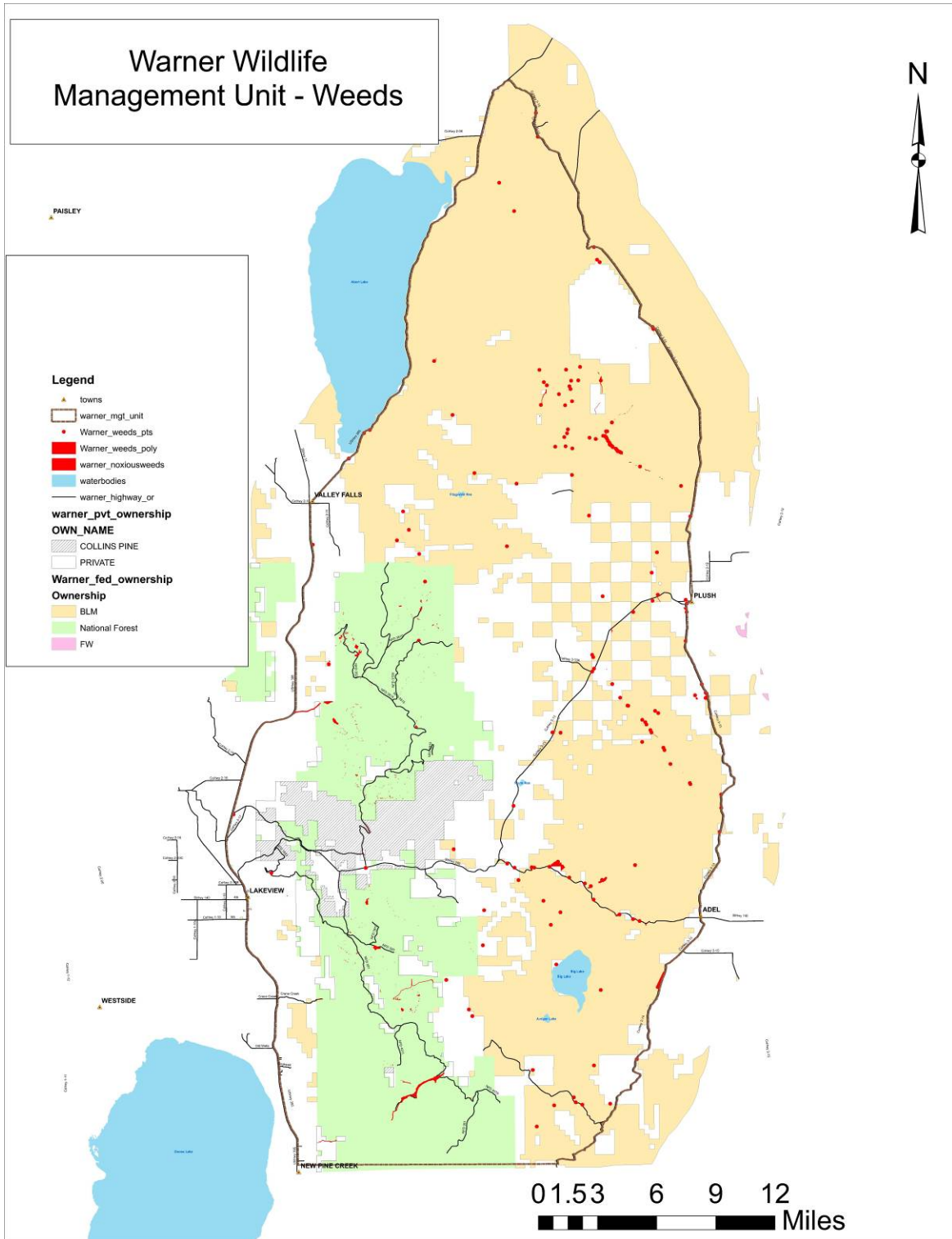


Figure 11. Non-native invasive plant distribution within Warner WMU.

DRAFT 5

Predator Management

Objective 1: Reduce mule deer mortality caused by predation in the Warner WMU.

Rationale: In the Warner WMU, we believe that cougars are the primary predator of both adult and fawn mule deer, while coyotes are a substantial predator of fawns. Coyote control efforts were substantially diminished when Lake County withdrew from US Department of Agriculture Wildlife Services program in 2000.

The proportion of fawn loss has increased through time and more on summer range than winter range. From 1970 through 1979, December fawn ratios averaged 67/100 does, with March fawn ratios averaging 39/100 adults. Assuming 169 fawns are conceived per 100 does, the summer fawn survival during this period averaged 40%, and winter fawn survival averaged 59%. From 2000 through 2008 December fawns averaged 49/100 does (29% summer survival), and March fawns average of 25/100 adults (59% winter survival).

Cougar densities in the Southeast Oregon Zone F (which includes Warner WMU) have increased from 1.2 cougars/100 sq. miles in 1994 to 2.7 cougars/100 sq. miles in 2003 (Oregon Department of Fish and Wildlife 2006a). The increase in hunter harvest, number of cougars taken in response to livestock or safety/pet complaints, and complaints received that did not result in a cougar being taken, all indicate that cougar populations have increased in the Warner WMU since 1994. The Department suspects cougar predation was an important factor in the failure of Zone F deer populations to reach MO and that fawn recruitment is substantially affected by winter severity, drought, coyote predation, and cougar predation (Oregon Department of Fish and Wildlife 2006a).

Ideally, aerial removal of coyotes on summer range would be preferred to maintain fawn ratios as high as possible through summer; however, aerial control on summer range is not practical due to the density of timber and juniper stands which provide cover for coyotes. Other control options, with the exception of the use of toxicants, have not been effective at controlling coyote predation on big game species. Therefore, if aerial coyote control occurs it should be completed at the most effective time while deer and coyotes are concentrated on winter range.

Low recruitment and reduced adult survival are preventing mule deer populations in Warner WMU from reaching population MO. Estimated mule deer populations have averaged 37% of population MO for the last five years.

Strategy 1: Implement a cougar target area in Warner WMU in accordance with Cougar Management Plan (Oregon Department of Fish and Wildlife 2006a).

Timeframe: 2010 - 2015

Estimated Costs: \$3,000/year with use of ODFW Cougar/Bear Agents

Strategy 2: Initiate coyote control during years that fall fawn ratios are below 45 fawns/100 does with a target of increasing average spring fawn ratios to more than 35 fawns per 100 adults. During control years the Lake County coyote index should indicate that the coyote population is above average.

DRAFT 5

Timeframe: Not currently planned

Estimated Costs: \$18,900/year for 126 hours/year of fixed wing aircraft time

Disturbance and Harassment

Objective 1: Reduce disturbance from motorized vehicles to maintain habitat effectiveness for mule deer.

Rationale: Within the Warner WMU on the Fremont/Winema National Forest, current road densities average 3.1 miles of road per square mile. On Lakeview District BLM lands, the density of open roads is less than 0.5 miles of road per square mile (Figure 13), but overland travel by OHVs is a resource concern. Access to private timberland in the unit is controlled by gates. There are few roads on other private lands.

Strategy 1: Through the U.S. Forest Service travel management process, coordinate with Fremont/Winema National Forest to decrease open road density. Avoid development of quasi-wilderness through road closure. Areas need to be available for recreational use while improving habitat effectiveness for mule deer.

Timeframe: 2010

Estimated Costs: No additional cost

Strategy 2: Coordinate mule deer habitat needs with Lakeview District BLM as they re-analyze their Resource Management Plan to address travel management and travel by OHVs; concerns include influence on habitat effectiveness and buck escapement.

Timeframe: 2010 - 2012

Estimated Costs: No additional cost

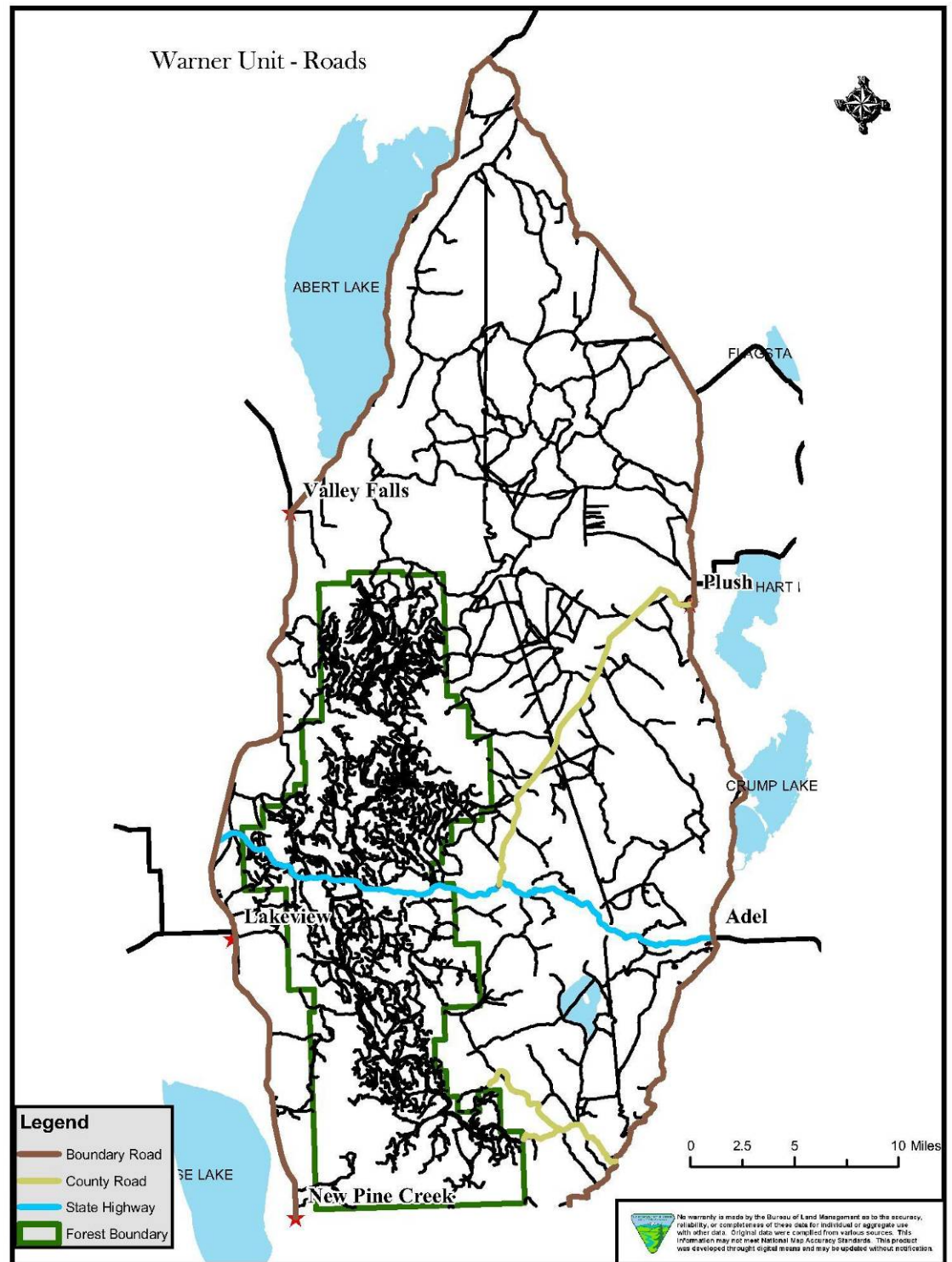


Figure 12. Roads within Warner WMU.

DRAFT 5

Objective 2: Minimize the effect of energy development projects on mule deer habitat effectiveness.

Rationale: Energy development projects such as wind farms, pipelines, and power line corridors have the potential to reduce habitat effectiveness for mule deer. Often the magnitude of the effect is more a result of where rather than if these facilities are developed. In some cases as a result of energy development, there is increased motor vehicle travel or increased spread of invasive plants that negatively affect habitat quality.

Strategy 1: Monitor and comment on energy development projects as they affect mule deer habitat (Figure 14).

Timeframe: 2009 - 2015

Estimated Costs: No additional cost

Objective 3: Reduce vehicle collisions with mule deer on Highways 395 and 140 East.

Rationale: Two major highways bisect mule deer winter range in the Warner WMU, and as mule deer abundance increases there is potential for increased loss of mule deer through collisions with vehicles.

Strategy 1: Work with Oregon Department of Transportation to identify wildlife corridors and develop techniques to reduce road kill.

Timeframe: 2010 - 2015

Estimated costs: Unknown at this time

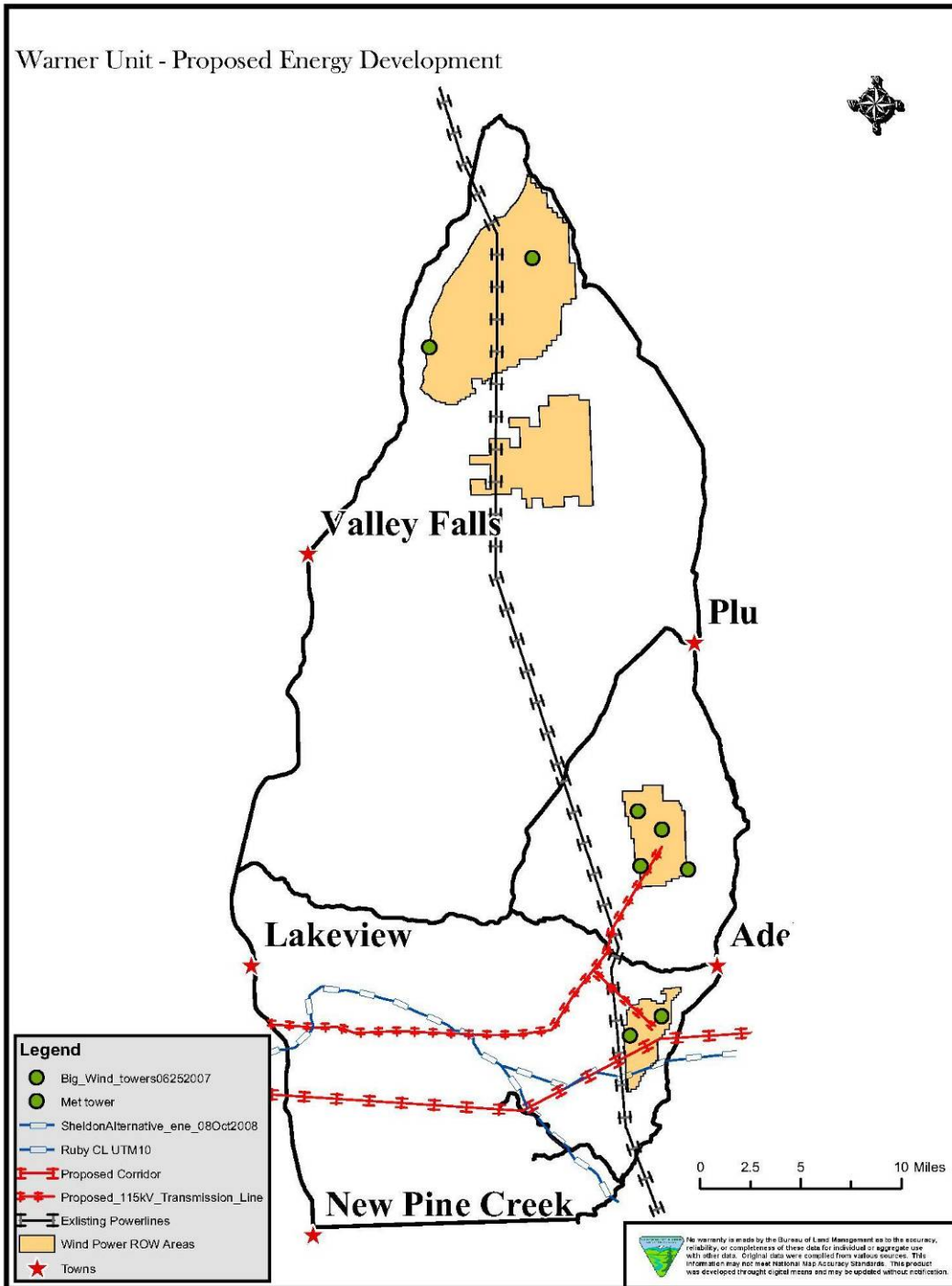


Figure 13. Proposed energy development projects in Warner WMU.

DRAFT 5

Law Enforcement

Objective 1: Document and reduce unlawful take of mule deer in Warner WMU.

Rationale: Illegal take of mule deer in Warner WMU is thought to be minimal. During the rifle deer seasons of 2007 and 2008, nine wildlife enforcement decoy operations were completed. OSP Fish & Game Officers measured > 90% compliance of hunters with wildlife laws. Enforcement patrols in the Warner WMU during winter ranges indicated less than five poached deer per year. There is concern that when the North Warner buck MO is met or exceeded poaching will increase. Therefore, it will be necessary to monitor illegal take in the unit for any substantial increase.

Strategy 1: Implement the OSP 2009 Warner WMU Deer Protection Action Plan (Appendix C). Operations should be implemented to measure compliance during hunting season and when deer are on winter range. Operations should be repeated after the buck MO is met in North Warner to measure change in compliance with increased availability of large bucks.

Timeframe: 2010 - 2011

Estimated Costs: No additional cost

Strategy 2: Increase incentives for citizens to notify OSP of game violations that occur in Warner WMU by doubling the TIP reward money.

Timeframe: 2009 - 2013

Estimated Costs: \$5,000 (5 rewards @ \$1,000 maximum)

Strategy 3: Inform and educate prosecutors, judges, legislators, news media, and the general public of the need to aggressively prosecute game cases and impose stiffened fines and penalties to achieve Warner WMU mule deer initiative goals.

Timeframe: 2010 - 2011

Estimated Costs: No additional cost

Disease and Parasites

Objective 1: Continue monitoring disease prevalence in Warner WMU.

Rationale: During the summers of 2006 and 2007 an outbreak of BTV resulted in death of most deer summering in Warner Valley hay fields. There was no indication that deer outside Warner Valley were affected, however discussions with the Department's wildlife veterinarian identified the need to monitor disease and parasite occurrence throughout the Warner WMU.

Research indicates that unhealthy deer may be more susceptible to collisions with motor vehicles. Monitoring disease prevalence in road killed deer or deer that die of unknown causes may give an indication of the type and severity of disease or parasites in Warner deer. A sampling strategy will be developed if a specific disease concern is identified.

DRAFT 5

Strategy 1: Collect a minimum of 20 biological specimens each year for five years from road kill or individual deer which die from unknown causes and analyze for disease and parasite occurrence.

Timeframe: 2010 - 2015
Estimated Costs: \$12,000

Strategy 2: Continue the Department's annual surveillance for CWD through hunter harvest and road killed mule deer sampling. Collect a minimum of 10 samples annually.

Timeframe: Ongoing
Estimated Costs: No additional cost

Population Management

Objective 1: Increase the post-season buck/doe ratio in North Warner to the MO of 25 bucks/100 does.

Rationale: Post-season buck ratios have been attained three times over the last 16 years in the north Warner hunt area. While this is not a reason for the decline in mule deer numbers in the WMU, to meet the established buck MO it will be necessary to reduce rifle and archery buck harvest (hunter opportunity). Implementation of a limited entry archery season will be necessary to adequately measure take by archers and distribute North Warner deer harvest between user groups. During years of reduced public hunting opportunity it will also be necessary to limit LOP opportunity in North Warner.

Strategy 1: Reduce rifle buck harvest until the buck ratio MO is met for three consecutive years or the three year average = or exceeds MO.

Timeframe: Started in 2009
Estimated costs: None

Strategy 2: Establish a limited entry archery season for North and South Warner hunt areas. It is necessary to limit the hunting in both areas because of the interchange of deer between North and South Warner. The 3-year average (2006 – 2008) was 136 archery deer hunters in the Warner WMU. We propose to reduce tags consistent with reductions in rifle tags with 40% available in North Warner and 60% available in South Warner. Archery elk hunters will need a limited entry deer tag to hunt elk in the Warner unit.

Timeframe: Start in 2010
Estimated Costs: No additional cost

Strategy 3: Implement restrictions on LOP tags issued in north Warner consistent with reduced opportunity in public tags (Strategy 1)

Timeframe: Start in 2010
Estimated Costs: None

DRAFT 5

Objective 3: Determine the interchange of deer between North and South Warner winter ranges as well as the amount of mixing on winter range with deer from other WMUs. Measure mortality rates for adult deer.

Rationale: To accurately apportion tag numbers between the two Warner hunt areas it is necessary to know the interchange of deer between winter and summer range within the Warner WMU as well as the amount of overlap that occurs on winter range between Warner deer and deer from adjacent units. Mortality estimates are an important variable in population models to monitor population change. Updated mortality estimates for Warner WMU would increase model strength and reliability.

Strategy 1: Radio mark a representative sample of adult mule deer distributed throughout the Warner unit to measure mortality and determine seasonal movements.

Timeframe: 2015 - 2019

Estimated Costs:

- Capture and marking costs = \$1200 - \$5000/deer.
- Monitoring and analysis costs = \$10,000 - \$36,000/year.
- Variation in cost is dependent on radio collar selected.

Prioritization of Objectives

The Warner implementation team included:

Dave Aikins	Oregon Hunters Association
Fred Craig	Oregon Hunters Association (State Board)
Lee Fledderjohann	Collins Timber
Todd Forbes	Bureau of Land Management
Ken Hand	Mule Deer Foundation
Roger Linton	Lake County Umbrella Watershed Council
Amy Markus	Fremont/Winema National Forest
Mike Ramsey	Fremont/Winema National Forest
Keith Reed	Oregon Hunters Association
Pete Schreder	Oregon State University Extension
Sonny Simms	Landowner
John Taylor	Landowner
Curtis Weaver	Oregon State Police
Brad Winters	Lake County Commissioner

Warner WMU implementation team members spent a substantial amount of time prioritizing objectives identified in this chapter. After much discussion it was decided that the objectives should be prioritized two ways. Objectives were first prioritized based on their potential to provide a long-term increase of mule deer populations in Warner. Second, they were prioritized based on what could be implemented in a short time frame (1 - 5 years) that would increase deer numbers while the effect of more long term strategies are realized.

DRAFT 5

The team recognized that the Mule Deer Initiative process is a new activity for the Department and it will be imperative that the public is kept informed of our activities, successes and failures. As the Plan is implemented, Public Outreach must be done and therefore not optional. Strategies identified under Population Management were all within the statutes or rules that govern mule deer management in Oregon. Strategies 1 and 2 were adopted by the Commission on 5 June 2009 and have since been implemented; the remaining task will be to measure their effects on the buck MO in the north Warner hunt area. Implementation of Strategy 3 would improve management and should be completed at some time.

Priorities Based on Having the Greatest Potential for Long-Term Effect

1. Habitat
2. Predator Control
3. Disturbance and Harassment
4. Enforcement
5. Disease

Strategies identified under Enforcement and Disease were designed to measure the amount of illegal take, and the effect of disease. At this time it does not appear that either of these factors are having significant effect on mule deer numbers in Warner. If through implementation we find that they are having an effect their ranking would change.

Prioritization Based on Implementation Timing

1. Predator Control
2. Habitat
3. Disturbance and Harassment
4. Enforcement
5. Disease

Due to the number of acres that need treatment, it will take several years before mule deer habitat quality is substantially improved. By implementing predator control strategies, both adult and fawn survival will increase, thereby increasing deer numbers while habitat quality is improved.

DRAFT 5

MULE DEER INITIATIVE IMPLEMENTATION

The Department is committed to improving mule deer populations throughout their range in the state. Implementation of recommendations in these WMU Action Plans is dependent on adequate funding and can enhance management of mule deer populations to provide improved mule deer hunting and viewing in Oregon.

At present, data collection and enforcement constitute the greatest expense and emphasis for mule deer management activities. However, in the future, the Department will more aggressively pursue actions which conserve and enhance mule deer populations. The MDI effort will involve participation in collaborative projects to protect and improve mule deer habitats, implementation of activities which will reduce disturbance or harassment of deer throughout the year, conducting predator management programs, increasing enforcement activities to address illegal take, adjusting regulations, and monitoring disease prevalence and effect. Because the mule deer initiative is a collaborative effort it will be imperative that the Department keep the public informed of MDI activities and results.

The Department recognizes that habitat must be comprehensively managed on a landscape basis if mule deer herds are to be sustained at levels desired by the public and in balance with available habitat. To achieve this, land use plans must address the ecological requirements of all species including mule deer. Habitat treatments must also be implemented at a scale sufficient to realize a population level response by mule deer. While strategies in this Plan are designed to benefit mule deer, they will also benefit many other wildlife species.

Predator management activities proposed in this Plan will not be carried out for both cougars and coyotes in all of the five WMUs at the same time. Monitoring will be designed to determine the effectiveness of predator reductions and the differential effects of cougar predation and coyote predation on mule deer populations and future actions will follow the Adaptive Management approach.

Adaptive Management

This Plan provides for adaptive management in implementation of the Mule Deer Initiative. Adaptive management is a flexible approach to long-term management of resources that is directed by results of ongoing monitoring activities and latest data. Management techniques and strategies are regularly evaluated in light of monitoring results, new scientific understanding, and other new information. These periodic evaluations are used over time to adapt both management techniques and strategies to better achieve goals.

Monitoring is an essential component of adaptive management in general and of this Plan in particular. Specific monitoring strategies will be developed for those management actions implemented to achieve the goals and objectives described in this Plan. The ability to monitor results will be considered when selecting and prioritizing management actions. Where possible, habitat management activities will be monitored to assess whether the desired effects on wildlife and habitat components have been achieved and to determine which habitat improvement projects provide the most benefit to mule deer.

DRAFT 5

The Department will continue to monitor trends in harvest and population parameters (buck and fawn ratios, etc.). Harvest survey and population parameter information will be a high priority and enhanced for MDI units to improve the ability to identify results of MDI management actions.

Partnerships

Collaborative partnerships are the most effective means to enhance funding from new and traditional sources. Interested state, federal, and local agencies and interest groups will be enlisted to assist with the MDI. These partners will play an important role in helping the Department achieve its mission and reach the goals of this effort. The Department will continue to rely on these and other partners in the future to help implement this Plan to provide input for future updates and to provide new project opportunities for existing or new partners.

As a result of the Department starting the MDI process numerous groups and individuals have expressed interest and are already developing ways to help mule deer in Oregon. For example, prior to any plans being finalized OHA approved doubling the Turn In Poachers rewards for convictions of wildlife crimes in the MDI units.

Potential Partners

Oregon Hunters Association
Mule Deer Foundation
Rocky Mountain Elk Foundation
Private landowners
Natural Resource Conservation Service
Oregon Watershed Enhancement Board
OSU Extension Service
U.S. Forest Service
Bureau of Land Management
USDA Wildlife Services
Oregon Department of Agriculture
Oregon Wildlife Heritage Foundation
Watershed Councils
Soil and Water Conservation Districts
County Weed Control Districts

Public Involvement and Outreach

By any social, cultural, economic, or ecological measure, mule deer are among the most valued of Oregon's natural resources. To many, the species is an iconic wildlife symbol of the west and one of the most popular big game species sought by resident and nonresident hunters alike.

Deer management entails a myriad of biological considerations. However, deer management also requires consideration of the human dimension. By statute, fish and wildlife species belong to the public, and their management is entrusted to the Department as the managing authority.

DRAFT 5

Hunting and non-hunting stakeholders, to whom the resource belongs, are the key to future support and funding of deer management. The success of this MDI requires a commitment by all stakeholders, particularly by those, private and public, that manage the lands in Oregon.

The Department's outreach program will seek to inform and educate the public about Oregon's Mule Deer Initiative. Through various articles, news releases, and public forums, the public will be provided timely information about the biology and ecology of mule deer, the challenges in managing deer and their habitat, and other related issues. Through public participation, species management plans, and one-on-one contacts, feedback will be solicited to understand the public's attitudes and expectations regarding deer management. Finally, the public will be provided opportunities to participate in management planning annually at public review meetings each May and Commission hearings.

In addition, the Department will seek creative programs that support voluntary conservation actions by landowners and land managers, which is one of the six most pressing conservation issues identified in the Oregon Conservation Strategy (Oregon Department of Fish and Wildlife 2006b).

Specific tools and strategies to promote the MDI could include: Bi-annual newsletter, periodic news releases, Oregon MDI gear (baseball hats, stickers, etc), flyers to MDI unit hunters and landowners, and at check stations, advertising in Big Game Regulations, and displays for use at sporting group and Hunter Education events.

Actions will be carried out to support each of the following objectives:

Population management:

- Promote compliance with mandatory reporting, tooth collection, etc.
- Inform hunters and landowners about regulation changes due to MDI

Habitat:

- Create brochure for landowners in MDI units
- Promote volunteer opportunities to improve habitat
- Educate hunters, others about mule deer habitat needs

Disease and Parasites:

- Publicize voluntary or mandatory disease sampling.
- Educate hunters about signs of disease.
- Assist efforts to education hunters about CWD rules (e.g. imports)

Disturbance and harassment:

- Educate about proper etiquette of shed antler hunting, use of ATVs, etc.
- Design signs for use on high mortality roads

Law Enforcement:

- Assist OSP as needed in efforts to publicize name of wildlife law violators
- Promote increased TIP rewards and need to turn in wildlife law violators
- Publicize impact of illegal activity on mule deer (e.g. central Oregon study)

DRAFT 5

Assist efforts to educate court system about wildlife law violations

Predator management:

Educate hunters about predator and mule deer interaction

Promote predator hunting (hunting clinics)

Funding:

Assist with grant writing efforts

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DRAFT 5

APPENDICIES

Appendix: A:

OREGON STATE POLICE HEPPNER WORKSITE
HEPPNER MANAGEMENT UNIT (48)
MULE DEER ACTION PLAN
2009

SUBMITTED BY
TROOPER MICHAEL MAYER
OREGON STATE POLICE

AREA DESCRIPTION

The Heppner Wildlife Unit is composed of 32% public lands with these holdings falling under United States Forest Service, Bureau of Land Management, and State of Oregon Ownership.

The remaining 68% of the land is under private land management and is under several different forms of management: timber, grazing, and other private uses.

OVERVIEW

The Heppner Wildlife Management Unit has been identified as an area that the Oregon Department of Fish and Wildlife is going to place additional resources in to enhance and restore mule deer populations and habitat. As part of this goal a unit wide enforcement action plan is being developed to enhance these efforts.

In 2008 there were 3,300 tags issued to hunters in the controlled rifle hunt drawing. It is unknown how many archers chose this unit to pursue mule deer during the general archery season.

The action plan is going to be broken down into four separate enforcement areas:

1. Habitat protection.
2. Mule Deer hunting season.
3. Winter range protection.
4. Unlawful taking of mule deer during closed seasons.

Some of these areas will overlap but by breaking it down into these areas of enforcement the goals and efforts of the Oregon State Police will be easier to identify and enable us to better track the success of the action plan.

Over the last five years the hours worked, number of contacts, violations, and compliance rates have been recorded using the Oregon State Police Broslund reporting system.

DRAFT 5

RIFLE SEASON

HEPPNER	2003	2004	2005	2006	2007
Hours	180	445	213	342	207
Contacts	140	237	194	275	144
Violations	28	38	16	24	22
Compliance	80%	84%	91.8%	91.3%	84.7%

ARCHERY SEASON

HEPPNER	2003	2004	2005	2006	2007
Hours	55	74	99	149.5	8
Contacts	32	29	30	168	0
Violations	1	0	2	1	0
Compliance	96.9%	100.0%	93.3%	100%	100.0%

As you can see from these numbers the compliance rates and hours worked during rifle season vary greatly.

During rifle season the Trooper with responsibilities in the Heppner Management Unit also has responsibilities in the Columbia Basin, Fossil and Ukiah Management Units.

RESOURCES AVAILABLE

DEDICATED RESOURCES:

Heppner Worksite- 1 Fish and Wildlife Trooper

1 seasonal cadet- 580 hours

AVAILABLE RESOURCES:

John Day Work Site- 2 Fish and Wildlife Troopers, 1 Wildlife Enforcement Mule Deer Decoy, 1 ATV vehicle, 1 Seasonal Cadet 600 hours

Pendleton Patrol Office- 2 Fish and Wildlife Troopers, 2 Wildlife Enforcement Mule Deer Decoys, 1 Motorcycle

Hermiston Patrol Office- 1 Fish and Wildlife Recruit Trooper

Condon Worksite- 1 Fish and Wildlife Trooper

Arlington Worksite- 1 Fish and Wildlife Trooper

Bend Patrol Office- 1 Fish and Wildlife airplane

Baker City Patrol Office- 1 Fish and Wildlife airplane

Oregon Department Fish and Wildlife Heppner Field Office- 3 employees, 2 ODFW ATV's

DRAFT 5

CONCERNS

There has been a downward trend in the number of mule deer harvested in the Heppner Unit. It is not exactly known what factors are responsible for this trend but the Oregon State Police, Oregon Department of Fish and Wildlife, private land owners, and recreational user groups will all need to work together to try and reverse this downward trend.

Oregon Department of Fish and Wildlife District Biologist Steve Cherry has been consulted in the formation of this action plan to ensure that ODFW and OSP are both partnering to establish the best chance of success of the Mule Deer Initiative and this action plan.

OPERATIONAL TIME PERIOD AND AREA

The entire Heppner Wildlife Unit will be covered by this plan. The action plan will start January 1, 2009 and conclude on December 31, 2009.

OPERATIONAL PLAN

In January, February, and March winter range patrols will be conducted. This is when the Heppner mule deer are most vulnerable to unlawful take and harassment. Most of the Heppner Unit public ground is open to vehicle travel but is often snowed out and inaccessible to Troopers during the winter months. The winter range is low and easier to access and the deer are more concentrated. Finding shed antlers is increasing in popularity and is often done on ATV. ATV harassment on the winter range when deer are already stressed is harmful to herd health. Flights utilizing the OSP plane will be conducted to locate the largest concentrations of deer. Most ground patrols will be conducted by marked pickup or ATV. Landowner contacts around the winter range will be done to help create the partnership in protecting the mule deer during this vulnerable time.

In April, May and June mule deer are transitioning to summer range and beginning to fawn with most of the roads into the summer range just becoming drivable at the same time. This time period would be best utilized by conducting patrols in these areas to minimize harassment to young wildlife.

In July and August mule deer are widely distributed on their summer range. Backcountry patrols will be conducted by foot and horse to identify areas of concern that may be potential problems during hunting seasons. Patrols for disturbance by unlawful ATV activity will also be conducted.

From late August through mid-October patrols looking for tag compliance will be conducted. If an area of concern is developed the Wildlife Enforcement Decoy will be used. ODFW has demonstrated a willingness to help with decoy operations. Two mule deer decoys are ready for use from the Pendleton area command.

Extra patrols from surrounding offices will be used as the need for manpower dictates. Having patrols from the Pendleton and Hermiston offices working much of the Columbia Basin and Ukiah unit would help free up the Heppner patrol to work the Heppner unit. For this reason there is a continued need for the Heppner seasonal cadet.

During late October through December mule deer bucks move to lower ground to locate does and breed. They are more visible than normal and therefore become vulnerable to unlawful take. Patrols will be conducted around areas of high mule deer activity with added emphasis on areas with large bucks.

DRAFT 5

Meetings with recreational user groups as well as local landowners will be utilized to inform them of the action plan and to ask for their assistance in reporting violations. ODFW has also offered there assistance where ever needed

The Heppner unit is located within the boundaries of Morrow, Umatilla, Wheeler and Grant County. County Justice courts will be used for all crimes and violations. Citations will be marked with an appearance per there respective county.

DATA COLLECTED:

The following data will be collected; number of patrol hours, hunters contacted, number of animals checked, number of hunters not in compliance, citations and warnings, number of illegal kills and the number of decoy operations conducted.

COMPLETION DATE:

The evaluation of the action plan will be submitted by January 31, 2010.

DRAFT 5

Appendix B:

MEMORANDUM OREGON STATE POLICE

DATE: January 4, 2009

TO: Sgt. David Pond
Fish & Wildlife Division - Bend

FROM: Sr. Tpr. Amos Madison
Fish & Wildlife Division – Prineville

SUBJECT: Action Plan: 2009 Eastern Oregon Mule Deer Initiative – Maury WMU (36)

GOAL: To support ODFW's task in addressing a declining mule deer population in the Maury Unit.

OREGON
BENCHMARK: 88a – Terrestrial Species (Vertebrates)

HISTORY: The Maury wildlife management unit (WMU 36) covers the South-Central portion of Crook County. It is roughly 1,155 Square miles in size and comprises some 739,200 acres of which approximately 61% is public land, and the remaining 39% private. The area consists of a mosaic of vegetation. This vegetation diversity is comprised primarily of Pine/Juniper trees in the Maury Mountains, with the remaining area being predominantly Juniper and sagebrush. It is classified as a high desert steppe. Many of the private ranches in this unit have alfalfa fields which are the primary attractors to deer in this unit. Elevations range from a high of 6100' down to a low of 3400' with the average being 4500'. The majority of all the private property is primarily at the 4500' elevation, or less. Take into account the alfalfa fields on these ranches and a person will find a significant number of deer on these private holdings.

Presently the Maury WMU is managed for a Mule Deer Herd Management Objective (MO) of 5200 animals. This goal has not been achieved for the last 30 years. Presently the estimated deer population is 42% below the MO. In addition, the minimum buck/doe strategy that is managed for this unit is 15 bucks/100 does. Data from the Prineville ODFW office shows that for the last 3 years, they have met or exceeded their buck MO. However, according to District Wildlife Biologist, Brian Ferry, the 2008 post-season counts revealed an estimated survival of less than 12 bucks/100 does. This is below the management objective and is too early to tell if this was a sampling error or the beginning of a decline in buck numbers.

DRAFT 5

In 2000 the number of rifle deer tags available to hunters was approximately 1500. Those tags were reduced each year after that to the present level of about 825 tags. Interestingly enough there are about 1100+ hunters that apply for the Maury WMU as their first choice. When you add up the remaining number of hunters that indicate they would be willing to hunt the Maury WMU if given a tag, by looking at other choices, this total increases to 3450+. The Maury WMU is also seeing a steady increase in the number of bow hunters that are hunting this unit. This information is coming from ODFW's phone survey of hunters.

Presently there are not any antlerless deer seasons in the Maury. The last hunts held were in 1988.

There used to be two Oregon State Police game officers assigned to the Prineville office who were able to coordinate and trade off making patrols into the Maury WMU. One of those officers retired in 1996 and that position has been held vacant to date, leaving just one officer to cover the Prineville area. When there used to be two officers, they would also receive additional help from a Bend game officer and a cadet. Since the late 90's the Prineville area has been fortunate if it received any additional game enforcement assistance. This is primarily due to budgetary constraints. Most recently during the fall 2008 seasons the one seasonal game officer that was working in the Ochoco WMU and Maury WMU was eliminated. This seasonal help was primarily responsible for patrolling the Paulina area and the East end of the Maury WMU. It's unknown at this time if there will be any additional Fish & Wildlife Enforcement support provided to augment the Prineville Wildlife Officer.

CONCERNS: ODFW Biologist Brian Ferry was conferred with about the reduced numbers of deer in the Maury WMU. He cites many reason's for this decline, most of which are biological, such as reduction of habitat, increased predation, and land development, just to name a few. He also feels that a reduction in Fish & Wildlife Enforcement presence is facilitating the poaching of larger bucks out of the unit.

Another concern of Biologist Ferry is the increased impact that ATV users are having on the public lands. The Maury WMU has a myriad of roads and open terrain which facilitates ATV's in getting around. This additional pressure put on deer will push them off public summer/winter ranges and onto private ground. Ultimately many of these deer will remain concentrated on private property.

There have also been some recent poaching incidents where bucks have been found with just the horns cut off. The Maury WMU used to have some tremendously large bucks back in the 70's and early 80's. But through increased pressure from hunters and illegal poaching there are fewer large bucks. It has also been noted that each year when there are hunting complaints in the Maury WMU it usually involves someone trespassing on private property where the deer are usually concentrated.

The following information was taken from the Oregon State Police data base. (Fish & Wildlife officers keep track of their activities based on management units, hunters contacted, and those found to be either in compliance or not.)

The Compliance Index information for the Maury WMU is as follows:

DRAFT 5

Maury WMA (36)

Rifle	2003	2004	2005	2006	2007
Hours	42.5	48.0	24.5	34.0	78.5
Contacts	27.0	32.0	1.0	17.0	91.0
Violations	12.0	4.0	0.0	10.0	10.0
Compliance	55.6%	87.5%	100.0%	41.2%	89.0%
Archery					
Hours	0	0	5	31.5	83
Contacts			0	33.0	131
Violations			0	5.0	13
Compliance			100.0%	84.9%	90.1%

The low hours and contacts reflected in the above table may be due to the demands that other WMU's place upon the Prineville Wildlife Officer. If a shift in enforcement efforts is made into the Maury WMU without additional man power to cover other WMU's, then those other units will subsequently see an increase in complaints associated with people violating the wildlife laws. However, since ODFW has identified Law Enforcement as one of their 5 strategies to increase deer numbers in the Maury WMU, then every effort will be made to assist with this management goal.

OPERATIONAL AREA & TIME PERIOD:

The action plan for addressing declining deer herds in the Maury WMU will be implemented for the entire year, having started the 1st of January 2009 and will continue till the 31st of December 2009.

Additional efforts by Fish & Wildlife Enforcement officers will be attempted during the Archery and Rifle seasons.

OPERATIONAL PLAN:

Wildlife Enforcement patrols will be done through the months of Jan-Mar to monitor any concentrations or known locations of large bucks. Shed hunters are also starting to increase their presence during this time, which places increased pressure on wintering deer. This sport brings with it an increased amount of ATV traffic in and around wintering deer. Persons will be contacted and educated should their actions be causing unnecessary pressure on deer. Their assistance in detecting any violations of game laws will also be solicited. The use of the department aircraft will also be made, weather permitting, to locate any vehicles that are operating in areas that have wintering deer.

April through August continued patrols in the Maury WMU will be made. Continued ATV pressure will also be monitored. This will also be a time when contacts and relationships with local landowners will be renewed. Many of the ranches in the Maury WMU welcome the deer and have actually been instrumental in this unit being selected for the additional resource monitoring by ODFW.

DRAFT 5

From September through October the Archery and Rifle deer seasons will commence. Hunting compliances will be monitored through hunter checks. Efforts will also be made to increase Law Enforcement presence by utilizing Crook County Sheriff Deputies. In the past couple years the Sheriff's Department has increased their presence in the Maury WMU at the request of local ranchers.

November and December are particularly critical to survival of larger bucks during the rutting season. These bucks make themselves more visible and vulnerable during this time period. Increased patrols will be conducted during this time frame and in areas of concentrated deer numbers.

A deer decoy has recently been provided to the Prineville Worksite. While it is difficult to secure a second officer to assist in decoy operations, every effort will be made to utilize this tool when it is deemed necessary.

During the local Prineville-Oregon Hunters Association meeting, they will be advised of the new direction that deer management in the Maury WMU is headed.

DATA TO BE COLLECTED:

The following data will be collected during patrols; number of patrol hours, contacts, any violations found and ultimately the compliance rate calculated. Plus, any complaints in the Maury WMU that are associated with wildlife that may be associated with illegal kills, citations and warnings. Additional information that may be gathered as time dictates is the number of deer seen, and their age classification and any animals harvested legally during the seasons. This will assist ODFW with their data analysis of deer in the Maury WMU.

Additionally, any decoy operations conducted will have its statistics compiled towards the Maury WMU action plan.

COMPLETION

DATE: An action plan critique will be compiled and completed by the end of January 2010.

DRAFT 5

Appendix C:

MEMORANDUM OREGON STATE POLICE

DATE: February 19, 2009

TO: David Gifford, Lieutenant
Southwest Region Headquarters

FROM: Randall G. Hand, Sergeant
Klamath Falls Patrol Office

SUBJECT: **ACTION PLAN: WARNER UNIT DEER PROTECTION**

GOAL:

The goal is to provide a measure of the illegal deer take in the Warner Unit.

OREGON BENCHMARK:

The action plan compliments Oregon Benchmark 90, the number of native fish and wildlife species that are healthy.

HISTORY/CONCERN:

The Oregon Department of Fish and Wildlife is charged with management of Oregon's mule deer. ODFW has implemented a variety of hunter management strategies over the years to deal with the demand for the opportunity to hunt mule deer. Since 1991 hunters have had to draw through a lottery process for all deer tags in eastern Oregon.

After years of declining mule deer populations, Oregon Department of Fish and Wildlife has implemented a Mule Deer Initiative. Five wildlife management units have been selected to implement a variety of strategies to improve mule deer populations. In our patrol area, the Warner Unit has been selected.

The population management objective (MO) for the Warner Unit is 5500 deer. In 1980 the estimated population was 8,120 deer. The most recent population estimate (2008) was 2,958 deer. For the purposes of deer management, the Warner Unit has been split into two sub-units with the dividing boundary being Highway 140. The unit north of Highway 140 is managed for a post-season buck management objective of 25 bucks per hundred does while the unit south of Highway 140 is managed for 15 bucks per hundred does. Since being divided, North Warner has seldom met the buck management objective. South Warner has consistently met or exceeded buck management objectives during the same time period.

DRAFT 5

In discussing the Warner Unit mule deer situation, ODFW Biologist Craig Foster states he does not believe that poaching is an issue, but would like to make sure his assumption is correct.

In discussing the Warner Unit mule deer situation with Trooper Curtis Weaver, he also does not believe poaching is an issue. Trooper Weaver stated that most of the illegal deer harvest in his patrol area occurs in the Interstate Unit and even this certainly does not appear to be at the levels seen in North Lake County (Fort Rock and Silver Lake Units).

Several WED operations have been run in the Warner Unit over the past several years. All operations in the North Warner were not successful in locating hunters without valid tags. The hunter density was low and the few vehicles that did manage to drive by did not stop for the WED. Of those operations in the South Warner, none turned up a hunter without a valid tag.

OPERATIONAL AREA/TIME PERIOD:

The operational area shall be the Warner Unit.

This plan is to compliment Oregon Department of Fish and Wildlife's Mule Deer Initiative. The overall time period for this plan shall be commensurate with their Initiative.

OPERATIONAL PLAN:

In 2009, Trooper Curtis Weaver will do a notebook review to formally document any deer unlawfully killed in the Warner Unit for the time he has been assigned to Lakeview. This shall be reported by year.

Beginning in 2010, the Lakeview Fish and Wildlife Trooper shall monitor and document all deer unlawfully killed in the Warner Unit and submit the results in an Action Plan Evaluation at the end of each year.

As time allows during deer season the Wildlife Enforcement Decoy will be operated in the Warner Unit (north and south) to determine the tag compliance rate.

DATA TO BE COLLECTED:

Numbers of deer unlawfully killed in the Warner Unit.
Number of WED operations
Hunters contacted
Hunters without valid tags

COMPLETION DATE:

Annual reports shall be filed no later than January 31 of each year beginning in 2010. The final evaluation shall be completed upon the full completion of ODFW's Mule Deer Action Plan.

DRAFT 5

Appendix D:



OREGON STATE POLICE
JOHN DAY WORKSITE

MURDERERS CREEK
MANAGEMENT UNIT (46)

MULE DEER ACTION PLAN
2009

SUBMITTED BY

SENIOR TROOPER LARRY JOHNSON
OREGON STATE POLICE
JOHN DAY WORK SITE
FISH AND WILDLIFE DIVISION
AREA DESCRIPTION

DRAFT 5

The Murderers Creek Wildlife Unit is composed of 64% public lands with these holdings falling under United States Forest Service, Bureau of Land Management, and State of Oregon Ownership. The Philip P. Snyder Wildlife Area is part of this management unit and is controlled by the Oregon Department of Fish and Wildlife. The Wildlife Area has 50,000 acres with BLM and some Private Land holdings dispersed within its boundaries. Also within this hunt unit is the Strawberry Mountain Wilderness area.

The remaining 36% of the land is under private land management and is under several different forms of management: timber, grazing, and other private uses.

OVERVIEW

The Murderers Creek Wildlife Management Unit has been identified as an area that the Oregon Department of Fish and Wildlife is going to place additional resources in to enhance and restore Mule Deer populations and habitat. As part of this goal a unit wide enforcement action plan is being developed to enhance these efforts.

In 2008 there were 1199 tags issued to hunters in the controlled rifle hunt drawing. It is unknown how many archers chose this unit to pursue mule deer during the general archery season.

The action plan is going to be broken down into four separate enforcement areas:

1. Habitat protection.
 - a. Road closure violation as part of year round closure.
2. Mule Deer hunting season.
3. Winter range protection.
4. Unlawful taking of Mule Deer during closed seasons.

Some of these areas will overlap but by breaking it down into these areas of enforcement the goals and efforts of the Oregon State Police will be easier to identify and enable us to better track the success of the action plan.

Over the last five years the hours worked, number of contacts, violations, and compliance rates have been recorded using the Oregon State Police Broslund reporting system.

RIFLE SEASON

Murderers Creek	2003	2004	2005	2006	2007
Hours	185	60.7	134.5	85	117.5
Contacts	63	12	62	52	73
Violations	4	2	24	15	15
Compliance	93.7	83.3%	61.3%	71.2%	79.5%

ARCHERY SEASON

DRAFT 5

Murderers Creek	2003	2004	2005	2006	2007
Hours	11	12	27.5	10.5	2
Contacts	12	6	4	29	0
Violations	1	0	4	1	0
Compliance	91.7	100.0	0.0%	96.6%	100.0

As you can see from these numbers the compliance rate in this unit is fairly high. However the hours worked varies greatly. Hours of enforcement recorded for archery deer season may be low due to the concurrent bull elk season that runs with archery season.

During rifle season the Troopers with responsibilities in the Murderers Creek Management Unit also have responsibilities in the Northside Management Unit, Desolation Management Unit, Beulah Management Unit, Heppner Management Unit, and Ochoco Management Unit.

RESOURCES AVAILABLE

Dedicated resources

John Day Work Site
 2 Fish and Wildlife Troopers
 1 Wildlife Enforcement Mule Deer Decoy
 1 ATV vehicle
 1 Seasonal Cadet 600 hours

Available resources

Pendleton Patrol Office
 1 Fish and Wildlife Trooper
 2 Wildlife Enforcement Mule Deer Decoys
 1 Motorcycle

Heppner Work Site
 1 Fish and Wildlife Trooper

Burns Work Site
 1 Fish and Wildlife Trooper
 1 Wildlife Enforcement Mule Deer Decoy
 1 Motorcycle

Bend Patrol Office
 1 Fish and Wildlife airplane

Baker City Patrol Office
 1 Fish and Wildlife airplane

Oregon Department of
 Fish and Wildlife
 John Day Field Office
 4 employees
 2 ATV vehicles

DRAFT 5

CONCERNS

There has been a downward trend in the number and quality of the Mule deer that are harvested in the Murderers Creek Unit. It is not exactly known what factors are responsible for this trend but the Oregon State Police, Oregon Department of Fish and Wildlife, Private Land Owners, and recreational user groups need to work together to try and reverse this downward trend.

Oregon Department of Fish and Wildlife District Biologist Ryan Torland has been consulted in the formation of this action plan to ensure that ODFW and OSP are both partnering to establish the best chance of success of the Mule deer initiative and this action plan.

OPERATIONAL TIME PERIOD AND AREA

The entire Murderers Creek Wildlife Unit will be covered by this plan. The action plan will start January 1, 2009 and conclude on December 31, 2009.

OPERATIONAL PLAN

In January, February, and March winter range patrols will be conducted. This is when the Murderers Creek mule deer are most vulnerable to unlawful take and harassment. Most of the Murderers Creek is open to vehicle travel but is often snowed out inaccessible during the winter months. The winter range is low and easier to access and the deer are more concentrated.

Finding shed antlers is increasing in popularity and is often done on ATV. ATV harassment on the winter range when deer are already stressed is harmful to herd health. Flights utilizing the OSP plane will be conducted to locate the largest concentrations of deer. Most ground patrols will be conducted by marked pickup or ATV. Landowner contacts around the winter range will be done to help create the partnership in protecting the mule deer during this vulnerable time.

In April, May and June mule deer are transitioning to summer range and beginning to fawn. Most of the roads into the summer range are just become drivable. This time period would be best utilized by conducting follow up investigations and fostering private land contacts.

In July and August mule deer are widely distributed on their summer range. Backcountry patrols will be conducted by foot and horse to identify areas of concern that may be potential problems during hunting seasons. Patrols for disturbance by unlawful ATV activity will also be conducted along the wildlife area.

From late August through mid-October patrols looking for tag compliance will be conducted. If an area of concern is developed the Wildlife Enforcement Decoy will be used. ODFW has demonstrated a willingness to help with decoy operations. Two mule deer decoys are ready for use from the John Day worksite.

Extra patrols from surrounding offices will be used as the need for manpower dictates. Having patrols from the Burns office working the North end of the Silvies and Malheur River unit would help free up the John Day patrol to work the Murderers Creek unit. Some of the hunting activity occurs in the wilderness area and will require Horseback patrols to check hunters in the field. Personal equipment as well as Oregon Department of Fish and Wildlife equipment will be used for these patrols.

DRAFT 5

During late October through December mule deer bucks move to lower ground to locate does and breed. They are more visible than normal and therefore become vulnerable to unlawful take. Patrols will be conducted around areas of high mule deer activity with added emphasis on areas with large bucks.

Meetings with recreational user groups will be attended to inform them of the action plan and to ask for their assistance in reporting violations. Landowners in the Murderers Creek wildlife unit will also be contacted.

The Murderers Creek unit is in Grant County. The Grant County Justice court will be used for all crimes and violations. Citations will be marked with an appearance scheduled for Tuesday's or Thursday's at 2:00pm.

DATA COLLECTED:

The following data will be collected; number of patrol hours, hunters contacted, number of animals checked, number of hunters not in compliance, citations and warnings, number of illegal kills and the number of decoy operations conducted.

COMPLETION DATE:

The evaluation of the action plan will be submitted by January 31, 2010.

DRAFT 5

Appendix E:

MEMORANDUM OREGON STATE POLICE

DATE: December 3, 2008

TO: Eric Newman, Sergeant
Ontario

FROM: Randy Caldwell, Senior Trooper
Burns

SUBJECT: **ACTION PLAN: Steens Mountain Unit Mule Deer**

GOAL: Protection of mule deer in the Steens Mountain Unit

OREGON

BENCHMARK: There is no Oregon Benchmark for this topic

HISTORY/ CONCERN:

The Steens Mountain unit, unit number 69, southeast of Burns, Oregon is 1,916 square miles and is comprised of 69% public land. The Steens Mountain wilderness area has a total of 170,167 acres and has 89,450 acres in wilderness study area. Both areas have no or limited motor vehicle use allowed. Steens Mountain is predominantly a high elevation fault block that rises gradually from the west and falls off sharply along the east slope. Elevations begin near 4200 feet and rise to 9733 feet at the summit. Mule deer use summer range on the upper slopes and winter on the lower slopes often without leaving the Steens Mountain unit.

Steens Mountain has historically been regarded as one of Oregon's premier mule deer hunting areas. Oregon Department of Fish and Wildlife records show that the mule deer population peaked in the 1950's. The population has gradually declined since. Today ODFW estimates the mule deer population to be at 35% of their management objective. The estimated population for 2007 was 3,850 mule deer.

In 2008, 273 buck tags were authorized for the Steen Mountain buck deer rifle season. 93 landowner preference tags were also issued for the unit. Four to five preference points were needed in 2008 to be able to draw a Steens Mountain unit wide buck deer rifle tag.

Enforcement presence from 2004 through the 2007 rifle seasons has been limited. Oregon State police records show that an average of 39 hours per rifle season were worked with an average compliance rate of 84.7%.

DRAFT 5

Archery season pressure is rumored to be increasing but is not known due to the previously larger enforcement need in the Silvies and Malheur River units.

In 2008 the Oregon Department of Fish and Wildlife drafted the Steens Mountain Initiative to increase the mule deer population in the unit. The action plan to protect mule deer in the Steens Mountain unit was discussed with ODFW district biologist for the area, Rod Klus. Mr. Klus was supportive of the plan and agreed that it would have the greatest chance of success if OSP and ODFW worked closely together on a year round protection plan. Mr. Klus provided a mule deer winter range map of the area to help concentrate our efforts.

OPERATIONAL AREA/ TIME PERIOD:

The entire Steens Mountain unit will be included in the action plan as well as a small portion of the Juniper unit which includes some Steens Mountain deer winter range.

The action plan will be year round. It will begin on January 1, 2009 and conclude December 31, 2009.

Archery season runs from August 29, 2009 to September 27, 2009. Rifle season runs from October 3, 2009 to October 14, 2009. Added emphasis will be placed during these periods.

OPERATIONAL PLAN:

In January, February, and March winter range patrols will be conducted. A winter range map showing four areas of special interest has been provided by ODFW. This is when the Steens Mountain mule deer are most vulnerable to unlawful take and harassment. Most of the Steens is high and remote country where on the summer range mule deer spread out and can be hard to find. The winter range is low and easier to access and the deer are more concentrated. Finding shed antlers is increasing in popularity and is often done on ATV. ATV harassment on the winter range when deer are already stressed is harmful to herd health. Flights utilizing the OSP plane will be conducted to locate the largest concentrations of deer. Most ground patrols will be conducted by marked pickup. Landowner contacts around the winter range will be done to help create the partnership in protecting the mule deer during this vulnerable time.

In April, May and June mule deer are transitioning to summer range and beginning to fawn. Most of the roads into the summer range have not yet become drivable. This time period would be best utilized by conducting landowner preference tag reviews in the Steens Unit.

In July and August mule deer are widely distributed on their summer range. Backcountry patrols will be conducted by foot to identify areas of concern that may be potential problems during hunting seasons. Patrols for disturbance by unlawful ATV activity will also be conducted.

From late August through mid-October patrols looking for tag compliance will be conducted. If an area of concern is developed the Wildlife Enforcement Decoy will be used. ODFW has demonstrated a willingness to help with decoy operations. Two mule deer decoys are ready for use from the Burns worksite.

DRAFT 5

Extra patrols from the Ontario area will be used as the need for manpower dictates. Having patrols from the John Day office working the North end of the Silvies and Malheur River unit would help free up the Burns patrol to work the Steens Mountain unit. Some of the hunting activity occurs in the wilderness area and will require backpack patrols to check hunters in the field. Personal equipment will be used for these patrols

During late October through December mule deer bucks move to lower ground to locate does and breed. They are more visible than normal and therefore become vulnerable to unlawful take. Patrols will be conducted around areas of high mule deer activity with added emphasis on areas with large bucks.

Meetings with user groups including OHA, the Rocky Mountain Elk foundation and the Mule deer foundation will be attended to inform them of the action plan and to ask for their assistance in reporting violations. Landowners in Steens will also be contacted.

The Steens Mountain unit is in Harney County. The Harney County Justice court will be used for all crimes and violations. Citations will be marked with an appearance scheduled for Tuesday's at 2:00pm.

DATA COLLECTED:

The following data will be collected; number of patrol hours, hunters contacted, number of animals checked, number of hunters not in compliance, citations and warnings, number of illegal kills and the number of decoy operations conducted.

COMPLETION DATE:

The evaluation of the action plan will be submitted by January 15, 2010.