DEER HERD UNIT MANAGEMENT PLAN
Deer Herd Unit # 2
(Cache)
October 2017

BOUNDARY DESCRIPTION

Cache, Rich, Weber, and Box Elder counties - Boundary begins at the Utah-Idaho state line and I-15; south on I-15 to US-91; northeast on US-91 to SR-101; east on SR-101 to Hardware Ranch and USFS Road 054 (Ant Flat); south on USFS 054 to SR-39; east on SR-39 to SR-16; southeast on SR-16 to the Utah-Wyoming state line; north along this state line to the Utah-Idaho state line; west along this state line to I-15.

LAND OWNERSHIP

RANGE AREA AND APPROXIMATE OWNERSHIP

	Yearlong range		Summer Range		Winter Range	
Ownership	**Area (acres)**	**%**	**Area (acres)**	**%**	**Area (acres)**	**%**
Forest Service	0	0%	273,346	55%	52,358	16%
Bureau of Land Management	845	<1%	46,126	9%	94,909	29%
Utah State Institutional Trust Lands	245	<1%	25,001	5%	28,933	9%
Native American Trust Lands	0	0%	0	0%	0	0%
Private	104,662	99%	146,362	30%	133,488	41%
Department of Defense	0	0%	0	0%	0	0%
USFWS Refuge	0	0%	0	0%	0	0%
National Parks	0	0%	0	0%	0	0%
Utah State Parks	0	0%	0	0%	17	<1%
Utah Division of Wildlife Resources	81	<1%	4,552	1%	11,823	4%
TOTAL	105,833	100%	495,387	100%	321,528	100%

UNIT MANAGEMENT GOALS

The primary goal is to maintain the proper balance between the number of animals in the deer herd and the habitat available on the limited winter range, thereby sustaining physiologically healthy deer. Also, to provide public hunting and non-consumptive opportunities, promote additional harvest opportunities for landowners, recommend measures for highway safety, and consider private property values.

POPULATION MANAGEMENT OBJECTIVES

Target Winter Herd Size - Maintain a target population size of 25,000 wintering deer. This population objective remains for both the short-term (5-year life of this plan) and long term, barring significant changes in range conditions.

Herd Composition – General Hunt portion of Cache Unit: Maintain a 3-year average postseason buck to doe ratio of 15-17:100 in accordance with the statewide plan. Crawford Mountain subunit, managed under combined general season and limited entry hunting: Maintain a 3-year average post-season buck: doe ratio of 15-17:100 and adjust late season limited entry permits according to migratory populations.

1994-2005 Objective:	25,000
2006-2013 Objective:	25,000
2013-2018 Objective:	25,000
2018-2023 Objective:	25,000

Change from last plan 0

POPULATION MANAGEMENT STRATEGIES

Monitoring

Population Size - Utilizing harvest data, postseason and spring classifications and mortality estimates, a computer model will be used to estimate winter population size. Annual mortality will be estimated based on survival of radio collared animals on this unit.

Buck Age Structure - Estimates of the age class structure of the buck population will be determined primarily (directly) through the use of hunter harvested bucks at checking stations and field bag checks, and secondarily (indirectly) using post-season classification observations.

Harvest - The primary technique used to estimate harvest over the unit is the statewide uniform harvest surveys.

Limiting Factors (May prevent achieving management objectives)

Crop Depredation - Address depredation issues as prescribed by state law and DWR policy. Some geographic populations may be maintained at lower levels due to conflicts with crop production and private landscapes.

Habitat - Winter range is the major limiting factor on the Cache Unit representing less than 30% of the total Unit. Increased urbanization is continually reducing the amount of traditional winter range and much of the winter range is in poor condition due to past fires, competition from introduced weedy species, and the lack of spring livestock grazing (Clements and Young 1997). Excessive habitat utilization will be addressed by antlerless harvests.

Predation – Consistently high fawn/doe ratios seem to indicate that predation is not a primary limiting factor for deer on the Cache Unit. Coyote removal through a bounty system is currently underway and future fawn/doe ratios will be used to determine if the removal was effective.

Highway Mortality - The cooperation of the Utah Department of Transportation to prevent vehicle collisions in terms of highway fences, underpasses, and earthen ramps in Wellsville Canyon, and warning signs as needed throughout the Unit is greatly appreciated. A significant number of highway mortalities may tend to reduce deer populations in the following areas: Wellsville Canyon, Highway 91 between Smithfield and Richmond, and Logan Canyon.

Illegal Harvest, Crippling Loss, Disease and Parasites - Although poaching losses appear insignificant on the Cache, due primarily to a highly visible law enforcement effort, crippling losses are a concern, especially under buck-only hunting. Hunter survey studies suggests as many as 18 deer may be left in the field per 100 hunters (Austin 1992). Disease is very difficult to evaluate, and high mortality is often associated with disease and malnutrition. The animal disease diagnostic facility associated with Utah State University acts as the laboratory to identify disease problems. Chronic Wasting disease is of further concern though it has not yet been detected on the unit. Surveillance has been implemented and will

continue by testing hunter harvested animals as well as targeted surveillance of symptomatic animals.

Urban Deer - Continued development across this Unit has lead to an increase in nuisance deer complaints. The Urban Deer Control Rule, R657-65, will be used to help municipalities address urban deer issues. Additional hunting opportunities outside of municipal boundaries will also be used to address nuisance complaints.

HABITAT

Habitat Description

The Cache Management Unit can be divided into three main areas which are isolated, to some extent, from one another (Wellsville, Cache and Rich areas). The first part is the Wellsville Mountains and their northern extension, Clarkston Mountain. The second area is Cache Valley with its crucial winter range along the east side of the valley on the foothills and west slope of the Wasatch Mountain Range along with summer range on the Cache National Forest to the east. Big game summer on the forest and use the winter ranges in the canyons and upper benches of the valley. The third area is Rich County, which includes a vast area of private and public range land on the east side of the Cache National Forest, extending to the Wyoming state line. Prior to 1993, these three areas were managed as separate deer herd units. In 1993, these areas were combined into Wildlife Management Unit 2 and managed as sub-units.

The Wellsville Mountains have remained relatively inaccessible because of the steep topography. Rising abruptly from the valley floor, the ridge of the Wellsville Mountains reaches over 9,300 feet in elevation. The upper limit for normal winter range is generally 7,000 feet, but in severe winters that limit drops to about 6,000-6,500 feet. In some canyons the upper limit drops to 6,000 feet and excludes the north slopes. Box Elder Canyon reaches a low limit at 5,400 feet. The lower limit follows an elevation of 4,400 feet. Most deer summer on the east side of the Wellsville Mountains and migrate to the west side each fall for winter range. Coldwater Canyon is the most notable concentration area for deer, and there is some migration from the Mantua-Willard herd unit. Most of the deer that winter on Clarkston Mountain range, also summer on the Caribou National Forest in Idaho. Land development and associated habitat loss is still a critical problem facing wildlife management in this area.

The majority of the deer range, along with the largest deer herd, is within the Cache County portion of the unit. Most of this herd summers at higher elevations in the Wasatch-Cache National Forest west of the Wasatch Range summit. The majority of the winter range is also on Forest Service land. The south-facing slopes of Blacksmith Fork, Logan, Dry, Providence, and Millville canyons are all important wintering areas. The lower winter range limits are restricted by the upper limits of the towns and cities of Cove, Richmond, Smithfield, Hyde Park, North Logan, Logan, Providence, Millville, Nibley, and Hyrum. These limits to the winter range also include the deer-proof fence above agricultural land between Hyrum and Logan. Between Hyde Park and the Idaho border, the lower third of the winter range is located on private land and is threatened by increased cultivation and subdivision developments.

The Rich County portion of the Cache deer herd unit, located on the east face of the Wasatch Range, is topographically similar to the west face. However, the drainages of Swan Creek, Garden City Canyon, Jebo Canyon, Cottonwood Canyon, and Temple Canyon are not as deep as those on the west face. Elevation ranges between 5,900 feet at Bear Lake and 9,114 feet on Swan Peak. Randolph and Woodruff are the principle municipalities located in Rich County. These towns are located on a strip of private land along the Bear River. Much of the lower country is privately owned and is grazed or farmed. Estimates are that 74,560 acres (33%) of the winter range is private land (Jensen et al. 1985). A much higher percentage of the severe winter range is private. The Bureau of Land Management (BLM) owns a majority of the winter range, controlling much of the land in the central part of the unit and the Crawford Mountains to the east. The upper limit of the winter range begins at about 8,000 feet at the Idaho border and gradually descends to 6,000 feet at Cottonwood Canyon. The lower limit generally follows the 6,000-foot contour.

Habitat Concerns

Mule deer habitat on the Cache Unit is fairly abruptly divided between summer range and winter range. The summer range is mostly at higher elevations in the Wasatch-Cache National Forest. Summer range habitat concerns are mainly the loss of aspen stands due to conifer encroachment.

Lower elevation winter range is the major limiting factor for mule deer populations on the Cache Unit. The winter range areas are also those areas that are most at risk. The largest threat to mule deer habitat on the Wellsville and Cache areas is the direct loss of crucial winter range acres due to development and urbanization; Particularly in Cache Valley along the east side from Hyrum, north to Richmond. Cache County has had an increase in population from 42,000 residents in 1970 to 112,656 in 2010. The associated increase in homes followed the trend from 12,000 homes in 1970 to 35,915 in 2010. Most of the increase in home building is occurring on the foothills in what was historic deer winter range.

Additional threats and losses to deer winter range on the Wellsville and Cache areas is the reduction in habitat quality due to the loss of critical browse species (sagebrush, bitterbrush, etc.). This loss has been attributed to a number of factors, fire, agriculture, drought etc. However, the abundance of weedy annual grass species, and the increase of the exotic, weedy, perennial grass bulbous bluegrass are the more likely causes of sagebrush decline. These weedy species can form dense mats of cover that compete with seedling and young sagebrush plants, which limits establishment of new sagebrush plants into the population. As the sagebrush population matures, decadence increases and density decreases as old plants begin to die. Annual grass species such as cheatgrass can also increase fuel loads and increase the chance of a catastrophic fire event.

The Rich area of the Cache Unit shares the same summer range as the Cache area. The winter range of the Rich area has also experienced loss due to development. The area around Bear Lake, from Garden City south to Laketown has seen recreation home development increases over the last few decades. The majority of the Rich area, through Randolph and Woodruff has not experienced significant development.

Mule deer winter range habitat has seen a decrease in sagebrush density. Causes of sagebrush decline are varied and multiple causes may have compounded effects on the low potential studies in this unit. The moderate drought in recent years has likely caused increased stress on plants, and negatively impacted them. Sagebrush age structure across the area is generally old and one age class. The lack of regeneration of the stand through establishment of young sagebrush is a concern. Annual grass species are present but not prevalent through most of the areas. However, the range trend does show increases of weedy species such as cheatgrass and bulbous bluegrass in many of the low potential studies in this unit. Perennial grass and forb species have increased on many of the studies as browse species decline, and may compete with browse establishment. This is especially the case for the seeded perennial species crested wheatgrass which is prevalent throughout Rich County.

Crucial mule deer habitat in all areas on the Cache Unit is also being lost and degraded through Juniper expansion. In certain areas where Juniper stands occur, the spread and invasion of young juniper have had a dramatic negative impact on existing browse and other understory species.

HABITAT MANAGEMENT

Loss of critical winter ranges to development is the highest cause of loss of mule deer habitat on the Wellsville and Cache areas. The loss of sagebrush and other browse species on the remaining winter range is important when considering habitat quality. Contributing factors to the loss of browse species such as the impact of the increase in weedy species, particularly annual grasses, juniper expansion, lack of browse regeneration and other variables are all of a concern in the habitat management of the Cache Unit.

To address the direct loss of habitat, efforts will be made towards the protection and conservation of

remaining mule deer habitat. Efforts must be made to work with counties, cities, private landowners and federal agencies to maintain and protect critical and existing winter range from future losses. Through existing partnerships and developing new conservation partners efforts are being made to identify and prioritize critical habitat areas. Conservation easements will be an important part of this effort. For example, recent efforts have included securing a conservation easement in crucial winter range at the mouth of Smithfield Dry Canyon, from an existing partner to the UDWR. Other conservation efforts are ongoing throughout the unit.

To address habitat quality and degradation, habitat improvement projects have been and will continue to be planned throughout the unit. Habitat projects have been and are being done on UDWR Wildlife Management Areas, private lands, US Forest Service lands and Bureau of Land Management lands throughout the unit. The habitat projects are designed to address the specific issues within each project area. Recent past projects have included prescribed aspen burning on the National Forest, annual grass control and shrub plantings on the Millville face WMA. Prescribed burns of transitional range on the Curtis Plateau, crested wheatgrass conversion to increase sagebrush, Juniper removal, shrub transplants, etc.

It is recommended that work to reduce conifer encroachment (bullhog, chaining, lop and scatter, etc. and prescribed fire in aspen) continue or begin in these communities. On some sites, management of annual grasses might be necessary through herbicide application. Introduced perennial grasses may also need management through changes in grazing or restoration of competitive native species. When reseeding, care should be taken in species selection and preference should be given to native species when possible.

The following are some of the areas that have been targeted for habitat projects within the unit over the next five years:

- Logan, Green, Providence and Blacksmith Fork Canyons. Projects should be focused on removal of encroaching juniper, and reestablishing understory with winter browse species as well as species of plants that can be used in the spring by wintering deer.
- Birch Creek area north of Highway 39 and west of Woodruff, UT. Projects should focus on removal of encroaching juniper, and reestablishing understory with winter browse species as well as species of plants that can be used in the spring by wintering deer.
- Winter range enhancement on all wintering WMA's on the unit including Hardware Ranch, Millville Face, Richmond, and Coldwater through scalping and hand planting browse species.
- Juniper removal and reseeding in Blacksmith Fork Canyon and on Hardware Ranch WMA.
- Transitional Range burn on Hardware Ranch WMA.
- Juniper removal around Temple Fork and Dry Canyon.
- Aspen regeneration prescribed fire in Card Canyon, near Old Ephraim's Grave, Tony Grove, and Franklin Basin.
- Winter range enhancement through browse establishment on SFW property east of Smithfield, known as the Weeks property.
- Fire rehab on Coldwater WMA

PERMANENT RANGE TREND DATA

Purpose of Range Trend Studies

The ability to detect changes in vegetation composition (range trend) on big game winter ranges is an important part of the Division's big game management program. The health and vigor of big game populations are closely correlated to the quality and quantity of forage in key areas.

The majority of the permanent range trend studies are located on deer and elk winter ranges. Range trend data are used for habitat improvement planning purposes.

Objective

Monitor, evaluate, and report range trend at designated key areas throughout the state, and inform Division biologists, public land managers, and private landowners of significant changes in plant community composition in these areas.

Expected Results and Benefits
Range trend studies are resurveyed every five years, and vegetation condition and trend assessments are made for key areas.

Summary and Excerpts of Range Trend Result

Unit 2 Cache

Range Trend studies have been sampled within WMU 2 on a regular basis since 1984, with studies being added or suspended as was deemed necessary. Due to changes in sampling methodologies, only data collected following the 1992 sample year are included in this summary. Monitoring studies of WRI projects began in 2004; when possible, WRI monitoring studies are established prior to treatment and sampled on a regular basis following treatment. Due to the long-term nature of the studies, many of the Range Trend and WRI studies have had some sort of disturbance or treatment prior to or since study establishment.

The condition of deer winter range within the Cache Management Unit has continually changed on the sites sampled since 1996. The Range Trend sites sampled within the unit are considered to be in very poor to excellent condition as of the 2016 sample year. South Crawford Mountains remained in excellent condition, Twin Creek improved from good to excellent, Otter Creek went from excellent to good, and State Line, Braizer Canyon, Higgins Hollow, and Pole Hollow Spring remained in good condition. Wood Pass went from good to fair-good condition while Woodruff Longhill remained in fair-good condition, and North Eden and Woodruff Co-op remained in fair condition. Warrens Spring improved from poor to fair, Mouth of Two Jump Canyon remained in poor-fair condition, and Garden City Canyon, Woodruff Creek, and Coldwater WMA remained in poor condition. Finally, the High Creek, Mouth of Blacksmith Fork, Beirdneau, Second Dam Blacksmith Fork, Hardware Plateau, Meadowville, Right Fork Logan Canyon, Swan Creek, Flat Bottom Canyon, Laketown Canyon, and Hardware Gravel Pit studies are considered to be in very poor or very poor-poor condition generally due to the lack of browse cover and sagebrush diversity and/or the presence of annual grasses.

Desirable Components Index: The desirable components index (DCI) for deer was created as a tool to address condition and/or value of winter ranges for mule deer. This index was designed to score mule deer winter range based upon several important vegetation components (i.e., preferred browse cover, shrub decadence, shrub young recruitment, cover of perennial grasses, cover of perennial forbs, cover of annual grasses and cover of noxious weeds). Although the index may be useful for assessing habitat for other species (i.e. sage grouse and elk), the rating system was devised to specifically address mule deer winter range requirements.

This index is used primarily to determine if a particular site has the vegetation components necessary to be a good winter range for mule deer. It can also be used to identify areas where habitat restoration projects may be needed and assist land managers in determining possible rehabilitation options. Because it does not take into account factors such as soil stability, hydrologic function, and other environmental factors, it should not be used to assess a sites function and/or condition as typically used by the Federal land management agencies. Desirable mule deer winter range provides 12-20% of preferred browse cover, 20% or less shrub decadency, and 10% or more of the shrub population is young. The herbaceous understory contains 8-15% perennial grasses cover, 5% perennial forb cover, and less than 5% annual grass cover.

Deer winter range Desirable Components Index (DCI) summary by year of Range Trend sites for WMU 2, Cache.

0%	1996	2001	2006	2011	2016
Excellent	0	0	2	2	2
Good-Excellent	1	1	1	0	0
Good	10	8	3	8	6
Fair-Good	1	3	5	1	2
Fair	2	5	5	3	4
Poor-Fair	1	1	0	1	1
Poor	2	0	3	4	3
Very Poor-Poor	3	2	2	1	1
Very Poor	14	13	8	10	10

Current Population Status

Year	Buck Harvest	Post-Season F/100 D	Post-Season Buck/100 D	Post-Season Population	Population Objective	% of Objective
2014	1,663	61	19	17,300	25,000	69%
2015	1,871	64	20	19,500	25,000	78%
2016	1,949	65	15	18,800	25,000	75%

Duration of Plan

This unit management plan was approved by the Wildlife Board on _____ and will be in effect for five years from that date, or until amended.

Literature Cited

Austin, D.D. 1992. A Handbook for Utah Hunters and Landowners. Great Basin Naturalist 52:364-372.

Clements, C.D. and J.A. Young. 1997. A viewpoint: Rangeland health and mule deer habitat. Journal of Range Management 50:129-138.