

**Arizona Strip Interdisciplinary Mule deer
Management Plan
2010-2014**

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Introduction

Mule deer, *Odocoileus hemionus hemionus*, have long been regarded as icons of the American West. The Arizona Strip, located in Arizona between the Arizona/Utah stateline and the Colorado River, is no exception. The Strip is well known for producing large antlered trophy mule deer, and hunters and other users expect the Bureau of Land Management (BLM) and the Arizona Game and Fish Department (AGFD) to implement aggressive, sound management practices across the landscape to allow mule deer populations to meet optimum levels.

The entire Arizona Strip can be considered mule deer habitat. The elevational changes and the ecoregion diversity, from Mojave Desert scrub to Ponderosa Pine, present unique challenges when managing mule deer populations. Managers of mule deer populations and mule deer habitat must incorporate the latest in sound scientific management practices and an ecological interdisciplinary approach will benefit all resources, including mule deer, across the landscape.

Mule deer populations and habitat on the Arizona Strip are currently managed under the AGFD Wildlife 2012 strategic Plan, and decisions outlined in the BLM Arizona Strip Field Office Resource Management Plan (RMP) (2008), Vermilion Cliffs National Monument RMP (2008), and the Grand Canyon Parashant National Monument RMP (2008).

Historically, management of mule deer and their habitats has been accomplished through Habitat Management Plans (HMP) and other planning documents of the AGFD and the BLM. The development of the new RMPs for the Arizona Strip, and availability of recent scientific research have created the need for a species specific plan for mule deer.

It is the intent of the AGFD and the BLM, Arizona Strip District, to cooperatively manage mule deer populations and habitats utilizing an interdisciplinary adaptive approach. This plan will serve as the Habitat Management Plan for each individual game management unit across the Arizona Strip, follows referenced decisions contained in the above RMPs, and replaces all mule deer decisions found in HMP planning documents prior to 2008.

While the guidelines in this plan are designed to be relatively constant, the objectives and strategies outlined in this plan are on a rolling 5 year horizon, designed to have ongoing implementation throughout the life of the plan. A core team that will meet yearly to review the implementation of this plan has been established consisting of BLM and AGFD personnel. Objectives and strategies will be reviewed and revised if necessary every 5 years.

This plan is intended as an adaptive implementation level planning document, designed to be able to react to changes in scientific knowledge and landscape designations. It directs future mule deer management on the Arizona Strip and outlines the management

guidelines, objectives, and monitoring strategies for mule deer and their habitats. This document only applies to BLM administered lands across the Arizona Strip.

Mule Deer Management Background

The AGFD and the BLM have managed mule deer and their habitats collaboratively since approximately the 1960s. Management activities have focused on one resource with mule deer being the main or secondary focus of a management action. Recently however, there has been a shift to incorporate a multidisciplinary approach to management in efforts to benefit all resources, including mule deer and other wildlife, and resource uses including recreation, forestry, and grazing.

The AGFD manages the mule deer on the Arizona Strip using a game management unit (GMU) approach. These units are 12B, 13A, and 13B, and include some lands administered by the National Park Service (NPS); namely Lake Mead National Recreation Area, and Glen Canyon National Recreation Area. Mule deer habitat is essentially contiguous across these units, but the boundaries provide geographical references for management.

The AGFD manages these units under alternative management guidelines approved through its Commission. The specific parameters of this management strategy as approved for 2010-2012 are included in Appendix 2. In general these prescriptions allow for harvest of older age class animals, for lower hunter densities, and for higher hunt success.

Each unit presents unique challenges to mule deer management. In 12B two large migratory mule deer populations move into the unit from the Paunsagunt herd unit in Utah, and the 12A unit in Arizona, occupying this area from late October through May. 12B has very few year long resident deer. In 13A and 13B most of the habitat is pinyon juniper woodlands occupied year-round by mule deer and fawn production is typically lower than what is found in 12B. Densities are very different from 12B to 13B. Migratory behavior exists in all units, but true summer range, Ponderosa Pine ecotype, across the Arizona Strip is limited. In general the scientific research available for mule deer management can be applied to all units, and management actions can be designed to benefit mule deer.

Mule deer populations on the Arizona Strip, as in much of the western United States, have fluctuated greatly. In the 1960s and 1970s there were many more mule deer on the western portions of the Arizona Strip than today. The mule deer populations appeared to crash by the early 1980s and have exhibited slow population growth and recovery. The actual reasons for the decline are unknown but several potential triggers have been identified. Long-term drought, predatory release, competition from livestock, successional changes in the habitat and disease may all have contributed to the decline. Urban encroachment is not considered an issue on the Arizona Strip, but increased visitor use is.

Currently there is a Mule Deer Working Group (MDWG) through the Western Association of Fish and Wildlife Agencies (WAFWA) that has developed an ecoregion approach to mule deer habitats in the west and has identified specific challenges related to mule deer populations and mule deer management (Watkins et.al). Mule deer populations on the Arizona Strip fall into the Colorado Plateau Shrubland and Forest Ecosystem on the eastern half of the Strip, as well as the Great Plains ecoregion on the western half of the Strip. These ecoregions are not delineated on the ground and aspects of each exist across the landscape. This plan and future management actions will incorporate, to the extent possible, the findings of this working group.

In the development of this document, mule deer habitat was identified using known distributions and behaviors of mule deer. Definitions for priority summer, yearlong, and winter range habitats in each game management unit were carried forward from previous HMPs, modified if needed, and mapped (see Appendix 4). Overall management objectives were identified, and specific implementation actions were delineated for each GMU.

Game Management Unit Descriptions

GMU 13B

GMU 13B can best be described as canyon plateau country. The unit is remote, very large (approximately 3000 square miles) and over half of the unit is within Grand Canyon Parashant National Monument (GCPNM). Ecoregions in GMU 13B include Mojave Desert scrub, pinyon-juniper woodlands, Great Basin short grass prairie, interior chaparral, ponderosa pine woodland, and a small section of aspen woodland on Mount Bangs on the northern end of the unit. The entire unit is occupied mule deer habitat, with the ponderosa and pinyon juniper types having the highest densities. Much of the unit, while occupied, has not reached its potential for mule deer populations and remains underutilized.

The mule deer population in the unit exists at low densities: in some areas less than 1/sq. mile. The population while not at levels attained in the 1970's has shown signs of growth in recent years. Fawn production has remained at approximately 50:100 for the past five years as documented by AGFD survey counts and the buck:doe ratio appears strong. The Black Rock Mountain area and southern portions of GCPNM (known locally as the Parashant) have historically contained the highest densities of mule deer in 13B.

Annual migration occurs across 13B following snowfall and changing of seasons. This typically occurs between approximately October-April each year. The majority of mule deer in the Whitmore Canyon and Whitmore Point area migrate to lower elevations in the winter, including portions of the Grand Canyon, and higher elevations such as Mt. Logan in the summer months. Many mule deer found on the southern portions of the GCPNM move into the Grand Canyon National Park or the Grand Wash Cliffs area in the wintertime. However mule deer are found year round in most of the unit, and true summer/winter range is difficult to delineate. Mule deer also share habitat types with

bighorn sheep and pronghorn antelope especially in the Virgin/Beaver Dam Mountains, Grand Wash Cliffs, and the short grass prairies types.

Unit 13B contains few perennial water sources. Natural springs do exist and many have been developed for livestock use. The Virgin River provides a perennial source of water in most years, but because of its low elevation and isolation in the extreme northwest portion of the unit, provides limited benefit to mule deer. Much of the water availability in the unit is from stock tanks, livestock developments, and man made water catchment facilities. Approximately 80 water catchments exist within 13B, presenting a major maintenance and monitoring concern for the unit. Installation of cooperative and wildlife only water catchments can improve water distribution in the unit.

13B has a long history of predator management. Poisoning and trapping occurred prior to Federal poisoning bans in 1972, and a statewide public initiative banned leghold trapping on public lands. Coyotes, and mountain lions are the primary predators of mule deer in 13B, and management of these species should occur in conjunction with mule deer management actions.

Active livestock grazing operations occur across the Arizona Strip. These operations consist of both year-long (intensive management), and seasonal use (less-intensive), and prescriptions for these grazing allotments include rest-rotation and deferred rotation prescriptions. The Parashant Allotment in the extreme southern portion of 13B is managed as a forage reserve under the 2008 RMP. Limited water resources, forage availability, and ability to navigate fences have all been identified as possible limiting factors to mule deer populations in 13B. Historically the AGFD and the BLM have worked cooperatively to resolve these issues, and this collaboration will continue through the implementation of this document.

Several habitat treatments exist in the unit. These include chaining and burning of pinyon juniper woodlands, chemical/herbicide sagebrush treatments, prescribed fire in ponderosa pine and pinyon juniper woodlands, fence modifications and fire restoration projects. To some degree, all of these efforts benefited mule deer, but it is recognized that some treatments and treatment methods were more successful than others. Maintenance of existing projects and development of new projects are critical to the long term management of mule deer populations and habitat. Priority areas for maintenance include the extreme southern portions of the GCPNM, Hidden Hills, Grassy Mountain, Poverty Knoll, Seegmiller Mountain, Low Mountain, and Jump Canyon.

Urban encroachment is not an issue in 13B, however, the populations of St. George, Utah, Mesquite, Nevada, and Las Vegas, Nevada, have provided a source of increased recreational visitor use to the unit. The designation of GCPNM has increased visitor use to the unit. The popularity of antler collection and OHV recreation has increased in the unit. Competitive speed events also occur annually in mule deer winter range. Managing these visitor uses will be very important in managing mule deer habitats in 13B.

GMU 13A

GMU 13A is bordered by the Hurricane Cliffs on the west, the Grand Canyon on the south, and the Kanab Creek drainage to the east. The unit contains extensive Great Basin short grass prairie, extensive pinyon-juniper woodlands, grassland pinyon-juniper association, and a ponderosa pine ecotype in the Mt. Logan and Mt. Trumbull areas. Mule deer inhabit most of the unit including the Kanab Plateau and associated areas such as Bulrush and Sunshine points, Hack Canyon, and the Kanab Creek drainage. They also occupy much of the pinyon-juniper woodlands to the west towards the Hurricane Rim, and the Ponderosa Pine ecotype.

Fawn production has been similar to that observed in 13B, and a similar decline, earlier than 13B, was observed in the early 1980s. The highest densities of mule deer in the unit can be found in the Mt. Logan and Mt. Trumbull areas, as well as the Whitmore Canyon area.

Annual migration of mule deer has been observed in 13A as in 13B. This typically occurs between approximately October-April each year. Recent telemetry studies of mule deer in 13A show that many deer winter in the Whitmore Canyon area and further south into the Grand Canyon. Deer also winter in the Kanab Creek drainage area, and occasionally 13A experiences interchange with the 12A North Kaibab deer herd, and the 12B mule deer herd. 13A also experiences interchange with Utah specifically in the Cane Beds, Lost Spring, and Yellowstone Mesa areas. Mule deer tend to occupy most other areas of the unit on a year round basis.

Mule deer in 13A also share habitat types with bighorn sheep and pronghorn antelope. Deer coexist in many portions of the Kanab Creek drainage and the Kanab Plateau, areas that are also occupied by bighorn. Mule deer also are present in areas of the short grass prairie where pinyon juniper have encroached, and or browse species are found in good densities.

Unit 13A contains few perennial water sources. Natural springs do exist and many have been developed for livestock use. Kanab Creek provides a perennial source of water in most years, but because of its low elevation, intermittent flow, and isolation in the bottom of the canyon provides limited benefit to mule deer. Much of the water availability in the unit is from stock tanks, livestock developments, and man made water catchment facilities. Approximately 50 water catchments exist within 13A, presenting a major maintenance and monitoring concern for the unit. Installation of cooperative and wildlife only water catchments can improve water distribution in the unit.

The AGFD and BLM have implemented various habitat treatments in 13A. These include chainings along the Temple Trail area, Death Valley, Hancock Knolls, Moriah Knoll, and Dutch Valley areas. The Mt. Trumbull ponderosa forest research project began efforts to return the forest to a pre-European settlement state. The mule deer population in this area responded favorably to this treatment with high fawn production, and deer have been

observed utilizing the treatment areas year round. In certain areas of the Mt Trumbull area cheatgrass has become established. If allowed to proliferate, a subsequent reduction in overall forage quality could become an issue in these areas. Sagebrush treatment, prescribed fires, and fuels reduction projects have all been completed in 13A and these projects have had some benefit to mule deer.

Similar to 13B, livestock grazing is an important component of land management in 13A. A forage reserve has been proposed on the Tuweep allotment, and the BLM and AGFD continue to work collaboratively to address issues with waterlot access, forage availability, and the long term maintenance of existing water resources.

Colorado City, Arizona, Hildale, Utah and Moccasin, Arizona are the only towns in the unit. Kanab, Utah and Fredonia, Arizona are also nearby. These communities have been experiencing some growth in recent years. Visitor use related to OHV use, antler collection, hunting, and destination spots such as the Tuweep overlook and Bar 10 Ranch have all increased in recent years. Managing these types of recreation will be very important when managing mule deer habitats in this unit.

GMU 12B

Ranging between 3200 feet along the Colorado River and 7000 on the Paria Plateau, GMU 12B encompasses a diverse array of habitats that extend between the city of Page and the town of Fredonia along the Arizona-Utah border. The almost 1800 square miles can best be described as plateaus and canyons with vast open valleys. Almost half of the unit is contained within Vermilion Cliffs National Monument, which is remote and geographically isolated from the rest of the unit by impressive sandstone vertical cliffs. Houserock Valley lies to the south of the Paria Plateau with the Buckskin Mountains and Kanab Creek in the western portion of the unit. Popular scenic landmarks such as the Vermilion Cliffs, Paria Canyon, and Coyote Buttes are located in the eastern portion of the unit. Vegetation varies from semi-desert grasslands in Houserock Valley and Great Basin desert east of the Buckskins to pinyon-juniper woodlands on the Buckskins and the Paria Plateau. The availability of water is very limited with wildlife species relying heavily on man-made water developments.

Much of the unit is occupied mule deer habitat, with the pinyon-juniper and sage brush flats having the highest densities between October-April. Excluding the Paria Plateau, 12B contains critical winter range for migratory deer herds from both the Kaibab Plateau in Arizona and from the Paunsaugunt Plateau in southern Utah. Studies have shown that the Paunsaugunt deer arrive in Unit 12B in mid-October through early November and occupy a range that extends southward into Arizona approximately eight miles. Deer from the North Kaibab begin migrating northward to merge with the migratory Utah deer in early November. This annual migration pattern to lower elevations varies year-to-year, and is heavily driven by snowfall or changing of the seasons.

The mule deer population in 12B exists at low densities in some parts of the unit, such as the Paria Plateau, after the migratory herds have moved into the unit. AGFD survey

counts have shown that fawn production has remained at approximately 65:100 does for the past five years and the buck:doe ratio remains at 25:100 does in areas where the North Kaibab and Paunsagunt deer winter. A population estimate is not generated for the migratory herds or for the few resident deer. The Buckskin Mountains and Suicide Ridge have the highest densities of deer after the fall migration, but by late April this area is almost void of any deer and remains that way for the duration of the summer months. Although habitat on the Paria Plateau is in excellent condition with an abundance of grasses, forbs and browse plants, the small resident herd's population is severely limited by the lack of reliable water sources.

Mule deer in Unit 12B share habitat with bighorn sheep in Paria Canyon, Vermilion Cliffs, and Kanab Creek and with pronghorn in House Rock Valley. In some cases deer range overlaps with livestock range.

Unit 12B contains few perennial water sources. A few natural springs exist throughout the unit, however many are private water rights and have been developed for livestock use and may no longer provide reliable surface water. The Paria River provides a perennial source of water in most years for the few deer that reside in this wilderness area. On the western edge of the unit, Kanab Creek also provides a fairly reliable, though intermittent source of water to a few local resident deer. Due to the low elevation and isolation of both drainages, they only provide limited benefit to mule deer. The majority of available water sources in the unit are stock tanks, livestock developments, and a few wildlife water catchments. Only nine wildlife specific/ cooperative water catchment facilities exist within 12B West. As of 2008 there are only five wildlife specific water catchments on the Paria Plateau. There are also a few additional livestock tanks and developments scattered across the plateau that contain water year-round. House Rock Valley deer and pronghorn herds are also extremely limited by the lack of perennial water sources. Water distribution should be improved in the unit by utilizing both cooperative projects and wildlife catchments.

12B has a long history of predator management. Poisoning and trapping occurred prior to Federal poisoning bans in 1972, and a statewide public initiative banned leghold trapping on public lands. Coyotes, and mountain lions are the primary predators of mule deer in 13B, and management of these species should occur in conjunction with mule deer management actions.

Active livestock grazing operations occur across 12B. These operations consist of both year-long (intensive management), and seasonal use (less-intensive), and prescriptions for these grazing allotments include rest-rotation and deferred rotation prescriptions. Limited water resources, forage availability, and ability to navigate fences have all been identified as possible limiting factors to mule deer populations in 13B. Historically the AGFD and the BLM have worked cooperatively to resolve these issues, and this collaboration will continue through the implementation of this document.

There are several habitat treatments areas in 12B West, most of which are within the Buckskin Mountains. These include chaining and burning of pinyon juniper woodlands,

sagebrush treatments, wildland and prescribed fires in pinyon juniper woodlands, juniper thinning, and fence modifications. Some of these treatments benefited mule deer, while others still need additional work (i.e. seeding native browse plants, eradication of invasive species, especially cheatgrass). Maintenance of existing projects and development of new projects are critical to the long term management of the deer population and habitats. Priority areas for maintenance include both new and old treatment and burn areas in the Buckskin Mountains, the Suicide Ridge area, Coyote Valley, Muggins Flat, and the Paria Plateau.

Urban encroachment is currently a minor factor in 12B. Visitation to the unit has increased with increasing populations of St. George, Kanab, Big Water, Utah, and Fredonia and Page, Arizona, and designation of Vermilion Cliffs National Monument. The popular geologic feature, "The Wave", is located within the Paria Canyon Vermilion Cliffs Wilderness area. The popularity of antler collection and OHV recreation has also significantly increased in the unit. Managing this increase in recreational use is an important factor in managing deer habitat in Unit 12B.

Management Issues

In addition to management issues identified by the MDWG, the following management issues for mule deer on the Arizona Strip have been identified by the core team.

1. Exotic Annual Grass Invasion – Cheatgrass and other *Bromus* species have gained a competitive advantage in many areas across the Arizona Strip. Cheatgrass is of value to wildlife for a very short period of time. When young, it provides protein and nutrient levels similar to native species of grass (Austin et. al). Because it cures quickly however, the benefit is limited. In addition, it has a large competitive advantage over other native grasses and shrubs by germinating throughout the fall/winter season, producing large amounts of seeds, and competing for soil water and nutrient availability. When cured it is not as palatable as native species. This has the potential to result in an increased utilization of native species by livestock and wildlife.
2. Fire Management – In general, fire use and low intensity wildfire can be very beneficial to wildlife habitat, particularly mule deer. When used appropriately fire use can be used to increase edge, target pinyon/juniper trees that have encroached into treatment areas, restore ponderosa pine habitats, and open dense, closed canopy stands of juniper to increase browse and forage species. In general however, prescribed burns have had limited use on the Arizona Strip, and an active suppression policy has reduced the ability to use wildfire as an effective management tool. In turn fire intervals have increased, particularly in the Mojave, higher elevation Mojave, and pinyon juniper habitats. Frequent fire disturbance presents unique challenges to managing mule deer habitats as shrub components are typically lost over time, and cheatgrass can gain a competitive advantage over other species.

In recent years large, high intensity, catastrophic wildfires have impacted much of the landscape on the Arizona Strip. These fires have been driven by fine fuel loads, particularly cheatgrass, and dense stands of pinyon-juniper.

3. Habitat Treatments and Conversion – Re-establishment of sagebrush and pinyon-juniper into previously treated areas, as well as dominance of these species has created the need to implement vegetative treatment projects designed to meet desired plant community (DPC) objectives thereby increase forage availability for mule deer and other resources. Maintaining an early seral stage of existing treatment areas and identifying new areas where DPC objectives are not being met will improve forage quality and availability for mule deer.
4. Water Distribution, Availability and Access – Significant efforts have been implemented across the Arizona Strip to improve water distribution. Perennial sources are generally lacking, and man-made sources such as livestock tanks, water catchment facilities and spring developments provide the bulk of water

sources available for mule deer. It has been demonstrated on the Arizona Strip that improving water distribution improves distribution and habitat use by mule deer and has positive impacts on populations. There are areas of the Arizona Strip that would benefit from increased water availability, and better distribution. In addition, many livestock tanks have poor access for mule deer which also impacts water availability.

5. Livestock Management Practices – The abundance, design, and “wildlife friendliness” of fences, especially around waterholes, is an important issue across the Arizona Strip. In order for this plan to be effective in benefiting all resources including mule deer and livestock, there is a need to develop Allotment Management Plans (AMPs) on those allotments without specific grazing use prescriptions. These AMPs will be developed in conjunction with BLM range staff.
6. Recreational Use – The designation of GCPNM and VCNM, growth of the nearby communities of St. George, Utah, Mesquite, Nevada, Kanab, Utah, and Page, Arizona, competitive speed events, the quality, and notoriety of the mule deer in these units and increased off-highway vehicle use have led to a year round disturbance of mule deer and their habitats.
7. Low Population Densities - Historically, through the 1960s-1970s mule deer populations across the Arizona Strip were higher compared to those observed today. While the cause of this decline is not easily identified, the issues identified in this plan, and those identified by the Western MDWG, provide triggers that may have impacted this decline.
8. Predator Management – Recognizing predators as an integral part of this landscape and the ecosystem, and the role they play in mule deer populations is an important part of identifying issues that could be limiting mule deer populations across the Arizona Strip.
9. Maintenance of genetic diversity throughout the populations – There is a genuine need to develop habitat connectivity models across all landscapes on the Arizona Strip to ensure that wildlife corridors are maintained. The AGFD’s Habitat branch is currently working on this effort for the Arizona Strip.
10. Summer and Winter Range Habitat Availability and Quality – The MDWG has identified winter range habitat as a limiting factor for mule deer populations across the west as the type, quality and quantity of forage is generally inadequate to prevent weight loss, and inadequate to fully meet the nutritional needs of every animal in the population. However implementing habitat treatments in wintering areas can increase quality browse species and provide beneficial effects to mule deer.

Unit 12B has large areas of contiguous winter range habitat on the Buckskin Mountains, Paria Plateau, and Gunsight Point areas that must meet the needs of the wintering mule deer population.

Units 13A/B have large areas of mid to lower elevation winter/yearlong habitat that, while certainly available, is of limited value because of its lack of forage or closed pinyon juniper canopy. Opportunities exist across both units to improve these lower elevation habitats and to experiment with winter range feed plots in areas such as Bulrush Point, Gunsight Point, and the Kanab Plateau area.

Higher elevation summer range on the Arizona Strip, because of its limited acreage is inherently a limiting factor for mule deer populations. The only areas of Ponderosa Pine Habitat on the Arizona Strip occur in unit 13A and 13B. These areas must be maintained and retained for the health of the mule deer populations.

Management Guidelines

1. Develop landscape scale, comprehensive habitat treatment priorities focusing on maintaining previously treated and priority treatment areas. Based on land health assessments and site suitability, a full range of habitat/vegetation treatment projects utilizing fire, mechanical, and chemical methods to provide quality forage, space and cover for mule deer and other wildlife/resources will be utilized. It is recognized that there is not a "one-size fits all" treatment method and a combination of methods should be utilized in project planning. Treatment design will include a mosaic pattern that maximizes edge effect. Seeding efforts should be implemented when appropriate, to provide soil stability and to compete with non-desirable species such as cheatgrass and Red Brome. Native shrub/browse and grass species should be emphasized, but it is recognized that non-intrusive non-native species that have been shown to successfully compete with cheatgrass may be used during seeding to reduce the proliferation of non-desirable species and to provide quality forage for wildlife.

Habitat treatment projects that require reseeding will be rested from livestock grazing for two calendar years to allow seed germination and seedling establishment. Treatments that do not require reseeding will be deferred from livestock grazing for two full growing seasons (approximately April 1–October 15) to allow existing understory to recover and build vigor.

Each habitat treatment will be designed to minimize visual impacts. It is recognized that wildlife and wildlife habitats are an important component of the landscape and naturalness attributes of areas with wilderness character. Habitat treatments that meet the objectives for these areas are appropriate as outlined in the RMPs.

2. During the design and development phase of fuels reduction projects, mule deer management guidelines for habitat treatments will be incorporated to ensure that

fuels projects meet multiple resource objectives. Close coordination with fuels staff will ensure this guideline is met.

3. Mule deer habitat management guidelines will be incorporated into all vegetative treatments in mule deer habitat. An example of an ongoing vegetative planning effort is the Shivwits vegetation planning. The Shivwits planning effort is intended to be an interdisciplinary adaptive process to address habitat management across the Shivwits Plateau.
4. In mid-lower elevation winter and year-long habitats focus on increasing/maintaining browse species such as cliffrose, sagebrush, oak, four-wing saltbush, winterfat and bitterbrush to provide over-winter forage for the mule deer populations in the area. When implementing habitat treatment in these areas, a balanced adaptive approach will be utilized to maintain the juniper and sagebrush components of the treatment.
5. Maintain the health of existing summer range habitats across the Arizona Strip. Maintain a full complement of browse, forb, and grass species appropriate for the area. Cliffrose, sagebrush, Gambel oak, oak brush, serviceberry, bitterbrush, four wing saltbush, blue grama, wheat grasses, fescue, and Eriogonum sp. are examples of quality species available in these areas.
6. Coordinate with Range Staff and permittees to develop AMPs that incorporate livestock grazing practices that meet DPC objectives. Seasons of use, pasture deferrals and rotation, utilization and stocking rates should all be evaluated when developing these plans. In implementing grazing practices, a year-round grazing system should be avoided, particularly in mule deer winter range habitats. The Arizona Strip RMP identifies two types of AMPs: intensive and less intensive. Intensive AMPs involve grazing systems such as rest-rotation, deferred rotation, or best pasture system and establish a key forage utilization level goal of 50 percent average of current years' growth. Less-intensive AMPs involve grazing systems that allow the rancher to operate seasonally but forage species utilization goals are set at 45 percent average of current year's growth. If specific grazing practices on a particular allotment need to be adjusted, BLM and AGFD will consult and coordinate the appropriate action.
7. All fences in mule deer habitat should meet BLM and/or AGFD standards and be wildlife friendly. Five-strand and net wire type fences should be avoided and replaced as appropriate. Existing fences around waterholes will be identified and modified to ensure safe access for all mule deer and other wildlife, while meeting the needs of the livestock operator. If a fence is shown to serve no purpose, it will be removed.
8. Existing water catchments designed for mule deer and livestock will be maintained or redeveloped as necessary across the Arizona Strip. Close coordination with permittees and BLM range staff will ensure that water is

present and available in troughs during periods of non-livestock use, and that the project meets wildlife needs on a year round basis. A “minimum pool” will be established at joint use waters of ~5000 – 10000 gallons that will be reserved for wildlife. Conflicts will be resolved to meet the needs of all resources.

9. Using a landscape approach, identify areas where water availability, access and distribution are potential limiting factors to mule deer. Improving access to stock ponds and/or developing new wildlife waters may be appropriate tools to improve water availability, access, and distribution. Design of new wildlife catchments will incorporate the latest in scientific research to ensure safe ingress and egress, and provide the maximum benefit to the species and other wildlife such as bats and small mammals. Design new water developments to include measures that minimize visual impacts.
10. Develop programmatic planning documents to accomplish projects outlined in this plan, while streamlining compliance with the National Environmental Policy Act (NEPA). Grouping projects based on similarities, priorities, locations, etc. are ways to streamline the NEPA process and ensure that projects can get completed when funding etc. becomes available.
11. Predator management strategies in adherence with AGFD predator management plans and policies will be implemented when conflicts are identified in meeting mule deer objectives.

Objectives

1. Ensure existing wildlife and joint use livestock/wildlife waters are functional and provide reliable year round water for all wildlife.

Strategy 1: Implement AGFD protocols with respect to wildlife water inspections to identify maintenance and water hauling needs throughout the year.

Strategy 2: Coordinate closely with range staff and livestock permittees to ensure that minimum pool requirements are met at each joint use water facility across the Arizona Strip.

Strategy 3: Refine existing processes and protocols related to water hauling requests and maintenance needs of wildlife developments.

Strategy 4: Through monitoring protocols, identify developments that have become dilapidated, non-functional, and are no longer meeting the needs of wildlife. Utilizing a yearly prioritization process, redevelop these catchments with updated materials. Up to 15 catchments will be redeveloped during the five-year span of this plan.

Strategy 5: Continue to develop partnerships with Non-Governmental Organizations (NGOs) such as the Arizona Deer Association, maintain heavy involvement in the Habitat Partnership Committees (HPC), and develop challenge cost share agreements through the BLM budgeting process to secure funding and develop a joint vision for wildlife catchment redevelopment and maintenance.

2. Where identified to meet resource needs, develop up to 8 new wildlife water developments across the Arizona Strip from 2010-2014.

Strategy 1: Utilizing GIS data on a landscape level, identify gaps in water distribution for mule deer. Typically these will be areas where spacing is further than 3 miles apart. It is recognized however, that having waters closer than 3 miles apart has cumulative positive impacts on mule deer populations and habitat use.

Strategy 2: Combine GIS data with survey and known distribution data to prioritize areas for new wildlife water developments.

Strategy 3: Continue to develop partnerships with NGOs such as the Arizona Deer Association, maintain heavy involvement in the Habitat Partnership Committees (HPC), and develop challenge cost share agreements through the BLM budgeting processes to secure funding for new wildlife developments.

3. Ensure that fences across the Arizona Strip, particularly at cattle ponds and water sources, are wildlife friendly, and provide safe ingress and egress.

Strategy 1: Incorporate existing cattle pond/waterlot fence inventory data into a prioritized plan to modify 8 waterlot fences by 2014.

Strategy 2: Remove fences that have no purpose for livestock management.

Strategy 3: Coordinate closely with range staff and livestock permittee to ensure that modification efforts meet the needs of both wildlife and the livestock operator. It is recognized that only portions of the entire perimeter fence of a cattle pond may need modification for wildlife access.

Strategy 4: Secure funding through the HPC and NGO partnerships, and with challenge cost-share agreements through the BLM budgeting process.

4. Implement up to 1000 acres per year of new prioritized mule deer habitat treatment across the Arizona Strip.

Strategy 1: Prioritize new treatment areas utilizing data such as desired future conditions, desired plant community objectives, current state, site suitability based on soil characteristics and erosion potential, and distribution and migration behaviors of mule deer.

Strategy 2: Incorporate priorities into treatment designs, using a full range of treatment options, best suited for the site and mule deer populations in the area.

Strategy 3: Complete interdisciplinary reviews of projects in the development phase, to ensure that multiple resource objectives are incorporated and can be met in the treatment area.

Strategy 4: Continue to develop partnerships with NGOs such as the Arizona Deer Association, maintain heavy involvement in the Habitat Partnership Committees (HPC), and develop challenge cost share agreements through the BLM budgeting processes to secure funding for new habitat treatments.

Strategy 5: Continue close interdisciplinary involvement with the Shivwits Vegetation Planning process, other program projects such as range program/permittee priorities to ensure mule deer and wildlife habitat objectives are met in implementation of these projects

5. In order to maintain the value of existing treatment areas to mule deer, implement up to **1000** acres per year of prioritized mule deer habitat treatment across the Arizona Strip.

Strategy 1: Focusing on summer and winter habitats for mule deer, identify previously treated areas that are in need of maintenance.

Strategy 2: Prioritize treatment areas based on desired future conditions, desired plant community objectives, current value to mule deer, and site suitability.

Strategy 3: Continue close interdisciplinary involvement with the Shivwits Vegetation Planning process, current fuels projects such as the Lang's Run Watershed, Middle Fork, West Fork, and Buckskin chaining projects, and range program/permittee treatment projects to ensure mule deer and wildlife habitat objectives are met in the implementation of these projects.

Strategy 4: Continue to develop partnerships with NGO's such as the Arizona Deer Association, maintain heavy involvement in the Habitat Partnership Committees (HPC), and develop challenge cost share agreements through the BLM budgeting processes to secure funding for maintenance of previously treated areas.

6. Mitigate impacts of increased recreational use across the Arizona Strip.

Strategy 1: Continue monitoring of visitor use data through recreation staff, monitoring of existing route designations within the monuments, and maintain involvement in planning efforts such as motorized use authorizations, to ensure that recreational use is not negatively impacting mule deer populations and mule deer habitat.

Strategy 2: Continue to develop local partnerships with OHV clubs and user groups, and continue public outreach efforts through the Off-Highway vehicle program, BLM visitor's center, and local resources such as newspapers and television to foster responsible use and public ownership of the resource.

7. Mitigate impacts of energy development on mule deer habitat across the Arizona Strip.

Strategy 1: Continue review and comment of energy development proposals and pursue potential mitigation such as funding for wildlife monitoring, water developments, etc. if appropriate.

Strategy 2: Develop energy development guidelines for proposed projects in mule deer habitat.

References

1. Austin, D. D., R. Stevens, K. R. Jorgenson, and P. J. Urness. 1994. Preferences of mule deer for 16 grasses found on Intermountain winter Ranges. *Journal of Range Management* 47(4):308-311 1994.
2. Watkins, B. E., C. J. Bishop, E. J. Bergman, A. Bronson, B. Hale, B.F. Wakeling, L. H. Carpenter, and D. W. Lutz. 2007. Habitat Guidelines for Mule Deer: Colorado Plateau Shrubland and Forest Ecoregion. Mule Deer Working Group, Western Association of Fish and Wildlife Agencies.

**TABLE 1. Mule Deer Water Developments Requiring Maintenance or Redevelopment
On the Arizona Strip in Priority Order by GMU
(Updated Sept 2009)**

Project Name	Location	Problem Description	Date Identified	Date Completed	Relevant Management Plans
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GMU 12BE: Paria Canyon-Vermilion Cliffs Area

Powell's Monument WLC	36°50.523'N 111°41.634'W	Redevelopment-replace float valve system, increase storage	2006		AZ Strip BHS Management Plan; Vermilion Cliffs National Monument RMP
Fisher point WLC	36° 53.554'N 111° 39.301'W	Redevelopment-replace float valve system, increase storage	2006		AZ Strip BHS Management Plan; Vermilion Cliffs National Monument RMP
Soap Creek Tank No.2	36° 47.133'N 111° 45.667'W	Repair earthen dam using steel gabions	2008		Vermilion Cliffs National Monument RMP
Jarvis Camp Concrete Dam and dirt tanks	36°46.835"N 111°54.432"W	Repair/ seal concrete dam, bentonite dirt tanks- State Trust Land	2007		Vermilion Cliffs National Monument RMP
Franks Reservoir	36°56.977"N 111°52.507"W	Coop- wildlife drinker needed and 10,000 gallon storage tank	2007		Vermilion Cliffs National Monument RMP

GMU 12BW: Coyote Valley to Gunsight Point including the Buckskin Mtns

Buckskin No1 WLC	T41N, R2E, Sec35	Needs new apron/ gutter	2009		Arizona Strip Field Office RMP
Buckskin No2 WLC	T41N, R2E, Sec13	Needs new apron/ gutter	2009		Arizona Strip Field Office RMP
Buck Pasture COOP Catchment	T41N, R2E, Sec16	Multiple cracks in new fiberglass trough-need repair	2009		Arizona Strip Field Office RMP

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Mt Trumbull WLC 1	NW¼ of Sec35, T36N, R8W	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2007		Arizona Strip Field Office RMP
Mt Trumbull WLC 2	NW¼ of Sec12, T35N, R8W	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2007		Grand Canyon-Parashant National Monument RMP
Mt Trumbull WLC 3	SE¼ of Sec31, T36N, R8W	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2007		Arizona Strip Field Office RMP
Mt Trumbull WLC 4	SW¼ of Sec1, T34N, R8W	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2007		Grand Canyon-Parashant National Monument RMP
Mt Trumbull WLC 5	NW¼ of Sec14, T34N, R8W	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2007		Grand Canyon-Parashant National Monument RMP
Mt Trumbull WLC 6	SE¼ of Sec7, T34N, R8W	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2007		Grand Canyon-Parashant National Monument RMP
Mt Trumbull WLC 7	SE¼ of Sec24, T35N, R9W	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2007		Arizona Strip Field Office RMP
Mt Trumbull WLC 8	NW¼ of Sec33, T36N, R7W	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2007		Arizona Strip Field Office RMP
Pas Pocket WLC	SW ¼ of Sec 18, T33 N, R8 W	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2007		Grand Canyon-Parashant National Monument RMP
Slide Mountain WLC	SE ¼ of Sec 32, T34 N, R8 W	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2007		Grand Canyon-Parashant National Monument RMP
Hurricane Rim WLC 758			2006		Arizona Strip Field Office RMP

Rim WLC 1			2008		Arizona Strip Field Office RMP
Rim WLC 2			2008		Arizona Strip Field Office RMP
Saltbush WLC		Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2008		Arizona Strip Field Office RMP
Pronghorn WLC		Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2008		Arizona Strip Field Office RMP
Mt Trumbull WLC		Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2008		Arizona Strip Field Office RMP
Witch's Pool WLC		Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2008		Grand Canyon-Parashant National Monument RMP
Heaton Knolls WLC		Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2007		Arizona Strip Field Office RMP
Logan WLC	N 36° 21.499' W 113° 12.241'	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2009		Grand Canyon-Parashant National Monument RMP
Hells Hole WLC		Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2009		Grand Canyon-Parashant National Monument RMP
Sawmill WLC		Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2009		Grand Canyon-Parashant National Monument RMP
Ponderosa Burn WLC		Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2009		Grand Canyon-Parashant National Monument RMP
Lion WLC		Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2009		Grand Canyon-Parashant National Monument RMP
SB WLC		Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2009		Arizona Strip Field Office RMP

GMU 13B

Mt. Dellenbaugh WLC	N 36° 07.330' W 113° 33.160'	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2007		Grand Canyon-Parashant National Monument RMP
Seegmiller 1 WLC	N 36° 49.129' W 113° 29.589'	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2008		Arizona Strip Field Office RMP
Seegmiller 2 WLC	N 36° 49.512' W 113° 31.931'	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2008		Arizona Strip Field Office RMP
Wolf Hole 1 WLC	N 36° 50.494' W 113° 37.604'	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2008		Arizona Strip Field Office RMP
Wolf Hole 2 WLC	N 36° 48.944' W 113° 36.997'	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2008		Arizona Strip Field Office RMP
Wolf Hole 3 WLC	N 36° 46.957' W 113° 36.612'	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2008		Arizona Strip Field Office RMP
Pick Point WLC	N 36° 17.147' W 113° 48.237'	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2007		Grand Canyon-Parashant National Monument RMP
Tincanebitts COOP	N 36° 09.003' W 113° 42.679'	Fence Repairs, Tank Lid	2009		Grand Canyon-Parashant National Monument RMP
Burnt Canyon COOP	N 36° 08.177' W 113° 38.390'	Fence Repairs, Tank Lid	2009		Grand Canyon-Parashant National Monument RMP
M+M COOP	N 36° 28.131' W 113° 33.952'	Tank Lid Installation, Storage Tank Repair and Apron Replacement	2005		Arizona Strip Field Office RMP
Shoebuckle WLC	N 36° 31.077' W 113° 38.491'	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2005		Grand Canyon-Parashant National Monument RMP
Low Mountain 1 WLC	N 36° 50.625' W 113° 45.269'	Redevelopment: Replace Apron, trough, increase storage	2007		Arizona Strip Field Office RMP

Littlewolf WLC	N 36° 45.593' W 113° 43.129' *Approximate	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2007		Grand Canyon-Parashant National Monument RMP
Whiterock WLC	N 36° 39.570' W 113° 34.603'	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2005		Arizona Strip Field Office RMP
Snap Draw WLC	Needs Field Verification	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2005		Grand Canyon-Parashant National Monument RMP
Imlay Airstrip WLC	N 36° 40.646' W 113° 40.194'	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2005		Grand Canyon-Parashant National Monument RMP
Hobble WLC	N 36° 37.064' W 113° 39.804'	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2005		Grand Canyon-Parashant National Monument RMP
Hobble Pond WLC	N 36° 37.957' W 113° 37.521'	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2005		Grand Canyon-Parashant National Monument RMP
Yellow John Mountain WLC	N 36° 09.109' W 113° 27.075'	Redevelopment: Replace Apron, trough, increase storage, remove float valve system	2005		Grand Canyon-Parashant National Monument RMP

WLC = Wildlife Catchment

**TABLE 2. Potential New Mule Deer Water Developments
On the Arizona Strip in Priority Order by GMU
(Updated Sept 2009)**

Project Name	Location	Purpose/ Description	Located In Wilderness	Located In Monument	Relevant Management Plans
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GMU 12BE: Paria Canyon-Vermilion Cliffs Area

Thousand Pockets WLC	T.41N., R.7E., S.21 36' 56.323'N, 111' 38.552'W	Increase available water in area; No reliable waters within 3 miles	X	X	AZ Strip BHS Management Plan; Vermilion Cliffs National Monument RMP
Benali Rim WLC	T.39N., R.4E., S.22 36' 45.804'N, 111' 57.301'W	Increase available water in area; No reliable waters within 3 miles		X	AZ Strip BHS Management Plan; Vermilion Cliffs National Monument RMP
Hancock WLC	T.39N., R.5E., S.32 36' 44.331'N, 111' 53.678'W	Increase available water in area; No reliable waters within 3 miles		X	AZ Strip BHS Management Plan; Vermilion Cliffs National Monument RMP
Cedar Mountain WLC	T.41N., R.6E., S.11 36' 57.995'N, 111' 43.520'W	Increase available water in area; No reliable waters within 3 miles; also relevant to pronghorn		X	AZ Strip BHS Management Plan; Vermilion Cliffs National Monument RMP

GMU 12BW: Coyote Valley to Gunsight Point including the Buckskin Mtns

Larkum Canyon WLC	T41N, R3E, Sect. 17	Increase reliable water; increase safe access; best off of 2 track road above Basin canyon			Arizona Strip Field Office RMP
Buck Pasture No2 WLC	T41N, R2E, Sect. 6	Increase reliable water in area; road from AZ No2 in section 7 into section 6			Arizona Strip Field Office RMP
Water Canyon WLC	T42N, R2E, Sect. 34	Increase reliable water in area; road from AZ No2 in section 33 into section 34			Arizona Strip Field Office RMP

Toothpick WLC	T.38N, R1W, Sect. 6	Increase reliable water in area			Arizona Strip Field Office RMP
Suicide WLC	T38N, R1W, Sect. 3	Increase reliable water in area			Arizona Strip Field Office RMP

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GMU 13B

Andrus Point WLC 3	N 36° 15.840' W 113° 29.975' *Approximate	Increase reliable water in area		X	Grand Canyon-Parashant National Monument RMP
Andrus Point WLC 2	N 36° 17.627' W 113° 23.985' *Approximate	Increase reliable water in area		X	Grand Canyon-Parashant National Monument RMP
Andrus Point WLC 1	N 36° 19.091' W 113° 25.239' *Approximate	Increase reliable water in area		X	Grand Canyon-Parashant National Monument RMP
Jacobs Well WLC	N 36° 40.343' W 113° 54.711' *Approximate	Relocation of Tom and Cull WLC		X	Grand Canyon-Parashant National Monument RMP
Black Rock WLC 1	N 36° 49.09' W 113° 45.43' *Approximate	Increase reliable water in area			Arizona Strip Field Office RMP
Poverty Mountain WLC 1	N 36° 24.633' W 113° 31.771' *Approximate	Increase reliable water in area		X	Grand Canyon-Parashant National Monument RMP

Poverty Mountain WLC 2	N 36° 24.139' W 113° 29.640' *Approximate	Increase reliable water in area		X	Grand Canyon-Parashant National Monument RMP
Gardner Breaks WLC	N 36° 19.134' W 113° 40.664' *Approximate	Increase reliable water in area		X	Grand Canyon-Parashant National Monument RMP
Castle Peak WLC	N 36° 11.852' W 113° 33.374' *Approximate	Increase reliable water in area		X	Grand Canyon-Parashant National Monument RMP

WLC = Wildlife Catchment

**TABLE 3. Mule Deer Habitat Improvement Projects by GMU
Requiring Maintenance/Monitoring on the Arizona Strip
(Updated Sept 2009)**

Project Name	Location	Purpose/ Description	Date Identified	Date Completed	Relevant Management Plans
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GMU 12BW: Coyote Valley to Gunsight Point including the Buckskin Mtns

West Buckskin Mtns. (top) Chainings/Burn/ Chemical Treatment- *multiple areas	T41N, R2E, Multiple Sections in & around 14&15	Reseed native grasses and browse species; reduce cheatgrass/exotic invasion	May 2009		Arizona Strip Field Office RMP
East Buckskin Mtns. (top) Chainings- *multiple areas	T41N, R3E, Multiple Sections in & around 7,8,17,18&19	Reseed native grasses and browse species; reduce cheatgrass/ exotic invasion	May 2009		Arizona Strip Field Office RMP
N. Buck Pasture (bottom)- *multiple areas	T41N, R2E, Sect 4,5,9,16	Reseed native grasses and browse species; reduce cheatgrass/ exotic invasion	May 2009		Arizona Strip Field Office RMP
Coyote Valley Vegetation Treatment (Chemical)	T41N, R3E, Sec 14,15,22,23,26,27	Reseed native grasses and browse species; lack of understory after Chemical treatment	May 2009		Arizona Strip Field Office RMP
Pine Hollow Burn	T42N, R3E, Sec34	Reseed native grasses and browse species; reduce cheatgrass/ exotic invasion; Possible herbicide site	May 2009		Arizona Strip Field Office RMP

GMU 13A

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GMU 13B

Twin Point, Dellenbaugh, Snap, Chaining Maintenance and Monitoring	T32N R12W Sec 3,5,31 T32N R13W Sec 25,27,29,33,35 *Approximate	Mechanical and Prescribed Fire/Fire use to Maintain browse production in previously treated areas.	2008		Grand Canyon-Parashant National Monument RMP
Penns Valley Chaining Maintenance and Monitoring	T33N R11W Sec 29,30,32,33 *Approximate	Mechanical and Prescribed Fire/Fire use to Maintain browse production in previously treated areas.	2008		Grand Canyon-Parashant National Monument RMP
Hidden Hills Chaining Maintenance and Monitoring	T34N R13W Sec 11,12,13,14,15,16,21, 22,23 *Approximate	Mechanical and Prescribed Fire/Fire use to Maintain browse production in previously treated areas.	2008		Grand Canyon-Parashant National Monument RMP
Seegmiller Mountain Chaining Maintenance and Monitoring	T39N R11W Sec 1 T39N R12W Sec 6 T40N R11W Sec 30,31,32 T40N R12W Sec 24,25 *Approximate	Mechanical, Chemical and Prescribed Fire/Fire use to Maintain browse production in previously treated areas.	2008		Arizona Strip Field Office RMP
Low Mountain Chaining Maintenance and Monitoring	T40N R13W Sec 29,30,31,32 *Approximate	Mechanical, Chemical and Prescribed Fire/Fire use to Maintain browse production in previously treated areas.	2008		Arizona Strip Field Office RMP

**TABLE 4. Potential New Mule Deer Habitat Improvement Projects
On the Arizona Strip by GMU
(Updated Sept 2009)**

Project Name	Location	Purpose/ Description	Date Identified	Date Completed	Relevant Management Plans
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GMU 12BW: Coyote Valley to Gunsight Point including the Buckskin Mtns

Buckskin Stewardship	T.41N, R.2E, Sect. 10,11,12	Mechanical Treatment of 100 acres of pinyon-juniper near Franks Reservoir Allotment	2008		Arizona Strip Field Office RMP
Buck Pasture Chaining/ Fuel reduction	T.41N, R.2E, Sect. 22,23,26,27,28,34,35	Mechanical Treatment of 1,000 acres to reduce woody species; Reseed native grasses and browse species	2007		Arizona Strip Field Office RMP
Pine Hollow Chaining/ Fuel reduction	T.41N, R.3E, Sect. 4,5,6,7,8,9; T.42N, R.3E, Sect. 32, 33	Mechanical Treatment of 1,000 acres to reduce woody species; Reseed native grasses and browse species	2007		Arizona Strip Field Office RMP

GMU 13A

GMU 13B

Penns Well Pinyon-Juniper Thinning	T33N R11W Sec 30,31 T33N R12W Sec25	Mechanical Treatment of ~500 acres to reduce pinyon-juniper densities and increase browse densities	2009		Grand Canyon-Parashant National Monument RMP
Grassy Mountain Pinyon-Juniper Thinning	T33N R11W Sec 1,2 T34N R12W Sec 34,35	Mechanical Treatment of ~1000 acres to reduce pinyon-juniper densities and increase browse densities	2009		Grand Canyon-Parashant National Monument RMP
Salthouse Pinyon-Juniper Thinning	T32N R13W Sec 3,4,5,8,9 T33N R13W Sec 32,33	Mechanical Treatment of ~1000 acres to reduce pinyon-juniper densities and increase browse densities	2009		Grand Canyon-Parashant National Monument RMP
Andrus Rim Pinyon-Juniper Thinning	T33N R11W Sec 18,19 T32N R12W Sec 11,12,13,14,23,24	Mechanical Treatment of ~1000 acres to reduce pinyon-juniper densities and increase browse densities	2009		Grand Canyon-Parashant National Monument RMP
Poverty Mountain Pinyon-Juniper Thinning	T35N R12W Sec 23,24,25 T35N R11W Sec 19,30,32	Mechanical Treatment of ~1000 acres to reduce pinyon-juniper densities and increase browse densities	2009		Grand Canyon-Parashant National Monument RMP
Castle Peak Pinyon-Juniper Thinning	T32N R12W Sec 3,11,14,15,22	Mechanical Treatment of 640 acres to reduce pinyon-juniper densities and increase browse densities	2009		Grand Canyon-Parashant National Monument RMP
Gardner Breaks Cliffrose Treatment	T34N R13W Sec 21,22,26,27,28,34	Reinvigorate decadent cliffrose stands via "topping" to foster new growth and production on ~500 acres	2009		Grand Canyon-Parashant National Monument RMP
Hidden Hills Pinyon-Juniper Treatment (State land)	T34N R13W Sec 2	Mechanical Treatment of 640 acres to reduce pinyon-juniper densities and increase browse densities	2009		Grand Canyon-Parashant National Monument RMP

**TABLE 5. NEPA Status for Mule Deer Projects
On the Arizona Strip
(Updated Sept 2009)**

Project Name	Date Identified/Status	Date Completed
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GMU 12BE: Paria Canyon-Vermilion Cliffs Area

Thousand Pockets WLC	July 2005	
Benali Rim WLC	Oct 2006	
Hancock WLC	Oct 2006	
Cedar Mountain WLC	Oct 2006	
Franks Reservoir	June 2007	
Soap Creek Tank No.2	Feb 2008/ In progress	

GMU 12BW: Coyote Valley to Gunsight Point including the Buckskin Mtns

Buck Pasture Chaining/ Fuel reduction	In progress	
Pine Hollow Chaining/ Fuel reduction	In progress	
West Buckskin Mtns. (top) Chainings/Burn/ Chemical Treatment-multiple areas	May 2009	

East Buckskin Mtns. (top) Chainings- multiple areas	May 2009	
N. Buck Pasture (bottom)-multiple areas	May 2009	
Coyote Valley Vegetation Treatment (Chemical)	May 2009	
Larkum Canyon WLC*	May 2009	
Buck Pasture No2 WLC*	May 2009	
Water Canyon WLC	May 2009	
Toothpick WLC	May 2009	
Suicide WLC	May 2009	

GMU 13A

Mt Trumbull WLC 1	In Progress	
Mt Trumbull WLC 2	In Progress	
Mt Trumbull WLC 3	In Progress	
Mt Trumbull WLC 4	In Progress	
Mt Trumbull WLC 5	In Progress	
Mt Trumbull WLC 6	In Progress	

Mt Trumbull WLC 7	In Progress	
Mt Trumbull WLC 8	In Progress	
Pas Pocket WLC	In Progress	
Slide Mountain WLC	In Progress	

GMU 13B

Seegmiller 1 WLC	In Progress	
Seegmiller 2 WLC	In Progress	
Wolf Hole 1 WLC	In Progress	
Wolf Hole 2 WLC	In Progress	
Wolf Hole 3 WLC	In Progress	
Hidden Hills Pinyon-Juniper Treatment (State land)	In Progress – State Land Review	

Appendix 1 – Desired Future Condition Decisions Specific to Mule Deer from RMPs

*DFC objectives found for other resources are not listed
but may be applicable to this planning effort

Grand Canyon Parashant Resource Management Plan

DFC-WF-01 Ecological conditions will be within the range of natural variability and will be functional for dependant animal species.

DFC-WF-02 Native wildlife communities, as Monument Objects, will be protected. A complete range of diverse, healthy, and self-sustaining populations of native wildlife species will occupy all available suitable habitats.

DFC-WF-03 Forage, water, cover, and space will be available to wildlife of sufficient quantity and quality to support productive and diverse wildlife populations.

DFC-WF-04 All waters will be safely accessible to wildlife.

DFC-WF-05 Fences will be the minimum necessary for effective livestock control or other administrative purposes. Fences will be wildlife passable, consistent with the species found in the area.

DFC-WF-06 Habitat connectivity and wildlife movement between ecological zones will be maintained.

DFC-WF-07 Adverse impacts to wildlife and wildlife resources will be avoided or mitigated.

DFC-WF-08 Predators will be recognized as an important component of plant and animal communities.

DFC-WF-09 Human/wildlife conflicts will be avoided, resolved, or mitigated.

DFC-WF-10 On BLM-administered lands, management of game and nongame species by Arizona Game and Fish Department (AGFD) will be consistent with AGFD Strategic Plans and other appropriate guidelines.

DFC-WF-11 On NPS-administered lands, wildlife management will be consistent with AGFD Strategic Plans, as applicable within NPS management policies.

DFC-WF-12 The natural biological diversity of fish, wildlife, and plant species will be maintained or, where necessary and feasible, restored throughout the Monument. Habitats will be managed on an ecosystem basis, ensuring that all parts of the ecosystem and natural processes are functional.

DFC-WF-13 Mule deer habitat will provide the necessary forage, water, and shelter components for healthy, self-sustaining populations within the range of natural variability.

DFC-WF-14 On BLM-administered lands, mule deer populations will be at or near maximum levels sustainable for the habitat.

DFC-WF-15 On BLM-administered lands, forage in crucial summer mule deer habitat will include at least 10% grasses and forbs weight (CBW) and at least 30% palatable browse species CBW at all key areas, where consistent with site potential.

DFC-WF-16 On BLM-administered lands, forage in crucial winter mule deer habitat will include at least 30% palatable browse species CBW at all key areas, where consistent with site potential.

DFC-WF-17 Mule deer habitat in pinyon-juniper woodland sites will include a healthy diverse mosaic of trees, shrubs, grasses, and forbs.

DFC-WF-18 Water sources within mule deer habitat will be safely accessible to deer and other wildlife.

DFC-WF-19 On BLM-administered lands, water sources within mule deer habitat will be spaced no more than 3 miles apart.

DFC-WF-20 All fences in mule deer habitat will be deer passable.

Arizona Strip Field Office Resource Management Plan

DFC-WF-01 Ecological conditions will be within the range of natural variability and will be functional for dependant animal species.

DFC-WF-02 Native wildlife communities will be protected. A complete range of diverse, healthy, and self-sustaining populations of native wildlife species will occupy all available suitable habitats.

DFC-WF-03 Forage, water, cover, and space will be available to wildlife of sufficient quantity and quality to support productive and diverse wildlife populations.

DFC-WF-04 All waters will be safely accessible to wildlife.

DFC-WF-05 Fences will be the minimum necessary for effective livestock control or other administrative purposes. Fences will be wildlife passable, consistent with the species found in the area.

DFC-WF-06 Habitat connectivity and wildlife movement between ecological zones will be maintained.

DFC-WF-07 Adverse impacts to wildlife and wildlife resources will be avoided or mitigated.

DFC-WF-08 Predators will be recognized as an important component of plant and animal communities.

DFC-WF-09 Human/wildlife conflicts will be avoided, resolved, or mitigated.

DFC-WF-10 Management of wildlife species by Arizona Game and Fish Department (AGFD) will be consistent with AGFD Strategic Plans and other appropriate guidelines.

DFC-WF-11 The natural biological diversity of fish, wildlife, and plant species will be maintained or, where necessary and feasible, restored throughout the Arizona Strip FO. Habitats will be managed on an ecosystem basis, ensuring that all parts of the ecosystem and natural processes are functional.

DFC-WF-12 Mule deer habitat will provide the necessary forage, water, and shelter components for healthy, self-sustaining populations within the range of natural variability.

DFC-WF-13 Mule deer populations will be at or near maximum levels sustainable for the habitat.

DFC-WF-14 Forage in crucial summer mule deer habitat will include at least 10% grasses and forbs composition by weight (CBW) and at least 30% palatable browse species CBW at all key areas, where consistent with site potential.

DFC-WF-15 Forage in crucial winter mule deer habitat will include at least 30% palatable browse species CBW at all key areas, where consistent with site potential.

DFC-WF-16 Mule deer habitat in pinyon-juniper woodland sites will include a healthy diverse mosaic of trees, shrubs, grasses, and forbs.

DFC-WF-17 Water sources within mule deer habitat will be safely accessible to deer and other wildlife.

DFC-WF-18 Water sources within mule deer habitat will be spaced no more than 3 miles apart.

DFC-WF-19 All fences in mule deer habitat will be deer passable.

Vermilion Cliffs National Monument Resource Management Plan

DFC-WF-01 Ecological conditions will be within the range of natural variability and will be functional for dependant animal species.

DFC-WF-02 Native wildlife communities will be protected, including those species considered monument objects. A complete range of diverse, healthy, and self-sustaining populations of native wildlife species will occupy all available suitable habitats.

DFC-WF-03 Forage, water, cover, and space will be available to wildlife of sufficient quantity and quality to support productive and diverse wildlife populations.

DFC-WF-04 All waters will be safely accessible to wildlife.

DFC-WF-05 Fences will be the minimum necessary for effective livestock control or other administrative purposes. Fences will be wildlife passable, consistent with the species found in the area.

DFC-WF-06 Habitat connectivity and wildlife movement between ecological zones will be maintained.

DFC-WF-07 Adverse impacts to wildlife and wildlife resources will be avoided or mitigated.

DFC-WF-08 Predators will be recognized as an important component of plant and animal communities.

DFC-WF-09 Human/wildlife conflicts will be avoided, resolved, or mitigated.

DFC-WF-10 Management of wildlife species by Arizona Game and Fish Department (AGFD) will be consistent with AGFD Strategic Plans and other appropriate guidelines.

DFC-WF-11 The natural biological diversity of fish, wildlife, and plant species will be maintained or, where necessary and feasible, restored throughout the Arizona Strip FO. Habitats will be managed on an ecosystem basis, ensuring that all parts of the ecosystem and natural processes are functional.

DFC-WF-12 Mule deer habitat will provide the necessary forage, water, and shelter components for healthy, self-sustaining populations within the range of natural variability.

DFC-WF-13 Mule deer populations will be at or near maximum levels sustainable for the habitat.

DFC-WF-14 Forage in crucial summer mule deer habitat will include at least 10% grasses and forbs composition by weight (CBW) and at least 30% palatable browse species CBW at all key areas, where consistent with site potential.

DFC-WF-15 Forage in crucial winter mule deer habitat will include at least 30% palatable browse species CBW at all key areas, where consistent with site potential.

DFC-WF-16 Mule deer habitat in pinyon-juniper woodland sites will include a healthy diverse mosaic of trees, shrubs, grasses, and forbs.

DFC-WF-17 Water sources within mule deer habitat will be safely accessible to deer and other wildlife.

DFC-WF-18 Water sources within mule deer habitat will be spaced no more than 3 miles apart.

DFC-WF-19 All fences in mule deer habitat will be deer passable.

**Appendix 2: Statewide and Alternative Mule Deer Management Guidelines
as approved by AGFD Commission for 2010-2012**

COMMISSION ORDER 2: DEER

The Department's Deer Management Goal is to maintain deer populations at levels that provide maximum and diverse recreational opportunities, while avoiding adverse impacts to the species and its habitat. Guidelines for both species are grouped into "Standard" or "Alternative" hunt management.

Season prescriptions:

1. Hunts will be for "antlered mule deer," "antlered whitetail deer," or "any antlered deer." "Antlerless deer" or "any deer" permits may be recommended for units where the deer population requires reduction or stabilization, or when conflicts with other land management uses exist.
2. Separate hunts for mule deer and white-tailed deer will occur in units having substantial populations of both species of deer.
3. General and muzzleloader deer hunts will occur on standard opening dates. When stratified, a series of 7-day hunts may occur throughout October and November with all hunts opening on a specific Friday and closing the following Thursday. A December white-tailed deer hunt will open the Friday of week 50 and continue to the end of the year. The following seasons will be available:

Juniors-only on Friday of week 41 (October 8, 2010 and October 7, 2011)
White-tailed or Mule Deer on Friday of week 43 (October 22, 2010 and October 21, 2011)
White-tailed or Mule Deer on Friday of week 44 (October 29, 2010 and October 28, 2011)
White-tailed or Mule Deer on Friday of week 45 (November 5, 2010 and November 4, 2011)
Juniors-only on Friday of week 45 (November 5, 2010 and November 4, 2011)
Mule Deer on Friday of week 46 (November 12, 2010 and November 11, 2011)
Juniors-only on Friday of week 47 (November 19, 2010 and November 18, 2011)
White-tailed on Friday of week 48 (November 26, 2010 and November 25, 2011)
White-tailed on Friday of week 50 (December 10, 2010 and December 9, 2011)
Juniors-only Muzzleloader on Friday of week 51 (December 17, 2010 and December 16, 2011)

If only a single early deer season is selected in October or November, the season will run for 10 days. Antlerless elk seasons will not overlap with a general or muzzleloader deer season

in units with hunts for both species. Season dates will be selected to avoid such overlaps. If the unit is managed under Alternative Hunt Management, 10-day seasons may also be used.

4. Archery deer seasons may begin on Friday of week 34 (August 20, 2010 and August 19, 2011) and run for 22 days. Archery deer seasons may also begin on Friday of week 50 (December 10, 2010 and December 9, 2011) and run through end of December or January 31 of the following year. An archery deer season may begin on January 1 and run for about 2 weeks or through January 31.

5. "Alternative Hunt Management" will provide opportunities to harvest older age class animals, for lower hunter densities, and for higher hunt success. Alternative hunt management for mule deer will occur in Units 12A, 12B, 13A, 13B, 45A, 45B, and 45C; hunts will be managed in accordance with the parameters below. Alternative hunt management for white-tailed deer will occur in Units 6A, 23, 30B, 31, and 36C; hunts will be managed in accordance with the parameters below. A limited amount of December white-tailed deer harvest opportunity will be offered in most white-tailed deer units, but up to 30% of the harvest will be allocated with December permits in those units managed under Alternative Hunt Management. A total of up to 5% of all white-tailed deer permits statewide will be offered in December.

6. At least 5% of all general deer permits will be allocated to juniors-only hunts. There will be at least 2 general juniors-only deer hunts offered in each Region structured to provide a season encompassing a school holiday, such as Columbus Day, and may overlap with a juniors-only elk season. One muzzleloader juniors-only seasons will start on Friday of week 51 (December 17, 2010 and December 16, 2011) and run through December 31. *Arizona Game and Fish Department Hunt Guidelines for Fall 2010 through Spring 2012 9 As amended November 19, 2009*

Opportunity prescriptions:

A. Wildlife Managers will manage mule deer for the center of guideline ranges, while keeping confidence intervals in mind. Emphasis will be placed on the current year's fawn:doe ratio, considering its effect on next year's hunt success. When a clear trend exists, emphasize last year's data. When no clear trend exists, emphasize the most recent 3-year mean data. Hunting opportunities should be maximized, providing an equitable allocation of harvest among weapon types.

Standard Mule Deer Hunt Guidelines

Parameters	Decrease	No change	Increase
Fawns:100 Does	<40	40 to 50	>50
Bucks:100 Does	<10	10 to 20	>20
Hunt Success	<15%	15 to 20%	>20%
Population Trend	Decreasing	Stable	Increasing

Alternative Mule Deer Hunt Objectives

Parameters	12A/12B (late general hunts)	13A/13B (general hunts)	45A/45B/45C (general hunts)
Fawns:100 Does	>60 (12A)	—	—
Bucks:100 Does	>20	>20	>20
Hunt Success	50–70%	50–70%	20–30%
% of Buck harvest ≥3 yrs	55–75%	65–80%	45–65%
% of Buck harvest ≥5 yrs	20–30%	45–55%	—
Hunter Density	<0.5/mi ²	<0.5/mi ²	<0.5/mi ²

Alternative mule deer hunt objectives are considered in combination to determine management recommendations.

For Unit 12A, low fawn:doe ratios may indicate poor maternal nutritional status or fawn survival, which will be considered for reducing or eliminating antlerless harvests if population projections indicate population growth will be insufficient to meet the targeted level. Mean yearling buck weights ≤ 90 lbs may suggest a decline in range quality, particularly on the summer range. Hunt success and age structure of harvest during late season hunts will be used to adjust permits for alternative structure hunts. Permits during early season hunts in Units 12A and 12B will be adjusted to meet desired buck:doe ratios. Hunter density guidelines are provided to maintain low hunter density during alternative management hunts. Early season dates in Units 12A and 12B will begin on Friday of week 43 (October 22, 2010 and October 21, 2011). Juniors-only hunts in these units will encompass a school holiday, such as Columbus Day. Should permit numbers for a single juniors-only season in Unit 12A West exceed 400, a stratified season structure will be recommended.

Unit 12A West will be managed to achieve a 5–7% annual population growth based on spreadsheet population models calibrated by periodic (4-year) population estimation surveys. Vegetation in Unit 12A West will be monitored annually and more intensively the fourth

year to determine range quality and deer use trends on the winter range. Yearling buck weights will be measured during the fall in Unit 12A from hunter-killed animals. Deer body condition from live deer will be monitored annually during spring as well. No changes to management will occur in response to these monitoring efforts without amendment to these guidelines. Amendment of the guidelines will only be recommended under the clear likelihood of significant long-term damage to the habitat or immediate jeopardy to the deer herd.

Archery Deer Hunt Guidelines

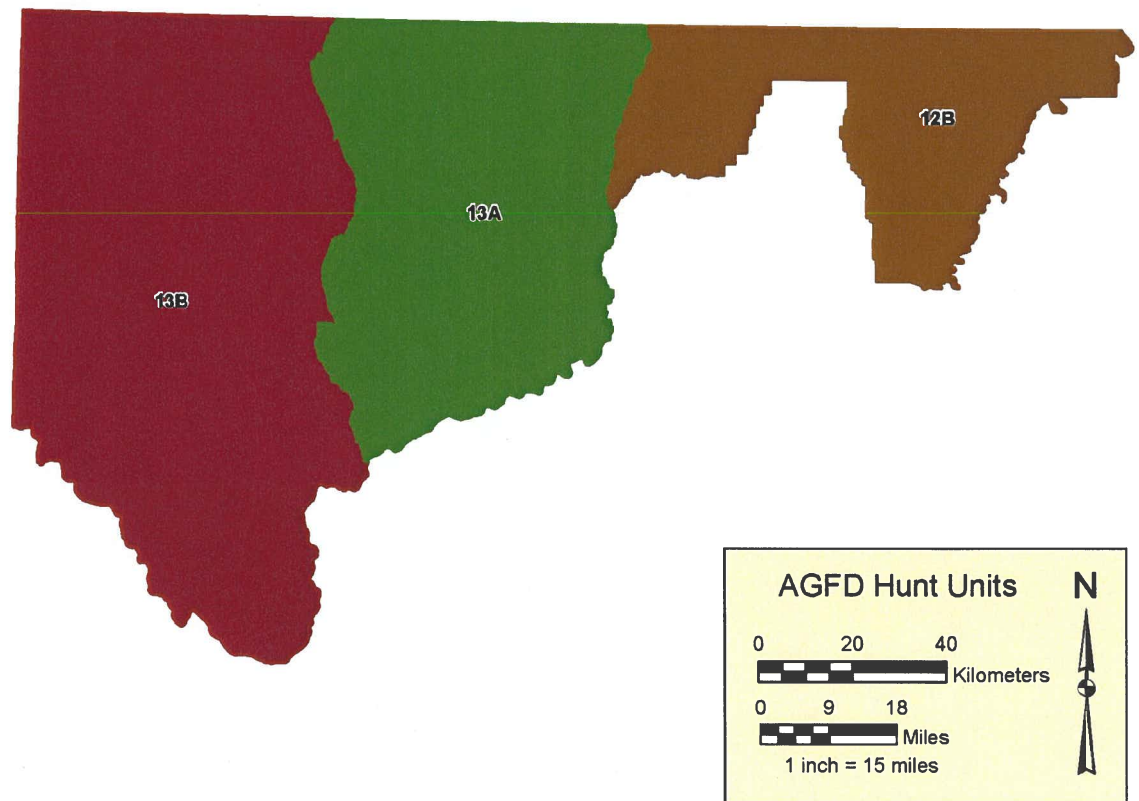
Archery deer opportunity for units located north of the Colorado River (Units 12A, 12B, 13A, and 13B) will be offered through archery-only permit tags during the August-September season. Archery-only deer permit tags will be set to achieve an archery deer harvest of 10-20% of the overall harvest in each of these units.

Archery hunt opportunity for units located south of the Colorado River will be offered according to the table below. Archery deer harvest will generally be managed not to exceed 20% of the overall harvest in a unit. When mean (3-year) archery deer harvest meets or exceeds 20% of overall harvest, the Wildlife Manager may recommend restrictions in archery hunt opportunity according to the following prescriptions unless the unit has only archery and muzzleloader seasons.

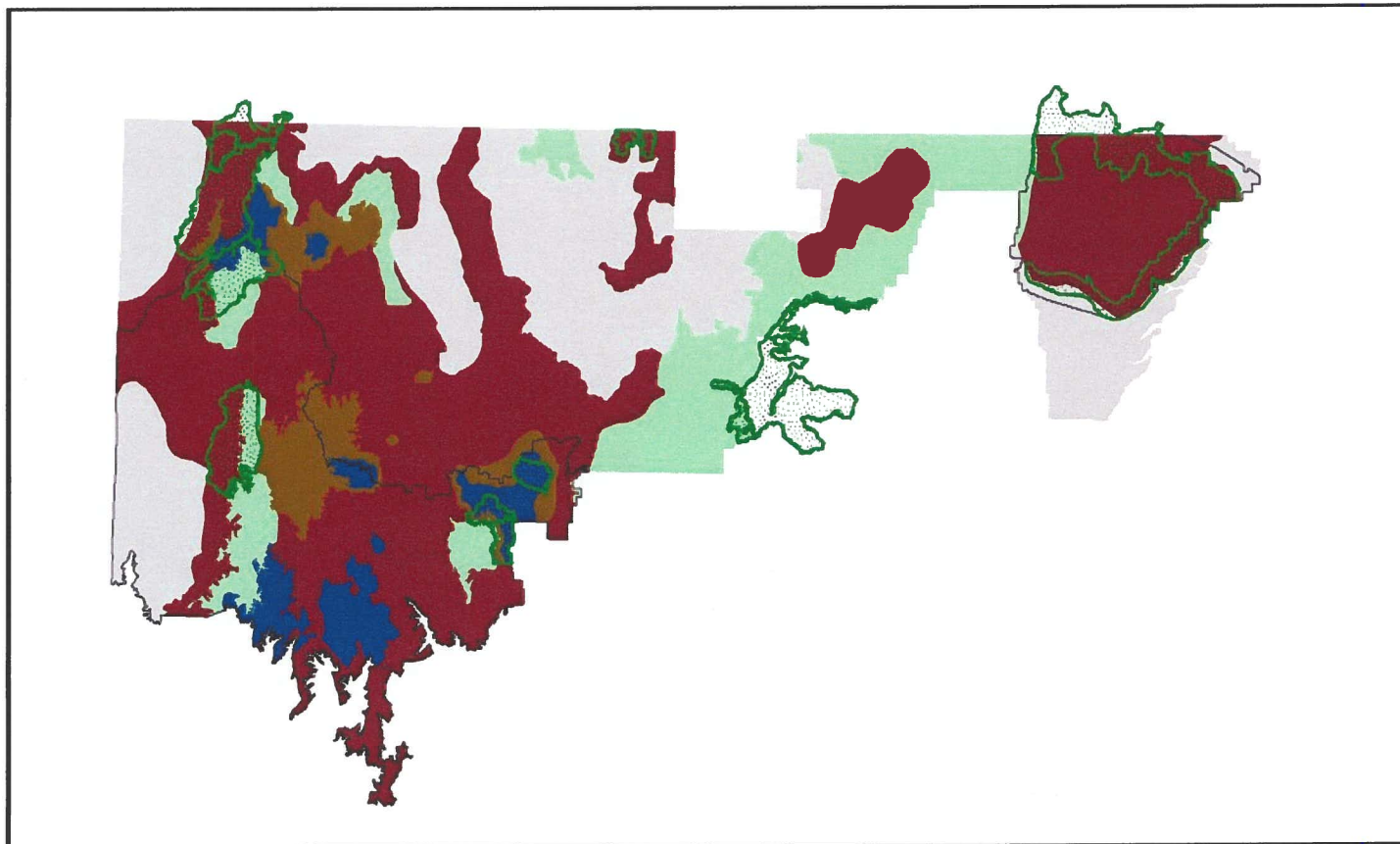
Current Archery Hunt Structure in Unit	Overall Harvest	Management Action
August–September and December–January	20% or greater	Eliminate December Opportunity
August–September and January	20% or greater	Eliminate last 2 weeks of January
August–September and first 2 weeks of January	20% or greater	Eliminate January Opportunity
August–September Only	20% or greater	August–September for which a harvest objective may be established
December–January Only	20% or greater	Eliminate December Opportunity
January Only	20% or greater	August–September or December for which a harvest objective may be established

If mean (3-year) archery deer harvest is less than 10% of the total harvest for a nonpermit-tag archery unit, a 2-week January archery season will be offered. Additional opportunity will be added incrementally until archery harvest is between 10–20% of the total take (i.e., reverse in above table). Alternative Management Units that do not currently have a January season will not be managed under this guideline. In addition, units that have only an archery and/or muzzleloader season will not be managed under this guideline.

Appendix 3: Arizona Game and Fish Department Hunting Units Map



Appendix 4. Arizona Strip Mule Deer Habitat Classifications



Legend

- | | |
|--|---|
|  Limited |  Winter Crucial - Below 6000 Feet |
|  Summer - Above 6000 Feet |  Yearlong |
|  Summer Crucial |  Wilderness |
|  Monument Boundary | |

