PINYON-JUNIPER MANAGEMENT FOR MULE DEER
Fact Sheet #21

OVERVIEW

Balanced shrub steppe and pinyon-juniper (PJ) woodland habitat provide valuable escape cover and forage important for mule deer reproduction, survival, and growth. But, when left undisturbed this drought-tolerant tree community can replace the forbs, grasses, and shrubs that provide an important food and cover source of mule deer forage. What is referred to in general as "PJ" has existed naturally as old growth and open savannah woodlands for the last several hundred years. These natural woodlands have become thicker and have expanded in distribution since the late 1800s by encroaching into areas once dominated by shrubs and herbaceous vegetation. Changes in landscape use, fire management, and rangeland grazing practices have resulted in larger areas of monotypic PJ forest communities throughout the West.

WHAT IS A HEALTHY PJ WOODLAND?

PJ woodlands are often described by three successional phases: Phase 1 – shrub, grass, and forb dominant habitat with active tree recruitment; Phase 2 – habitat with a mix of trees, shrubs, grasses and forbs and continuing tree recruitment; Phase 3 – tree dominated habitat with limited recruitment and shrubs, grasses and forbs are mostly absent.

Healthy PJ woodlands contain a mosaic of all three phases; open shrublands, savannahs, and parks are interspersed with stands of sparse trees, and persistent PJ stands dependent on soil types, elevation, and topography. This mosaic benefits mule deer because it provides greater plant diversity, more nutritious forbs, grasses, and browse and necessary escape and fawning cover.

Natural disturbance regimes like fire have historically created these mosaics and limited PJ encroachment by reverting invading stands to younger, more nutritious stands. In the absence of natural disturbances, PJ can dominate the landscape, leading to less forage production and reduced habitat quality for mule deer. Land managers can manage PJ stands through targeted treatments (like prescribed burning or mechanical removal) to minimize encroachment and create the desired mosaic habitats.

PJ MANAGEMENT FOR MULE DEER

Managers should consider seasonal habitat needs of mule deer when managing PJ woodlands. Properly managed PJ ecosystems promote more nutritious forage, which improves body condition and, subsequently, reproduction and survival. Primary objectives when treating PJ for mule deer focus on pushing back encroachment and reducing overstory tree cover, maximizing nutritional quality of the understory, while maintaining sufficient cover in adjacent untreated woodlands. In general, managers treat several, smaller areas in a mosaic pattern on the landscape because this approach is more beneficial to mule deer than a single, large treatment in the center of the habitat. Treatment areas should

be large enough to impact the landscape, and therefore the population, not just a few individuals locally. When properly applied, management actions can also increase the value of nearby untreated or dense PJ habitat. Mule deer are more likely to positively respond to treatments focused in areas of higher forage production potential that are in close proximity to denser PJ stands. Persistent PJ woodlands are retained on the landscape because they provide escape and hiding cover for adult and fawn mule deer.

METHODS TO MANAGE PJ WOODLANDS

Managers generally employ either burning or mechanical treatments to improve quality of mule deer habitat in areas where PJ is encroaching on the landscape. Treating PJ encroachment when the stands contain a large shrub component is likely to achieve the most predictable results for the least cost to managers. However, because of vegetation response, treating dense stands of PJ can also greatly benefit mule deer by increasing forage availability on the landscape. Reseeding is typically necessary following treatments in areas with sparse understory vegetation. Additionally, mosaic pattern treatments are important to maintain access to escape cover.

Prescribed burns can be used to thin thick stands of PJ or following mechanical or hand thinning. Burning releases the site nutrients and returns them to the soil which promotes nutritious new forb and shrub growth. Burning also removes excessive undergrowth, thereby facilitating deer movement. Because of the temporary loss of understory cover which is important for fawn hiding and escapement, use of prescribed fire over large areas prior to the fawning period is typically avoided. Prescribed burns may also be undesirable at times because understory shrubs, grasses, and forbs can be slow to recover from fires.

Managers can also use mechanical treatments (mastication, chaining, lop and scatter) to restore ecological function in encroaching PJ woodlands. Mechanical treatments can be used to selectively thin PJ stands and allow sunlight to reach the forest understory which encourages growth of early successional forbs, grasses, and shrubs. Because managers can select for certain plants using mechanical methods, beneficial shrub cover and perennial grasses can be maintained in the treatment area. Where an adequate understory is not present, mechanical treatments such as chaining can help prepare the seed bed for reseeding. Additionally, managers can selectively remove junipers and leave pinyon trees where appropriate. Mechanical treatments also allow managers to target multiple smaller areas with higher edge ratios which increases the effectiveness of the treatments. A few years after applying a mechanical treatment, burns may be desired to remove downed woody debris and return nutrients to the soil. Managers have to keep all tools in mind because site conditions or environmental and social concerns can sometimes preclude prescribed burning or mechanical treatment.

CONCLUSIONS

Managing for healthy mule deer starts with managing for healthy habitats. In the absence of natural disturbance regimes, PJ encroachment has changed the landscape throughout the West by expanding into adjacent shrub, grassland, and even riparian plant communities decreasing the landscape's value for mule deer. Thinning PJ communities using fire or mechanical treatments will directly benefit mule deer populations by enhancing forage and security cover. Land managers are encouraged to thin biotic communities invaded by PJ woodlands to provide better habitat for mule deer. Regardless of the tool used, the goal should be to create a landscape mosaic that contains the three successional phases of PJ stands to provide for the annual needs of mule deer. More information on mule deer can be found at www.muledeerworkinggroup.com

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