

Wooded Draw Management in Northeast Wyoming Rangelands

Habitat Extension Bulletin

No. 35



"Bright, clear sky over a plain so wide that the rim of the heavens cut down on it around the entire horizon... Could no living thing exist out here, in the empty, desolate, endless wastes of green and blue?... If life is to thrive and endure, it must at least have something to hide behind!"

O. E. Rolvaag
Giants in the Earth

Introduction

A century has passed since Rolvaag's pioneer woman was overwhelmed by feelings of vulnerability on the vast, windswept expanses of the northern Great Plains. Much has changed since then, but the "no-place-to-hide" character of the country

remains, and its wild residents still need protection from the elements to survive.

Northern Great Plains rangelands make up an extensive ecosystem in northeastern Wyoming. Although at first sight they appear to be made up entirely of gently rolling grasslands, further investigation reveals a variety of vegetation types including deciduous trees and shrubs. Confined to natural drainages, these woodlands or "wooded draws" are relatively hidden.

Scattered throughout the northern Great Plains, wooded draws occupy approximately one percent of northeast Wyoming rangelands. Representing the only real cover available, wooded draws provide crucial habitat components for both wildlife and livestock.

A wide variety of plant species occupy wooded

Habitat Extension Services



draws. Characteristically, the upper reaches of these drainages support shrub species such as silver buffalo berry and western snowberry. Further downstream, species such as common chokecherry, American plum, saskatoon serviceberry and hawthorn are found. Wetter sites contain green ash, American elm, boxelder and bur oak. Other tree and shrub species occur in the Great Plains but are generally confined to larger, meandering stream systems. In these areas, plains cottonwood dominates, with willow and sagebrush occurring also.

In Wyoming, most wooded draw species are at the edge of their geographic ranges and restricted to moist sites. Even on favorable sites, these woody plants live under extreme conditions of temperature, high winds and low precipitation. Many species, particularly trees, have shorter life spans and smaller growth forms than their eastern or northern counterparts.



Ravines on the western plains offer an unusually gentle microclimate. These sites have more water than the surrounding uplands and are also sheltered from the constant prairie wind. The combination encourages trees and shrubs that won't survive on more exposed sites.

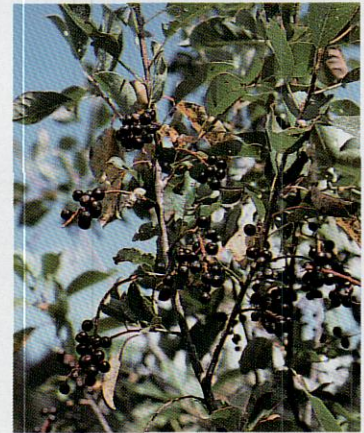
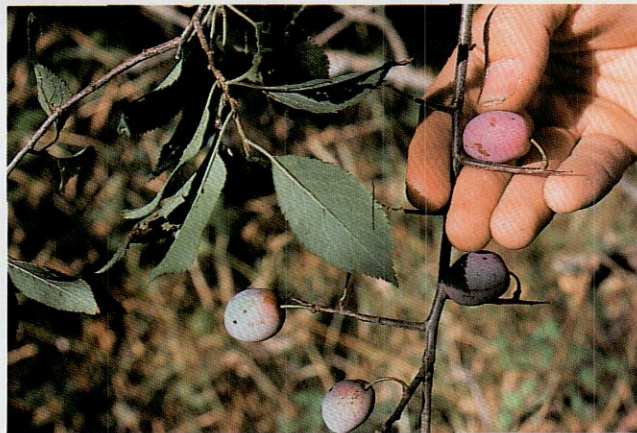
chickadees, field sparrows, American goldfinches and great-horned owls. Wild turkeys and sharp-tailed grouse rely on these draws for brooding habitat, cover and food. Cottontail rabbits, jackrabbits, porcupines, skunks, raccoons, weasels, bobcats, red fox and coyotes also rely on wooded draw habitats. Small mammals such as deer mice, white-footed mice and bushy-tailed woodrats occur here in great numbers. Wooded draws

of extensive length also act as travel corridors for various wildlife species during their daily routines or seasonal migrations. Without wooded draws, the northern Great Plains would contain only a fraction of the wildlife it now supports.

Wooded Draw Values to Livestock

Wooded draws are relatively important to livestock year-round for a variety of reasons. During winter months, livestock depend on wooded draws for shelter and browse when other

Several species of wild plum (immediate right) may appear in sheltered draws along with other berry producers like chokecherry (far right). The shrubs provide shelter and forage for many species and the fruits are an added benefit.



Wooded Draw Values to Wildlife

Wooded draws provide key habitat for nearly all wildlife species living in the northern Great Plains. For white-tailed and mule deer, these draws provide fawning habitat, escape cover and browse. Studies indicate that deer spend over half their time in this habitat type. Wooded draws also provide important breeding and nesting habitat for a variety of birds including black-capped

forage is unavailable. During summer, livestock seek shade offered by wooded draws to escape heat and insects. Forage, provided by a longer "green" season (created by cooler temperatures and moisture holding characteristics of wooded draws), also attracts livestock to the area. Wooded draws are natural locations for stock ponds and other water developments, another attraction for livestock.

Wooded Draw Values to People

Wooded draws provide economic benefits to landowners by contributing to livestock health and production. Economic benefits derived from wildlife, however, are less obvious. Hunter expenditures during wildlife hunting seasons contribute greatly to local economies. Landowner benefits include money from license coupons, trespass fees and outfitting businesses. Less quantifiable, but equally important, benefits of wooded draws include erosion control, consistent water quality, scenery enhancement and nonconsumptive wildlife uses. Benefits to land managers and society from proper wooded draw management include continued high-quality wildlife habitat and related wildlife production.

Wooded Draw Management Problems

Despite their value to wildlife and livestock, evidence indicates that wooded draws of the northern Great Plains constitute a vegetation type in serious trouble. Many woody stands have already disappeared from the Great Plains landscape, replaced by stands of grasses and broadleaf plants. Many more are in a serious state of decline. Only a few stands persist in healthy, productive condition.

Healthy wooded draws are characterized by moderately dense stands of trees dominating dense, vigorous shrub understories. Such stands usually have protective layers of litter and duff on the ground surface, with evidence of ongoing tree and shrub reproduction.

In contrast, the more prevalent, declining stands are characterized by a decadent tree overstory, with only scattered shrub remnants. These sites typically lack a litter and duff layer, with tree and shrub seedlings, suckers and sprouts absent. Ground cover, if any, consists of grasses and broadleaf plants.

Land managers are understandably alarmed that an entire cover type, particularly one of high value and limited extent, is seemingly threatened with extinction. This habitat extension bulletin compiles existing research findings to provide landowners with viable management alternatives to sustain or enhance wooded draw habitats.

Reasons for Wooded Draw Decline

Field examination of many deteriorating wooded draws suggests that a wide assortment of destructive factors are responsible for their degeneration.

Some factors are obvious while others are somewhat obscure.

Trees in many wooded draws appear to be nearing the end of their life span, already shortened by the harsh northern Great Plains environment. Reduced vigor and growth of old trees makes them particularly vulnerable to insect damage, disease and mechanical stresses. These agents heavily affect the majority of trees in declining stands.

Improper livestock practices have had a serious negative impact on wooded draw habitats in Wyoming. Overstocking ranges containing wooded draws or leaving livestock in wooded draw habitats for excessive periods has resulted in the decline, or in some cases, the complete loss of wooded draw habitats. In these areas, natural tree and shrub reproduction has been suppressed, with livestock consuming or trampling young plants. Over a period of years, this practice has resulted in the loss of mature trees and shrubs through natural processes with no young trees and shrubs to replace them. The end result is the complete loss of a unique and valuable habitat, one which would take decades to re-establish. Fortunately, proper livestock management practices will result in stable, vigorous wooded draw habitats.

Wooded Draw Management Techniques

Seasonal Grazing Practices

Deciduous vegetation associated with wooded draws is susceptible to livestock damage depending on the season of the year. Winter grazing has little negative impact on deciduous tree and shrub stands, but spring, summer or year-long grazing can devastate these habitats.

Spring use can be detrimental because plants are vulnerable to damage during this time of rapid growth and high energy expenditure. Moist spring soils are susceptible to compaction which further decreases productivity.

Summer grazing can place considerable demands on wooded draws, increasing their susceptibility to damage. If wooded draws are grazed continuously in the summer, some degradation is inevitable. During hot summer months, livestock naturally seek shade. Wooded draws may provide the only shade for many miles, resulting in increased livestock use. Wooded draws also provide livestock with relief from insect attacks and offer

places to dislodge insects by rubbing.

Vegetation in wooded draws remains green longer than most uplands due to the wetter conditions of wooded draws. This encourages longer and more intensive livestock use, especially in late summer. The presence of stock ponds and other water developments further attracts livestock, and encourages use, causing them to linger in these areas.

Wooded draws withstand grazing pressures better in winter than summer because of less demand. Wintering cattle neither seek shade nor are bothered by flies. Cold temperatures attract livestock to sunny, south-facing slopes rather than shaded draws. Frozen soils are less vulnerable to compaction and dormant plants may withstand grazing better. Finally, deep snow drifts often limit livestock movement within wooded draws.

Still, winter grazing can be harmful if supplemental livestock feeding is practiced nearby. Cattle tend to remain in feed ground areas, and long-term cattle concentrations can result in local vegetative deterioration.

Common grazing systems, such as two- or three-pasture deferred-rotation systems, do not appear to benefit woody vegetation. Rest-rotation systems are more difficult to evaluate because effects seem to depend on the proportion of a pasture occupied by wooded draws. Wooded draws in low proportions may deteriorate even under a rest-rotation system. However, in pas-

tures with a high proportion of wooded draws, rest-rotation may prevent draw degradation. This greatly depends on livestock distribution.

One management technique which lessens damage to woody species is alternating summer and winter livestock use, a technique which gives plants a rest during the critical growing season. Before this technique is employed, however, several factors need to be evaluated in advance, including:

the length of time trees and shrubs can be grazed in summer before damage occurs;

the length of rest or winter grazing periods;

alternating grazing on a two-year basis;

the practicality of such a system (some pastures may not be available during winter months).

These factors will vary depending on stocking rates, acreage available, etc. A county extension agent or SCS representative may be able to help determine which management system is best for your situation.

Livestock Distribution

Where wooded draws occupy only a small portion of a pasture, chances are good they will be overused by livestock, regardless of stocking rates. In other words, problems result more from livestock concentration rather than overstocking.

One of the most effective ways to sustain and/or improve wooded draws involves altering pasture fence locations, watering places and salt stations to better disperse livestock. Strategic placement of these devices will discourage livestock from concentrating in and near wooded draws.

Developing watering sites away from wooded draws helps distribute livestock and lessen overuse of draws. Simple piping systems can



Merriam's turkeys are not native to Wyoming, but they have thrived in parts of the state, thanks in large measure to good stands of riparian timber and wooded draws.

be installed to deliver water to alternate sites away from more fragile wooded draws. The use of buried lines serving several water tanks can provide managers with a means to rotate grazing and discourage excessive use of wooded draws.

Providing shade shelters in appropriate locations will improve livestock distribution, decrease wooded draw use and consequently encourage regeneration and re-establishment of woody plants. Additionally, some data suggest that providing shade increases gains in livestock production. However, this remains questionable.

Insect control can have positive effects on grazing distribution as well. Recently developed insecticide-impregnated ear tags have provided excellent control of horn flies. Ranchers have observed better rangeland dispersion of livestock fitted with these devices. This has resulted in better grazing distribution and less use of wooded draws.

Wooded Draw Maintenance and Enhancement Techniques

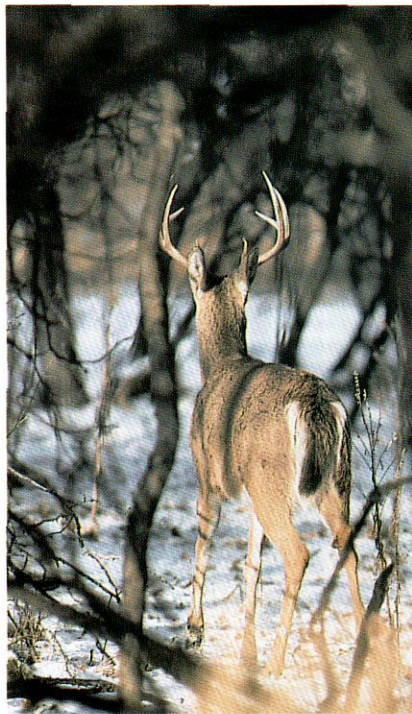
In addition to proper grazing management, several techniques are effective for maintaining or enhancing wooded draw habitats.

Prescribed Burning

The relationship between fire and woody plants is often misunderstood. Although immediate fire effects are often judged to be detrimental, fire can be a useful tool for rehabilitating and maintaining woody species. Prescribed burning is useful for opening up shrub thickets and triggering sprout reproduction of remnant trees and shrubs in failing stands. Fire, however, can be detrimental to some species; species response should be determined before using fire as a rejuvenation method. See the Wyoming Game and Fish habitat extension bulletin number 49, "Fire Management and Wildlife" and consult your county extension agent or local SCS office for more information.

Selective Tree Cutting

Many woody species associated with wooded draws have the ability to regenerate (sucker)



White-tailed deer thrive in wooded draws, which not only offer food and cover for ungulate but provide travel lanes through which deer and other large animals can move from one large tract of cover to another.

following cutting. In North Dakota, researchers found that stumps of nearly all felled trees produced sprouts the first growing season, and most retained live sprouts five years later. Also, survival and heights of individual plant species were generally greater when not grazed by livestock (after three years of study, green ash trees showed 72 percent and 38 percent survival on ungrazed and grazed sites, respectively).

Observations indicate that many trees in existing woody stands originate from sprouts. Silviculture experiments have shown that sprout reproduction has a high survival rate and growth potential due to support from large, established root systems. Thus, felling of selected high-risk, low-vigor trees to promote sprouting is a promising treatment. Protection from cattle influences how sprout clumps develop, however. Researchers have found that livestock grazing has little effect on numbers of sprouts surviving after three years. Increases in heights of Wood's rose and green ash also result from a reduction in tree density.

Selective cutting is a valuable tool for regenerating many but not all woody species. Some species such as plains cottonwood may decline if cut. They rely on natural events (such as flooding) for regeneration. The response of a particular species to cutting should be investigated before applying the technique.

Fertilization, Interseeding and Mowing

Fertilization and interseeding of highly palatable plant species in under used or unused areas will attract livestock to these areas and reduce pressure on wooded draws. Mowing will provide longer green periods, thus helping with livestock distribution, but is less effective than fertilization or interseeding.

Underplanting Trees and Shrubs

Seed reproduction of trees and shrubs is an uncertain process in declining woody draws. Transplanting nursery stock is a suitable alternative and a relatively dependable way to establish woody plants in the plains. Underplanting is useful, not only as a backup for natural regenera-

tion, but also as a way to enrich stand composition with desirable plant species.

Planting shrubs and trees may re-establish viable woodland stands, but costs may be prohibitive. Transplanted stock plant survival is low when grazed by livestock. Total exclusion of livestock results in highest planting survival. Rocky Mountain juniper, green ash, bur oak, chokecherry and wild plum transplants have succeeded under grazed conditions. However, significant reductions in survival of unprotected seedlings should be expected due to browsing and trampling by livestock. In areas of livestock use, planting under partially cut stands greatly increases seedling survival because of limited livestock access.

Conclusion

Although wooded draws make up only one percent of northern Great Plains rangelands, their importance to wildlife, livestock and the health of the environment in general is tremendous. Degradation of these habitats, brought on by poor land management practices over the last 100 years, threatens all benefits derived from them. By implementing innovative management strategies, land managers can slow and even reverse this

downward trend. Treatment response is often slow, but success of any approach will ultimately depend on the value of wooded draws to the person(s) managing them. Past generations have enjoyed the benefits derived from wooded draws in northeastern Wyoming. Conservation efforts, however, are needed to ensure perpetuation of these valuable habitats for the benefit and enjoyment of future generations.

Acknowledgements

The bulk of this information and portions of the context were derived from research conducted by the U.S. Forest Service, Rocky Mountain Forest and Range Experiment Station in Rapid City, South Dakota. Researchers include Daniel W. Uresk, Charles E. Boldt, Ardell J. Bjugstad, Cindy F. Sorg, Keith E. Severson and Michele Girard.

Written by Brad Wichman of the Wyoming Game and Fish Department through the Wyoming Cooperative Fish and Wildlife Research Unit.

This publication is one in a series of habitat extension bulletins produced by the Wyoming Game and Fish Department. Call 1-800-842-1934 for additional information or assistance.

Habitat Extension Services

