

NATURAL RESOURCES CONSERVATION SERVICE
MONTANA CONSERVATION PRACTICE SPECIFICATION

BRUSH MANAGEMENT (ACRE)

CODE 314

DEFINITION: The management or removal of woody (non-herbaceous or succulent) plants including those which are invasive and noxious.

Purpose:

- Create the desired plant community consistent with the ecological site.
- Restore or release desired vegetative cover to protect soils, control erosion, reduce sediment, improve water quality or enhance stream flow.
- Maintain, modify or enhance fish and wildlife habitat.
- Improve forage accessibility, quality and quantity for livestock and wildlife.
- Manage fuel loads to achieve desired conditions.

PLANNING AND GENERAL REQUIREMENTS: All brush management practices in Montana have the potential to impact wildlife habitat. Consider consultation with Montana Fish, Wildlife and Parks, and other appropriate agencies.

General Criteria Applicable To All Purposes:

Where adjustments in grazing management alone will not restore the kind of plant cover or species needed to attain conservation objectives within a reasonable amount of time. Prescribed grazing will be applied to ensure desired response from treatments.

Ecological Site Descriptions (ESD) should be used as a source of information to determine the present state of the plant community within the whole state and transition model for a particular ecological site that is being evaluated for this practice. The ESD will have information regarding the ecological dynamics of the site and how different management practices can change the site over time. The ESD is also a good source of information to predict the time and energy that would be required to reach the goals of the brush management practice. If the ESD is not available or does not provide adequate, updated information for a particular ESD, consultation with experienced planners with appropriate job approval authority will be necessary.

The type of treatment selected will depend on the following factors: kind of land, ecological site, topography, species of woody plants. Additional considerations will be based on whether the target species are root sprouters or non-sprouters, and the size, abundance and distribution of woody plants. Potential hazards of treatment, wildlife habitat needs, impacts to recreation and aesthetics, goals of the land user and costs in relation to expected benefits will also be considered.

Mechanical treatments will be timed to prevent exposure of bare soil for prolonged periods to reduce erosion and potential sedimentation to waterways.

In general, brush management is not recommended on shallow and/or steep soils or on sites where brush removal will result in accelerated erosion. Exceptions may be made in areas that have adequate vegetative ground cover or where revegetation is planned.

Where the present canopy cover of conifers (13-feet tall or taller) is less than 25%, use brush management practices to remove unwanted trees. In areas where the present canopy cover of conifers (13-feet tall or taller) is 25% or greater, use practice Forest Stand Improvement (Code 666). This practice

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may also be used on rangelands where present canopy cover is less than 25% if the producer has a forest management objective for that area.

On native rangeland areas, brush management practices will be used to remove unwanted and excessive woody vegetation. Brush species density and composition will be allowed as compared to what is identified for the ecological site in the reference state.

It is the responsibility of the owner to obtain all necessary permits and/or rights, and to comply with all regulations and laws pertaining to the installation of this practice. On federal, state, tribal, or local lands, the landowner/leasee must have clearances and approvals or permits from the responsible permitting agency prior to any implementation.

For federally-funded practices, the area of potential effect for each undertaking must be investigated for cultural resources under Section 106 of the National Historical Preservation Act (1966), as amended, before soil disturbance occurs.

For federally-funded practices, the NRCS must determine if installation of this practice will affect any federal, tribal, state-listed threatened and endangered species or species of concern or their habitat prior to application or construction. If this action may affect a listed species or result in modification of critical habitat, the NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid adverse effects. Further assistance will be provided only if the land user selects one of the alternative conservation treatments for installation; or at the request of the landowner, the NRCS may initiate consultation with the U. S. Fish and Wildlife Service. Any special requirements for endangered species will be addressed under Special Provisions.

For federally-funded practices, if during installation, any cultural resources, historical resources, threatened or endangered species are found, the landowner/leasee agrees to stop all work and immediately notify the NRCS.

Additional Criteria For Reducing Wildfire Hazards:

Control the density of volatile woody plants and promote the growth of more fire resistant herbaceous species to protect structures and land from wildfire hazard conditions. Refer to guidelines in the Field Office Technical Guide (FOTG), Section IV, Practice Standards and Specifications, Fuel Break (Code 383), for design criteria.

Considerations:

Consider the potential for natural regeneration prior to conducting any brush management method.

Brush management goals and procedures may be different for different kinds of land and for different uses of the land. For example: If primary use of rangeland is for domestic livestock, the goal may be to manipulate numbers, species and distribution of brush to approximate that of natural or climax conditions for the site. If use is also for wildlife, an additional goal may be to maintain more brush than is natural to the site and to manage the brush in a pattern on the land that favors both livestock and wildlife.

Additional Considerations Applicable For Improving Wildlife Habitat:

Brush on land where wildlife is a primary or important use should be manipulated to provide optimum wildlife habitat and to facilitate wildlife management.

Where the landscape provides opportunity, consider leaving brush on steep escarpments, ravines, rocky hillsides and other rough formations.

Woody draws provide thermal cover and other habitat components. However, if the woody cover is excessive for the site, or is not native to the site, the adverse impact to hydrology may offset the wildlife benefit.

When brush is being managed to improve rangeland, consider leaving selected areas of desirable food and cover plants for wildlife. The type of cover and size of the areas to be retained depends on the type of wildlife being benefited. Scattered areas as small as one-quarter acre can be beneficial to most species of upland wildlife.

Where wildlife is to be the primary user of the habitat, manage brush to provide travel lanes, escape cover, loafing areas and browse plants. The following are examples:

1. On areas of uniform slopes, leave strips or clumps of brush to provide food and cover.
2. Where they occur in brush areas, leave fruit and mast trees to produce food for wildlife.
3. In mixed brush, less desirable species may be controlled to promote the development of the more important.
4. Plant species, which contribute to wildlife food and cover.

Brush management may be applied to the following species:

1. Native Species

Ponderosa pine	<i>Pinus ponderosa</i>
Rocky Mountain juniper	<i>Juniperus scopulorum</i>
Fringed sagewort	<i>Artemisia frigida</i>
*Big sagebrush	<i>Artemisia tridentata</i>
*Silver sagebrush	<i>Artemisia cana</i>
Western or common snowberry	<i>Symphoricarpos occidentalis</i> or <i>S. albus</i>
Douglas Fir	<i>Pseudotsuga menziesii</i>
Plains pricklypear	<i>Opuntia polyacantha</i>
Broom snakeweed	<i>Gutierrezia sarothrae</i>
Rabbitbrush spp.	<i>Chrysothamnus spp.</i> or <i>Ericameria spp.</i>
Thinleaved Alder	<i>Alnus incana</i>

*** The NRCS State Biologist will be consulted before any treatment is planned for any sagebrush species.**

2. Introduced Species

Russian olive	<i>Elaeagnus angustifolia</i>
Tamarisk	<i>Tamarix spp.</i>

I. TREATMENT METHODS:

A. Chemical Treatment

Specifications for the kind of chemical, methods, and time of application will be in accordance with the herbicide label and the latest edition of *Montana, Utah, Wyoming Weed Management*

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Handbook, Cooperative Extension Services, Montana State University. Amount of chemical will not exceed the label.

Dates of chemical application must coincide with the proper growth stage(s) of the target species.

Diesel carriers may be used for spot treatment applications including stump painting with chemical and diesel mixes, or straight diesel. Due to potential negative impacts on wildlife and other resources, diesel will not be used alone or in combination with other chemicals when the method used is a broadcast spray application (ground or aerial).

Aerial Application: Flight must be low enough to obtain proper distribution and coverage and be made when wind velocities are low enough to prevent drift into sensitive areas. Where water is used as a carrier, commercial wetting agents will be used according to manufacturer's recommendations.

Caution cooperators using chemical herbicides as follows: If pesticides are handled or applied improperly, or if unused portions are not disposed of safely, they may be injurious to humans, domestic animals, desirable plants, and fish or other wildlife, and they may contaminate water supplies. Drift from aerial spraying can contaminate nearby crops and other vegetation. Follow the directions and heed all precautions on the container label.

Specific treatments will address the rate of application or spray volume; acceptable dates of application; mixing instructions and special application techniques (follow all label instructions).

Reference FOTG, Section IV, Practice Standard and Specification, Pest Management (Code 595).

B. Mechanical Treatment

Equipment will consist of mowers, saws (brush or chainsaw), choppers, beaters, bulldozers, blades, rails, chains, or other suitable equipment, as appropriate to the site and target species. The optimum season or date(s) for the treatment selected will be outlined in the job sheet. Erosion protection needed during and after treatment will be addressed. Specific treatments will list the techniques or procedures to be following, including the handling of residue.

C. Biological Treatment

Grazing with alternative kinds of livestock, particularly browsers such as sheep or goats during critical growing stages of target plants can be effective control for certain species. The hoof action associated with winter-feeding of livestock may also effectively reduce some brush species. Host-specific insects may be beneficial to reduce some brush species. Specifications for biological treatment will be developed based on the individual problems of the area, and available research data. Specific treatments will address the kind of biological agent or grazing/browsing animal to be used; timing, duration and intensity of grazing or browsing; desired degree of grazing or browsing use for effective control of target species; maximum allowable degree of use on desirable non-target species, and; special precautions or requirements when using insects or plants as control agents.

D. Prescribed Burning Treatment

If the preferred method of controlling a certain brush species is prescribed burning, the FOTG, Section IV, Standard, Specification and Job Sheet for Prescribed Burning (Code 338) will be required. The prescribed burning will be in accordance with all federal, state, tribal, and local laws and regulations.

II. SPECIES SPECIFIC TREATMENT RECOMMENDATIONS:

A. Native Species

Ponderosa Pine and Douglas Fir: The preferred method of controlling conifer encroachment is prescribed burning. If prescribed burning is the chosen treatment, follow in the FOTG, Section IV, the Standard and Specification for Prescribed Burning. Burning prior to the time trees reach a height of 6 feet will provide excellent control, ensure adequate fine fuels, and reduce hazards associated with prescribed fire.

Mechanical methods such as cutting individual trees are effective but more labor and cost intensive. Chemical methods are also available and effective, especially when trees are less than 3 inches diameter at breast height.

The thinning of small Ponderosa pine and Douglas fir to commercial timber production, where applicable, may provide additional income while maintaining the desirable understory vegetation. See FOTG, Section IV, Practice Standard and Specification, Forest Stand Improvement (Code 666).

Rocky Mountain Juniper: The preferred method of controlling juniper encroachment is prescribed burning. If prescribed burning is the chosen treatment, follow in the FOTG, Section IV, the Standard and Specification for Prescribed Burning (Code 338).

Mechanical methods such as cutting individual trees, dozing, chaining, and cabling are effective but labor intensive and/or expensive. Chemical methods are also available but are generally less cost effective than prescribed burning.

Excessive junipers can be controlled by igniting individual trees. Ignition can be done with a propane or drip torch. The best time to perform this treatment is in the late winter when there is snow on the ground to reduce the spread of fire.

Mechanically remove juniper rather than burn juniper when juniper can act as a ladder fuel and ignite larger trees.

Thinleaved Alder: The preferred method of controlling alder is mechanical removal with chainsaw followed up by chemical stump treatment to prevent re-sprouting.

Remove alder to release conifers from competition from surrounding alder vegetation. Select conifers that are properly spaced, have good form and are of the desired species to be released. Cut alder no higher than 6 inches from the ground for a radius of 5 feet around the conifer.

Treat cut stumps with a recommended mix of 25% Element 4 and 75% mineral oil. Follow all label restrictions.

Treatment should release about 300 – 400 trees per acre from alder competition. No treatment shall occur within the Streamside Management Zone (SMZ).

Optimum time of control is during the growing season (June 1 to October 31).

USE CAUTION WHEN PLANNING FOR THE FOLLOWING SPECIES: High density, canopy cover, and/or production of the following species is often indicative of improper grazing management sometime in the past. Control treatments should only be applied if prescribed grazing is planned to assure the success of treatment, and the desired plant community following treatment. Native brush species provide valuable food and cover for wildlife, and the potential impacts to wildlife species of concern must be addressed in the plan before applying treatment.

Fringed sagewort: Chemical control is preferred due to this species' ability to sprout from roots and plant bases following burning or mechanical treatment. Utilizing alternative grazing animals such as sheep and goats can be effective in controlling this species.

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Big sagebrush: Prescribed burning is the preferred least cost control method, if this is the chosen treatment; follow in the FOTG, Section IV, the Standard and Specification for Prescribed Burning (Code 338). Remember to consult the NRCS State Biologist during the planning process.

Chemical control is effective if burning is not possible. Correct timing of treatments is important to assure best control, and to lessen impacts to non-target species.

Utilizing alternative grazing animals such as sheep and goats can be effective in controlling this species.

Mechanical methods such as chaining or cabling are not as effective, costs are higher, and potential soil disturbance is increased.

When planning for sagebrush dependent wildlife species, additional planning guidance can be found in the *Montana Final Sage Grouse Management Plan, 2005*.

Silver sagebrush: Chemical control is preferred due to this species' ability to sprout from roots and plant bases following burning or mechanical treatment. Utilizing alternative grazing animals such as sheep and goats can be effective in controlling this species.

Plains pricklypear: Chemical control methods generally produce the best control. Dense stands can be reduced by blading in the dormant season just below the soil surface into windrows. Windrows must be turned the following year to prevent bladed pads from re-establishing. Expect no more than 75-80% reduction after five years.

Broom snakeweed: This species is cyclical in its occurrence, so feasibility of treatment must be carefully considered. Prescribed burning is the most effective and least cost treatment, if this is the chosen treatment; follow in the FOTG, Section IV, the Standard and Specification for Prescribed Burning (Code 338). Chemical control is effective if burning is not possible.

Rabbitbrush spp.: Chemical control is preferred due to this species' ability to sprout from roots and plant bases following burning or mechanical treatment.

Western or common snowberry: Utilizing alternative grazing animals such as sheep and goats can be effective in controlling this species. Intensive prescribed grazing with cattle directly within colonies of this species will provide adequate control. Hoof action associated with winter-feeding may also be effective. Chemical methods are effective as this species has the ability to sprout from roots and plant bases.

B. Introduced Species:

Russian olive: A combination of chemical and mechanical control methods generally produce the best control. Mechanical methods such as cutting individual trees and dozing are effective but labor intensive and expensive. Stumps of individually sawn trees should be chemically treated to prevent sprouting. Control is most effective where trees are less than 5 feet in height.

Submergence in water (where practical and feasible) for 28 months will reduce light to moderate stands. Inundate plants for one entire growing season, and over half of the next two growing seasons.

Tamarisk: This species is an aggressive sprouter. Effective control of medium to heavy stands can be accomplished by chemical treatments or a combination of root plowing, burning and chemicals. Cutting down tamarisk and treating the stump with effective herbicides is very effective, but is labor intensive. Pile and burn vegetation to prevent re-sprouting. Follow-up with chemical treatments on re-growth.

Submergence in water (where practical and feasible) for 28 months will reduce light-to-moderate stands. Inundate plants for one entire growing season, and over half of the next two growing seasons.

III. MANAGEMENT OF TREATED ACRES:

If chemical methods of treatment are used, all label restrictions concerning grazing, haying, or other uses will be applied.

If the area is grazed by livestock, the treatment area will be deferred from livestock grazing for the entire growing season(s) for a minimum of two years following the treatment. Drought following treatment, low vigor of desirable grasses, invasion of the treated area by undesirable plants, and/or other abnormal conditions may make it desirable to extend the deferment beyond the above requirements. If any of these conditions exist, the NRCS conservationist will inform the cooperators that the deferment period will need to be extended.

Additional periods of livestock deferral may be needed prior to treatment application based on the treatment method used.

Field Office Technical Guide (FOTG), Section IV, Practice Specification, Prescribed Grazing (Code 528) will address a short-term prescribed grazing strategy and a long-term prescribed grazing strategy:

- *A short-term prescribed grazing strategy will address how the loss of acres (for grazing) due to deferment or rest of treated pastures will alleviate any harmful effects from livestock grazing which may potentially occur to untreated pastures.*
- *A long-term prescribed grazing strategy will be developed to include pastures where the treatment occurred as well as for other untreated pastures that would be part of a grazing management unit (e.g., where one herd would typically graze through multiple pastures during the growing season or for a significant portion of a growing season).*

IV. OPERATION AND MAINTENANCE:

This conservation practice is an asset to your farm or ranch. This practice will need periodic operation and maintenance to maintain satisfactory performance. The life of this practice or system is at least 10 years. The life of this practice can be assured or extended by thorough and timely operation and maintenance. Some recommendations to help you develop a successful operation and maintenance program include:

- Following initial application, some re-growth, re-sprouting or reoccurrence of brush should be expected.
- Spot treatment of individual plants or areas will be done as needed.
- In some situations, it may be appropriate to apply a maintenance treatment, such as a prescribed burn following a previous mechanical or herbicide brush management treatment, to extend the life of the treatment, refer to FOTG, Section IV, Standard and Specification, Prescribed Burning (Code 338).

REFERENCES

Best Management Practices for Montana, Invasive Species Technical Note No. MT-30. Biology, Ecology and Management of Russian Olive and Saltcedar, December 2010.

Montana, Wyoming, Utah—Weed Management Handbook, 2001–2002, Cooperative Extension Services, April 2001.

Montana Final Sage Grouse Management Plan, 2005.

Range Developments and Improvements, Vallentine, Brigham Young University Press, 1977.

Saltcedar (Tamarisk), Grubb, R.T., R.L. Sheley, and R.D. Carlstrom, MONTGUIDE MT 9710, 1997.

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USDA, Natural Resources Conservation Service, Field Office Technical Guide, Section IV, Practice Standards and Specifications:

Prescribed Burning (Code 338), most current dated version.

Prescribed Grazing (Code 528), *most current dated version*.

Pest Management (Code 595), *most current dated version*.

Wetland Wildlife Habitat Management (Code 644), *most current dated version*.

Upland Wildlife Habitat Management (Code 645), *most current dated version*.