Natural Resources Conservation Service

CONSERVATION PRACTICE STANDARD

ARIZONA

Brush Management

Code 314

(Ac)

# DEFINITION

The removal or control of woody (non-herbaceous or succulent) plants including those that are invasive and noxious.

# Purpose

* Create the desired plant community consistent with the ecological site or a desired state within the site description.
* Restore or release desired vegetative cover to protect soils, control erosion, reduce sediment, improve water quality, or enhance hydrology.
* 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.
* Pervasive plant species are controlled to a desired level of treatment that will ultimately contribute to creation or maintenance of an ecological site description “steady state” addressing the need for forage, wildlife habitat, and/or water quality.

# Conditions Where Practice Applies

On all lands, except active cropland where the removal, reduction, or manipulation of woody (non-herbaceous or succulent) plants is desired.

This practice does not apply to removal of woody vegetation by prescribed fire (use Prescribed Burning (338)) or removal of woody vegetation to facilitate a land-use change (use Land Clearing (460)).

# criteria

## General Criteria Applicable to All Purposes

Brush management will be designed to achieve the desired plant community based on species composition, structure, density, and canopy (or foliar) cover or height.

Brush management will be applied in a manner to achieve the desired control of the target woody species and protection of desired species including spot treatment of individual plants or areas needing re-treatment due to regrowth, resprouting, or reoccurrence. This will be accomplished by mechanical, chemical, burning, or biological methods, either alone or in combination.

When prescribed burning is used as a method, Prescribed Burning (338) will also be applied.

When the intent is to manage trees for silvicultural purposes, use Forest Stand Improvement (666).

NRCS will not develop biological or chemical treatment recommendations except for biological control utilizing grazing animals. In such cases, Prescribed Grazing (528) is used to ensure desired results are achieved and maintained. NRCS may provide clients with acceptable biological and/or chemical control references.

Section IV, USDA-NRCS Arizona FOTG, *Arizona “*[Vegetation Management and Control Methods](https://efotg.sc.egov.usda.gov/references/public/AZ/AZNRCSVegMngtContr.docx)”, identifies target species approved for treatment and acceptable treatment methods for those species.

In cases where the treatment area has insufficient understory vegetation to provide a seed source to result in the desired plant community consistent with the ecological site to repopulate the area in sufficient time to prevent invasive of weeds or re-invasion of the target brush management species, the treatment area will be seeded with desired herbaceous plants as part of the brush management plant. Refer to conservation practice standard Range Planting (550).

Prescribed Grazing shall be applied to the area of brush management following treatment to ensure the desired response from the treatment is achieved. Grazed range treated with brush management will be deferred or rested from grazing by domestic livestock for a minimum of two spring and summer growing seasons following treatment. If grazing is to occur during the non-growing period(s) between these growing seasons it shall be planned to enhance the recovery of the desired herbaceous plant species and will be documented in the brush management plan. If adverse climatic conditions occur following treatment adjustments will be made to the prescribed grazing plan to allow adequate deferment or rest for the desired herbaceous plants. Refer to conservation practice standard Prescribed Grazing (528).

Follow-up treatments may be necessary to achieve objectives.

## Additional Criteria for Creating the Desired Plant Community Consistent with the Ecological Site

Use applicable ecological site description (ESD) state and transition models to develop specifications that are ecologically sound and defensible. Treatments must be congruent with dynamics of the ecological site(s) and keyed to state and plant community phases that have the potential and capability to support the desired plant community. If an ESD is not available, base specifications on the best approximation of the desired plant community composition, structure, and function to support resilience.

Brush management treatments on native rangelands shall be planned in such a way as to not remove more woody species than indicated in the Ecological Site Description for the desired state and plant community phase (canopy cover or pounds per acre).

Additional treatments are planned and will be applied to achieve effective control of pervasive plant species through reapplication.

## Additional Criteria for Restoring or Releasing Desired Vegetative Cover to Protect Soils, Control Erosion, Reduce Sediment, Improve Water Quality or Enhance Hydrology

Choose a method of control that results in the least amount of soil disturbance if soil erosion potential is high and revegetation is slow or uncertain leaving the site vulnerable to long-term exposure to soil loss.

In conjunction with other conservation practices, the number, sequence, and timing of soil-disturbing operations must be managed to maintain soil loss within acceptable levels using approved erosion prediction technology.

## Additional Criteria to Maintain, Modify or Enhance Fish and Wildlife Habitat

Brush management will be planned and applied in a manner to meet the habitat requirements for wildlife species of concern as determined by an approved habitat evaluation procedure.

Conduct treatments during periods of the year that accommodate reproduction and other life-cycle requirements of target wildlife and pollinator species, and in accordance with specifications developed for Wetland Wildlife Habitat Management (644) and Upland Wildlife Habitat Management (645).

Brush Management will be planned and applied in a manner to meet the habitat requirements for cover, food or space of the wildlife species or suites of species of concern. These species will be listed on the job sheet. Any special patterns and/or reduced rates of application used to improve wildlife habitat requirements will be recorded on the job sheet.

*When brush management is being applied for the primary purpose of maintaining, modifying, or enhancing fish and wildlife habitat through the removal of invasive trees or shrubs and the planned post treatment grazing management will enhance the desired herbaceous forage plants, then the requirement of two spring and summer growing seasons deferment or rest may partially or entirely waived. The desired herbaceous forage plants must be present in sufficient amounts as determined by a forage-animal balance assessment and be in a healthy, vigorous condition.*

## *Additional Criteria for Treatments in Listed Species Habitat*

*Salt cedar and Russian olive removal must be by hand cutting, cut-stump spray treatment, or grubbing in listed fish or plant species habitat. This does not include the use of large equipment unless done outside of the active channel of the stream or river. Heavy equipment use would require additional consultation.*

*If brush management treatments are planned in Sonoran desert tortoise (Gopherus morajkai) habitat, the NRCS will initiate consultation to determine whether adverse effects may occur. The Sonoran desert tortoise generally lives in steeper, more rugged habitats than the Mohave species. It is not likely to occur in areas that need Brush Management for restoration to desired or natural plant communities.*

*NRCS will initiate informal consultation to determine whether a Brush Management project within Pima pineapple cactus range, southwestern willow flycatcher, western yellow-billed cuckoo, Sonoran desert tortoise, or Mohave desert tortoise habitat will adversely affect these species. If the project area is in known occupied or suitable southwestern willow flycatcher or western yellow-billed cuckoo habitat or designated willow flycatcher critical habitat, additional consultation is also required. This practice will not adversely affect other listed species or critical habitat if all required Conservation Measure’s (CM’s) are followed during construction and implementation.*

*Herbicide treatments in listed species habitat must follow the guidelines within the FWS document “*[Recommended Pesticide Application Protection Measures - FWS 2007.pdf](http://efotg.sc.egov.usda.gov/references/public/AZ/12-0323_Pesticide_Protection_Measures_FWS_2007.pdf)*”*

*The FWS document provides buffer zones and treatments for herbicide use in listed species habitat. If the recommendations are followed the project would meet the threshold for "not likely to adversely affect" listed species and their critical habitat.*

*All specific projects that propose the use of fire or biological control, in listed species habitat or designated critical habitat would require the initiation of site-specific informal consultation to determine whether adverse effects may occur.*

* *Use existing stream crossings for equipment access during practice installation.*
* *Minimize soil and vegetation disturbance during practice installation; avoid total removal of vegetation to allow regrowth by only removing targeted species and leaving the native herbaceous layer as undisturbed as possible.*
* *Re-establish vegetation on disturbed areas after practice installation using native species.*
* *Immediately clean any grease, oil, or other contaminant spills and remove from the site.*
* *Plant or seed native species adapted to local conditions on disturbed ground to reduce opportunities of invasive weed establishment. In listed species habitat, NRCS will consult on any non-native plant species used in the planting plan.*
* *Minimize upland soil compaction during practice construction WFA by selecting the location and timing of the practice to minimize compaction (i.e. avoid periods when soil is wet, especially high clay soils).*
* *Use existing roads and limit cross-country travel or initiation ES of new roads.*
* *Where clearing of vegetation is determined to be necessary during planned construction or maintenance, the corridor cleared, otherwise prepared, or maintained will not exceed 25 feet in width.*
* *Flag or otherwise protect individuals of a listed plant species in construction areas.*
* *A pre-construction survey will be completed to ensure that vegetation or habitat structural materials to be removed are not occupied or used as primary cover for a listed species. Cover or nest materials will remain with a 250' undisturbed buffer.*
* *Use the NRCS computer program WIN-PST to determine pesticide mitigation requirements.*
* *Complete practice outside covered species' critical time periods. See “*[Species Critical Time Period Table](http://efotg.sc.egov.usda.gov/references/public/AZ/12-0323_Programmatic_Species_Critical_Period_Table_1.docx)*”*
* *Use existing travel routes through listed species habitat.*
* *Alignments for planned construction (pipelines, fences) will be routed so as to avoid specific areas known to be occupied by listed species and known habitat features such as burrows and nests.*
* *Conduct a pre-installation, pedestrian survey for wildlife that may be trapped within a temporarily fenced construction area. Trapped wildlife will be allowed to escape prior to construction.*
* *Screen inlets and outlets to prevent non-native fish and amphibians from spreading into other habitats.*
* *Time practice implementation to reduce spread of non-native plants or animals by implementing the practice during the dormant season (e.g. avoid ground disturbance in riparian areas in the summer to reduce salt cedar spread).*
* *Clean equipment used in practice implementation (vehicles, farm equipment, and tools) before entering and leaving project site to prevent the spread of non-native plant/animals or disease.*
* *Locate practice a minimum of 250 feet from any known listed HD species active nest or burrow as applicable, whether or not bulldozers, trenching machines, or similar equipment is used.*

## Additional Criteria to Improve Forage Accessibility, Quality and Quantity for Livestock and Wildlife

Timing and sequence of brush management must be planned in coordination with specifications developed for Prescribed Grazing (528).

## Additional Criteria to Manage Fuel Loads to Achieve Desired Conditions

Control undesirable woody plants in a manner that creates the desired plant community, including the desired fuel load, to reduce the risk of wildfire, and facilitate the future application of prescribed fire.

## Additional Criteria for Control of Pervasive Plant Species to a Desired Level of Treatment That Will Ultimately Contribute to Creation or Maintenance of an Ecological Site Description “Steady State” Addressing the Need for Forage, Wildlife Habitat, and/or Water Quality.

Additional treatments are planned and will be applied to achieve effective control of pervasive plant species through reapplication.

# CONSIDERATIONS

Consider using Integrated Pest Management (595) in support of brush management.

Consider soil erosion potential and difficulty of vegetation establishment when choosing a method of control that causes soil disturbance. The effects brush management will have on soil erosion will depend on the site and the method of brush management chosen. Brush management will only be applied on sites where long-term soil erosion will not be increased.

Consider the effects brush management will have on water quality will depend on the site and the method of brush management chosen. Brush management will only be applied on sites where, in the long-term, water quality will not be negatively impacted.

Preserving the natural beauty of the treatment area should be an integral part of the planning process. The treatment area will be designed to blend with the untreated area wherever possible.

The timing and sequence of brush management in a pasture and/or the entire operating unit should be planned to ensure any required grazing management will be obtained.

Consider the appropriate time period for treatment. Some brush management activities can be effective when applied within a single year; others may require multiple years of treatment(s) to achieve desired objectives.

Consider impacts and consequences to obligate species (species dependent on the target woody species) when significant changes are planned to existing and adjacent plant communities.

Consider impacts to wildlife food supplies, space, nesting, and cover availability when planning the method and amount of brush management.

State-issued licenses may be required when using chemical pesticide treatments.

For air quality purposes, consider using chemical methods of brush management that minimize chemical drift and excessive chemical usage, and consider mechanical methods of brush management that minimize the entrainment of particulate matter.

The use of any wood products, such as fuel wood or posts, should be considered and addressed in the brush management plan.

# Plans and specifications

Plans and specifications for the treatment option(s) selected by the decision maker will be recorded for each pasture, field or management unit where brush management will be applied.

The degree of control or removal of the target species or specie from the plant community will be determined by, and designed to achieve the intended purpose(s) for the planned brush management. The applied brush management will be within ten percent of the planned degree of control.

Prepare brush management plans and specifications that conform to all applicable Federal, State, and local laws. These documents will contain the following data as a minimum:

1. Goals and objectives clearly stated.
2. Pretreatment cover or density of the target plant(s) and the planned post-treatment cover or density and desired efficacy.
3. Maps, drawings, and/or narratives detailing or identifying areas to be treated, pattern of treatment (if applicable), and areas that will not be disturbed.
4. A monitoring plan that identifies what should be measured (including timing and frequency) and that documents the changes in the plant community (compare with objectives) will be implemented.

Mechanical Treatment Methods
Plans and specifications will include items 1 through 4, above, plus—

* Types of equipment and any modifications necessary to enable the equipment to adequately complete the job.
* Dates of treatment to best effect control.
* Operating instructions (if applicable).
* Techniques or procedures to be followed.

Chemical Treatment Methods

Plans and specifications will include items 1 through 4, above, plus—

* Acceptable chemical treatment references for containment and management or control of target species.
* Evaluation and interpretation of herbicide risks associated with the selected treatment(s).
* Acceptable dates or plant growth stage at application to best effect control and reduce reinvasion.
* Any special mitigation, timing considerations or other factors (such as soil texture and organic matter content) that must be considered to ensure the safest, most effective application of the herbicide.
* Reference to product label instructions.
* Documentation of the use of environmental risk analysis tools (such as WIN-PST Soil Pesticide Interaction Loss Potential and Hazard Rating Report) in formulating alternatives with the client.

***Note:*** *When a chosen alternative has significant potential to negatively impact important water resources, (e.g., WIN-PST “Extra High”, “High” or “Intermediate” soil/pesticide human risk ratings in the drainage area of a drinking water reservoir), an appropriate set of mitigation techniques must be put in place to address risks to humans and non-target plants and animals.*

*A WIN-PST “Extra High” rating for an identified water resource concern requires all possible mitigation in addition to available IPM that minimizes the use of this pesticide to the maximum extent possible.*

* Treatment requirements for standing dead material as needed.
* Methods and timing for additional treatments needed for pervasive plant species to achieve effective control through reapplication.

Biological Treatment Methods
Plans and specifications will include items 1 through 4, above, plus—

* Acceptable biological treatment references for containment and management or control of target species.
* Kind of grazing animal to be used, if applicable.
* Timing, frequency, 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.
* Special mitigation, precautions, or requirements associated with the selected treatment(s).

# OPERATION AND MAINTENANCE

The expected lifespan of this practice is 10 years. With good maintenance, brush management applied to these specifications can last 20 years or more.

Operation

Brush management practices must be applied using approved materials and procedures. Operations will comply with all local, State, and Federal laws and ordinances.

Success of the practice shall be determined by evaluating post-treatment regrowth of target species after sufficient time has passed to monitor the situation and gather reliable data. Length of evaluation periods will depend on the woody species being monitored, proximity of propagules (seeds, branches, and roots) to the site, transport mode of seeds (wind or animals), and methods and materials used.

The operator will develop a safety plan for individuals exposed to chemicals, including telephone numbers and addresses of emergency treatment centers and the telephone number for the nearest poison control center. The National Pesticide Information Center (NPIC) telephone number in Corvallis, Oregon, may also be given for nonemergency information: **1-800-858-7384,** Monday to Friday, 6:30 a.m. to 4:30 p.m. Pacific Time. The national Chemical Transportation Emergency Center (CHEMTRAC) telephone number is **1-800-424-9300.**

* Follow label requirements for mixing/loading setbacks from wells, intermittent streams and rivers, natural or impounded ponds and lakes, and reservoirs.
* Post signs, according to label directions and/or Federal, State, Tribal, and local laws, around fields that have been treated. Follow restricted entry intervals.
* Dispose of herbicides and herbicide containers in accordance with label directions and adhere to Federal, State, Tribal,and local regulations.
* Read and follow label directions and maintain appropriate Material Safety Data Sheets (MSDS). MSDS and pesticide labels may be accessed on the Internet at: http://[www.greenbook.net/](http://www.greenbook.net/) or <http://www.cdms.net/Label-Database>
* Calibrate application equipment according to recommendations before each seasonal use and with each major chemical and site change.
* Replace worn nozzle tips, cracked hoses, and faulty gauges on spray equipment.
* Maintain records of brush/shrub control for at least 2 years. Herbicide application records shall be in accordance with USDA Agricultural Marketing Service’s Pesticide Recordkeeping Program and State-specific requirements.

Maintenance

Following initial application, some regrowth, resprouting, or reoccurrence of brush may be expected. Spot treatment of individual plants or areas needing retreatment should be completed as needed while woody vegetation is small and most vulnerable to desired treatment procedures.

Review and update the plan periodically in order to:

* Incorporate new integrated pest management technology.
* Respond to grazing management and complex plant population changes.
* Avoid the development of plant resistance to herbicide chemicals.

# references

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