

# TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE

STATE OF WYOMING

NATURAL RESOURCES CONSERVATION SERVICE

## RANGE TECHNICAL NOTE NO. 1

October 2015

To: All Field and Area Offices  
From: State Range Management Specialist

Subject: Wyoming Brush Management (314) Guidance for Treatment of Conifer Encroachment on Rangeland.

This document is to aid planners in planning and contracting conifer encroachment on rangelands. It does not cover the whole planning process but does provide the methodologies we use to evaluate the resource concern. The following inventory is required for planning. Additional documentation may be required for SGI/WLFW and other programs as listed at the end of the document.



### General Planning

1. Identify area (s) where conifers are encroaching onto rangelands. Be sure you are treating encroachment and not areas where these species occur naturally (e.g. very shallow, shallow breaks, badlands etc.). Typically, encroachment occurs on ecological sites that have some topsoil (shallow loamy, loamy, steep loamy, etc.) and would normally be a grass/shrub or grass plant community. Any application of this practice will require an on-site visit to evaluate the area to be treated.
2. Conifer Treatment will be documented on WY-ECS-21
3. Timing
  - a. Conifer removal is allowed outside established timing restrictions applied for various wildlife species.
  - b. Disturbance from machinery may lead to the possibility of more soil erosion when soils are wet or saturated.
  - c. Early spring treatment (using machinery) typically is not recommended.
4. Inventory
  - a. Range Trend or Range Health Assessment of treatment area.
  - b. Photo points
  - c. On-site inventory will require establishing a minimum of 2 -1/10th acre plots (66' X 66') within representative areas to be treated.

- d. Determine the average conifer canopy. Stands with multiple canopy diameters may require you to determine an average canopy diameter. Count the number of trees in the plots and convert to trees/ac.
- 1) Using *Brush Canopy Table* below, calculate an estimated canopy cover.

***Brush Canopy Table 1:***

Tree Canopy (diameter in ft.)	Percent Canopy								
	1%	5%	10%	15%	20%	25%	30%	40%	50%
2	139	694	1387	2081	2775	3468	4162	5549	6936
4	35	173	347	520	694	867	1040	1387	1734
6	15	77	154	231	308	385	462	617	771
8	9	43	87	130	173	217	260	347	434
10	6	28	55	83	111	139	166	222	277
12	4	19	39	58	77	96	116	154	193
14	3	14	28	42	57	71	85	113	142
16	2	11	22	33	43	54	65	87	108
18	2	9	17	26	34	43	51	69	86
20	1	7	14	21	28	35	42	55	69

- 2) Instruction:
- i. Determine the average canopy diameter of the trees.
    - a. Canopy is the area of ground covered by the vertical projection of the outmost perimeter of the natural spread of plant foliage.
    - b. A quick and easy way to do this is to measure the diameter of shaded circle on the ground below the tree at mid-day.
  - ii. After measuring the canopy diameter of several trees to get an average, refer to the first column in the chart and find the diameter value that is the same as the one you determined.
  - iii. Follow the row across to the column value that most closely represents the number of trees per acre. The percentage at the top of that column is the percent canopy cover.
  - iv. The value that is present is the number of trees that would need to be counted in an acre to be considered infested at that canopy percentage.
- 3) Alternative method to determine canopy cover through aerial photo interpretation. An onsite visit to verify encroachment is still required.
- i. Delineate acres to be treated in Toolkit and draw a circle in representative treatment area (see Figure 1) and estimate % cover using the Comparison Charts for Visual Estimation of Foliar Cover (Figure 2).

Figure 1. Estimated percent cover of encroachment is 2-3%

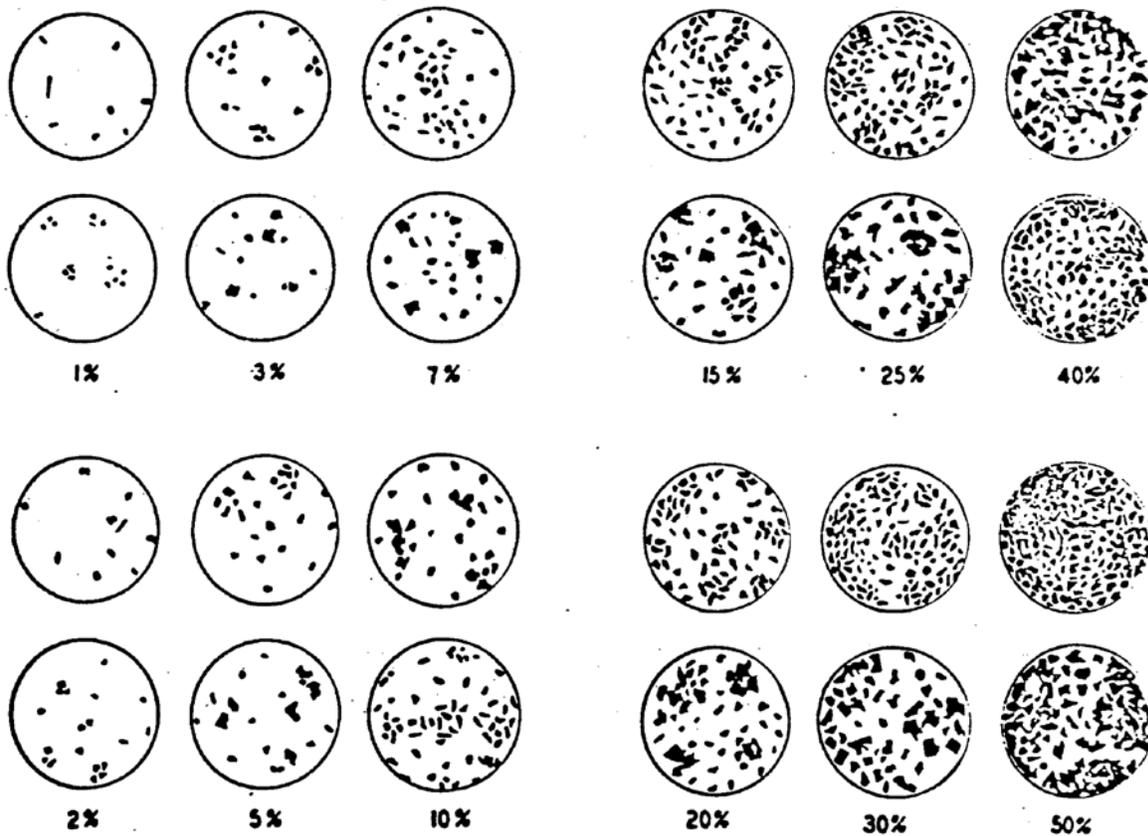


Figure 2. Visual Estimation of Foliage Cover

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EXHIBIT NO. 3  
SOIL CONSERVATION SERVICE

## COMPARISON CHARTS FOR VISUAL ESTIMATION OF FOLIAGE COVER 1/



1/ Developed by Richard D. Terry and George V. Chilingar. Published by the Society of Economic Paleontologist and Mineralogist in its Journal of Sedimentary Petrology 25 (3): 229-234, September 1955.

5. Treatment Level Scenarios – Utilize the current payment schedule to determine the appropriate payment scenario based on infestation level and the selected control method.
  - a. Conifers need to be cut below the lowest branch or regrowth may occur.
  - b. Treatment on rangeland will require 100% removal of conifers within treatment polygons.

**Figure 3.** Canopy cover <10



**Figure 4.** Canopy cover >10



6. Slash Treatment (within 2 years of conifer removal)
  - a. Prescribed Burning (338) may need to be applied to treat brush piles.
  - b. Woody Residue Treatment (384) should be applied if the amount of slash will adversely affect the herbaceous and or shrub component of the plant community.
7. Post treatment management:
  - a. Grazing deferment may be required depending on the extent of disturbance to site.
8. Additional documentation may be required for SGI/WLFW or other programs such as:
  - a. SG Threats Checklist
  - b. SG WHEG (conifers encroachment would be documented under Habitat Factor 9 - Invasive species).
  - c. Upland Wildlife Habitat Management (645)
  - d. Prescribed Grazing (528) documentation

**Contact:** State Rangeland Management Specialist