United States
Department
of Agriculture

Forest Service

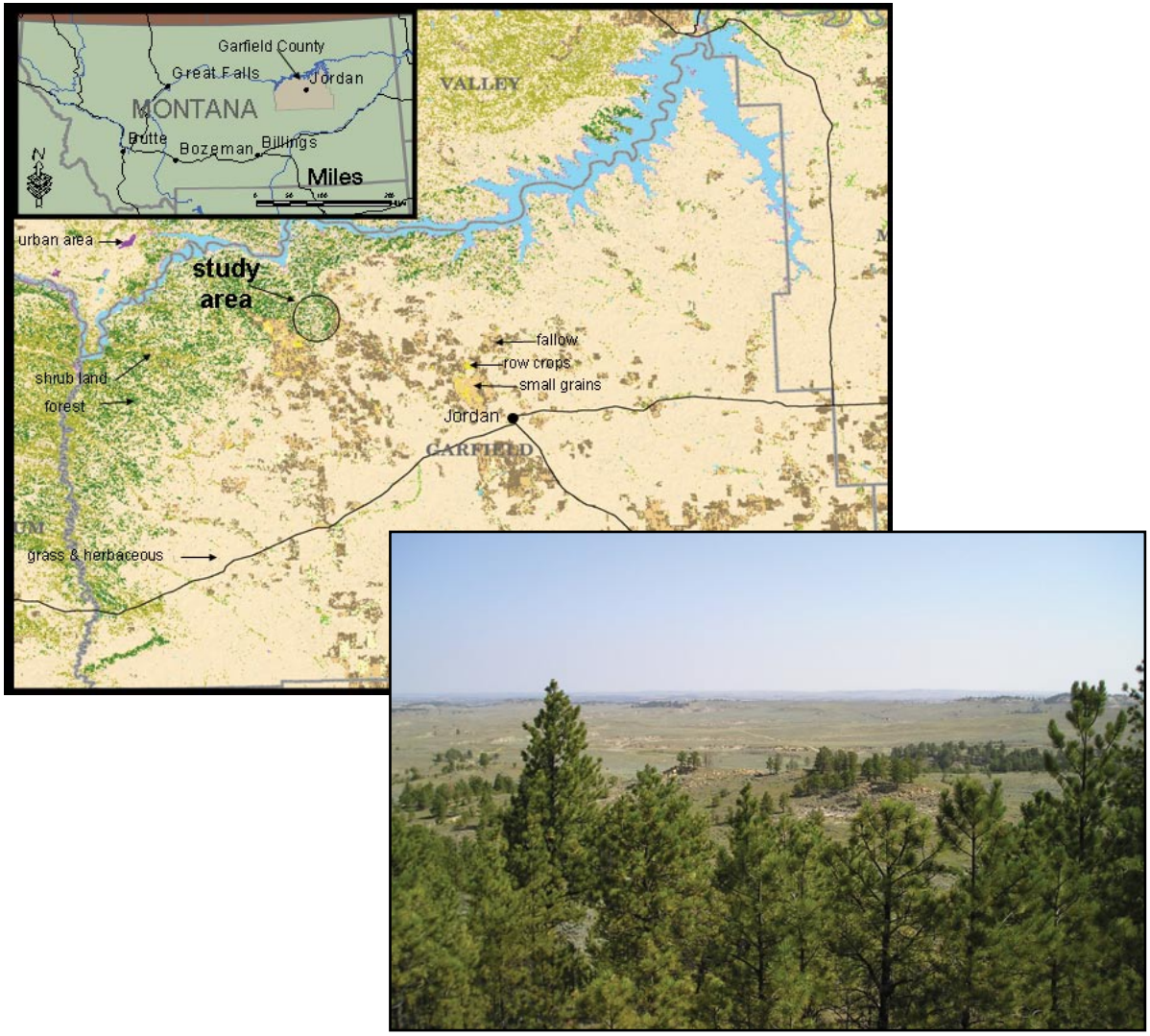
**Rocky Mountain
Research Station**

General Technical
Report RMRS-GTR-186

February 2007

Forest Descriptions and Photographs of Forested Areas Along the Breaks of the Missouri River in Eastern Montana, USA

Theresa Jain, Molly Juillerat, Jonathan Sandquist, Brad Sauer, Robert Mitchell, Scott McAvoy, Justin Hanley, John David



Jain, Theresa B.; Juillerat, Molly; Sandquist, Jonathan; Sauer, Brad; Mitchell, Robert; McAvoy, Scott; Hanley, Justin; and David, John. 2007. **Forest descriptions and photographs of forested areas along the breaks of the Missouri River in eastern Montana, USA**. Gen. Tech. Rep. RMRS-GTR-186. Fort Collins, CO: U.S. Department of Agriculture,Forest Service, Rocky Mountain Research Station. 51 p.

Abstract

This handbook presents information and photographs obtained from forest lands along the breaks of the Missouri River in eastern Montana. Forest characteristics summarized in tables with accompanying photographs can be used to provide quick estimates of species composition and densities within similar landscape features. These estimates may be useful to foresters, wildlife biologists, range ecologists, and fire and fuel specialists. The book is organized by six physiographic positions: 1) waterways (ravines or gullies), 2) south aspects ≤ 25 percent slope angle, 3) south aspect > 25 percent slope angle, 4) north aspects ≤ 25 percent slope angle, 5) north aspects > 25 percent slope angle, and 6) ridges or benches. Within each physiographic position, sites containing three overstory densities are represented. Inventory data describes the forest floor, ground-level vegetation, tree density, average crown ratio, canopy base height, and other characteristics; two photographs (close and distant view) provide a visual image and accompany the quantitative descriptions.

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Purpose

This handbook will help local land managers (for example, foresters, wildlife biologists, range ecologists, fire ecologists, or fuels specialists) describe forests that currently occur (circa 2004) along the breaks of the Missouri River in eastern Montana (figs. 1 and 2). The information in this book describes trees, ground level vegetation, and the soil surface that are represented within three different tree densities (low, moderate, and high) on six physiographic positions (table 1). The physiographic positions are: 1) waterways (ravines or gullies), 2) south aspects ≤ 25 percent slope angle, 3) south aspects > 25 percent slope angle, 4) north aspects ≤ 25 percent slope angle, 5) north aspects > 25 percent slope angle, and 6) ridges or benches.

The quantitative descriptions combined with photographs provide a quick and inexpensive method for appraising forest conditions across forested and non-forested areas within eastern Montana. Local land managers can use this book as a quick way to estimate tree density, as well as the percent cover of ground-level vegetation, mineral soil exposure, and litter. The degree of accuracy and precision achieved when using this handbook can vary greatly, depending on the techniques used in developing estimates. In most cases this book can be a useful tool for evaluating forest characteristics in other locales, especially if it is used to obtain coarse estimates of forest characteristics across large landscapes within similar physiographic and geographic locations.

Area Described

The data tables and photographs reflect forested sites located along the Missouri River Breaks in eastern Montana (fig. 1). These forested areas are composed of warm-dry to moist ponderosa pine (*Pinus ponderosa*) forests. The understories can consist of continuous or patchy grass, pine needle mats, and dense understories (Fisher and Clayton 1983). The area is composed of public lands administered by the U.S. Department of Interior, Bureau of Land Management, and the Montana State Department of Natural Resources and Conservation. There are also many large private ranches interspersed throughout the region. The sites in this handbook reflect current conditions where fire has been excluded for several decades (80 to 100 years). Livestock grazing, however, has occurred throughout the past in this region.

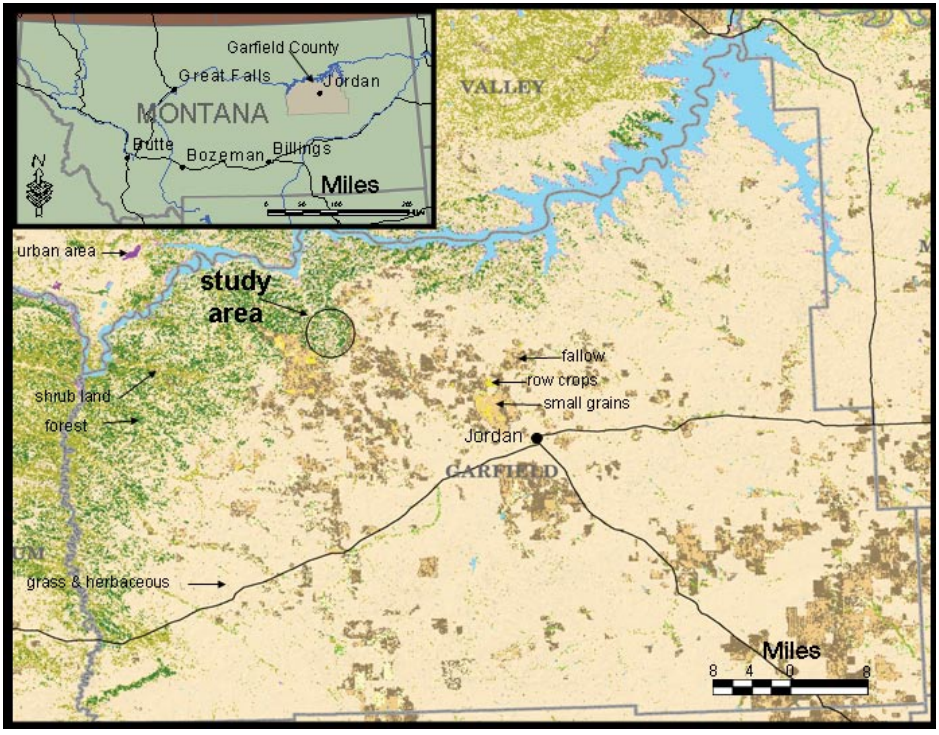

Figure 1—Map of the study area along the breaks of the Missouri River in eastern Montana. The circle indicates the locale where the photographs and data were obtained for the handbook.

Figure 2—Photograph depicting the landscape of the study area.

Table 1—The minimum, median, maximum trees per acre, average basal area, and average percent cover for each tree density class within a physiographic position (N = 3 unless otherwise noted). Waterways are ravines or gullies.

Physiographic position	Density	Description				
		Trees per acre			Average basal area (ft^2/acre)	Average canopy cover (%)
		Minimum	Median	Maximum		
Waterways	Low	0	216	552	8	9
	Moderate	669	864	956	43	32
	High	525	1306	1704	84	54
South aspect ≤ 25%	Low	0	30	120	13	6
	Moderate (N = 4)	72	177	278	40	27
	High	960	1630	2300	128	66
South aspect > 25%	Low	34	48	72	24	16
	Moderate	72	140	464	48	31
	High	744	1296	1488	112	67
North aspect ≤ 25%	Low (N = 5)	0	168	288	9	9
	Moderate	261	300	432	46	31
	High	744	984	1248	91	60
North aspect > 25%	Low	768	840	1104	10	13
	Moderate	548	864	1200	66	47
	High	888	1632	1920	129	72
Ridge or bench	Low	0	24	38	7	4
	Moderate	192	336	816	6	12
	High	336	712	840	89	57

Development of Handbook

Sampling Design

We used a stratified random sampling design with physiographic position (stratum 1) and overstory tree density (stratum 2) (table 1). Several locations (five to 10) within the study area were randomly selected that contained the two strata. Within each location, three two-person crews randomly located a starting point and a random direction and began walking along a linear transect. As each crew crossed a physiographic position, they established a random plot (50 feet from the transect, with direction dictated by location of a second hand on a watch) that contained the lowest density of trees based upon canopy cover (table 1). After a low density plot was located and data collected, the crew continued walking along the transect until they located a moderate density site, defined as

containing twice the density of the low density plot, within a similar physiographic position. Continuing on this transect, a high density plot, containing twice the density as the moderate density plot, was established. This technique continued until each crew had identified a low, moderate, and high density sample within a group of similar physiographic positions. This was repeated three to five times for each physiographic position and density combination (table 1). To obtain the full range of overstory densities, several random locations and transects were established. All plots were ranked by density to ensure a full range of potential densities for the given physiographic position were sampled.

Data Collection

The ocular estimate of the soil surface (litter and mineral soil exposure), and cover for low (≤ 0.2 inch basal stem diameter or ≤ 1 foot tall) and medium (> 0.2 inch basal stem diameter or > 1.0 foot tall) shrubs, forbs, and grass were described using a 1/300th (6.8 foot radius) acre circular plot. The numbers of stems within a basal stem diameter class were used to calculate biomass (Brown 1976) (table 2).

All trees ≤ 12.0 inches diameter at breast height (dbh) were quantified using a 1/24th (24 foot radius) acre circular plot. Trees exceeding 12.0 inches dbh were quantified using a variable radius, proportional to tree size, defined by a 20 basal area factor prism. Tree canopy base height and uncompacted crown ratio were measured directly (table 2). A hard hat was used to indicate plot center and scale, and a close and distant view of the plot were photographed.

For each example shown, the data tables illustrate individual plot summaries. Summarized data included trees per acre, dead trees per acre, total cubic foot volume, merchantable cubic foot volume, basal area, and canopy cover. The tables also include the fire behavior fuel model that the photograph and data represent. In some cases, where dead trees were large enough (> 4 in dbh and > 6 foot tall, Thomas and others 1979) to be considered wildlife snags, snags per acre values were included in footnotes below the data tables. The tree data were summarized using the Fire and Fuels Extension of the Forest Vegetation Simulator (FFE-FVS), eastern Montana variant (Crookston and Stage 1999; Dixon 2003; Reinhardt and Crookston 2003; Wykoff 1986; Wykoff and others 1982) (table 2). Table 3 describes the values used in the fire behavior fuel models appearing in this handbook, summarized using FFE-FVS (Reinhardt and Crookston 2003).

We also added vegetation fuel class (VFC) as defined by the LANDFIRE Rapid Assessment (2005) (Table 4). The five VFC's were within the ponderosa pine-northern Great Plains potential natural vegetation group. They are: early-development, mid-development closed canopy, mid-development open canopy, late-development open canopy, and late-development closed canopy. To illustrate how a particular forest structure may appear within the five vegetation fuel classes, the photographs and canopy cover were used by the lead author to post-classify the photographs into different VFCs from the ponderosa pine-northern Great Plains reference condition models. This classification was then validated through two other independent classifications and differences were reconciled. We do not report the abundance of each VFC across a landscape, but rather provide examples of these different fuel classes at an individual site.

Using the Handbook

Organization of the Handbook

The book is organized into six sections, based upon physiographic position. Within each

Table 2—The following information describes forest characteristics, how they were measured, and the plot size used when obtaining the measurements. Also included are the calculation and/or reference used to summarize data.

Characteristics	Direct measurement	Plot size	Calculation used and/or literature reference
Forest floor and surface			
Litter, mineral soil exposure, grass, forbs, shrub (%)	Ocular estimate of proportion of cover (± 5%)	1/300th acre circular plot	Proportion of 1/300th acre plot presented as percent
Shrub biomass (tons/acre)	Number of basal stems in two diameter and height classes (low = ≤ 0.2 in or ≤ 1.0 ft tall; med = > 0.2 in or > 1.0 ft tall)	1/300th acre circular plot	Regression equation for estimating total above ground weight, based on number of basal stems for big sagebrush (*Artemisia tridentata*) and common juniper (*Juniperus communis*) (Brown 1976)
Tree characteristics			
Trees & snags ≤ 12.0 inches diameter breast height (dbh) breast height=4.5 feet	Tally by height (nearest foot), species, and diameter (± 0.1 in)	1/24th acre circular plot	Trees per acre = tree tally per plot multiplied by 24
Trees & snags > 12.0 inches diameter breast height (dbh) breast height=4.5 feet	Tally by height (nearest foot), species, and diameter (± 0.1 in)	Sampling proportional to size using a 20 basal area factor prism	Stand table factor multiplied by tree count per plot in a diameter class (Dilworth 1970, page 267) Forest Vegetation Simulator (FVS), eastern Montana variant (Dixon 2003)
Total basal area (ft^2/acre)	Tally by height (nearest foot), species, diameter (± 0.1 in)	1/24th acre circular plot, and through sampling proportional to size	Dilworth 1970, page 267, FVS, eastern Montana variant (Dixon 2003)
Total volume (ft^3 /acre)	Tally by height (nearest foot), species, diameter (± 0.1 in)	1/24th acre circular plot, and through sampling proportional to size	FVS, eastern Montana variant (Dixon 2003; Wykoff 1986)
Merchantable volume (ft^3 /acre)	Tally by height (nearest foot), species, diameter (± 0.1 in)	1/24th acre circular plot, and through sampling proportional to size	FVS, eastern Montana variant (Dixon 2003); merchantability standards: 1 foot stump height to a 2 inch top (Wykoff 1986)
Tree crown characteristics			
Canopy base height (ft)	Height from surface to lowest live branch (± 1.0 ft)	1/24th acre circular plot, and through sampling proportional to size	Average canopy base height for all trees within a height class per plot
Uncompacted crown ratio (%)	Percent of tree with crown from lowest live branch to top of tree (± 1%)	1/24th acre circular plot, and through sampling proportional to size	Average crown ratio for trees within a height class per plot
Total canopy cover (%)	Uncompacted crown ratio and tree species	1/24th acre circular plot, and through sampling proportional to size	Estimates of total canopy cover accounting for crown overlap, FVS, eastern Montana variant (Crookston and Stage 1999, Dixon 2003)
Fuel model and vegetation fuel class			
Fuel model	Photograph and data sheet	Overall description of site	Assigned a value based on Anderson (1982)
Vegetation fuel class	Photograph and data sheet	Overall description of site and development stage	Assigned a value based on LANDFIRE Rapid Assessment (2005)

Table 3—Values used in the fire behavior fuel models (Anderson 1982, Reinhardt and Crookston 2003). Surface to volume ratio is the amount of surface area for a given volume. Moisture of extinction is the moisture content above which a fuel cannot sustain a fire. Fuel classes are 1-hour (≤ 0.25 in), 10-hour (> 0.25 to ≤ 1.0 in), and 100-hour (> 1.0 to ≤ 3.0 in).

Fuel model no.	Fuel model name	Surface to volume ratio (1 / 1 ft)				Fuel loading (lbs/ft^2)				Fuel bed depth (ft)	Moisture of extinction (%)
		Dead				Dead					
		1 hour	10 hour	100 hour	Live	1 hour	10 hour	100 hour	Live		
1	Short grass	3500	109	30	1500	0.034	0	0	0	1	12
2	Timber (grass & understory)	300	109	30	1500	0.092	0.046	0.023	0.023	1	15
9	Closed ponderosa pine (litter)	2500	109	30	1500	0.134	0.019	0.007	0	0.2	0.25

Table 4—The Vegetation Fuel Class (VFC) descriptions used to assign a VFC letter (A, B, C, D, or E) to each of the sites (LANDFIRE Rapid Assessment 2005).

Class	Name	Description
A	Early-development	Community is dominated by herbaceous and wood species, including the graminoids, needle grasses (*Stipa* spp.), western wheatgrass (*Agropyron* spp.), and little bluestem (*Schizachyrium scoparium*) in moist areas. Various shrubs include skunkbush (*Rhus* spp.) and snowberry (*Symphocarpus* spp.). Ponderosa pine seedlings are scattered and found in small clumps. Number of years in this class is variable, depending on climatic patterns and fire disturbances. Canopy cover ranges from 0 to 100 percent.
B	Mid-development, closed canopy	Multi-story stand of small and medium trees with saplings and seedlings coming in as clumps. Understory is sparse. Canopy cover ranges from 50 to 100 percent.
C	Mid-development, open canopy	Generally single-story stands with a few pockets of regeneration. Shrubs such as snowberry and skunkbush are present as well as grasses and forbs. Rocky Mountain juniper (*Juniperus scoparium*) present in patches. Canopy cover ranges from 0 to 50 percent.
D	Late-development, open canopy	Single-story stands of large ponderosa pine with pockets of smaller size classes. Snowberry, skunkbush, patches of Rocky Mountain juniper, and grasses are still present. Canopy cover ranges from 0 to 50 percent.
E	Late-development, closed canopy	Multi-story stands of ponderosa pine containing large, medium, and small to seedling sized trees. Shrubs and grasses are sparse. This type generally exceeds 70 percent canopy cover.

of these positions, the forest description and accompanying photographs are further arranged by overstory density class (low, moderate, and high) (table 1). Three to five examples of each density class are provided with an associated data sheet and two photographs (close and distant view). The data table characterizes the ground-level vegetation, litter, mineral soil exposure, and overstory tree characteristics (table 5). The photographs provide a visual illustration of the characteristics (fig. 3). Table 5 and figure 3 describe in detail how to read and interpret the data table and photographs.

Assessing Forest Structure Characteristics

There are many different ways this handbook can be used to assess other locales having similar forest and physiographic characteristics and communicate variation in forest structure. The following section provides examples illustrating how this book could be used.

As a communication tool—The combination of information that describes forest structure characteristics complemented by a visual illustration of the information is one of the most powerful communication tools (Culbertson 1974; Morton 1984; Wagner 1974). When developing this handbook, we first collected information using forest inventory techniques, followed by a close and distant view of plot center (a hard hat located at plot center can used to obtain the scale of the photograph). This is the most accurate and reliable method to ensure a photograph is representing the associated descriptors (Wagner 1974). Using a photograph as an accompaniment to the quantitative characteristics allows the user to focus on the specific forest characteristics in the photograph that are being described. In addition, we added the VFCs to provide the user with an example of what particular fuel classes may look like as defined by the LANDFIRE Rapid Assessment (2005).

As a calibration tool—Sometimes it is impractical to locate and measure inventory type plots to quantify forest structure, yet an estimate of forest structure is needed. Information from this handbook can be used to calibrate estimates of forest structure. The handbook provides an estimate of density, size class, diameter, and crown ratios of different forest conditions within given physiographic positions. One could compare the data in this handbook with data from similar stands and use the photographs as a visual verification. This allows one to obtain an estimate of trees per acre, volume per acre, and tree size without installing a plot, obtaining data, and summarizing the data to reflect per acre estimates.

As a monitoring tool—Monitoring the effects from different types of disturbances is often a necessary component in resource management. These disturbances may include, but are not limited to, wildfires, prescribed fires, windstorms, harvesting, and livestock grazing. The preferable technique is to characterize forest structure prior to an event and then return to the exact same location and characterize forest structure after that event occurs. However, most often the location of a future forest disturbance, such as a wildfire, is unknown. It also may not be economical or physically feasible to conduct a forest examination. Because this handbook describes sites where fire has been excluded, it could be used for estimating subsequent changes in forest structure after a wildfire. For example, if a high density plot illustrated in this handbook was similar to a high density forest of interest, except that half of the trees were killed by a wildfire, an estimate of live trees per acre could be obtained by reducing the values illustrated in this handbook by 50 percent.

Figure 3—A) The left photograph or close view shows the surface and reflects information presented on the upper half of table 5. B) The right photograph is a distant view showing the tree characteristics presented in the lower half of table 5.

Each set of photographs shows the site where data quantifying forest characteristics (table 5) were obtained. Similar photographs accompany each table in this handbook. A hard hat is placed on plot center in each photograph. For some photographs in which the hard hat is difficult to find, we placed an arrow to help locate it. The hard hat (11 X 12 inches, longer dimension front to back) can also serve as a scale. The photographs are from a north ≤ 25 percent slope and is a site with many trees (high density). The left photograph (close view) was taken to show the surface (table 5). Note the low and medium shrubs in the left photograph above are described in table 5. Common juniper was used to estimate low shrub biomass and big sagebrush was used to estimate medium shrub biomass (Brown 1976). The right photograph focuses on trees that are summarized in table 5. Please refer to table 2 for specifics on how forest characteristics were summarized.

Factors to Consider

The value of information obtained by using this handbook depends on the user's objectives and how precision, bias, and accuracy in estimates are accounted for. Understanding these data characteristics increases the likelihood that information obtained using this handbook will provide relevant characterizations of forested landscapes. Precision, which varies in response to sample size, describes the extent to which a given set of measurements represents their average. Multiple samples of a tree characteristic taken in a particular locale increase the likelihood that individual samples will be similar to the average, compared to situations when fewer samples are acquired. Bias describes how well the average obtained through sampling reflects the true value of a characteristic. For example, if a tree is 30 feet tall and the average of 10 measurements indicates the tree is 40 feet tall, the estimate is biased. On the other hand, if through sampling the tree is estimated to be 30 feet tall, the estimate is unbiased. An extremely accurate measurement reflects the combination of both precision and lack of bias.

Table 5—Example of a surface **(A)**, trees **(B),** and plot summary **(C)** data table. The soil surface and ground-level vegetation **(A1)** were characterized by ocular estimates of percentage cover for 1) litter (discernable dead needles, grass, and leaves), 2) mineral soil exposure, 3) exposed rock ≥ 1 inch diameter, 4) live grass, 5) live forbs, 6) low shrubs (≤ 0.2 inch basal diameter or ≤ 1.0 feet tall) and 7) medium shrubs (> 0.2 inch diameter or > 1.0 feet tall). The depth of the litter **(A2)** was measured. Common juniper (*Juniperus communis*) (low shrubs) and big sagebrush (*Artemisia tridentata*) (medium shrubs) were used to provide an estimate of tons per acre for shrub biomass **(A3)**.

Trees were summarized to provide two forms of information, tree characteristics by height class **(B)** and characteristics for the entire plot **(C)**. Trees were separated into four height classes: ≤ 6 feet, > 6 to ≤ 12 feet, > 12 to ≤ 23 feet, and > 23 feet **(B1)**. Within each height class the following characteristics are provided: the trees per acre for each of two species, ponderosa pine (*Pinus ponderosa*-PP) and Rocky Mountain juniper (*Juniperus scopulorum*-JU) **(B2)**, the average height for trees that occur in each height class **(B3)**, and the average canopy base height and average uncompacted crown ratio **(B4)**.

Plot summaries reflect whole plot characteristics **(C)** and are not associated with individual tree height classes. These plot characteristics include total basal area, total canopy cover, total trees per acre, total dead trees per acre, total cubic volume, and merchantable cubic volume, fuel model, and vegetation fuel class. Snags (> 4 in dbh and > 6 foot tall, Thomas and others 1979) are footnoted below the tables. Tables 2, 3 and 4 describes data definitions, how the data was measured, and how the data was summarized.

Surface (A)							
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs
Percentage cover **(A1)**	80	2	0	3	2	4	23
Depth (cm) **(A2)**	20						

Shrub biomass (tons/acre) **(A3)**	
Low shrubs	0.014
Medium shrubs	0.016

Trees (B)						
Height class of trees (ft.) **(B1)**	Trees/acre **(B2)**		Average height (ft.) **(B3)**		Canopy **(B4)**	
	PP	JU	PP	JU	Base height(ft)	Crown ratio (%)
≤ 6	264	0	4	-	1.3	72
> 6 ≤ 12	216	0	9	-	3.0	69
> 12 ≤ 23	240	0	18	-	5.8	64
> 23	264	0	34	-	9.5	75

Plot summaries (C)	
Total basal area (ft^2/acre)	131
Total canopy cover (%)	74
Total trees per acre	984
Total dead trees per acre[1]	48
Total volume (ft^3/acre)	1548
Merch. volume (ft^3/acre)	0
Fuel model	9
Vegetation fuel class	B

[1] 24 snags per acre

To ensure information obtained through the use of this handbook is accurate, consider the following suggestions.

1) Use the same physiographic positions within a region similar to the one described in this handbook.
2) Use the three overstory density classes (low, moderate, and high) by referring to table 1.
3) Use the same height classes used in this handbook when characterizing trees.
4) Take a sub-sample of data on a few plots (use the same plot design as used in the handbook) to ensure the site being characterized reflects forest conditions similar to those characterized in this handbook.
5) Estimate surface directly in the field, at least initially, as an aid towards validation of the surface characteristics in this handbook. This is suggested because several factors can influence surface cover, such as livestock grazing, annual precipitation, and other

weather variables, which may be unique for any given year. If the measurements taken in the field do not match the handbook, it may be more appropriate to actually estimate surface cover. This decision depends upon the objective and the use of the assessment.

6) Obtain as many observations as possible, since this will increase precision. This can be important when evaluating stand density, which often varies considerably. However, since time, affordability, travel distance, or a combination of these can be limiting factors, a minimum of three observations may suffice for any given physiographic and density combination.
7) There may be times when three stories are present in the stand being evaluated, yet a fourth story is described in the handbook. In this case, we suggest that the missing story be removed from the quantitative measurements documented in the handbook in order to improve the field estimate.

Advantages in Using the Handbook

For a variety of reasons, the time needed to quantify forest characteristics using strict quantitative methods is sometimes impractical. This handbook was developed and is intended to provide a quick estimate of forest characteristics based on landscape features, which could be used to characterize wildlife and range habitat, identify forest products, fuels, and other resources associated with forested lands. This handbook is not intended to quantify exact measurements in other locales or replace forest inventories.

Disadvantages

Rocky Mountain juniper (*Juniperus scopulorum*) was an incidental species and may be present or absent in some locations. Therefore, for some applications, the estimates for sites containing this species may not be as accurate as the estimates for sites that only contained ponderosa pine.

Acknowledgments

This publication is a result of a cooperative effort between the U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station and the U.S. Department of Interior, Bureau of Land Management in Montana and Oregon. We would like to thank Gail Fullerton, Dan Frigard, Don Shipton, Jerome Funchess, and Jim Hedgecock, who all worked very hard collecting the data, taking photographs, and preparing tables. Funding was provided through the Joint Fire Sciences Program, Rocky Mountain Research Station, and Bureau of Land Management, Montana.

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Ravine or gully, low density

Site 1 close

Site 1 distant

Site 2 close

Site 2 distant

Site 3 close

Site 3 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 1

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.014
								Medium shrubs	0.000
Percentage cover	5	20	0	40	40	9	0	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	0
Trees								Total canopy cover (%)	0
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	0
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6								Total volume (ft^3/acre)	0
> 6 ≤ 12			No trees					Merch. volume (ft^3/acre)	0
> 12 ≤ 23								Fuel model	1
> 23								Vegetation fuel classes	A

Site 2

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.010
								Medium shrubs	0.000
Percentage cover	60	25	2	10	1	3	0	Plot summaries	
Depth (cm)	2							Total basal area (ft^2/acre)	16
Trees								Total canopy cover (%)	18
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	216
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6	48	0	3	-	1.0	6		Total volume (ft^3/acre)	182
> 6 ≤ 12	72	0	11	-	2.0	70		Merch. volume (ft^3/acre)	55
> 12 ≤ 23	48	0	16	-	4.5	60		Fuel model	2
> 23	48	0	29	-	6.0	70		Vegetation fuel classes	C

Site 3

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.070
								Medium shrubs	0.115
Percentage cover	10	90	0	40	10	25	8	Plot summaries	
Depth (cm)	2							Total basal area (ft^2/acre)	7
Trees								Total canopy cover (%)	10
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	552
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	96
≤ 6	360	72	3	4	0.3	93		Total volume (ft^3/acre)	76
> 6 ≤ 12	48	0	9	-	0.0	90		Merch. volume (ft^3/acre)	0
> 12 ≤ 23	24	24	23	21	2.5	85		Fuel model	2
> 23	24	0	25	-	6.0	80		Vegetation fuel classes	C

Ravine or gully, moderate density

Site 1 close

Site 1 distant

Site 2 close

Site 2 distant

Site 3 close

Site 3 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 1

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.115
								Medium shrubs	0.000
Percentage cover	50	10	1	35	3	25	0	Plot summaries	
Depth (cm)	10							Total basal area (ft²/acre)	41
Trees								Total canopy cover (%)	27
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	669
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre[1]	48
≤ 6	504	0	2	-	1.1	64		Total volume (ft³/acre)	706
> 6 ≤ 12	72	0	9	-	2.7	73		Merch. volume (ft³/acre)	498
> 12 ≤ 23	24	0	14	-	4.0	75		Fuel model	2
> 23	69	0	40	-	9.3	75		Vegetation fuel classes	D

[1] 48 snags per acre

Site 2

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.088
								Medium shrubs	0.298
Percentage cover	20	79	1	10	5	10	12	Plot summaries	
Depth (cm)	5							Total basal area (ft²/acre)	20
Trees								Total canopy cover (%)	24
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	864
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre[1]	62
≤ 6	264	240	3	4	0.6	81		Total volume (ft³/acre)	208
> 6 ≤ 12	48	96	9	10	1.0	86		Merch. volume (ft³/acre)	0
> 12 ≤ 23	24	120	13	19	1.7	88		Fuel model	2
> 23	48	24	25	24	6.3	78		Vegetation fuel classes	D

[1] 38 snags per acre

Site 3

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.034
								Medium shrubs	0.140
Percentage cover	20	80	1	2	3	6	3	Plot summaries	
Depth (cm)	5							Total basal area (ft²/acre)	69
Trees								Total canopy cover (%)	46
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	956
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	24
≤ 6	504	48	3	4	1.0	65		Total volume (ft³/acre)	938
> 6 ≤ 12	120	48	10	9	1.5	84		Merch. volume (ft³/acre)	531
> 12 ≤ 23	120	0	19	-	4.2	78		Fuel model	2
> 23	116	0	34	-	12.0	66		Vegetation fuel classes	D

Ravine or gully, high density

Site 1 close

Site 1 distant

Site 2 close

Site 2 distant

Site 3 close

Site 3 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 1

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.134
								Medium shrubs	0.000
Percentage cover	95	5	1	4	1	25	0	Plot summaries	
Depth (cm)	15							Total basal area (ft²/acre)	78
Trees								Total canopy cover (%)	45
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	525
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre[1]	8
≤ 6	72	144	4	4	1.3	64		Total volume (ft³/acre)	1474
> 6 ≤ 12	0	48	-	11	2.0	75		Merch. volume (ft³/acre)	1030
> 12 ≤ 23	72	0	20	-	8.3	53		Fuel model	9
> 23	165	24	42	25	11.6	69		Vegetation fuel classes	D

[1] 8 snags per acre

Site 2

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.011
								Medium shrubs	0.000
Percentage cover	92	8	1	0	0	3	0	Plot summaries	
Depth (cm)	70							Total basal area (ft²/acre)	131
Trees								Total canopy cover (%))	68
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	1306
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	48
≤ 6	552	0	4	-	1.3	82		Total volume (ft³/acre)	1928
> 6 ≤ 12	240	0	9	-	3.2	64		Merch. volume (ft³/acre)	1196
> 12 ≤ 23	288	0	19	-	3.3	83		Fuel model	9
> 23	226	0	36	-	10.2	67		Vegetation fuel classes	E

Site 3

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.104
								Medium shrubs	0.210
Percentage cover	80	20	1	2	3	12	20	Plot summaries	
Depth (cm)	25							Total basal area (ft²/acre)	43
Trees								Total canopy cover (%)	48
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	1704
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	96
≤ 6	336	360	3	3	1.0	65		Total volume (ft³/acre)	475
> 6 ≤ 12	360	24	9	12	3.4	62		Merch. volume (ft³/acre)	89
> 12 ≤ 23	528	0	18	-	5.1	72		Fuel model	9
> 23	96	0	37	-	6.3	74		Vegetation fuel classes	B

South ≤ 25% slope, low density

Site 1 close

Site 1 distant

Site 2 close

Site 2 distant

Site 3 close

Site 3 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 1

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.003
								Medium shrubs	0.006
Percentage cover	5	30	25	25	2	1	3	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	0
Trees								Total canopy cover (%)	0
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	0
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6								Total volume (ft^3/acre)	0
> 6 ≤ 12			No trees					Merch. volume (ft^3/acre)	0
> 12 ≤ 23								Fuel model	1
> 23								Vegetation fuel classes	A

Site 2

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.004
								Medium shrubs	0.009
Percentage cover	2	30	0	55	2	2	25	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	38
Trees								Total canopy cover (%)	18
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	30
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6	0	0	-	-	-	-		Total volume (ft^3/acre)	553
> 6 ≤ 12	0	0	-	-	-	-		Merch. volume (ft^3/acre)	465
> 12 ≤ 23	0	0	-	-	-	-		Fuel model	1
> 23	30	0	39	-	3.5	88		Vegetation fuel classes	D

Site 3

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.001
								Medium shrubs	0.006
Percentage cover	2	45	1	65	2	1	20	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	2
Trees								Total canopy cover (%)	0
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	120
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6	24	0	2	-	0.0	100		Total volume (ft^3/acre)	11
> 6 ≤ 12	96	0	9	-	1.0	97		Merch. volume (ft^3/acre)	0
> 12 ≤ 23	0	0	-	-	-	-		Fuel model	2
> 23	0	0	-	-	-	-		Vegetation fuel classes	C

South ≤ 25% slope, moderate density

Site 1 close

Site 1 distant

Site 2 close

Site 2 distant

Site 3 close

Site 3 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 1

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.033
								Medium shrubs	0.009
Percentage cover	30	70	0	25	3	9	8	Plot summaries	
Depth (cm)	5							Total basal area (ft²/acre)	29
Trees								Total canopy cover (%)	22
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	72
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre[1]	24
≤ 6	0	0	-	-	-	-		Total volume (ft³/acre)	296
> 6 ≤ 12	0	0	-	-	-	-		Merch. volume (ft³/acre)	197
> 12 ≤ 23	24	0	14	-	3.0	85		Fuel model	2
> 23	48	0	24	-	1.5	93		Vegetation fuel classes	B

[1] 24 snags per acre

Site 2

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.009
								Medium shrubs	0.002
Percentage cover	80	5	0	25	1	2	1	Plot summaries	
Depth (cm)	2							Total basal area (ft²/acre)	66
Trees								Total canopy cover (%)	40
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	163
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	14
≤ 6	0	0	-	-	-	-		Total volume (ft³/acre)	817
> 6 ≤ 12	24	0	10	-	4.0	75		Merch. volume (ft³/acre)	564
> 12 ≤ 23	72	0	18	-	4.0	60		Fuel model	2
> 23	67	0	34	-	6.3	77		Vegetation fuel classes	C

Site 3

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.006
								Medium shrubs	0.005
Percentage cover	60	20	0	18	0	5	5	Plot summaries	
Depth (cm)	8							Total basal area (ft²/acre)	28
Trees								Total canopy cover (%)	25
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	192
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6	72	0	3	-	0.3	98		Total volume (ft³/acre)	252
> 6 ≤ 12	72	0	10	-	1.7	84		Merch. volume (ft³/acre)	139
> 12 ≤ 23	48	0	21	-	3.0	95		Fuel model	2
> 23	0	0	-	-	-	-		Vegetation fuel classes	D

South ≤ 25% slope, moderate density

Site 4 close

Site 4 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 4

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.016
								Medium shrubs	0.000
Percentage cover	60	10	2	15	1	5	0	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	38
								Total canopy cover (%)	22

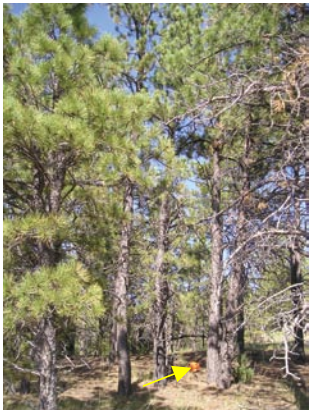
Trees							
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy		Total trees per acre	278
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)	Total dead trees per acre	0
≤ 6	168	0	3	-	0.0	100	Total volume (ft^3/acre)	500
> 6 ≤ 12	72	0	8	-	1.5	85	Merch. volume (ft^3/acre)	393
> 12 ≤ 23	0	0	-	-	-	-	Fuel model	2
> 23	38	0	34	-	6.5	75	Vegetation fuel classes	D

South ≤ 25% slope, high density

Site 1 close

Site 1 distant

Site 2 close



Site 2 distant

Site 3 close

Site 3 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 1

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.001
								Medium shrubs	0.000
Percentage cover	90	0	0	7	0	5	0	Plot summaries	
Depth (cm)	7							Total basal area (ft²/acre)	150
								Total canopy cover (%)	73
Trees								Total trees per acre	960
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total dead trees per acre[1]	48
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total volume (ft³/acre)	1999
≤ 6	72	0	5	-	1.5	40		Merch. volume (ft³/acre)	1025
> 6 ≤ 12	216	0	10	-	2.4	64		Fuel model	2
> 12 ≤ 23	240	0	18	-	6.5	57		Vegetation fuel classes	B
> 23	432	0	32	-	11.1	59			

[1] 48 snags per acre

Site 2

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.000
								Medium shrubs	0.000
Percentage cover	95	0	0	1	0	0	0	Plot summaries	
Depth (cm)	4							Total basal area (ft²/acre)	176
								Total canopy cover (%)	76
Trees								Total trees per acre	960
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total dead trees per acre	0
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total volume (ft³/acre)	2175
≤ 6	216	0	3	-	1.7	40		Merch. volume (ft³/acre)	1138
> 6 ≤ 12	144	0	10	-	1.5	81		Fuel model	9
> 12 ≤ 23	144	0	18	-	5.3	68		Vegetation fuel classes	B
> 23	456	0	30	-	12.9	50			

Site 3

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.003
								Medium shrubs	0.000
Percentage cover	90	0	0	75	3	2	0	Plot summaries	
Depth (cm)	3							Total basal area (ft²/acre)	58
								Total canopy cover (%)	48
Trees								Total trees per acre	2300
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total dead trees per acre	0
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total volume (ft³/acre)	753
≤ 6	1008	24	4	1	2.6	60		Merch. volume (ft³/acre)	495
> 6 ≤ 12	1224	0	9	-	3.0	63		Fuel model	2
> 12 ≤ 23	0	0	-	-	-	-		Vegetation fuel classes	D
> 23	44	0	42	-	11.0	73			

South > 25% slope, low density

Site 1 close

Site 1 distant

Site 2 close

Site 2 distant

Site 3 close

Site 3 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 1

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.000
								Medium shrubs	0.000
Percentage cover	45	30	5	40	3	0	0	Plot summaries	
Depth (cm)	2							Total basal area (ft^2/acre)	40
Trees								Total canopy cover (%))	22
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	34
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6	0	0	-	-	-	-		Total volume (ft^3/acre)	472
> 6 ≤ 12	0	0	-	-	-	-		Merch. volume (ft^3/acre)	354
> 12 ≤ 23	0	0	-	-	-	-		Fuel model	2
> 23	34	0	30	-	2.5	85		Vegetation fuel classes	C

Site 2

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.003
								Medium shrubs	0.003
Percentage cover	2	90	10	3	1	2	3	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	4
Trees								Total canopy cover (%)	5
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	48
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6	0	0	-	-	-	-		Total volume (ft^3/acre)	22
> 6 ≤ 12	48	0	10	-	3.0	65		Merch. volume (ft^3/acre)	0
> 12 ≤ 23	0	0	-	-	-	-		Fuel model	2
> 23	0	0	-	-	-	-		Vegetation fuel classes	C

Site 3

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.006
								Medium shrubs	0.002
Percentage cover	5	65	5	25	1	3	7	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	29
Trees								Total canopy cover (%)	22
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	72
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6	0	0	0	-	-	-		Total volume (ft^3/acre)	308
> 6 ≤ 12	0	0	0	-	-	-		Merch. volume (ft^3/acre)	166
> 12 ≤ 23	24	0	18	-	3.0	80		Fuel model	2
> 23	48	0	26	-	3.5	85		Vegetation fuel classes	C

South > 25% slope, moderate density

Site 1 close

Site 1 distant

Site 2 close

Site 2 distant

Site 3 close

Site 3 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 1

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.001
								Medium shrubs	0.001
Percentage cover	3	85	15	4	1	3	1	Plot summaries	
Depth (cm)	1							Total basal area (ft²/acre)	23
Trees								Total canopy cover (%)	18
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	72
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre[1]	24
≤ 6	0	0	-	-	-	-		Total volume (ft³/acre)	261
> 6 ≤ 12	0	0	-	-	-	-		Merch. volume (ft³/acre)	127
> 12 ≤ 23	48	0	17	-	6.5	60		Fuel model	2
> 23	24	0	33	-	6.0	80		Vegetation fuel classes	D

[1] 24 snags per acre

Site 2

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.006
								Medium shrubs	0.000
Percentage cover	45	15	0	35	2	5	0	Plot summaries	
Depth (cm)	2							Total basal area (ft²/acre)	60
Trees								Total canopy cover (%)	36
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	140
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6	0	0	-	-	-	-		Total volume (ft³/acre)	700
> 6 ≤ 12	24	0	9	-	4.0	50		Merch. volume (ft³/acre)	480
> 12 ≤ 23	72	0	18	-	6.7	53		Fuel model	2
> 23	44	0	32	-	4.0	88		Vegetation fuel classes	D

Site 3

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.002
								Medium shrubs	0.000
Percentage cover	2	75	20	15	0	2	0	Plot summaries	
Depth (cm)	1							Total basal area (ft²/acre)	60
Trees								Total canopy cover (%)	38
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	464
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	48
≤ 6	168	0	5	-	2.8	43		Total volume (ft³/acre)	863
> 6 ≤ 12	24	0	8	-	4.0	50		Merch. volume (ft³/acre)	524
> 12 ≤ 23	168	0	18	-	4.5	64		Fuel model	2
> 23	104	0	35	-	8.2	64		Vegetation fuel classes	D

South > 25% slope, high density

Site 1 close

Site 1 distant

Site 2 close

Site 2 distant

Site 3 close

Site 3 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 1

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.001
								Medium shrubs	0.001
Percentage cover	95	3	1	1	1	1	1	Plot summaries	
Depth (cm)	6							Total basal area (ft²/acre)	102
								Total canopy cover (%)	61
Trees								Total trees per acre	744
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total dead trees per acre[1]	24
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total volume (ft³/acre)	1246
≤ 6	120	0	4	-	3.7	50		Merch. volume (ft³/acre)	497
> 6 ≤ 12	72	0	10	-	3.7	45		Fuel model	9
> 12 ≤ 23	288	0	18	-	8.6	56		Vegetation fuel classes	B
> 23	264	0	30	-	12.8	57			

[1] 24 snags per acre

Site 2

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.006
								Medium shrubs	0.000
Percentage cover	80	0	10	1	0	8	0	Plot summaries	
Depth (cm)	3							Total basal area (ft²/acre)	145
								Total canopy cover (%)	71
Trees								Total trees per acre	1296
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total dead trees per acre	0
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total volume (ft³/acre)	2026
≤ 6	0	0	-	-	-	-		Merch. volume (ft³/acre)	1154
> 6 ≤ 12	528	0	7	-	1.0	30		Fuel model	9
> 12 ≤ 23	456	0	18	-	6.0	60		Vegetation fuel classes	B
> 23	312	0	36	-	13.1	54			

Site 3

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.008
								Medium shrubs	0.000
Percentage cover	90	0	0	1	1	5	0	Plot summaries	
Depth (cm)	5							Total basal area (ft²/acre)	88
								Total canopy cover (%)	70
Trees								Total trees per acre	1488
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total dead trees per acre	72
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total volume (ft³/acre)	747
≤ 6	384	0	5	-	2.0	57		Merch. volume (ft³/acre)	0
> 6 ≤ 12	456	0	10	-	3.0	62		Fuel model	9
> 12 ≤ 23	504	0	18	-	5.6	57		Vegetation fuel classes	B
> 23	144	0	25	-	8.8	60			

North ≤ 25% slope, low density

Site 1 close

Site 1 distant

Site 2 close

Site 2 distant

Site 3 close

Site 3 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 1

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.025
								Medium shrubs	0.004
Percentage cover	1	5	50	40	1	5	4	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	0
Trees								Total canopy cover (%)	0
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	0
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6								Total volume (ft^3/acre)	0
> 6 ≤ 12			No trees					Merch. volume (ft^3/acre)	0
> 12 ≤ 23								Fuel model	1
> 23								Vegetation fuel classes	A

Site 2

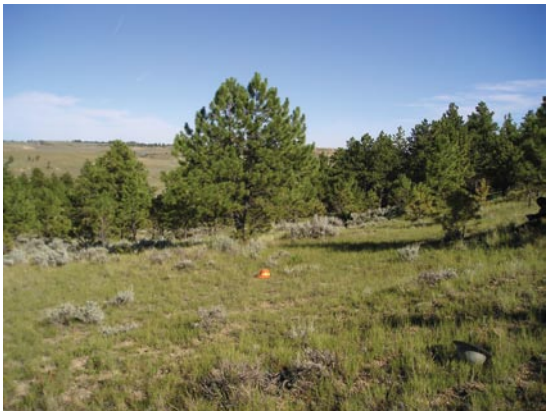
Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.002
								Medium shrubs	0.004
Percentage cover	1	20	0	70	1	2	10	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	0
Trees								Total canopy cover (%)	< 5
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	48
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	24
≤ 6	48	0	4	-	0.7	95		Total volume (ft^3/acre)	0
> 6 ≤ 12	0	0	-	-	-	-		Merch. volume (ft^3/acre)	0
> 12 ≤ 23	0	0	-	-	-	-		Fuel model	2
> 23	0	0	-	-	-	-		Vegetation fuel classes	C

Site 3

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.018
								Medium shrubs	0.001
Percentage cover	4	92	3	45	20	5	2	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	9
Trees								Total canopy cover (%)	9
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	168
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6	120	0	4	-	0.0	79		Total volume (ft^3/acre)	84
> 6 ≤ 12	24	0	7	-	0.0	100		Merch. volume (ft^3/acre)	43
> 12 ≤ 23	24	0	21	-	4.0	75		Fuel model	2
> 23	0	0	-	-	-	-		Vegetation fuel classes	C

North ≤ 25% slope, low density

Site 4 close



Site 4 distant

Site 5 close

Site 5 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 4

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.000
								Medium shrubs	0.002
Percentage cover	3	30	8	70	3	1	6	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	11
								Total canopy cover (%)	14

Trees							
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy		Total trees per acre	192
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)	Total dead trees per acre	0
≤ 6	96	0	4	-	0.0	100	Total volume (ft^3/acre)	72
> 6 ≤ 12	48	0	12	-	0.0	100	Merch. volume (ft^3/acre)	0
> 12 ≤ 23	48	0	15	-	1.0	100	Fuel model	2
> 23	0	0	-	-	-	-	Vegetation fuel classes	C

Site 5

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.024
								Medium shrubs	0.000
Percentage cover	60	10	3	20	2	5	0	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	27
								Total canopy cover (%)	24

Trees							
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy		Total trees per acre	288
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)	Total dead trees per acre[1]	72
≤ 6	96	0	3	-	2.0	90	Total volume (ft^3/acre)	408
> 6 ≤ 12	120	0	9	-	1.0	93	Merch. volume (ft^3/acre)	288
> 12 ≤ 23	24	0	16	-	4.0	75	Fuel model	2
> 23	48	0	41	-	4.0	83	Vegetation fuel classes	C

[1] 24 snags per acre

North ≤ 25% slope, moderate density

Site 1 close

Site 1 distant

Site 2 close

Site 2 distant

Site 3 close

Site 3 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 1

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.005
								Medium shrubs	0.000
Percentage cover	50	10	2	11	1	2	0	Plot summaries	
Depth (cm)	10							Total basal area (ft^2/acre)	27
Trees								Total canopy cover (%))	22
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	261
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	24
≤ 6	144	0	5	-	0.8	94		Total volume (ft^3/acre)	301
> 6 ≤ 12	96	0	9	-	1.0	90		Merch. volume (ft^3/acre)	210
> 12 ≤ 23	0	0	-	-	-	-		Fuel model	2
> 23	21	0	33	-	7.0	77		Vegetation fuel classes	D

Site 2

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.005
								Medium shrubs	0.004
Percentage cover	95	0	0	85	20	4	3	Plot summaries	
Depth (cm)	5							Total basal area (ft^2/acre)	101
Trees								Total canopy cover (%)	51
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	300
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6	0	0	-	-	-	-		Total volume (ft^3/acre)	1433
> 6 ≤ 12	24	0	10	-	2.0	70		Merch. volume (ft^3/acre)	976
> 12 ≤ 23	48	0	15	-	5.0	65		Fuel model	2
> 23	228	0	32	-	10.9	62		Vegetation fuel classes	C

Site 3

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.005
								Medium shrubs	0.007
Percentage cover	30	10	0	10	1	3	10	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	10
Trees								Total canopy cover (%)	21
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	432
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	48
≤ 6	168	0	6	-	1.0	100		Total volume (ft^3/acre)	61
> 6 ≤ 12	264	0	9	-	1.0	95		Merch. volume (ft^3/acre)	0
> 12 ≤ 23	0	0	-	-	-	-		Fuel model	2
> 23	0	0	-	-	-	-		Vegetation fuel classes	C

North ≤ 25% slope, high density

Site 1 close

Site 1 distant

Site 2 close

Site 2 distant

Site 3 close

Site 3 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 1

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.018
								Medium shrubs	0.001
Percentage cover	90	0	0	6	1	25	2	Plot summaries	
Depth (cm)	22							Total basal area (ft^2/acre)	112
Trees								Total canopy cover (%)	64
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	744
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	120
≤ 6	96	0	2	-	0.7	65		Total volume (ft^3/acre)	1604
> 6 ≤ 12	144	0	11	-	5.8	48		Merch. volume (ft^3/acre)	622
> 12 ≤ 23	120	24	18	23	5.5	69		Fuel model	2
> 23	336	24	35	29	9.4	67		Vegetation fuel classes	B

Site 2

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.014
								Medium shrubs	0.016
Percentage cover	80	2	0	3	2	4	23	Plot summaries	
Depth (cm)	20							Total basal area (ft^2/acre)	131
Trees								Total canopy cover (%)	74
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	984
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	48
≤ 6	264	0	4	-	1.3	72		Total volume (ft^3/acre)	1548
> 6 ≤ 12	216	0	9	-	3.0	69		Merch. volume (ft^3/acre)	902
> 12 ≤ 23	240	0	18	-	5.8	64		Fuel model	9
> 23	264	0	34	-	9.5	75		Vegetation fuel classes	B

Site 3

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.001
								Medium shrubs	0.000
Percentage cover	50	50	0	70	5	1	0	Plot summaries	
Depth (cm)	5							Total basal area (ft^2/acre)	29
Trees								Total canopy cover (%)	43
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	1248
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	120
≤ 6	216	48	5	6	0.7	89		Total volume (ft^3/acre)	190
> 6 ≤ 12	864	0	9	-	2.9	68		Merch. volume (ft^3/acre)	0
> 12 ≤ 23	120	0	14	-	4.7	67		Fuel model	2
> 23	0	0	-	-	-	-		Vegetation fuel classes	C

North > 25% slope, low density

Site 1 close

Site 1 distant

Site 2 close

Site 2 distant

Site 3 close

Site 3 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 1

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.012
								Medium shrubs	0.010
Percentage cover	10	80	5	12	6	4	11	Plot summaries	
Depth (cm)	3							Total basal area (ft^2/acre)	19
Trees								Total canopy cover (%)	19
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	768
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6	432	216	3	1	0.8	85		Total volume (ft^3/acre)	218
> 6 ≤ 12	24	0	8	-	1.0	85		Merch. volume (ft^3/acre)	108
> 12 ≤ 23	72	0	17	-	1.3	97		Fuel model	2
> 23	24	0	30	-	1.0	95		Vegetation fuel classes	C

Site 2

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.003
								Medium shrubs	0.005
Percentage cover	9	90	2	2	1	2	7	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	9
Trees								Total canopy cover (%)	12
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	840
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	24
≤ 6	696	0	3	-	0.8	82		Total volume (ft^3/acre)	94
> 6 ≤ 12	120	0	8	-	3.5	53		Merch. volume (ft^3/acre)	48
> 12 ≤ 23	0	0	-	-	-	-		Fuel model	2
> 23	24	0	26	-	3.0	85		Vegetation fuel classes	C

Site 3

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.005
								Medium shrubs	0.002
Percentage cover	3	95	1	60	1	3	4	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	3
Trees								Total canopy cover (%)	7
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	1104
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6	864	168	3	2	0.1	96		Total volume (ft^3/acre)	23
> 6 ≤ 12	48	0	10	-	1.0	93		Merch. volume (ft^3/acre)	0
> 12 ≤ 23	24	0	17	-	0.0	100		Fuel model	2
> 23	0	0	-	-	-	-		Vegetation fuel classes	C

North > 25% slope, moderate density

Site 1 close

Site 1 distant

Site 2 close

Site 2 distant

Site 3 close

Site 3 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 1

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.009
								Medium shrubs	0.001
Percentage cover	80	3	2	5	1	20	1	Plot summaries	
Depth (cm)	4							Total basal area (ft^2/acre)	95
Trees								Total canopy cover (%)	53
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	548
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre[1]	24
≤ 6	24	0	5	-	3.0	40		Total volume (ft^3/acre)	1565
> 6 ≤ 12	72	0	11	-	6.5	40		Merch. volume (ft^3/acre)	772
> 12 ≤ 23	120	0	22	-	6.0	60		Fuel model	9
> 23	332	0	36	-	15.2	54		Vegetation fuel classes	B

[1] 24 snags per acre

Site 2

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.002
								Medium shrubs	0.002
Percentage cover	7	90	1	18	2	1	2	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	28
Trees								Total canopy cover (%)	33
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	864
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6	408	48	4	2	0.8	73		Total volume (ft^3/acre)	250
> 6 ≤ 12	192	0	8	-	2.7	74		Merch. volume (ft^3/acre)	67
> 12 ≤ 23	192	0	16	-	3.4	76		Fuel model	2
> 23	24	0	29	-	6.0	75		Vegetation fuel classes	C

Site 3

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.054
								Medium shrubs	0.315
Percentage cover	85	10	1	4	1	4	27	Plot summaries	
Depth (cm)	10							Total basal area (ft^2/acre)	74
Trees								Total canopy cover (%)	56
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	1200
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre[1]	48
≤ 6	168	432	4	2	0.9	86		Total volume (ft^3/acre)	879
> 6 ≤ 12	96	0	11	-	3.7	75		Merch. volume (ft^3/acre)	197
> 12 ≤ 23	264	0	21	-	7.2	67		Fuel model	9
> 23	240	0	28	-	9.7	70		Vegetation fuel classes	B

[1] 24 snags per acre

North > 25% slope, high density

Site 1 close

Site 1 distant

Site 2 close

Site 2 distant

Site 3 close

Site 3 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 1

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.028
								Medium shrubs	0.000
Percentage cover	95	2	4	1	2	12	0	Plot summaries	
Depth (cm)	3							Total basal area (ft^2/acre)	130
Trees								Total canopy cover (%)	67
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	888
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre[1]	48
≤ 6	0	0	-	-	-	-		Total volume (ft^3/acre)	1913
> 6 ≤ 12	96	0	8	-	4.0	30		Merch. volume (ft^3/acre)	823
> 12 ≤ 23	432	24	18	20	6.1	55		Fuel model	9
> 23	336	0	34	-	11.6	56		Vegetation fuel classes	B

[1] 48 snags per acre

Site 2

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.001
								Medium shrubs	1.121
Percentage cover	95	0	0	0	0	1	18	Plot summaries	
Depth (cm)	70							Total basal area (ft^2/acre)	165
Trees								Total canopy cover (%))	80
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	1632
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre[1]	96
≤ 6	288	0	5	-	2.1	54		Total volume (ft^3/acre)	2245
> 6 ≤ 12	480	0	10	-	3.9	59		Merch. volume (ft^3/acre)	1116
> 12 ≤ 23	576	0	17	-	6.2	65		Fuel model	9
> 23	288	0	34	-	13.2	57		Vegetation fuel classes	E

[1] 24 snags per acre

Site 3

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.001
								Medium shrubs	0.000
Percentage cover	97	3	1	1	0	1	0	Plot summaries	
Depth (cm)	15							Total basal area (ft^2/acre)	93
Trees								Total canopy cover (%)	69
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	1920
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	480
≤ 6	288	0	4	-	2.2	61		Total volume (ft^3/acre)	1066
> 6 ≤ 12	528	0	10	-	3.9	61		Merch. volume (ft^3/acre)	190
> 12 ≤ 23	912	0	19	-	7.7	59		Fuel model	9
> 23	192	0	29	-	11.8	56		Vegetation fuel classes	B

Ridge or bench, low density

Site 1 close

Site 1 distant

Site 2 close

Site 2 distant

Site 3 close

Site 3 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 1

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.049
								Medium shrubs	0.009
Percentage cover	3	27	1	70	4	15	4	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	0
Trees								Total canopy cover (%)	0
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	0
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6								Total volume (ft^3/acre)	0
> 6 ≤ 12			No trees					Merch. volume (ft^3/acre)	0
> 12 ≤ 23								Fuel model	1
> 23								Vegetation fuel classes	A

Site 2

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.022
								Medium shrubs	0.002
Percentage cover	3	30	0	30	8	5	30	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	0
Trees								Total canopy cover (%)	< 5
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	24
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6	24	0	2	-	0	95		Total volume (ft^3/acre)	0
> 6 ≤ 12	0	0	-	-	-	-		Merch. volume (ft^3/acre)	0
> 12 ≤ 23	0	0	-	-	-	-		Fuel model	1
> 23	0	0	-	-	-	-		Vegetation fuel classes	C

Site 3

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.028
								Medium shrubs	0.002
Percentage cover	53	45	2	45	4	9	2	Plot summaries	
Depth (cm)	5							Total basal area (ft^2/acre)	20
Trees								Total canopy cover (%)	11
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	38
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6	24	0	1	-	0	100		Total volume (ft^3/acre)	287
> 6 ≤ 12	0	0	-	-	-	-		Merch. volume (ft^3/acre)	219
> 12 ≤ 23	0	0	-	-	-	-		Fuel model	2
> 23	14	0	38	-	5	85		Vegetation fuel classes	C

Ridge or bench, moderate density

Site 1 close

Site 1 distant

Site 2 close

Site 2 distant

Site 3 close

Site 3 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 1

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.035
								Medium shrubs	0.006
Percentage cover	50	1	0	5	4	5	20	Plot summaries	
Depth (cm)	3							Total basal area (ft^2/acre)	8
Trees								Total canopy cover (%)	14
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	192
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6	0	0	-	-	-	-		Total volume (ft^3/acre)	55
> 6 ≤ 12	144	0	12	-	2.0	98		Merch. volume (ft^3/acre)	0
> 12 ≤ 23	48	0	13	-	1.0	100		Fuel model	2
> 23	0	0	-	-	-	-		Vegetation fuel classes	C

Site 2

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.008
								Medium shrubs	0.001
Percentage cover	80	3	0	40	1	2	25	Plot summaries	
Depth (cm)	2							Total basal area (ft^2/acre)	8
Trees								Total canopy cover (%)	16
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	336
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	0
≤ 6	48	0	3	-	0.7	80		Total volume (ft^3/acre)	56
> 6 ≤ 12	264	0	9	-	0.6	97		Merch. volume (ft^3/acre)	0
> 12 ≤ 23	24	0	20	-	2.0	90		Fuel model	2
> 23	0	0	-	-	-	-		Vegetation fuel classes	C

Site 3

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.004
								Medium shrubs	0.000
Percentage cover	1	15	1	75	2	3	0	Plot summaries	
Depth (cm)	1							Total basal area (ft^2/acre)	3
Trees								Total canopy cover (%)	7
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy			Total trees per acre	816
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)		Total dead trees per acre	24
≤ 6	744	0	5	-	1.0	83		Total volume (ft^3/acre)	10
> 6 ≤ 12	72	0	8	-	1.3	90		Merch. volume (ft^3/acre)	0
> 12 ≤ 23	0	0	-	-	-	-		Fuel model	2
> 23	0	0	-	-	-	-		Vegetation fuel classes	C

Ridge or bench, high density

Site 1 close

Site 1 distant

Site 2 close

Site 2 distant

Site 3 close

Site 3 distant

Refer to figure 3 and table 5 on pages 8 and 9 for explanation on interpreting photographs and tables.

Site 1

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.005
								Medium shrubs	0.007
Percentage cover	90	10	1	7	1	5	1	Plot summaries	
Depth (cm)	15							Total basal area (ft^2/acre)	87
								Total canopy cover (%)	54

Trees							
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy		Total trees per acre	336
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)	Total dead trees per acre	24
≤ 6	24	0	4	-	0.0	99	Total volume (ft^3/acre)	1028
> 6 ≤ 12	24	48	11	12	1.5	85	Merch. volume (ft^3/acre)	576
> 12 ≤ 23	72	0	18	-	4.7	67	Fuel model	2
> 23	168	0	29	-	5.4	79	Vegetation fuel classes	C

Site 2

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.008
								Medium shrubs	0.000
Percentage cover	75	25	0	15	1	5	0	Plot summaries	
Depth (cm)	10							Total basal area (ft^2/acre)	75
								Total canopy cover (%)	56

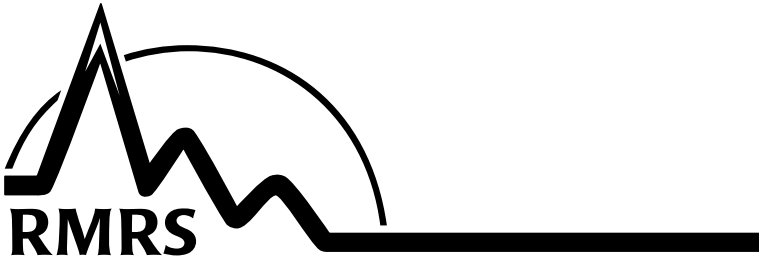
Trees							
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy		Total trees per acre	712
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)	Total dead trees per acre	0
≤ 6	264	0	4	-	2.0	71	Total volume (ft^3/acre)	717
> 6 ≤ 12	168	0	10	-	2.9	77	Merch. volume (ft^3/acre)	308
> 12 ≤ 23	168	24	18	19	3.5	79	Fuel model	2
> 23	88	0	26	-	5.7	78	Vegetation fuel classes	B

Site 3

Surface								Shrub biomass (tons/acre)	
Substrate	Litter	Mineral soil	Rocks	Grass	Forbs	Low shrubs	Medium shrubs	Low shrubs	0.000
								Medium shrubs	0.000
Percentage cover	95	0	0	20	0	0	0	Plot summaries	
Depth (cm)	3							Total basal area (ft^2/acre)	104
								Total canopy cover (%)	60

Trees							
Height class of trees (ft.)	Trees/acre		Average height (ft.)		Canopy		Total trees per acre	840
	PP	JU	PP	JU	Base height (ft)	Crown ratio (%)	Total dead trees per acre	0
≤ 6	144	0	4	-	1.3	67	Total volume (ft^3/acre)	1191
> 6 ≤ 12	168	0	10	-	2.6	66	Merch. volume (ft^3/acre)	329
> 12 ≤ 23	264	0	18	-	9.6	52	Fuel model	2
> 23	264	0	26	-	12.8	48	Vegetation fuel classes	B

Notes



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