

Colorado Front Range Fuel Photo Series

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General Technical Report RMRS-GTR-155WWW

United States Department of Agriculture

Forest Service

Rocky Mountain Research Station

June 2005

Battaglia, Michael A.; Dodson, Jonathan M.; Shepperd, Wayne D.; Platten, Mark J.; Tallmadge, Owen M. 2005. Colorado Front Range fuel photo series. Gen. Tech. Rep. RMRS-GTR-155WWW. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Abstract—This photo series was developed to help fire managers estimate ground and surface fuel loads that exist in cover types of the Southern Colorado Front Range wildland-urban interface. Photos and associated data representing low, medium, and high fuel loadings from this study are presented by forest type, along with examples of typical or median fuel loadings that were encountered.



Colorado Front Range Fuel Photo Series



Background

Assessment of the quantity and type of fuels present in a forest is important for prescribed burning activities, developing fuel management prescriptions, and assessing wildfire risk. This photo series was developed to help fire managers estimate ground and surface fuel loads that exist in cover types of the Southern Colorado Front Range wildland-urban interface.

Data and photos presented in this series were collected in 2001 at the Manitou Experimental Forest near Woodland Park, CO, which is representative of the montane ponderosa pine zone in the Colorado Front Range. Elevations of sample sites range from 7,500 to 9,300 ft. Plots were laid out along a grid of pre-selected GPS coordinates in three different physiographic areas of the Experimental Forest: the Trout Creek area where a total of 313 permanent plots were established over 2,400 ac; the Hotel Gulch area with a total of 117 permanent plots established over 1,200 ac; and the Rampart Range area with a total of 49 permanent plots were established over 343 ac. All sites sampled in this study had been subjected to harvests that occurred in the late 1800s at the time of European settlement.

A planar intersect sampling technique (Brown and others 1982)¹ was used to sample fuel loadings on each plot. This technique inventories surface fuels based on diameter and time response to moisture changes, and summarizes results in dry tons per acre by fuel time response class. All downed and dead woody material were measured on each plot along a 35 ft randomly oriented transect. One-hour and 10-hr fuels were measured within the first 6 ft of the transect, the 100-hr fuels in the first 10 ft, and all 1,000-hr fuels for the entire 35 ft of the transect. Three fuel and litter depths were taken within the first 3.28 ft along the transect from plot center. Duff depths were measured at 1 ft and 5 ft from plot center.

Photo Series

The intent of this photo guide is to provide users with a reference to Colorado Front Range fuel conditions that is useful in estimating ground fuel loadings for management planning. Photos and associated data representing low, medium, and high fuel loadings from this study are presented by forest type, along with examples of typical or median fuel loadings that were encountered.

¹Brown, J.K., Oberhau, R.D., Johnston, C.M. 1982. Handbook for inventorying surface fuels and biomass in the Interior West. Gen. Tech. Rep. INT-129. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 48p.



Colorado Front Range Photo Series



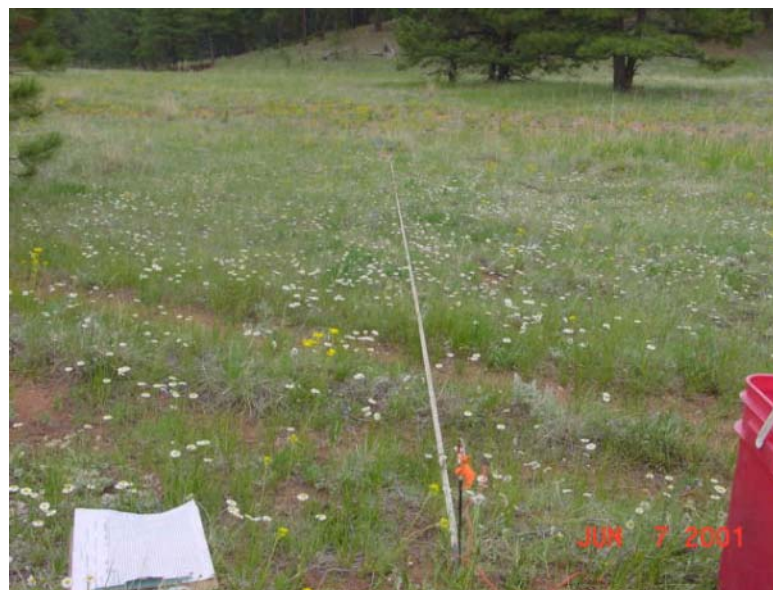
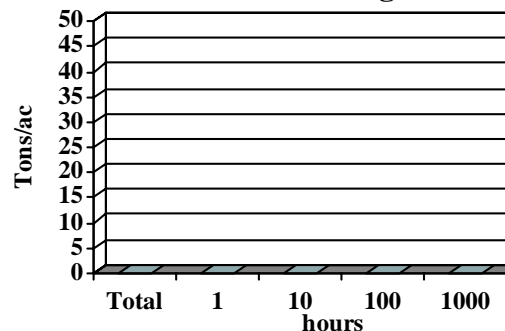
Forest Type: Meadow
Number of Plots: 12

Fuels Class: Low
Number of Plots: 7

Site Data	Slope	Elevation	
	6 %	7500 ft	
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0	--	--
0.25"-0.99"	0	--	--
1"-2.99"	0	--	--
3" +	0	0	0
Plot Total	0		
Fuel Depth			
Litter	0	Inches	
Duff	0	Inches	

Tree Data		
	Saplings	Mature trees
Most Common Species	--	--
Second Most Common	--	--
Trees per acre	N/A	0
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	--	--
Engelmann Spruce	--	--
Limber Pine	--	--
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	--	--

Fuel Time-lag





Colorado Front Range Photo Series

Forest Type: Meadow
Number of Plots: 12

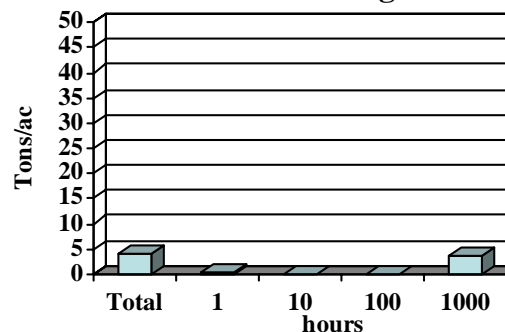
Site Data	Slope	Elevation	
	5 %	7500 ft	
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0	--	--
0.25"-0.99"	0.3	--	--
1"-2.99"	0	--	--
3" +	3.65	1.45	2.2
Plot Total	3.95		
Fuel Depth			
Litter	1	Inches	
Duff	0	Inches	

Tree Data		
	Saplings	Mature trees
Most Common Species	--	--
Second Most Common	--	--
Trees per acre	N/A	0
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	--	--
Engelmann Spruce	--	--
Limber Pine	--	--
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	--	--

Fuels Class: Medium
Number of Plots: 2



Fuel Time-lag





Colorado Front Range Photo Series

Forest Type: Meadow
Number of Plots: 12

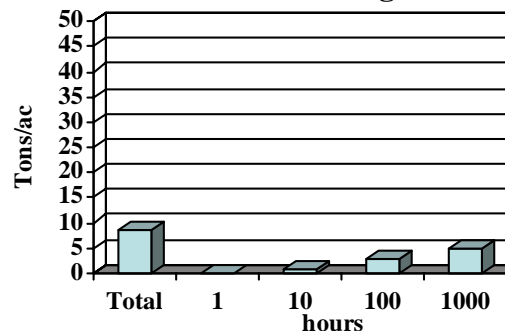
Fuels Class: High
Number of Plots: 1



Site Data	Slope		Elevation
	3%		7500 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0	--	--
0.25"-0.99"	0.9	--	--
1"-2.99"	2.9	--	--
3" +	4.9	3.2	1.7
Plot Total	8.7		
Fuel Depth			
Litter	2	Inches	
Duff	0.1	Inches	

Tree Data		
	Saplings	Mature trees
Most Common Species	--	--
Second Most Common	--	--
Trees per acre	N/A	0
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	--	--
Engelmann Spruce	--	--
Limber Pine	--	--
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	--	--

Fuel Time-lag





Colorado Front Range Photo Series

Forest Type: Meadow
Number of Plots: 12

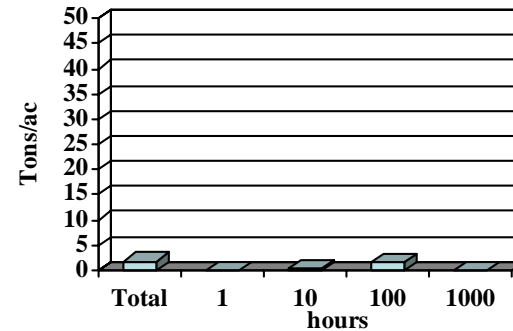
Fuels Class: Mean
Number of Plots: 2



Site Data	Slope		Elevation
	23%		9118 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0.1	--	--
0.25"-0.99"	0.3	--	--
1"-2.99"	1.5	--	--
3" +	0	0	0
Plot Total	1.8		
Fuel Depth			
Litter	0.7	Inches	
Duff	0.1	Inches	

Tree Data		
	Saplings	Mature trees
Most Common Species	--	--
Second Most Common Species	--	--
Trees per acre	0	0
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	--	--
Engelmann Spruce	--	--
Limber Pine	--	--
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	--	--

Fuel Time-lag





Colorado Front Range Fuel Classification

Meadow Fuel Classes



Low:
0
tons/ac



Medium:
3.95
tons/ac



High:
8.7
tons/ac



Mean:
1.8
tons/ac



Colorado Front Range Photo Series

Forest Type: Spruce
Number of Plots: 14

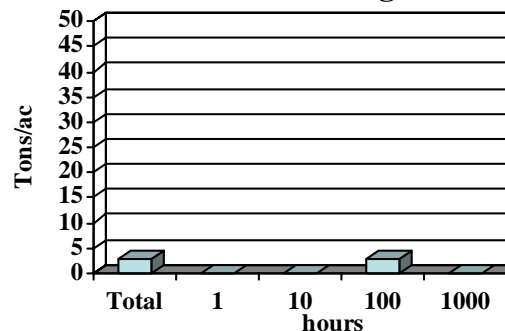
Fuels Class: Low
Number of Plots: 6



Site Data	Slope		Elevation
	45 %		8329 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0.1	--	--
0.25"-0.99"	0	--	--
1"-2.99"	2.9	--	--
3" +	0	0	0
Plot Total	3		
Fuel Depth			
Litter	0	Inches	
Duff	0.1	Inches	

Tree Data		
	Saplings	Mature trees
Most Common Species	--	Blue Spruce
Second Most Common	--	Douglas Fir
Trees per acre	0	262
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	240	80 ft ²
Douglas Fir	22	20 ft ²
Engelmann Spruce	--	--
Limber Pine	--	--
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	262	100 ft ²

Fuel Time-lag





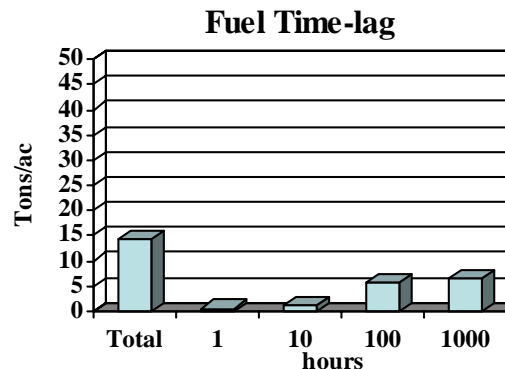
Colorado Front Range Photo Series

Forest Type: Spruce
Number of Plots: 14

Fuels Class: Medium
Number of Plots: 5



Site Data	Slope		Elevation
	26 %		9144 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0.6	--	--
0.25"-0.99"	1.2	--	--
1"-2.99"	5.8	--	--
3" +	6.7	5.3	1.4
Plot Total	14.3		
Fuel Depth			
Litter	1.3	Inches	
Duff	0.1	Inches	



Tree Data		
	Saplings	Mature trees
Most Common Species	Engelmann	Engelmann
Second Most Common	Aspen	--
Trees per acre	1800	105
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	--	--
Engelmann Spruce	105	40 ft ²
Limber Pine	--	--
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	105	40 ft ²





Colorado Front Range Photo Series

Forest Type: Spruce
Number of Plots: 14

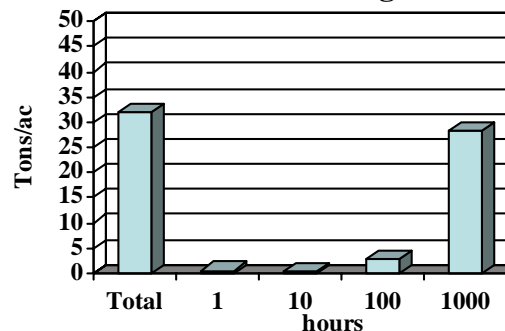
Site Data	Slope		Elevation
	40%		9183 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0.6	--	--
0.25"-0.99"	0.3	--	--
1"-2.99"	2.9	--	--
3" +	28.3	0	28.3
Plot Total	32.1		
Fuel Depth			
Litter	6.3	Inches	
Duff	1	Inches	

Tree Data		
	Saplings	Mature trees
Most Common Species	Aspen	Engleman
Second Most Common	Pice/Pifl	--
Trees per acre	1800	1156
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	--	--
Engelmann Spruce	1156	120 ft ²
Limber Pine	--	--
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	1156	120 ft ²



Fuels Class: High
Number of Plots: 2

Fuel Time-lag





Colorado Front Range Photo Series

Forest Type: Spruce
Number of Plots: 14

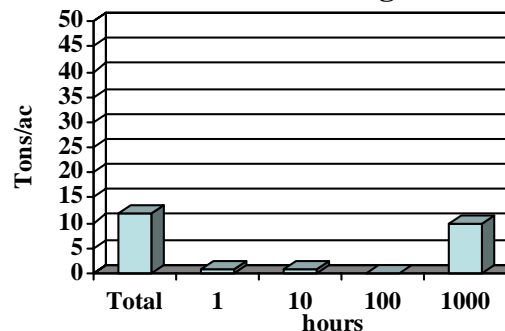
Fuels Class: Mean
Number of Plots: 1



Site Data	Slope		Elevation
	8%		9260 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0.9	--	--
0.25"-0.99"	0.9	--	--
1"-2.99"	0	--	--
3" +	9.9	0	9.9
Plot Total	11.7		
Fuel Depth			
Litter	1.7	Inches	
Duff	2.1	Inches	

Tree Data		
	Saplings	Mature trees
Most Common Species	Engelmann	Engelmann
Second Most Common	--	Aspen
Trees per acre	2700	2224
Species Composition		
	Trees/ac	Basal area
Aspen	30	20 ft ²
Blue Spruce	--	--
Douglas Fir	--	--
Engelmann Spruce	2194	120 ft ²
Limber Pine	--	--
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	2224	140 ft ²

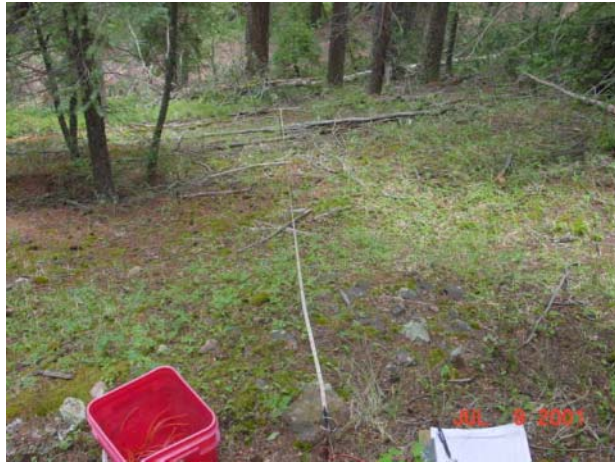
Fuel Time-lag





Colorado Front Range Fuel Classification

Spruce Fuel Classes



Low:
3
tons/ac



Medium:
14.3
tons/ac



High:
32.1
tons/ac



Mean:
11.7
tons/ac



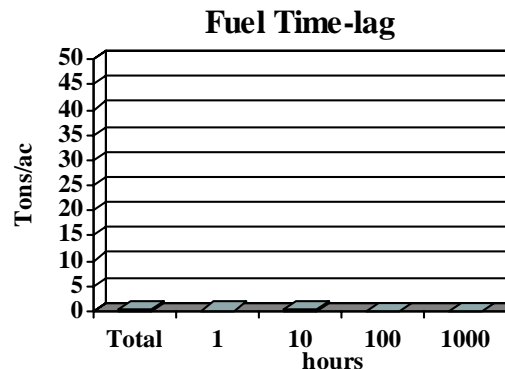
Colorado Front Range Photo Series

Forest Type: Lodgepole Pine
 Number of Plots: 27

Fuels Class: Low
 Number of Plots: 13



Site Data	Slope		Elevation
	12 %		9342 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0.2	--	--
0.25"-0.99"	0.3	--	--
1"-2.99"	0	--	--
3" +	0	0	0
Plot Total	0.5		
Fuel Depth			
Litter	1	Inches	
Duff	0.1	Inches	



Tree Data	Saplings	Mature trees
Most Common Species	--	Lodgepole
Second Most Common	--	--
Trees per acre	0	401
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	--	--
Engelmann Spruce	--	--
Limber Pine	--	--
Lodgepole Pine	401	140 ft ²
Ponderosa Pine	--	--
Total (per acre)	401	140 ft ²





Colorado Front Range Photo Series

Forest Type: Lodgepole Pine
Number of Plots: 27

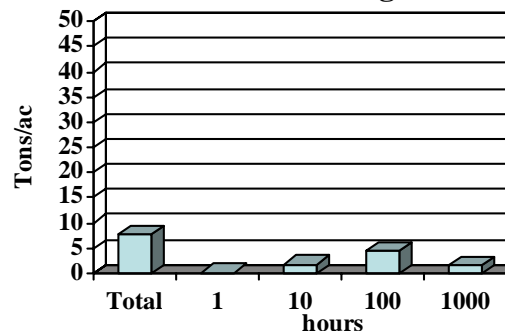
Fuels Class: Medium
Number of Plots: 6



Site Data	Slope		Elevation
	9%		9322 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0.2	--	--
0.25"-0.99"	1.8	--	--
1"-2.99"	4.4	--	--
3" +	1.5	1.5	0
Plot Total	7.9		
Fuel Depth			
Litter	1	Inches	
Duff	0.1	Inches	

Tree Data		
	Saplings	Mature trees
Most Common Species	--	Lodgepole
Second Most Common	--	--
Trees per acre	0	211
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	--	--
Engelmann Spruce	--	--
Limber Pine	--	--
Lodgepole Pine	211	100 ft ²
Ponderosa Pine	--	--
Total (per acre)	211	100 ft ²

Fuel Time-lag





Colorado Front Range Photo Series

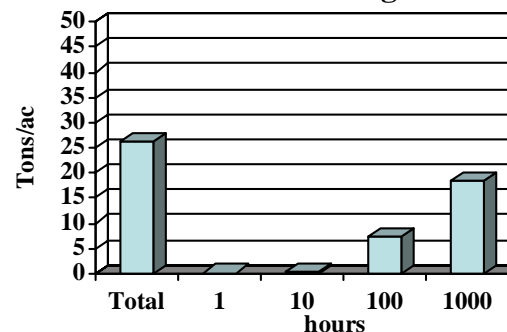
Forest Type: Lodgepole Pine
Number of Plots: 27

Fuels Class: High
Number of Plots: 7



Site Data	Slope		Elevation
	10 %		9383 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0.2	--	--
0.25"-0.99"	0.3	--	--
1"-2.99"	7.3	--	--
3" +	18.3	9.8	8.5
Plot Total	26.1		
Fuel Depth			
Litter	1	Inches	
Duff	0.7	Inches	

Fuel Time-lag



Tree Data		
	Saplings	Mature trees
Most Common Species	--	Lodgepole
Second Most Common	--	Psme/Pice
Trees per acre	0	271
Species composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	16	20 ft ²
Engelmann Spruce	13	20 ft ²
Limber Pine	--	--
Lodgepole Pine	242	100 ft ²
Ponderosa Pine	--	--
Total (per acre)	271	140 ft ²





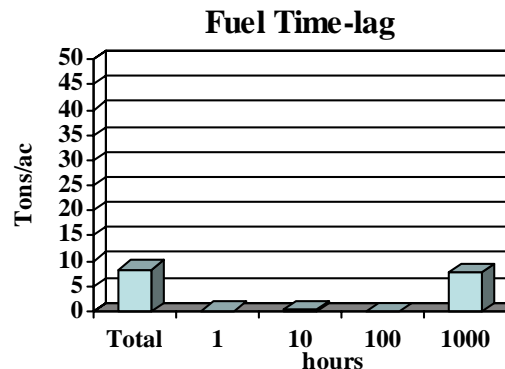
Colorado Front Range Photo Series

Forest Type: Lodgepole Pine
Number of Plots: 27

Fuels Class: Mean
Number of Plots: 1



Site Data	Slope		Elevation
	7%		9352 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0.2	--	--
0.25"-0.99"	0.3	--	--
1"-2.99"	0	--	--
3" +	7.9	6.2	1.7
Plot Total	8.4		
Fuel Depth			
Litter	1	Inches	
Duff	0	Inches	



Tree Data		
	Saplings	Mature trees
Most Common Species	Lodgepole	Lodgepole
Second Most Common	--	--
Trees per acre	600	145
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	--	--
Engelmann Spruce	--	--
Limber Pine	--	--
Lodgepole Pine	145	120 ft ²
Ponderosa Pine	--	--
Total (per acre)	145	120 ft ²





Colorado Front Range Fuel Classification

Lodgepole Pine Fuel Classes



Low:
0.5
tons/ac



Medium:
7.9
tons/ac



High:
26.1
tons/ac



Mean:
8.4
tons/ac



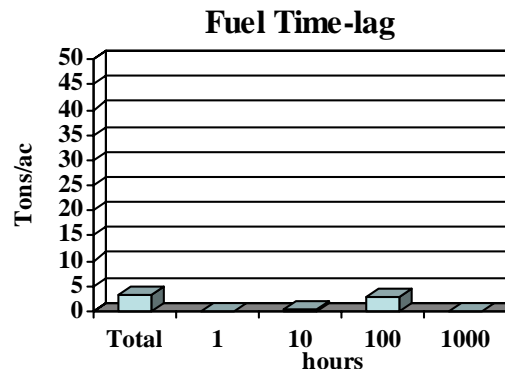
Colorado Front Range Photo Series

Forest Type: Limber Pine
Number of Plots: 18

Fuels Class: Low
Number of Plots: 10



Site Data	Slope		Elevation
	3%		9345 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0	--	--
0.25"-0.99"	0.3	--	--
1"-2.99"	2.9	--	--
3" +	0	0	0
Plot Total	3.2		
Fuel Depth			
Litter	0	Inches	
Duff	0	Inches	



Tree Data		
	Saplings	Mature trees
Most Common Species	--	Limber Pine
Second Most Common	--	Lodgepole
Trees per acre	0	56
Species composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	--	--
Engelmann Spruce	--	--
Limber Pine	43	40 ft ²
Lodgepole Pine	13	20 ft ²
Ponderosa Pine	--	--
Total (per acre)	56	60 ft ²





Colorado Front Range Photo Series

Forest Type: Limber Pine

Number of Plots: 18

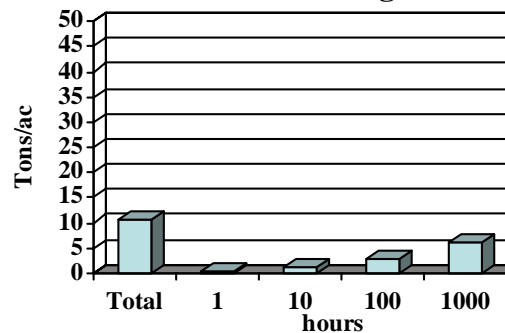
Fuels Class: Medium

Number of Plots: 5



Site Data	Slope		Elevation
	4%		9403 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0.4	--	--
0.25"-0.99"	1.2	--	--
1"-2.99"	2.9	--	--
3" +	6.1	0	6.1
Plot Total	10.6		
Fuel Depth			
Litter	1	Inches	
Duff	0.4	Inches	

Fuel Time-lag



Tree Data		
	Saplings	Mature trees
Most Common Species	Aspen	Limber Pine
Second Most Common	Limber	Lodgepole
Trees per acre	2100	165
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	13	20 ft ²
Engelmann Spruce	--	--
Limber Pine	118	60 ft ²
Lodgepole Pine	34	40 ft ²
Ponderosa Pine	--	--
Total (per acre)	165	120 ft ²





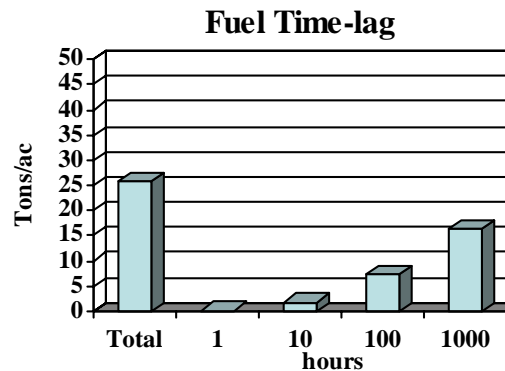
Colorado Front Range Photo Series

Forest Type: Limber Pine
Number of Plots: 18

Fuels Class: High
Number of Plots: 2



Site Data	Slope		Elevation
	2%		9275 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0.2	--	--
0.25"-0.99"	1.8	--	--
1"-2.99"	7.3	--	--
3" +	16.5	2.4	14.1
Plot Total	25.8		
Fuel Depth			
Litter	0	Inches	
Duff	0.5	Inches	



Tree Data		
	Saplings	Mature trees
Most Common Species	BL Spruce	Limber Pine
Second Most Common	Limber	Blue Spruce
Trees per acre	1500	426
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	16	20 ft ²
Douglas Fir	--	--
Engelmann Spruce	--	--
Limber Pine	409	140 ft ²
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	426	160 ft ²





Colorado Front Range Photo Series

Forest Type: Limber Pine
Number of Plots: 18

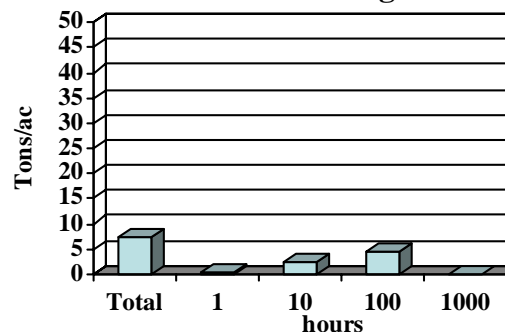
Fuels Class: Mean
Number of Plots: 1



Site Data	Slope		Elevation
	11 %		9282 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0.5	--	--
0.25"-0.99"	2.4	--	--
1"-2.99"	4.4	--	--
3" +	0	0	0
Plot Total	7.3		
Fuel Depth			
Litter	1	Inches	
Duff	0.5	Inches	

Tree Data		
	Saplings	Mature trees
Most Common Species	Aspen	Limber Pine
Second Most Common	--	Engelmann
Trees per acre	1200	262
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	16	20 ft ²
Engelmann Spruce	45	20 ft ²
Limber Pine	201	120 ft ²
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	262	160 ft ²

Fuel Time-lag





Colorado Front Range Fuel Classification

Limber Pine Fuel Classes



Low:
3.2
tons/ac



Medium:
10.6
tons/ac



High:
25.8
tons/ac



Mean:
7.3
tons/ac



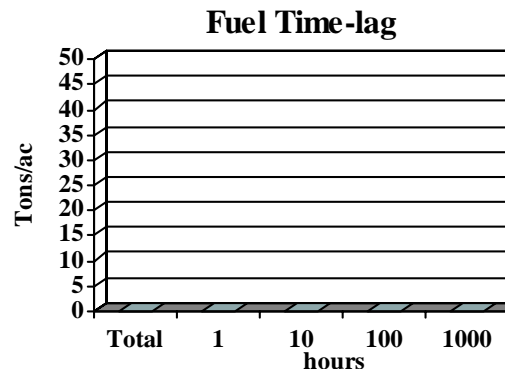
Colorado Front Range Photo Series

Forest Type: Ponderosa Pine
Number of Plots: 332

Fuels Class: Low
Number of Plots: 248



Site Data	Slope		Elevation
	0 %		7500 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0	--	--
0.25"-0.99"	0	--	--
1"-2.99"	0	--	--
3" +	0	0	0
Plot Total	0		
Fuel Depth			
Litter	0	Inches	
Duff	0	Inches	



Tree Data		
	Saplings	Mature trees
Most Common Species	--	Ponderosa
Second Most Common	--	--
Trees per acre	N/A	N/A
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	--	--
Engelmann Spruce	--	--
Limber Pine	--	--
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	N/A	100 ft ²





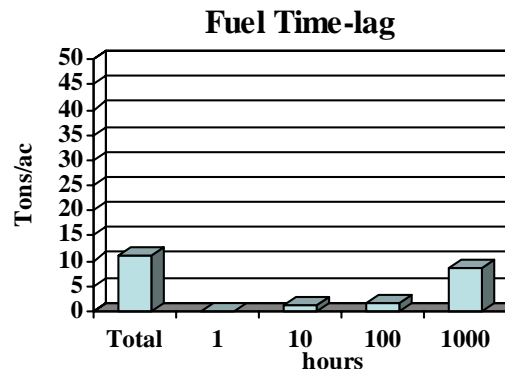
Colorado Front Range Photo Series

Forest Type: Ponderosa Pine
Number of Plots: 332

Fuels Class: Medium
Number of Plots: 70



Site Data	Slope		Elevation
	5 %		7500 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0	--	--
0.25"-0.99"	1.2	--	--
1"-2.99"	1.5	--	--
3" +	8.5	0	8.5
Plot Total	11.2		
Fuel Depth			
Litter	1.3	Inches	
Duff	0.2	Inches	



Tree Data		
	Saplings	Mature trees
Most Common Species	--	Ponderosa
Second Most Common	--	--
Trees per acre	N/A	N/A
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	--	--
Engelmann Spruce	--	--
Limber Pine	--	--
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	N/A	60 ft ²





Colorado Front Range Photo Series

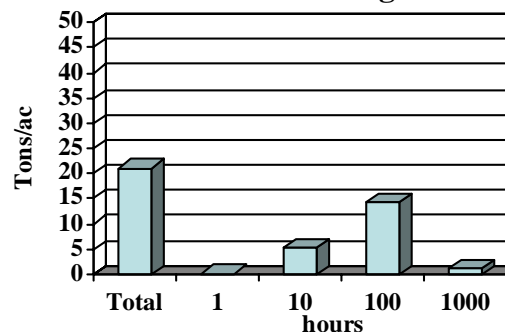
Forest Type: Ponderosa Pine
Number of Plots: 332

Fuels Class: High
Number of Plots: 13



Site Data	Slope		Elevation
	10%		7500 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0.2	--	--
0.25"-0.99"	5.2	--	--
1"-2.99"	14.5	--	--
3" +	1.2	1.2	0
Plot Total	21.1		
Fuel Depth			
Litter	4	Inches	
Duff	0.5	Inches	

Fuel Time-lag



Tree Data		
	Saplings	Mature trees
Most Common Species	--	Ponderosa
Second Most Common	--	--
Trees per acre	N/A	N/A
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	--	--
Engelmann Spruce	--	--
Limber Pine	--	--
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	N/A	140 ft ²





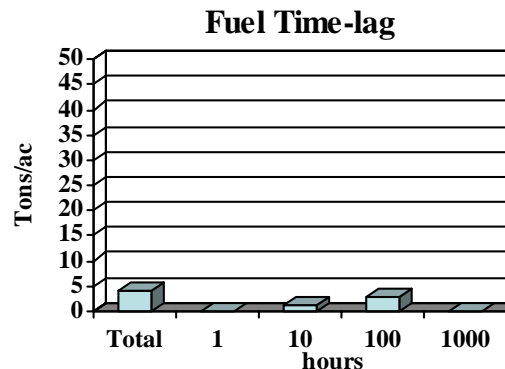
Colorado Front Range Photo Series

Forest Type: Ponderosa Pine
Number of Plots: 332

Fuels Class: Mean
Number of Plots: 1



Site Data	Slope		Elevation
	10%		7500 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0	--	--
0.25"-0.99"	1.2	--	--
1"-2.99"	2.9	--	--
3" +	0	0	0
Plot Total	4.1		
Fuel Depth			
Litter	1	Inches	
Duff	0	Inches	



Tree Data		
	Saplings	Mature trees
Most Common Species	--	--
Second Most Common	--	--
Trees per acre	--	--
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	--	--
Engelmann Spruce	--	--
Limber Pine	--	--
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	--	80 ft ²





Colorado Front Range Fuel Classification

Ponderosa Pine Fuel Classes



Low:
0
tons/ac



Medium:
11.2
tons/ac



High:
21.1
tons/ac



Mean:
4.1
tons/ac



Colorado Front Range Photo Series

Forest Type: Quaking Aspen

Number of Plots: 10

Fuels Class: Low

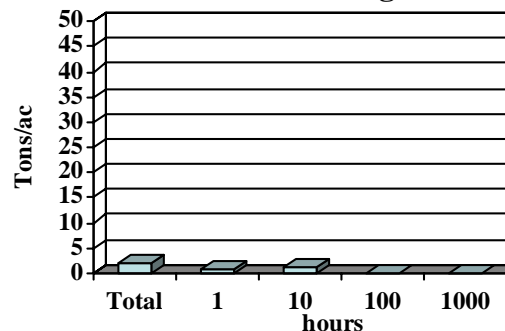
Number of Plots: 3



Site Data	Slope		Elevation
	11 %		9092 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0.9	--	--
0.25"-0.99"	1.2	--	--
1"-2.99"	0	--	--
3" +	0	0	0
Plot Total	2.1		
Fuel Depth			
Litter	2.7	Inches	
Duff	0.9	Inches	

Tree Data		
	Saplings	Mature trees
Most Common Species	Aspen	Aspen
Second Most Common	--	Limber Pine
Trees per acre	600	1360
Species composition		
	Trees/ac	Basal area
Aspen	1138	60 ft ²
Blue Spruce	--	--
Douglas Fir	--	--
Engelmann Spruce	--	--
Limber Pine	222	40 ft ²
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	1360	100 ft ²

Fuel Time-lag





Colorado Front Range Photo Series

Forest Type: Quaking Aspen

Fuels Class: Medium

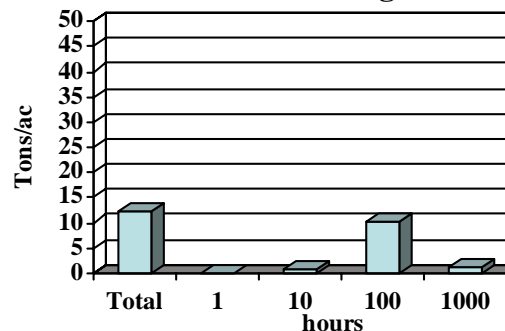
Number of Plots: 10

Number of Plots: 5



Site Data	Slope		Elevation
	3%		7988 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0.1	--	--
0.25"-0.99"	0.9	--	--
1"-2.99"	10.2	--	--
3" +	1.2	0	1.2
Plot Total	12.4		
Fuel Depth			
Litter	1	Inches	
Duff	0.1	Inches	

Fuel Time-lag



Tree Data		
	Saplings	Mature trees
Most Common Species	Douglas	Aspen
Second Most Common	Aspen	Ponderosa
Trees per acre	1200	369
Species Composition		
	Trees/ac	Basal area
Aspen	147	20 ft ²
Blue Spruce	--	--
Douglas Fir	75	20 ft ²
Engelmann Spruce	--	--
Limber Pine	--	--
Lodgepole Pine	--	--
Ponderosa Pine	147	20 ft ²
Total (per acre)	369	60 ft ²





Colorado Front Range Photo Series

Forest Type: Quaking Aspen

Number of Plots: 10

Fuels Class: High

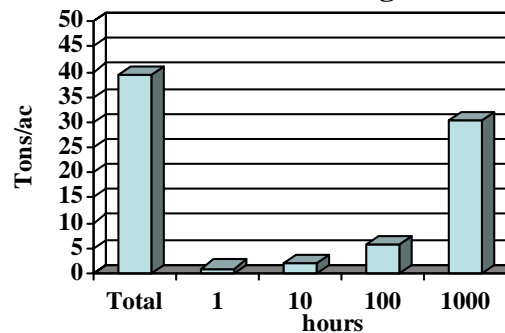
Number of Plots: 1



Site Data	Slope		Elevation
	4%		9165 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	1	--	--
0.25"-0.99"	2.1	--	--
1"-2.99"	5.8	--	--
3" +	30.3	4	26.3
Plot Total	39.2		
Fuel Depth			
Litter	1	Inches	
Duff	1.2	Inches	

Tree Data		
	Saplings	Mature trees
Most Common Species	Engleman	Aspen
Second Most Common	Douglas	Douglas
Trees per acre	2400	247
Species composition		
	Trees/ac	Basal area
Aspen	120	40 ft ²
Blue Spruce	--	--
Douglas Fir	67	40 ft ²
Engelmann Spruce	30	20 ft ²
Limber Pine	30	20 ft ²
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	247	120 ft ²

Fuel Time-lag





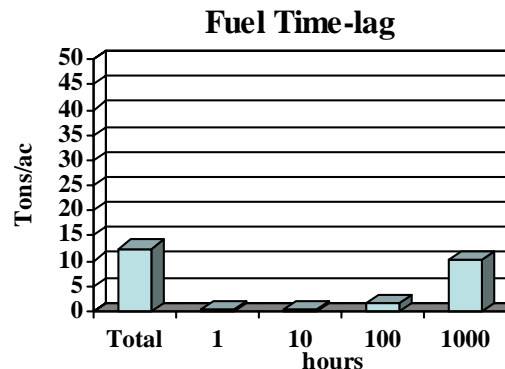
Colorado Front Range Photo Series

Forest Type: Quaking Aspen
Number of Plots: 10

Fuels Class: Mean
Number of Plots: 1



Site Data	Slope		Elevation
	22 %		9282 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0.5	--	--
0.25"-0.99"	0.3	--	--
1"-2.99"	1.5	--	--
3" +	10.2	0	10.2
Plot Total	12.5		
Fuel Depth			
Litter	1	Inches	
Duff	0.1	Inches	



Tree Data		
	Saplings	Mature trees
Most Common Species	Aspen	Aspen
Second Most Common	--	Douglas Fir
Trees per acre	300	933
Plot basal area		
	trees/ac	Basal area
Aspen	917	20 ft ²
Blue Spruce	--	--
Douglas Fir	16	20 ft ²
Engelmann Spruce	--	--
Limber Pine	--	--
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	933	40 ft ²





Colorado Front Range Fuel Classification

Quaking Aspen Fuel Classes



Low:
2.1
tons/ac



Medium:
12.4
tons/ac



High:
39.2
tons/ac



Mean:
12.5
tons/ac



Colorado Front Range Photo Series

Forest Type: Douglas Fir
Number of Plots: 66

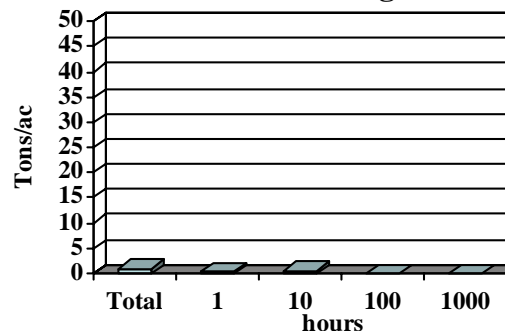
Site Data	Slope		Elevation
	44 %		8484 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0.4	--	--
0.25"-0.99"	0.6	--	--
1"-2.99"	0	--	--
3" +	0	0	0
Plot Total	1		
Fuel Depth			
Litter	1	Inches	
Duff	0	Inches	

Tree Data		
	Saplings	Mature trees
Most Common Species	--	Douglas Fir
Second Most Common	--	Limber Pine
Trees per acre	0	251
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	213	80 ft ²
Engelmann Spruce	--	--
Limber Pine	38	40 ft ²
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	251	120 ft ²



Fuels Class: Low
Number of Plots: 45

Fuel Time-lag





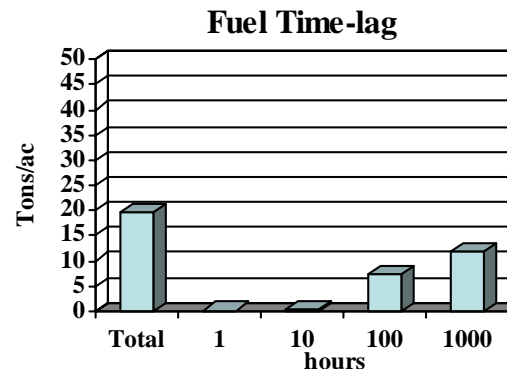
Colorado Front Range Photo Series

Forest Type: Douglas Fir
Number of Plots: 66

Fuels Class: Medium
Number of Plots: 11



Site Data	Slope		Elevation
	26 %		9186 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	0.2	--	--
0.25"-0.99"	0.3	--	--
1"-2.99"	7.3	--	--
3" +	11.9	4.9	7
Plot Total	19.7		
Fuel Depth			
Litter	0	Inches	
Duff	0.1	Inches	



Tree Data		
	Saplings	Mature trees
Most Common Species	Aspen	Douglas Fir
Second Most Common	--	Aspen
Trees per acre	30,000	1125
Species Composition		
	Trees/ac	Basal area
Aspen	917	20 ft ²
Blue Spruce	--	--
Douglas Fir	208	60 ft ²
Engelmann Spruce	--	--
Limber Pine	--	--
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	1125	80 ft ²





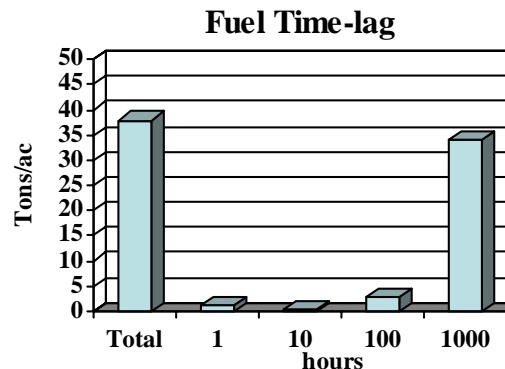
Colorado Front Range Photo Series

Forest Type: Douglas Fir
Number of Plots: 66

Fuels Class: High
Number of Plots: 9



Site Data	Slope		Elevation
	16 %		8603 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	1.3	--	--
0.25"-0.99"	0.3	--	--
1"-2.99"	2.9	--	--
3" +	33.4	22.8	10.6
Plot Total	37.9		
Fuel Depth			
Litter	1	Inches	
Duff	0	Inches	



Tree Data		
	Saplings	Mature trees
Most Common Species	--	Douglas Fir
Second Most Common	--	--
Trees per acre	0	40
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	40	60 ft ²
Engelmann Spruce	--	--
Limber Pine	--	--
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	40	60 ft ²





Colorado Front Range Photo Series

Forest Type: Douglas Fir
Number of Plots: 66

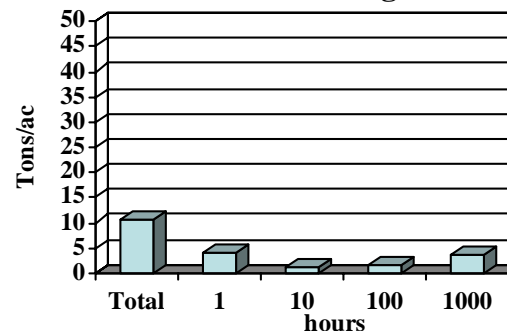
Fuels Class: Mean
Number of Plots: 1



Site Data	Slope		Elevation
	0%		7500 ft
Fuel Data			
Diameter Class	Total tons/ac	Sound	Rotten
0"-0.24"	4.2	--	--
0.25"-0.99"	1.2	--	--
1"-2.99"	1.5	--	--
3" +	3.8	3.8	0
Plot Total	10.7		
Fuel Depth			
Litter	6	Inches	
Duff	1.6	Inches	

Tree Data		
	Saplings	Mature trees
Most Common Species	--	Douglas Fir
Second Most Common	--	--
Trees per acre	0	N/A
Species Composition		
	Trees/ac	Basal area
Aspen	--	--
Blue Spruce	--	--
Douglas Fir	--	100 ft ²
Engelmann Spruce	--	--
Limber Pine	--	--
Lodgepole Pine	--	--
Ponderosa Pine	--	--
Total (per acre)	N/A	100 ft ²

Fuel Time-lag





Colorado Front Range Fuel Classification

Douglas Fir Fuel Classes



Low:
1
tons/ac



Medium:
19.7
tons/ac



High:
37.9
tons/ac



Mean:
10.7
tons/ac



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