

Observatory Mesa Summary

On November 16 2016, 36 NAU Forestry students conducted a simple inventory of a 490-acre area (Figure 1) west of Flagstaff located on Observatory Mesa. The primary objectives of this exercise were to provide the students with experience implementing fixed-area plot sampling and estimating current (and previous) stand conditions and to identify and measure site trees to determine site index (Minor 1964). Students collected data on a total of 45 (of 53 planned) 1/20th fixed-area plots (on a 10chx10ch grid) and 45 site index trees. TO estimate previous condition, student predicted dbh form existing stump diameters (Sanchez Meador et al 2010) and added these values to those observed for contemporary live trees. Table 1 and Figure 2 provide estimates of cubic foot volume per acre, basal area per acre and tree density (both pretreatment and posttreatment) , as well as site index and an associated diameter distribution:

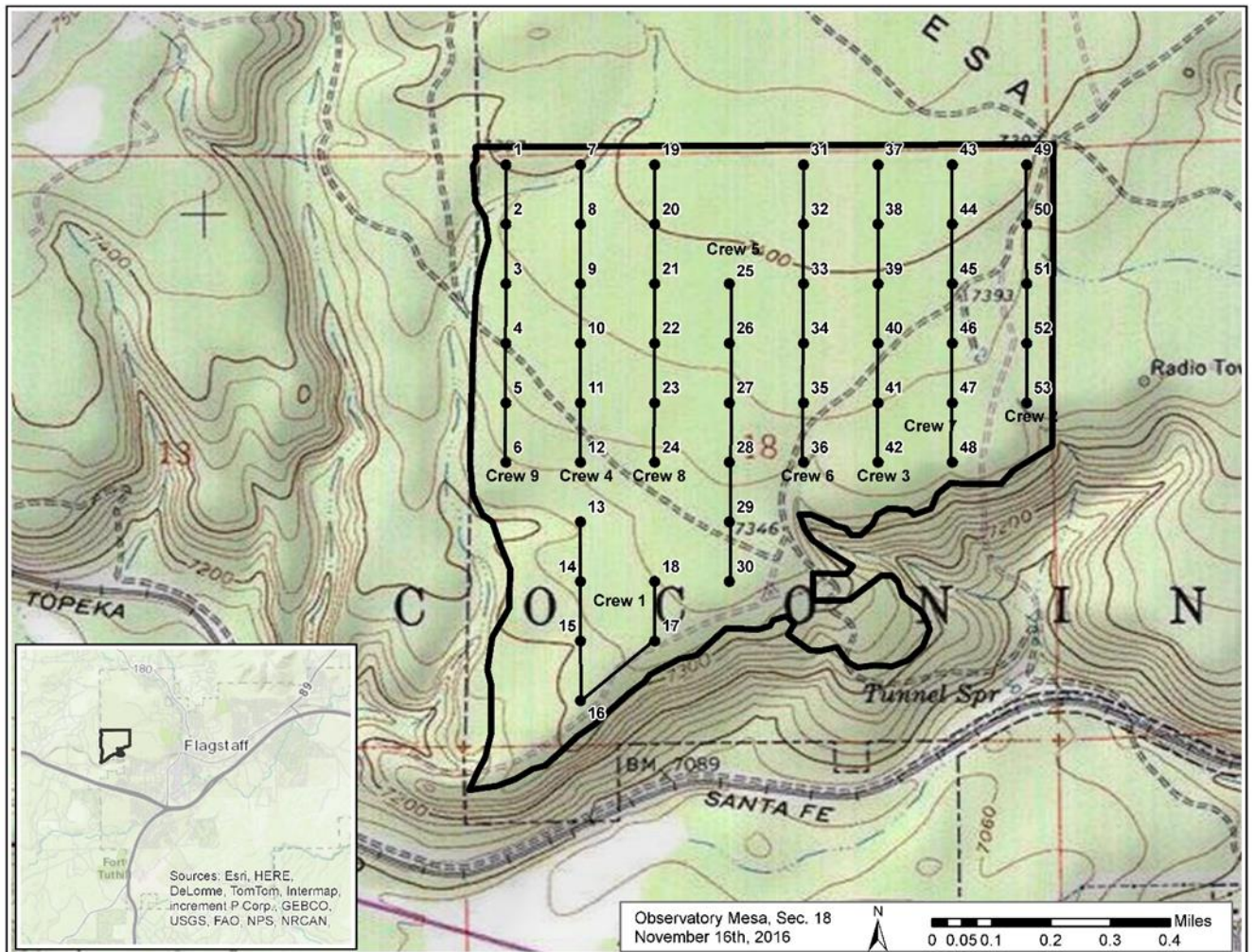


Figure 1: Location and planned inventory design map.

Table 1: Stand Attributes pre and posttreatment for a 490-acres area west of Flagstaff located on Observatory Mesa. Summaries based on n = 45 1/20th fixed-area plots.

Estimate	Mean	Standard Deviation	CV	95% Confidence limits		Sampling error in	
				Percent	Units		
Pretreatment							
Density (trees ac ⁻¹)	146.67	93.71	64%	118.51	174.83	19.2%	28.2
Volume (ft ³ ac ⁻¹)	2469.58	1118.54	45%	2133.45	2805.70	13.6%	336.1
Basal Area (ft ² ac ⁻¹)	127.75	54.4	43%	111.40	144.10	12.8%	16.3
PostTreatment							
Density (trees ac ⁻¹)	76.44	63	82%	57.51	95.38	24.8%	18.9
Volume (ft ³ ac ⁻¹)	1485.86	1146.54	77%	1141.32	1830.40	23.2%	344.5
Basal Area (ft ² ac ⁻¹)	74.47	50.2	67%	59.38	89.55	20.3%	15.1
Site index ₁₀₀ (ft)	63.62	13.22	-	59.65	67.59	-	-

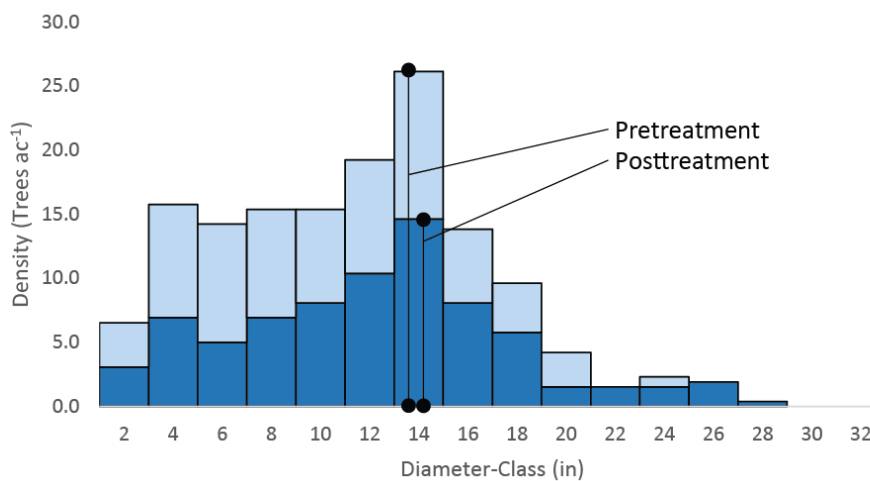


Figure 2: Pre and posttreatment diameter distributions (2-in classes) for a 490-acres area west of Flagstaff located on Observatory Mesa. Summaries based on n = 45 1/20th fixed-area plots.

References:

Minor, Charles O. 1964. Site-index curves for young-growth ponderosa pine in northern Arizona. Res. Note RM-37. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 8 p.

Sánchez Meador, A.J., Parysow, P.F., and M.M. Moore. 2010. Historical stem-mapped permanent plots increase precision of reconstructed reference data in ponderosa pine forests of northern Arizona. *Restoration Ecology*. 18: 224-234.