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BLACK ROCK FOREST PAPERS

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CORDWOOD VOLUME TABLES FOR RED OAK AND RED MAPLE IN THE HUDSON HIGHLANDS

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RED OAK (Q. borealis Michx.) and red maple (Acer rubrum Linn.) are very common species on the Black Rock Forest. The former has a good growth rate, not infrequently reaching sawtimber size and possessing the desirable qualities of hardness and strength. The latter can hardly be classed hereabouts as a timber species, but is ranked as a fair-to-middling fuel. Owing to a long period of over-exploitation in much of the Highlands, coupled with repeated severe fires, today the form of these species lends itself as a rule to the production of fuelwood rather than saw-logs. So far as we now know, no cordwood volume table has thus far been made for these species in this region.

This project was begun in the winter of 1927. Ten separate cutting operations on the Forest, beginning with the above date and ending with the spring of 1934 were used as the source of the necessary measurements. Portions of nine different compartments covering a broad range of altitude, type, and soil conditions were operated. These cuttings included cleanings, increment cuttings, and one reproduction cutting. Eleven hundred and thirty-nine red oaks and 296 red maples were measured, the great majority of these falling within the suppressed, intermediate and co-dominant classes.

The following field measurements were taken. The d.b.h.; the total height (taken after each tree was felled); the stump height; age; condition of tree; and the middle diameter of each 4-foot cordwood stick. In conformity with local utilization, these last were taken down to 1.5 inches.

The graphic method [1] was employed in the office. The total cubic foot volume of each tree was calculated and scatter diagrams plotted, using volume against d.b.h. by height classes. The number of trees measured was entered against each point, and each height-class series was harmonized by the method of least squares. The resultant curves furnished values from which a second scatter diagram of volume against total height by diameter classes was drafted. These curves were also harmonized and from the final plottings thus obtained were derived the values of cubic feet per tree by d.b.h. and total height classes given in Tables 1 and 2.

From these final values, using our previously published converting factor [2] of 79.185 cubic feet per cord, tables may be computed giving cords per tree and trees per cord.

The authors believe that these tables, when applied in this region, should not show a variation greater than 4% from actual yield.

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[1] Chapman, H. H.; Forest Mensuration; J. Wiley and Son, 1931, p. 163 et seq.

[2] Tryon, H. H., and R. F. Finn; A Chestnut Oak Volume Table for the Hudson Highland Region; Black Rock Forest Papers I; 3, 1936.

RED MAPLE VOLUME TABLE — 296 TREES

	Total Height in Feet										
	20	25	30	35	40	45	50	55	60	65	No. Trees
D. B. H.	Volume in Cubic Feet										
1	0.05	0.07	0.09	0.12							3
2	0.28	0.32	0.38	0.47	0.58						12
3	0.645	0.69	0.78	0.83	0.91	1.00	1.09				56
4	1.17	1.26	1.34	1.44	1.56	1.70	1.86	2.08	2.35		66
5		1.92	2.07	2.26	2.47	2.77	3.14	3.55	3.98	4.42	39
6				3.44	3.70	4.03	4.48	5.06	5.72	6.44	26
7				5.02	5.25	5.55	6.01	6.68	7.48	8.27	17
8					6.90	7.27	7.80	8.53	9.46	10.49	20
9					8.60	9.15	9.87	10.7	11.6	12.70	21
10						11.9	12.4	13.1	14.5	16.44	13
11						13.9	14.8	15.8	17.4	19.44	6
12						17.1	17.6	18.7	20.5	22.55	7
13						19.2	20.4	21.8	23.5	25.73	3
14							23.3	25.3	27.8	30.52	3
15							25.9	28.8	32.2	35.94	1
16							28.8	32.5	37.8	43.47	2
17							31.6	36.7	43.0	49.53	1

Red Oak Volume Table — 1139 Trees

	Total Height in Feet											
	20	25	30	35	40	45	50	55	60	65	70	
D. B. H.	Volume in Cubic Feet											No. Trees
2	0.25	0.31	0.37									12
3	0.62	0.70	0.80	0.95	1.13	1.33						60
4		1.39	1.44	1.56	1.70	1.84	2.00	2.20				219
5		2.30	2.34	2.45	2.64	2.89	3.17	3.46	3.76	4.05		257
6		3.31	3.39	3.56	3.84	4.20	4.60	5.04	5.50	5.98		173
7			4.61	4.98	5.38	5.80	6.26	6.77	7.34	7.92		102
8				7.04	7.37	7.72	8.17	8.78	9.70	10.89	12.20	83
9				9.24	9.55	9.92	10.42	11.18	12.24	13.56	14.92	75
10					11.65	12.32	13.07	13.97	15.19	16.60	18.07	68
11					14.49	15.06	15.82	16.96	18.50	20.25	22.08	37
12						17.56	18.70	20.20	22.32	24.77	27.30	31
13								23.82	26.72	29.36	31.40	7
14								27.98	31.33	34.21	36.41	6
15								32.96	36.10	39.05	41.20	7
16								38.26	41.47	44.19	45.94	1
17								44.52	47.05	49.31	51.08	1