

FOREST INVENTORY DATA FOR THE BLUE MOUNTAINS (1910-1911)

This workbook contains early plot information for the Blue Mountains area of northeastern Oregon and southeastern Washington. Some of this information was derived from an important bulletin called "Western yellow pine in Oregon" by Thornton T. Munger, who was the first chief of the "Section of Silvics" in the District Office in Portland, Oregon. He was also the first director of the Pacific Northwest Forest Experiment Station.

Information is provided for the following plot locations: Austin-Whitney; Crawford Creek; Lookingglass Creek; Parker's Mill; Winlock's Mill; and seedling growth data for Baker/Grant/Union counties.

All of the data summarized in this workbook was collected in 1910 or 1911, with the actual date supplied in the title of the data summary chart ("Density summary for Austin-Whitney tract (1910)"). In general, Munger's 1917 bulletin was not used to derive the data in this workbook because it had been generalized for publication purposes. I consulted the original references that Munger used for the bulletin to compile this workbook. Those original references were authored in 1912 by Munger or by George A. Bright.

A few notes about the calculated or derived items in this workbook:

1. For stand density index calculations, a value of 1.77 was used for ponderosa pine and 1.51 for other species (see Cochran and others 1994 for more information about SDI calculation methodology).
2. For canopy cover values, basal area was used to calculate this metric using equations contained in Dealy (1985).
3. For leaf area calculations, the central Oregon equation of O'Hara and Valappil (1995) was used.
4. The uneven-aged analysis was patterned after a process described by Harrod and others (1998).

LITERATURE CITED

Bright, George A. 1912. A study of the growth of yellow pine in Oregon. Unpublished typescript report obtained from the National Archives, College Park, Maryland; record group 95. 106 p.

Cochran, P.H.; Geist, J.M.; Clemens, D.L. [and others]. 1994. Suggested stocking levels for forest stands in northeastern Oregon and southeastern Washington. Research Note PNW-RN-513. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 21 p.

Dealy, J. Edward. 1985. Tree basal area as an index of thermal cover for elk. Research Note PNW-425. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 6 p.

Harrod, Richy J.; Gaines, William L.; Hartl, William E.; Camp, Ann. 1998. Estimating historical snag density in dry forests east of the Cascade Range. General Technical Report PNW-GTR-428. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 16 p.

Munger, T. T. 1912. The future yield of yellow pine stands in Oregon. Unpublished typescript report obtained from the National Archives, College Park, Maryland; record group 95. 33 p.

Munger, Thornton T. 1917. Department of Agriculture. 48 p.

O'Hara, Kevin L.; Valappil, Narayanan I. 1995. Age class division of growing space to regulate stocking in uneven-aged stands. In: O'Hara, Kevin L., editor. Uneven-aged management: opportunities, constraints and methodologies. Miscellaneous Publication No. 56. Missoula, MT: Montana Forest and Conservation Experiment Station: 123-143.

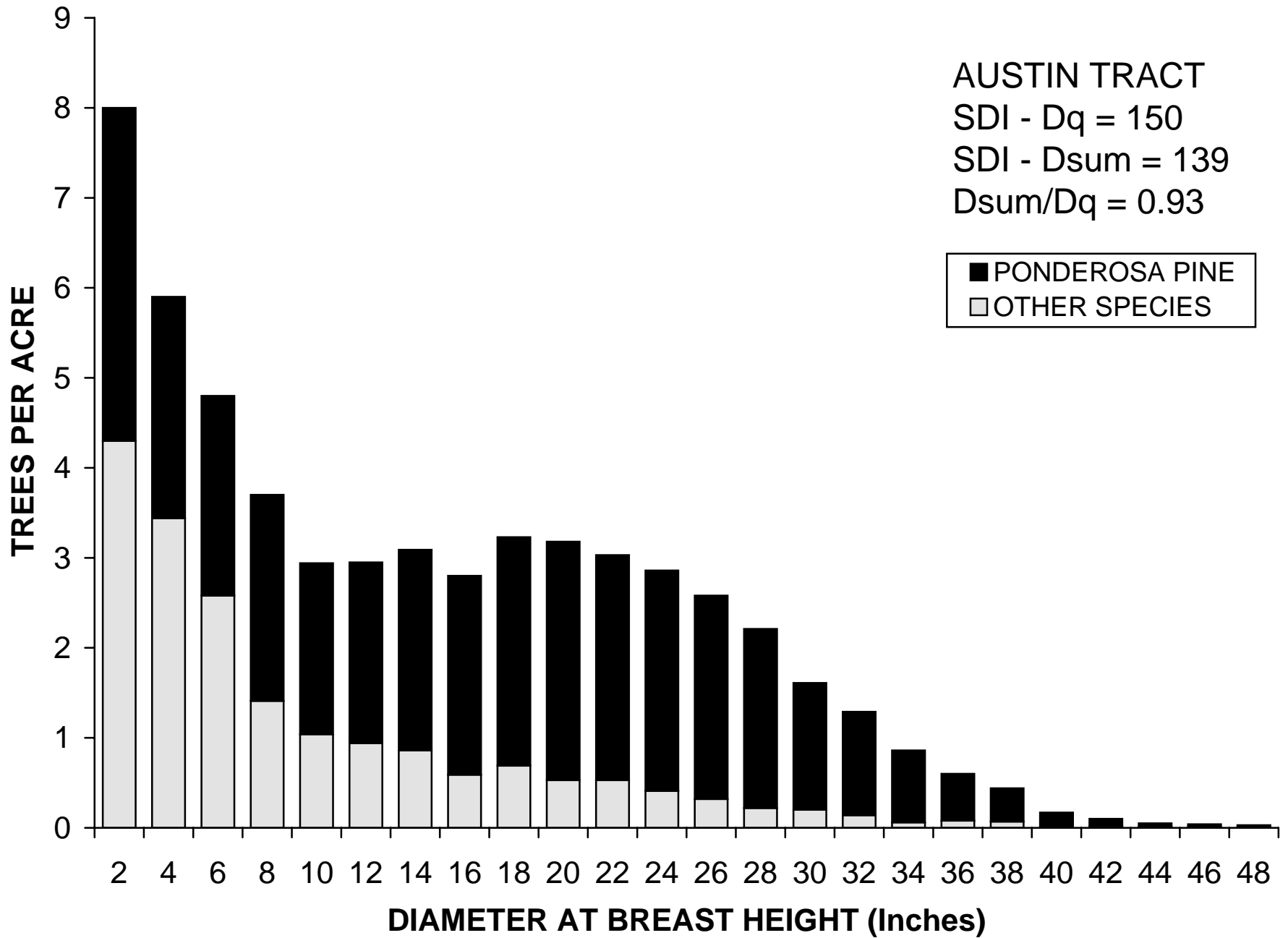
CONTACT INFORMATION

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DENSITY SUMMARY FOR AUSTIN-WHITNEY TRACT (1910)

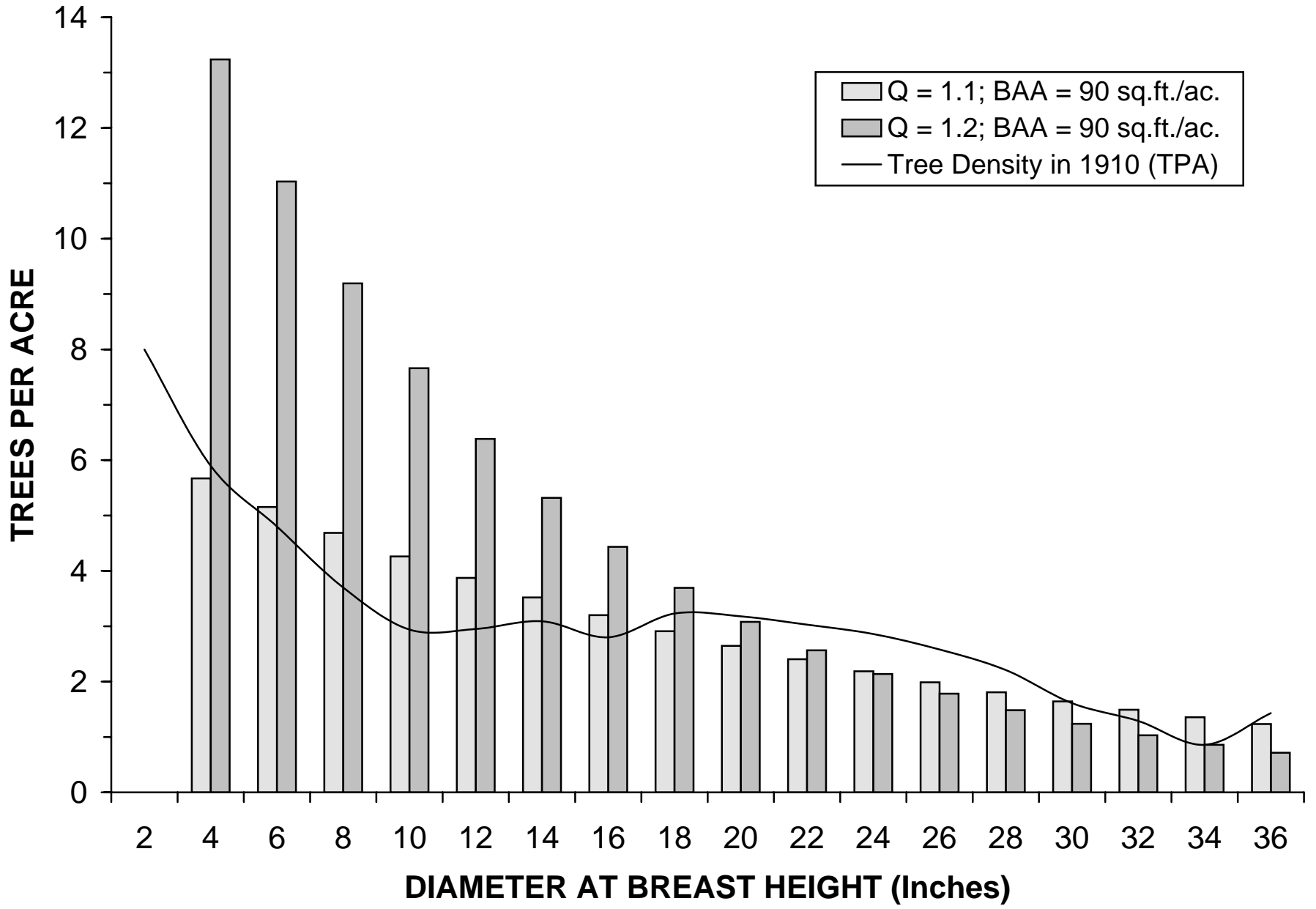
DBH CLASS	BA PER TREE	TREES PER ACRE			BASAL AREA PER ACRE			STAND DENSITY INDEX/ACRE		
		Pine	Other	Total	Pine	Other	Total	Pine	Other	Total
2	0.02	3.70	4.30	8.00	0.08	0.09	0.17	0.21	0.38	0.59
4	0.09	2.46	3.44	5.90	0.21	0.30	0.51	0.49	0.86	1.35
6	0.20	2.22	2.58	4.80	0.44	0.51	0.94	0.90	1.19	2.09
8	0.35	2.29	1.41	3.70	0.80	0.49	1.29	1.54	1.01	2.55
10	0.55	1.90	1.04	2.94	1.04	0.57	1.60	1.90	1.04	2.94
12	0.79	2.01	0.94	2.95	1.58	0.74	2.32	2.78	1.24	4.01
14	1.07	2.23	0.86	3.09	2.38	0.92	3.30	4.05	1.43	5.47
16	1.40	2.21	0.59	2.80	3.09	0.82	3.91	5.08	1.20	6.28
18	1.77	2.54	0.69	3.23	4.49	1.22	5.71	7.19	1.68	8.87
20	2.18	2.65	0.53	3.18	5.78	1.16	6.94	9.04	1.51	10.55
22	2.64	2.50	0.53	3.03	6.60	1.40	8.00	10.09	1.74	11.84
24	3.14	2.45	0.41	2.86	7.70	1.29	8.98	11.54	1.54	13.08
26	3.69	2.26	0.32	2.58	8.33	1.18	9.51	12.26	1.35	13.62
28	4.28	1.99	0.22	2.21	8.51	0.94	9.45	12.31	1.04	13.35
30	4.91	1.41	0.20	1.61	6.92	0.98	7.90	9.86	1.05	10.91
32	5.59	1.15	0.14	1.29	6.42	0.78	7.20	9.01	0.81	9.82
34	6.30	0.80	0.06	0.86	5.04	0.38	5.42	6.98	0.38	7.36
36	7.07	0.52	0.08	0.60	3.68	0.57	4.24	5.02	0.55	5.57
38	7.88	0.37	0.07	0.44	2.91	0.55	3.47	3.93	0.53	4.46
40	8.73	0.16	0.01	0.17	1.40	0.09	1.48	1.86	0.08	1.94
42	9.62	0.08	0.02	0.10	0.77	0.19	0.96	1.01	0.17	1.19
44	10.56	0.04	0.01	0.05	0.42	0.11	0.53	0.55	0.09	0.64
46	11.54	0.03	0.01	0.04	0.35	0.12	0.46	0.45	0.10	0.55
48	12.57	0.02	0.01	0.03	0.25	0.13	0.38	0.32	0.11	0.43
TOTAL		37.99	18.47	56.46	79.19	15.51	94.70	118.37	21.09	139.45

Percent of Total	67.3	32.7		83.6	16.4		84.9	15.1	
Percent Over 21" DBH	36.3	11.3	28.1	74.9	56.0	71.8	72.0	45.3	67.9
Quad Mean Diameter (In.)	19.5	12.4	17.5	<div style="border: 1px solid black; padding: 5px;"> hills at elevations of 4500 to 4800 feet. Soil: loamy, decomposed lava, shallow. Whitney: T10S, R36E; 1.5 miles north of Whitney, OR. </div>					
Stand Density Index-Dq	124.4	25.6	150.0						
Dsum/Dq SDI Ratio	0.95	0.82	0.93						
Equilateral Spacing (Ft)	36.4	52.2	29.8						
Canopy Cover (Percent)			57						
Leaf Area Index			4.3						



UNEVEN-AGED ANALYSIS FOR AUSTIN-WHITNEY TRACT (1910)

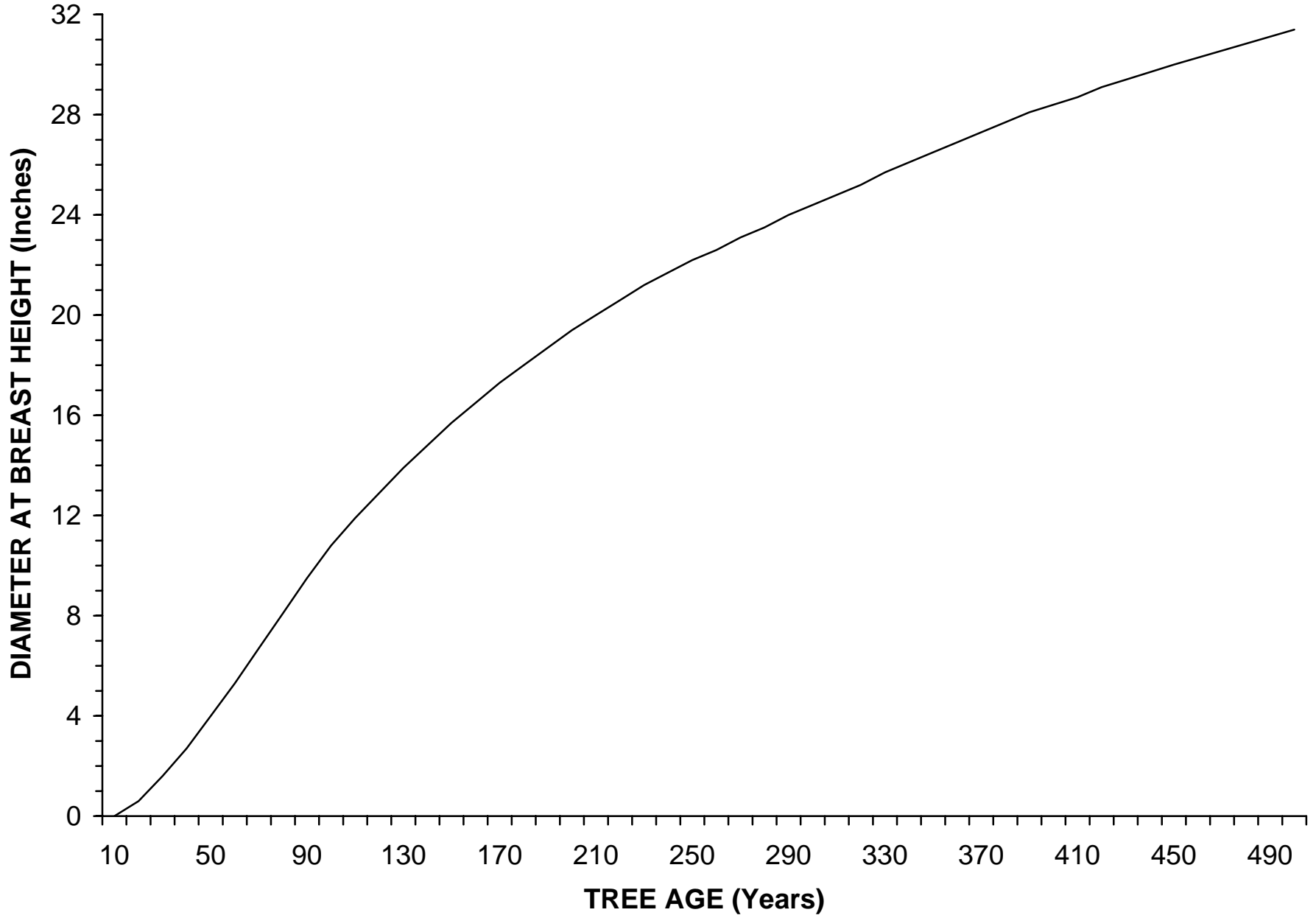
DBH CLASS	BA PER TREE	SDI PER TREE	EXISTING DENSITY IN 1910			Q=1.1; BAA=90		BY GROUP		Q=1.2; BAA=90		BY GROUP	
			TPA	BAA	SDI	TPA	BAA	BAA	SDI	TPA	BAA	BAA	SDI
2	0.02	0.06	8.0	0.2	0.6								
4	0.09	0.20	5.9	0.5	1.3	5.67	0.49	1.51	3.21	13.24	1.16	3.32	7.08
6	0.20	0.40	4.8	0.9	2.1	5.15	1.01			11.03	2.17		
8	0.35	0.67	3.7	1.3	2.5	4.69	1.64			9.19	3.21		
10	0.55	1.00	2.9	1.6	2.9	4.26	2.32	7.00	12.76	7.66	4.18	12.40	22.67
12	0.79	1.38	3.0	2.3	4.0	3.87	3.04			6.38	5.01		
14	1.07	1.81	3.1	3.3	5.5	3.52	3.76			5.32	5.69		
16	1.40	2.30	2.8	3.9	6.3	3.20	4.47	13.37	21.98	4.43	6.19	18.41	30.29
18	1.77	2.83	3.2	5.7	8.9	2.91	5.14			3.69	6.53		
20	2.18	3.41	3.2	6.9	10.5	2.65	5.77			3.08	6.72		
22	2.64	4.04	3.0	8.0	11.8	2.40	6.35	18.99	29.03	2.57	6.77	20.21	30.93
24	3.14	4.71	2.9	9.0	13.1	2.19	6.87			2.14	6.72		
26	3.69	5.43	2.6	9.5	13.6	1.99	7.33			1.78	6.57		
28	4.28	6.19	2.2	9.5	13.4	1.81	7.73	23.12	33.44	1.48	6.35	18.99	27.50
30	4.91	6.99	1.6	7.9	10.9	1.64	8.06			1.24	6.07		
32	5.59	7.84	1.3	7.2	9.8	1.49	8.34			1.03	5.76		
34	6.30	8.72	0.9	5.4	7.4	1.36	8.56	25.62	35.45	0.86	5.42	16.24	22.49
36	7.07	9.65	1.4	10.1	14.7	1.23	8.72			0.72	5.06		
TOTAL			56.5	93.3	139.4	50.03	89.60	89.60	135.87	75.85	89.57	89.57	140.97



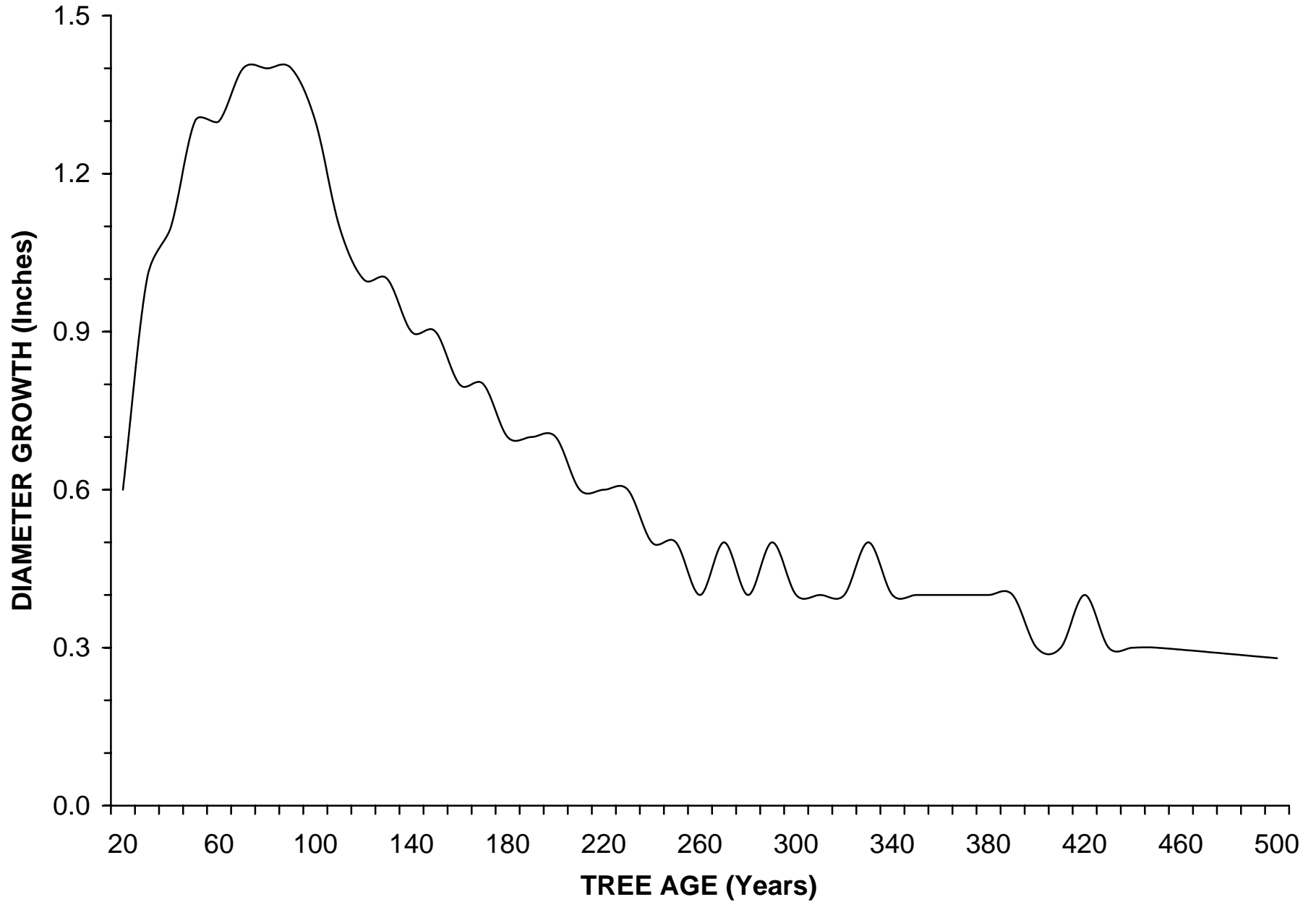
GROWTH SUMMARY FOR AUSTIN-WHITNEY TRACT (Bright 1912)

AGE	DBH (Inches)	DBH GROWTH (Inches)	RADIAL GROW (20ths)	HEIGHT (Feet)	HGT GROW (Feet)
10	0.0			2	
20	0.6	0.6	6	5	3
30	1.6	1.0	10	10	5
40	2.7	1.1	11	16	6
50	4.0	1.3	13	22	6
60	5.3	1.3	13	28	6
70	6.7	1.4	14	35	7
80	8.1	1.4	14	42	7
90	9.5	1.4	14	50	8
100	10.8	1.3	13	58	8
110	11.9	1.1	11	66	8
120	12.9	1.0	10	72	6
130	13.9	1.0	10	77	5
140	14.8	0.9	9	82	5
150	15.7	0.9	9	86	4
160	16.5	0.8	8	89	3
170	17.3	0.8	8	92	3
180	18.0	0.7	7	95	3
190	18.7	0.7	7	98	3
200	19.4	0.7	7	100	2
210	20.0	0.6	6	102	2
220	20.6	0.6	6	105	3
230	21.2	0.6	6	107	2
240	21.7	0.5	5	108	1
250	22.2	0.5	5	110	2
260	22.6	0.4	4	111	1
270	23.1	0.5	5	112	1
280	23.5	0.4	4	113	1
290	24.0	0.5	5	114	1
300	24.4	0.4	4	115	1
310	24.8	0.4	4	115	0
320	25.2	0.4	4	116	1
330	25.7	0.5	5	116	0
340	26.1	0.4	4	117	1
350	26.5	0.4	4	117	0
360	26.9	0.4	4	118	1
370	27.3	0.4	4	118	0
380	27.7	0.4	4	119	1
390	28.1	0.4	4	119	0
400	28.4	0.3	3	119	0
410	28.7	0.3	3	120	1
420	29.1	0.4	4	120	0
430	29.4	0.3	3	120	0
440	29.7	0.3	3	120	0
450	30.0	0.3	3	120	0
460					
470					
480					
490					
500	31.4	0.3	3	121	1
BASIS:	672 trees			437 trees	

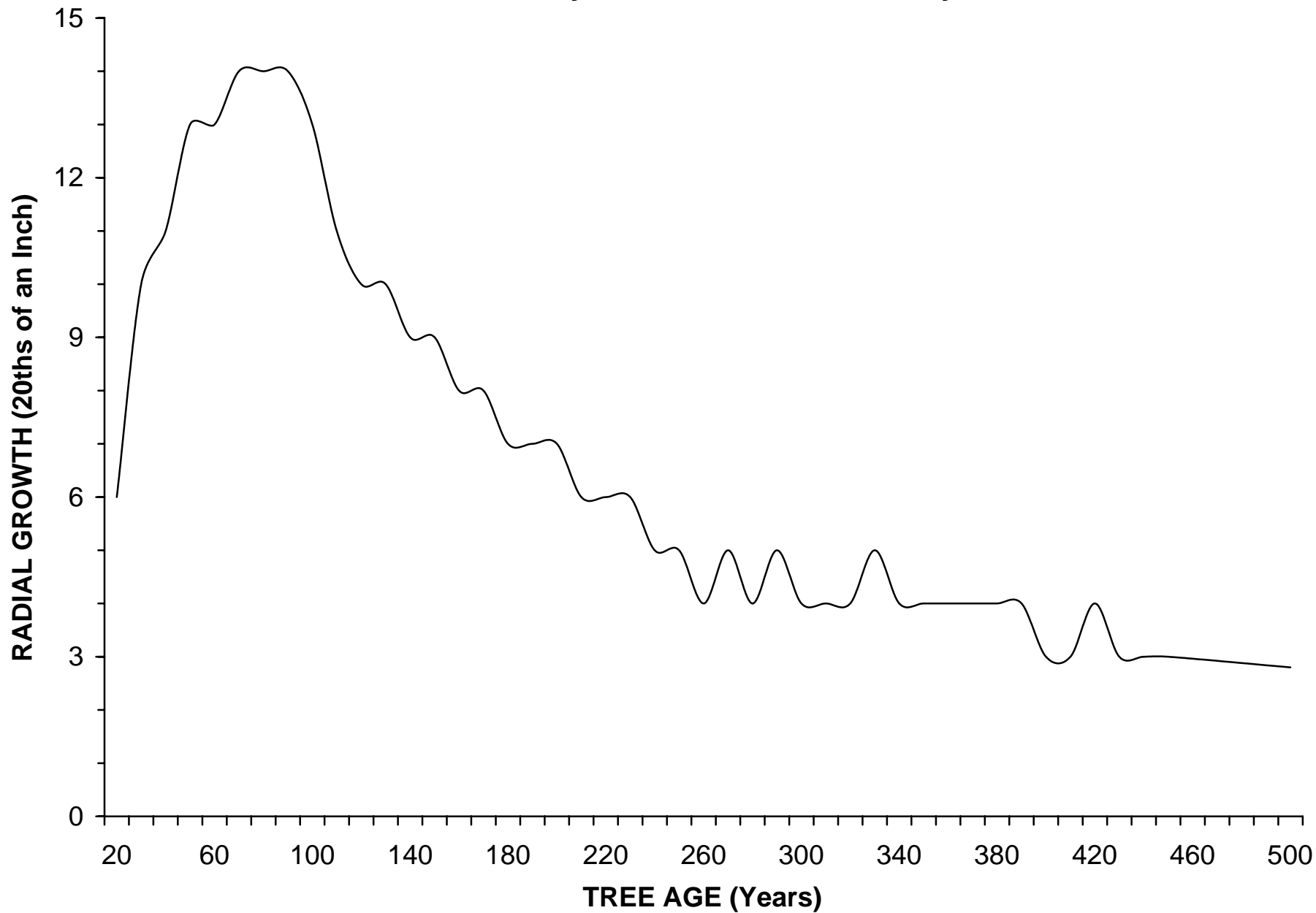
Austin-Whitney Diameter Accretion (Based on 672 Trees)



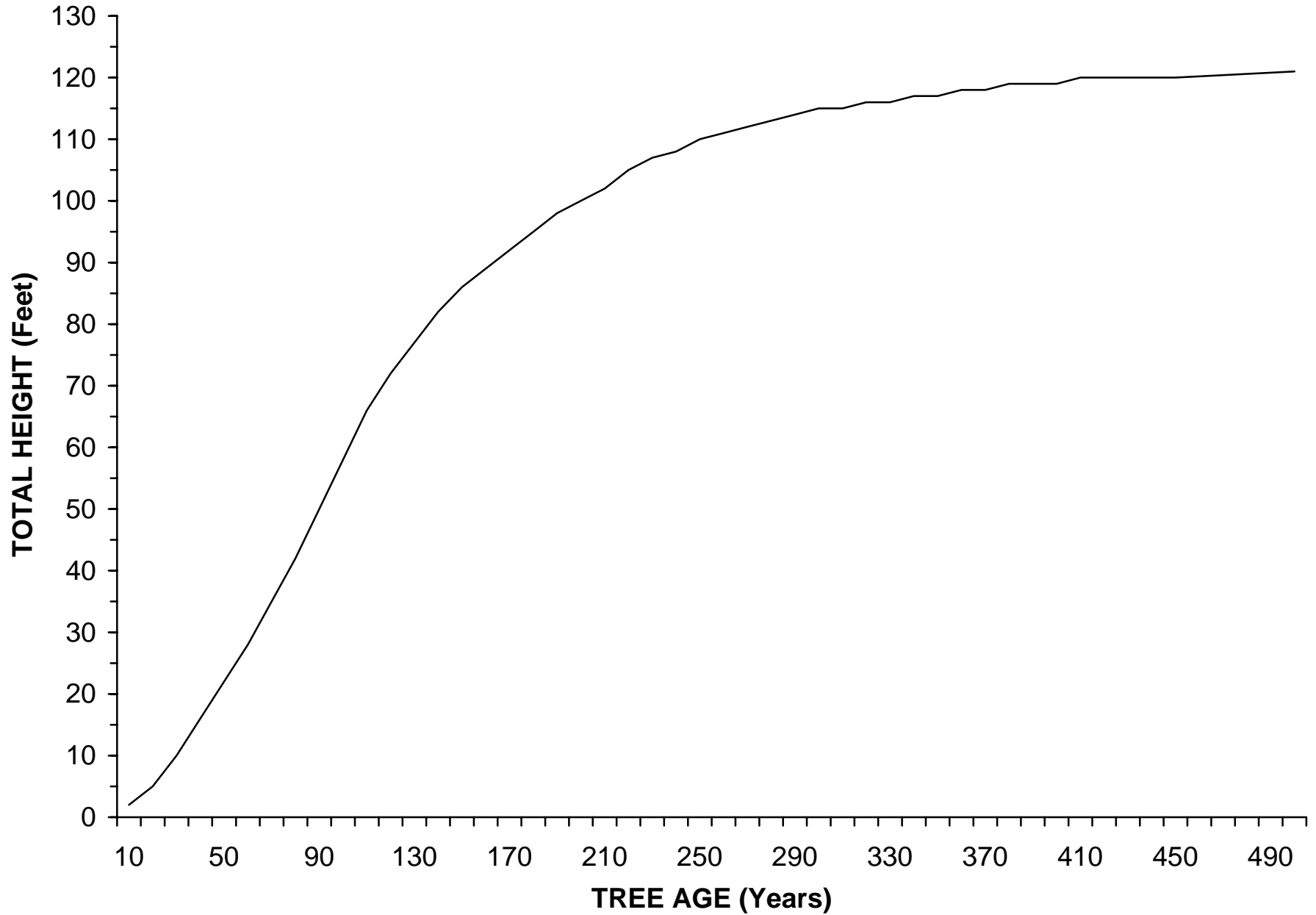
Austin-Whitney Diameter Growth Summary



Austin-Whitney Radial Growth Summary



Austin-Whitney Height Accretion (Based on 437 Trees)

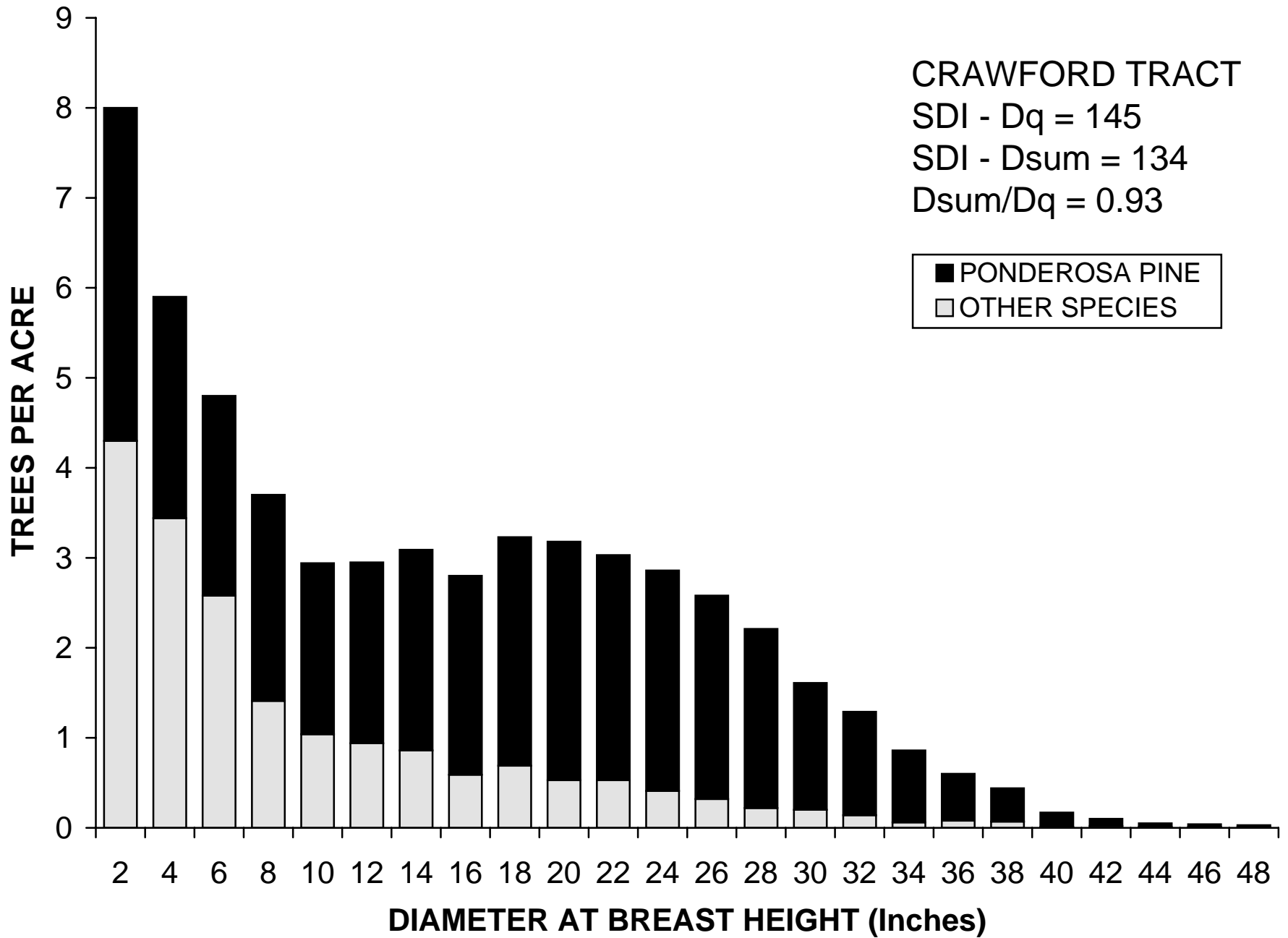


DENSITY SUMMARY FOR CRAWFORD CREEK TRACT (1910-1911)

DBH CLASS	BA PER TREE	TREES PER ACRE			BASAL AREA PER ACRE			STAND DENSITY INDEX/ACRE		
		Pine	Other	Total	Pine	Other	Total	Pine	Other	Total
2	0.02	2.93	2.69	5.62	0.06	0.06	0.12	0.17	0.24	0.41
4	0.09	4.80	0.99	5.79	0.42	0.09	0.51	0.95	0.25	1.20
6	0.20	4.65	0.86	5.51	0.91	0.17	1.08	1.88	0.40	2.28
8	0.35	4.57	0.91	5.48	1.60	0.32	1.91	3.08	0.65	3.73
10	0.55	3.37	0.86	4.23	1.84	0.47	2.31	3.37	0.86	4.23
12	0.79	2.86	0.74	3.60	2.25	0.58	2.83	3.95	0.97	4.92
14	1.07	2.19	0.72	2.91	2.34	0.77	3.11	3.97	1.20	5.17
16	1.40	2.63	0.69	3.32	3.67	0.96	4.64	6.04	1.40	7.45
18	1.77	2.06	0.55	2.61	3.64	0.97	4.61	5.83	1.34	7.17
20	2.18	2.40	0.53	2.93	5.24	1.16	6.39	8.19	1.51	9.69
22	2.64	1.96	0.55	2.51	5.17	1.45	6.63	7.91	1.81	9.72
24	3.14	2.27	0.48	2.75	7.13	1.51	8.64	10.69	1.80	12.49
26	3.69	2.15	0.34	2.49	7.93	1.25	9.18	11.67	1.44	13.11
28	4.28	2.11	0.34	2.45	9.02	1.45	10.48	13.05	1.61	14.66
30	4.91	1.47	0.25	1.72	7.22	1.23	8.44	10.28	1.31	11.59
32	5.59	0.99	0.19	1.18	5.53	1.06	6.59	7.76	1.10	8.86
34	6.30	0.57	0.17	0.74	3.59	1.07	4.67	4.97	1.08	6.05
36	7.07	0.42	0.02	0.44	2.97	0.14	3.11	4.05	0.14	4.19
38	7.88	0.27	0.06	0.33	2.13	0.47	2.60	2.87	0.45	3.32
40	8.73	0.17	0.00	0.17	1.48	0.00	1.48	1.98	0.00	1.98
42	9.62	0.08	0.00	0.08	0.77	0.00	0.77	1.01	0.00	1.01
44	10.56	0.02	0.00	0.02	0.21	0.00	0.21	0.28	0.00	0.28
46	11.54	0.02	0.02	0.04	0.23	0.23	0.46	0.30	0.20	0.50
48	12.57	0.00	0.02	0.02	0.00	0.25	0.25	0.00	0.21	0.21
TOTAL		44.96	11.98	56.94	75.35	15.67	91.02	114.25	19.97	134.21

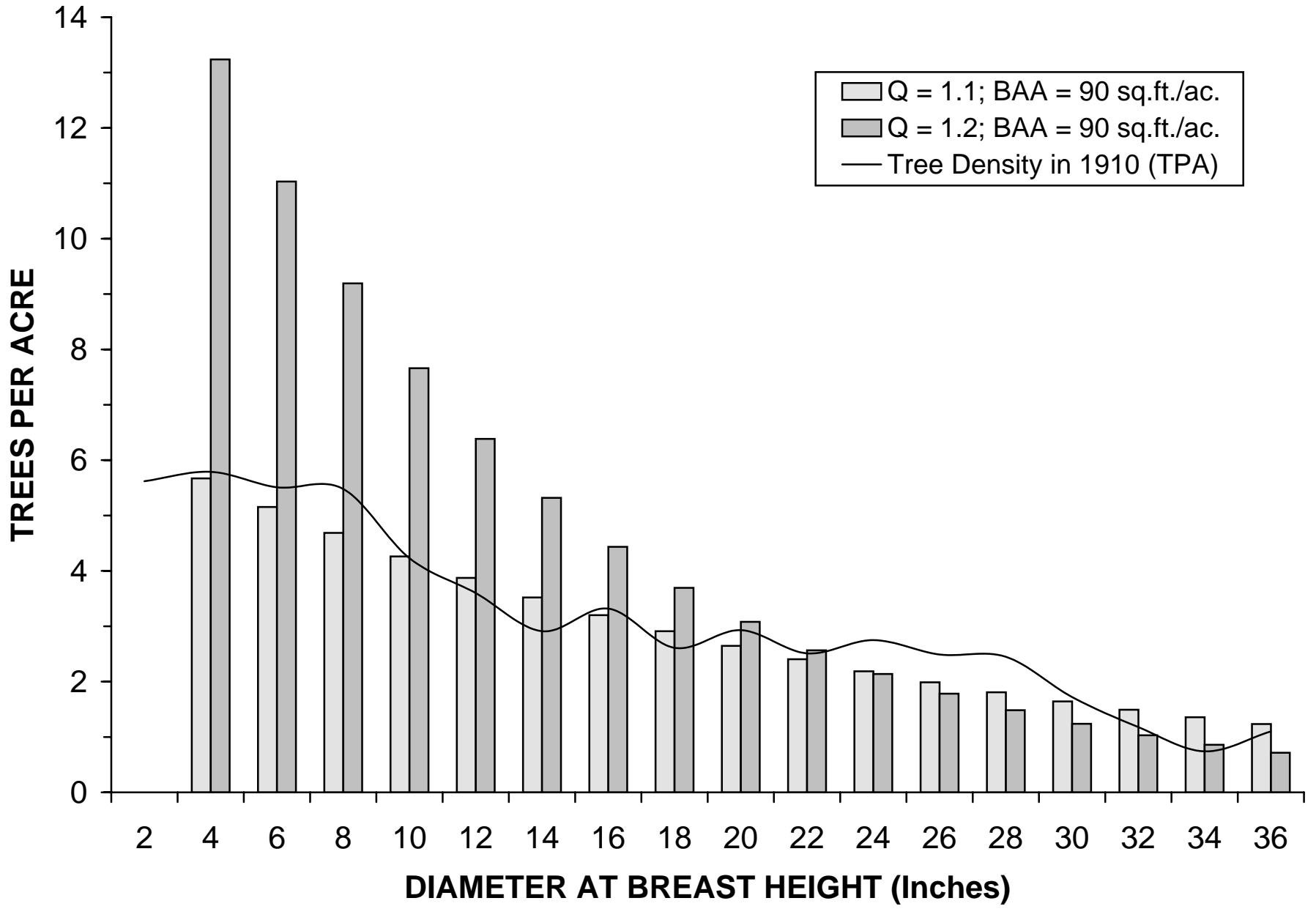
Percent of Total	79.0	21.0		82.8	17.2		85.1	14.9	
Percent Over 21" DBH	27.8	20.4	26.2	70.8	64.6	69.8	67.2	55.9	65.5
Quad Mean Diameter (In.)	17.5	15.5	17.1						
Stand Density Index-Dq	121.4	23.2	144.6						
Dsum/Dq SDI Ratio	0.94	0.86	0.93						
Equilateral Spacing (Ft)	33.4	64.8	29.7						
Canopy Cover (Percent)			56						
Leaf Area Index			4.2						

Source: Munger (1912).



UNEVEN-AGED ANALYSIS FOR CRAWFORD CREEK TRACT (1910-1911)

DBH CLASS	BA PER TREE	SDI PER TREE	EXISTING DENSITY IN 1910			Q=1.1; BAA=90		BY GROUP		Q=1.2; BAA=90		BY GROUP	
			TPA	BAA	SDI	TPA	BAA	BAA	SDI	TPA	BAA	BAA	SDI
2	0.02	0.06	5.6	0.1	0.4								
4	0.09	0.20	5.8	0.5	1.2	5.67	0.49	1.51	3.21	13.24	1.16	3.32	7.08
6	0.20	0.40	5.5	1.1	2.3	5.15	1.01			11.03	2.17		
8	0.35	0.67	5.5	1.9	3.7	4.69	1.64			9.19	3.21		
10	0.55	1.00	4.2	2.3	4.2	4.26	2.32	7.00	12.76	7.66	4.18	12.40	22.67
12	0.79	1.38	3.6	2.8	4.9	3.87	3.04			6.38	5.01		
14	1.07	1.81	2.9	3.1	5.2	3.52	3.76			5.32	5.69		
16	1.40	2.30	3.3	4.6	7.4	3.20	4.47	13.37	21.98	4.43	6.19	18.41	30.29
18	1.77	2.83	2.6	4.6	7.2	2.91	5.14			3.69	6.53		
20	2.18	3.41	2.9	6.4	9.7	2.65	5.77			3.08	6.72		
22	2.64	4.04	2.5	6.6	9.7	2.40	6.35	18.99	29.03	2.57	6.77	20.21	30.93
24	3.14	4.71	2.8	8.6	12.5	2.19	6.87			2.14	6.72		
26	3.69	5.43	2.5	9.2	13.1	1.99	7.33			1.78	6.57		
28	4.28	6.19	2.5	10.5	14.7	1.81	7.73	23.12	33.44	1.48	6.35	18.99	27.50
30	4.91	6.99	1.7	8.4	11.6	1.64	8.06			1.24	6.07		
32	5.59	7.84	1.2	6.6	8.9	1.49	8.34			1.03	5.76		
34	6.30	8.72	0.7	4.7	6.1	1.36	8.56	25.62	35.45	0.86	5.42	16.24	22.49
36	7.07	9.65	1.1	7.8	11.5	1.23	8.72			0.72	5.06		
TOTAL			56.9	89.9	134.2	50.03	89.60	89.60	135.87	75.85	89.57	89.57	140.97



DENSITY SUMMARY FOR LOOKINGGLASS CREEK TRACT (1910)

DBH CLASS	BA PER TREE	TREES PER ACRE			BASAL AREA PER ACRE			STAND DENSITY INDEX/ACRE		
		Pine	Other	Total	Pine	Other	Total	Pine	Other	Total
2	0.02	4.00	4.00	8.00	0.09	0.09	0.17	0.23	0.35	0.58
4	0.09	3.00	3.00	6.00	0.26	0.26	0.52	0.59	0.75	1.34
6	0.20	3.11	3.55	6.66	0.61	0.70	1.31	1.26	1.64	2.90
8	0.35	5.02	1.41	6.43	1.75	0.49	2.24	3.38	1.01	4.39
10	0.55	5.11	1.39	6.50	2.79	0.76	3.55	5.11	1.39	6.50
12	0.79	5.27	1.09	6.36	4.14	0.86	5.00	7.28	1.44	8.71
14	1.07	4.53	1.07	5.60	4.84	1.14	5.99	8.22	1.78	10.00
16	1.40	3.43	0.59	4.02	4.79	0.82	5.61	7.88	1.20	9.08
18	1.77	3.34	0.45	3.79	5.90	0.80	6.70	9.45	1.09	10.55
20	2.18	2.52	0.57	3.09	5.50	1.24	6.74	8.59	1.62	10.22
22	2.64	2.86	0.48	3.34	7.55	1.27	8.82	11.55	1.58	13.13
24	3.14	2.75	0.29	3.04	8.64	0.91	9.55	12.95	1.09	14.04
26	3.69	2.68	0.32	3.00	9.88	1.18	11.06	14.54	1.35	15.90
28	4.28	2.07	0.09	2.16	8.85	0.38	9.24	12.81	0.43	13.23
30	4.91	1.41	0.09	1.50	6.92	0.44	7.36	9.86	0.47	10.33
32	5.59	1.21	0.07	1.28	6.76	0.39	7.15	9.48	0.41	9.89
34	6.30	0.68	0.09	0.77	4.29	0.57	4.85	5.93	0.57	6.50
36	7.07	0.80	0.11	0.91	5.65	0.78	6.43	7.72	0.76	8.48
38	7.88	0.25	0.09	0.34	1.97	0.71	2.68	2.66	0.68	3.33
40	8.73	0.36	0.00	0.36	3.14	0.00	3.14	4.19	0.00	4.19
42	9.62	0.14	0.00	0.14	1.35	0.00	1.35	1.78	0.00	1.78
44	10.56	0.14	0.00	0.14	1.48	0.00	1.48	1.93	0.00	1.93
46	11.54	0.09	0.00	0.09	1.04	0.00	1.04	1.34	0.00	1.34
48	12.57	0.05	0.00	0.05	0.63	0.00	0.63	0.80	0.00	0.80
TOTAL		54.82	18.75	73.57	98.82	13.79	112.60	149.53	19.61	169.13

Percent of Total	74.5	25.5		87.8	12.2		88.4	11.6	
Percent Over 21" DBH	28.3	8.7	23.3	69.0	48.1	66.4	65.2	37.4	62.0
Quad Mean Diameter (In.)	18.2	11.6	16.8						
Stand Density Index-Dq	157.9	23.5	181.4						
Dsum/Dq SDI Ratio	0.95	0.83	0.93						
Equilateral Spacing (Ft)	30.3	51.8	26.1						
Canopy Cover (Percent)			60						
Leaf Area Index			4.8						

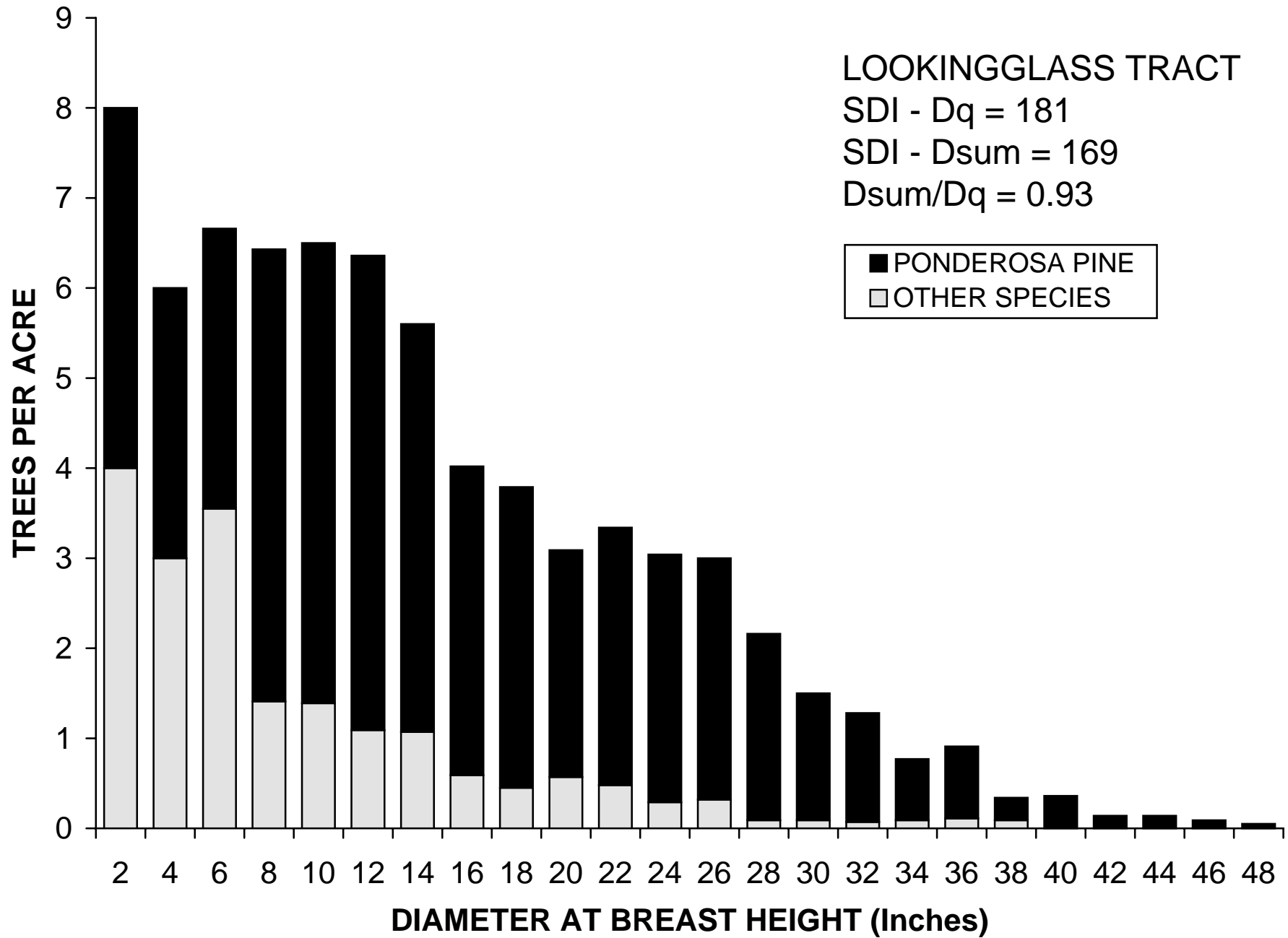
Other species: larch (2/3), Douglas-fir (1/3). Area measured: 44 acres. Source: above the Grande Ronde River.

LOOKINGGLASS TRACT

SDI - Dq = 181

SDI - Dsum = 169

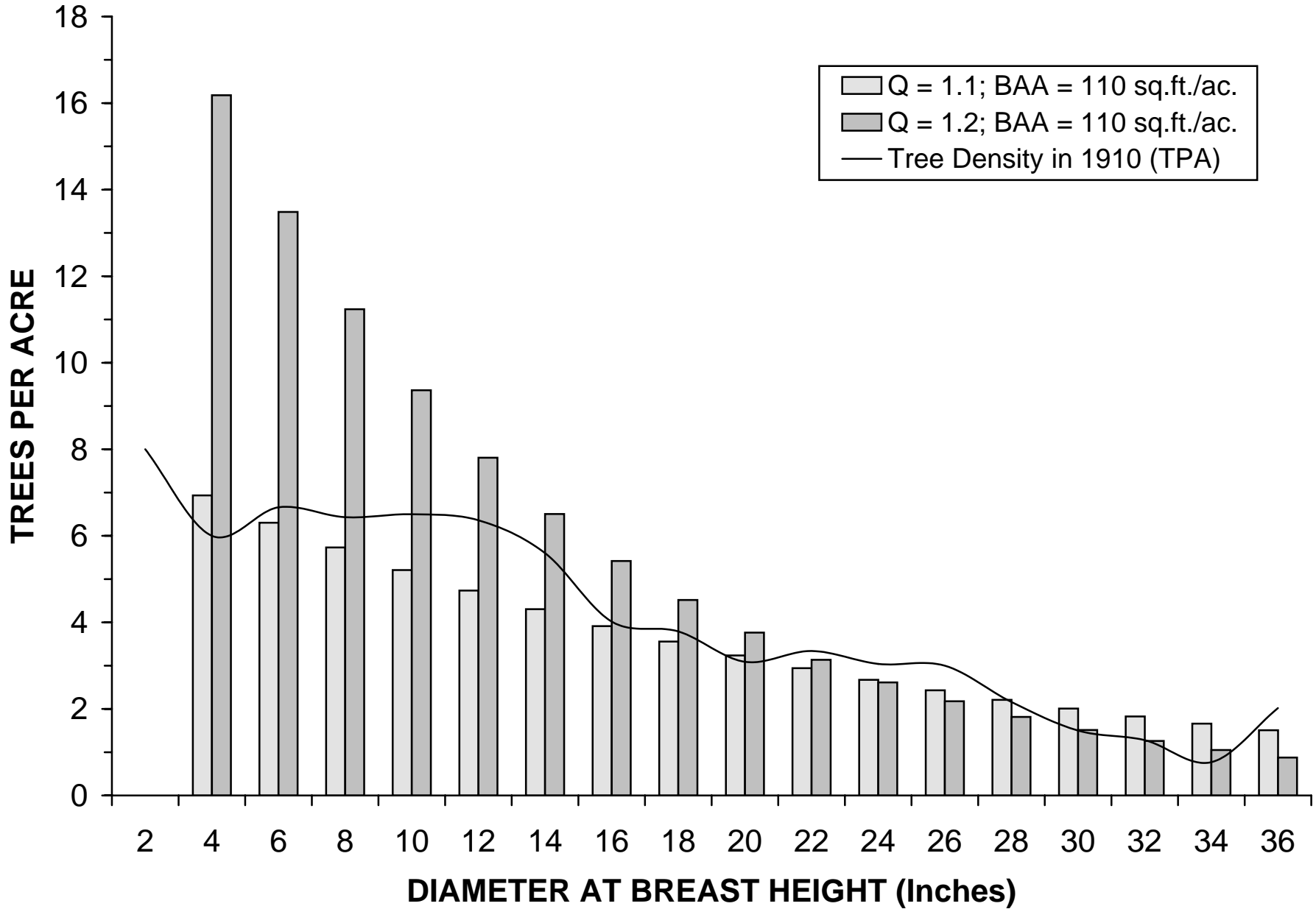
Dsum/Dq = 0.93



UNEVEN-AGED ANALYSIS FOR LOOKINGGLASS CREEK TRACT (1910)

DBH CLASS	BA PER TREE	SDI PER TREE	EXISTING DENSITY IN 1910			Q=1.1; BAA=110		BY GROUP		Q=1.2; BAA=110		BY GROUP	
			TPA	BAA	SDI	TPA	BAA	BAA	SDI	TPA	BAA	BAA	SDI
2	0.02	0.06	8.0	0.2	0.6								
4	0.09	0.20	6.0	0.5	1.3	6.93	0.61	1.84	3.92	16.18	1.41	4.06	8.66
6	0.20	0.40	6.7	1.3	2.9	6.30	1.24			13.49	2.65		
8	0.35	0.67	6.4	2.2	4.4	5.73	2.00			11.24	3.92		
10	0.55	1.00	6.5	3.5	6.5	5.21	2.84	8.56	15.61	9.37	5.11	15.16	27.71
12	0.79	1.38	6.4	5.0	8.7	4.74	3.72			7.80	6.13		
14	1.07	1.81	5.6	6.0	10.0	4.31	4.60			6.50	6.95		
16	1.40	2.30	4.0	5.6	9.1	3.91	5.46	16.36	26.87	5.42	7.57	22.50	37.03
18	1.77	2.83	3.8	6.7	10.5	3.56	6.29			4.52	7.98		
20	2.18	3.41	3.1	6.7	10.2	3.23	7.06			3.76	8.21		
22	2.64	4.04	3.3	8.8	13.1	2.94	7.76	23.22	35.49	3.14	8.28	24.70	37.81
24	3.14	4.71	3.0	9.6	14.0	2.67	8.40			2.61	8.21		
26	3.69	5.43	3.0	11.1	15.9	2.43	8.96			2.18	8.03		
28	4.28	6.19	2.2	9.2	13.2	2.21	9.45	28.27	40.90	1.82	7.76	23.22	33.62
30	4.91	6.99	1.5	7.4	10.3	2.01	9.86			1.51	7.42		
32	5.59	7.84	1.3	7.1	9.9	1.83	10.20			1.26	7.04		
34	6.30	8.72	0.8	4.9	6.5	1.66	10.47	31.33	43.36	1.05	6.62	19.85	27.49
36	7.07	9.65	2.0	14.3	21.5	1.51	10.67			0.88	6.19		
TOTAL			73.6	110.1	168.8	61.18	109.57	109.57	166.15	92.72	109.49	109.49	172.32

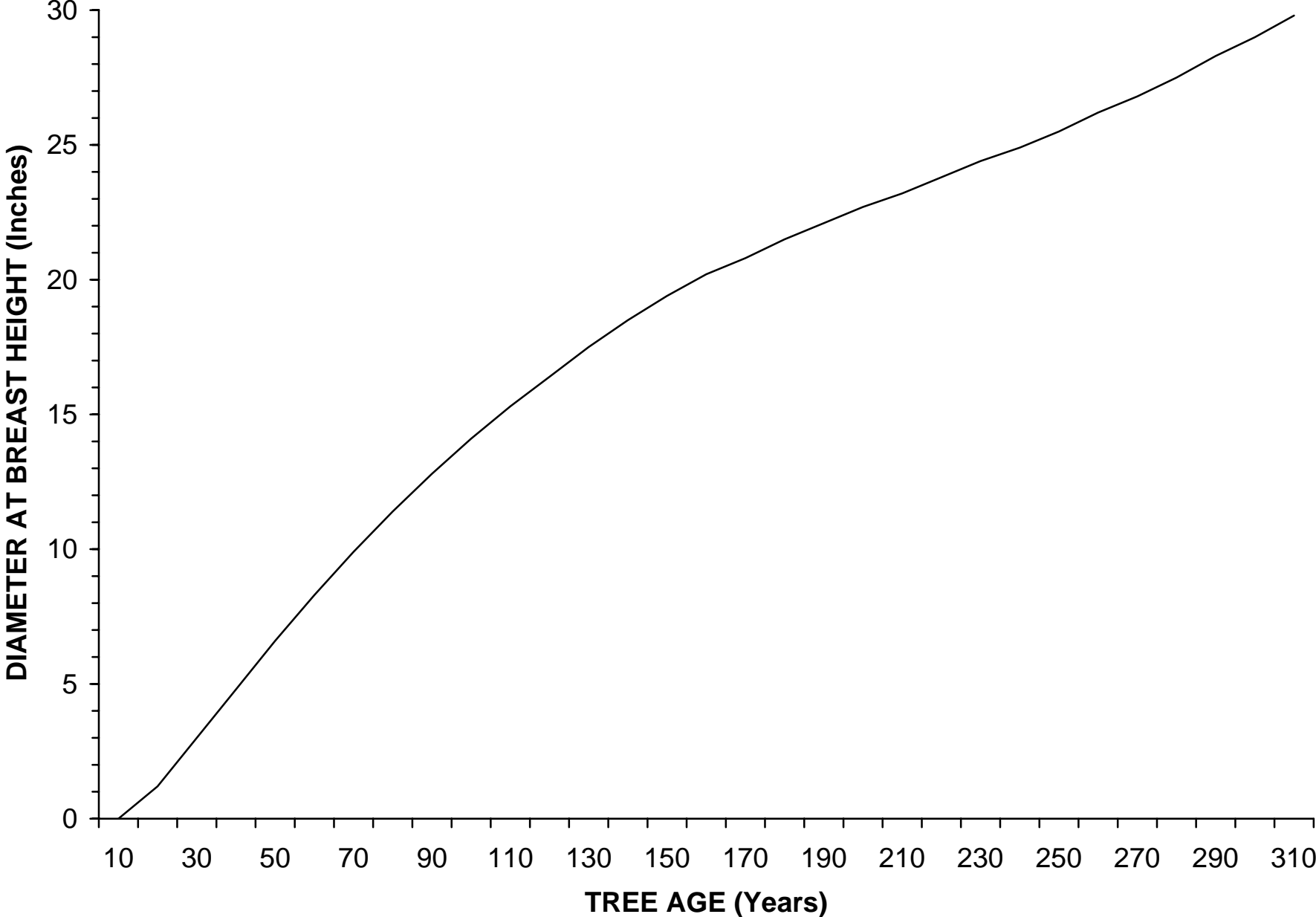
Uneven-aged Analysis for Lookingglass Creek Tract

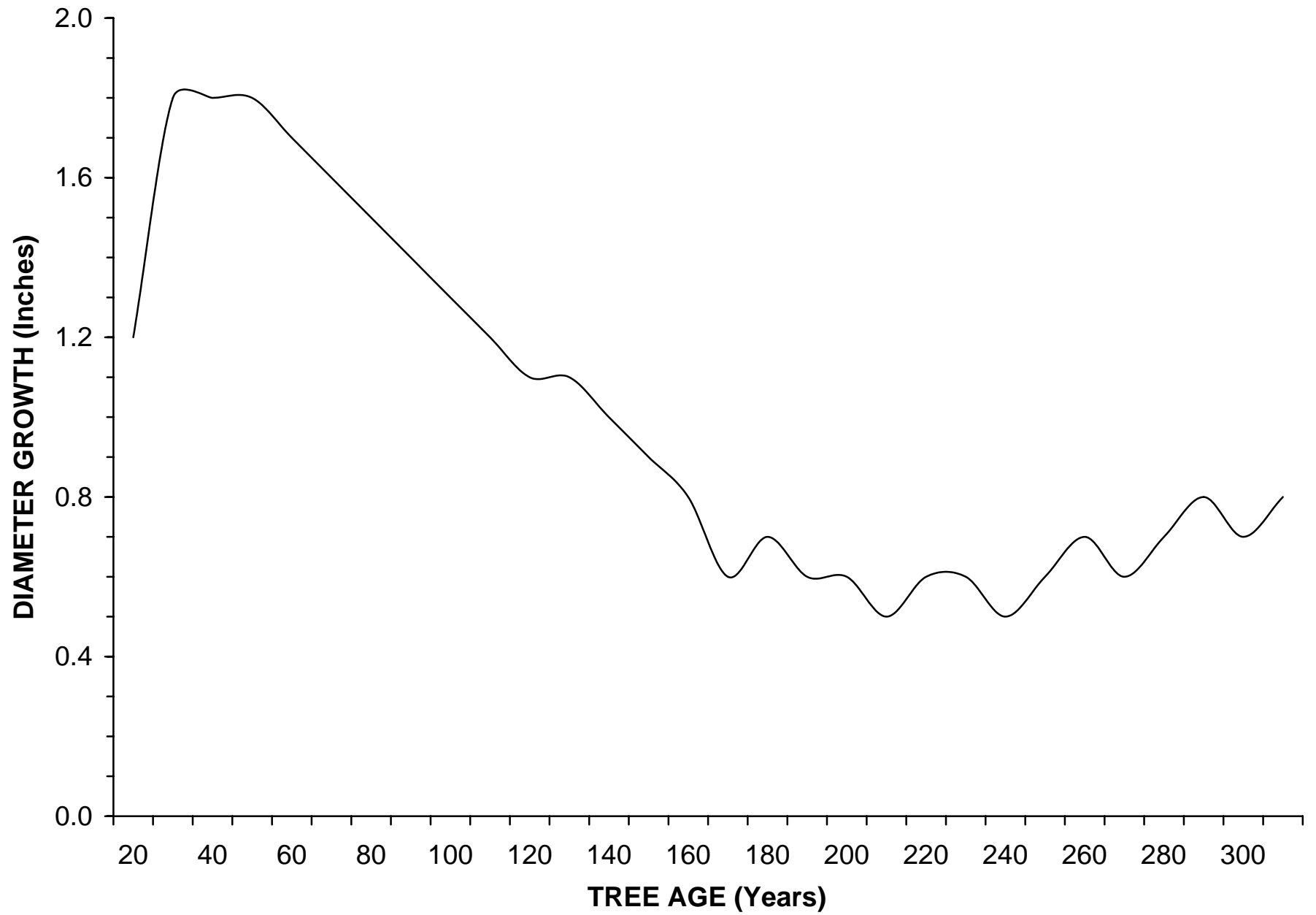


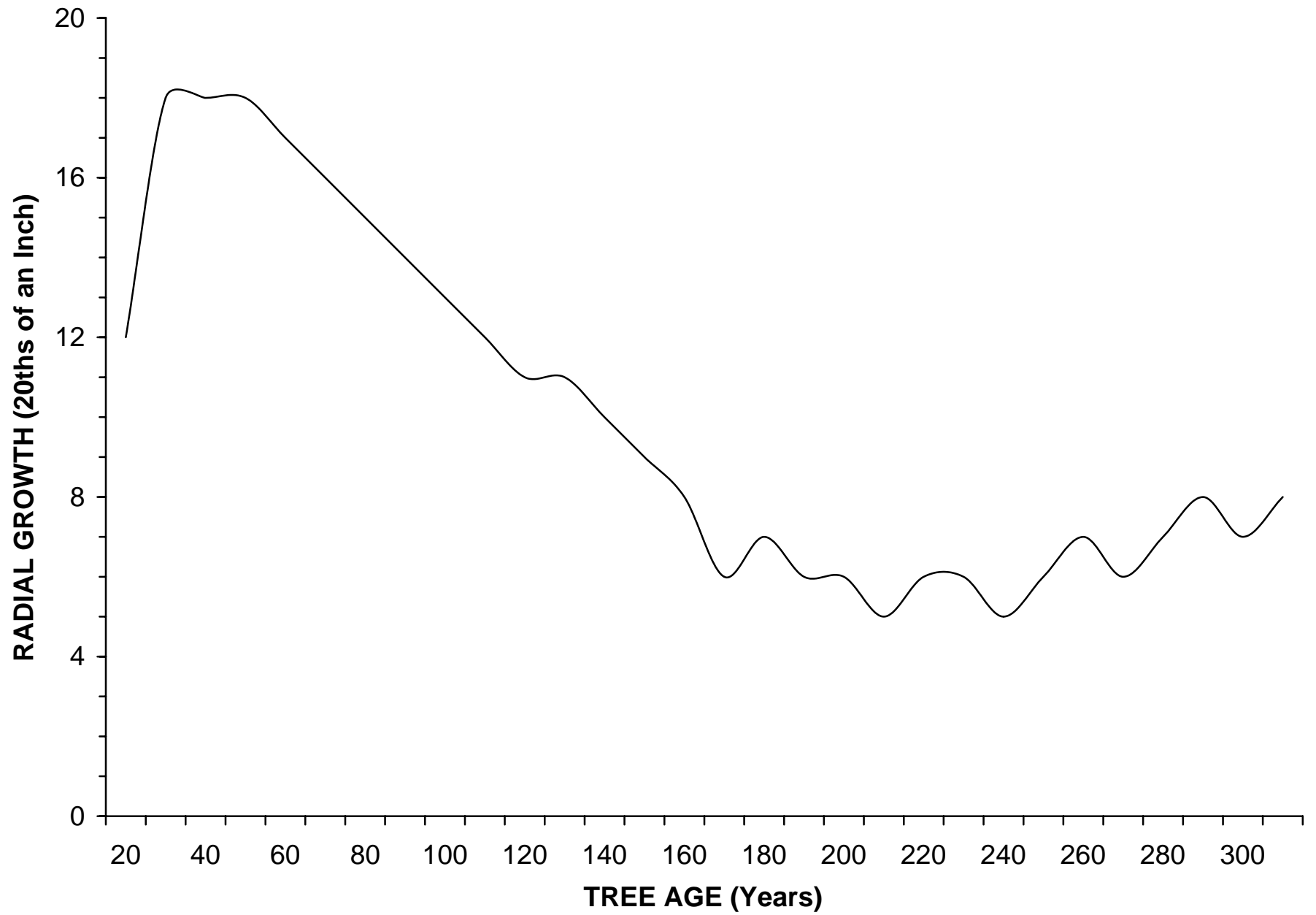
GROWTH SUMMARY FOR LOOKINGGLASS CREEK TRACT (Bright 1912)

AGE	DBH (Inches)	DBH GROWTH (Inches)	RADIAL GROW (20ths)	HEIGHT (Feet)	HGT GROW (Feet)
10	0.0			2	
20	1.2	1.2	12	6	4
30	3.0	1.8	18	16	10
40	4.8	1.8	18	27	11
50	6.6	1.8	18	38	11
60	8.3	1.7	17	48	10
70	9.9	1.6	16	57	9
80	11.4	1.5	15	65	8
90	12.8	1.4	14	72	7
100	14.1	1.3	13	79	7
110	15.3	1.2	12	86	7
120	16.4	1.1	11	91	5
130	17.5	1.1	11	96	5
140	18.5	1.0	10	100	4
150	19.4	0.9	9	104	4
160	20.2	0.8	8	107	3
170	20.8	0.6	6	110	3
180	21.5	0.7	7	112	2
190	22.1	0.6	6	114	2
200	22.7	0.6	6	115	1
210	23.2	0.5	5	116	1
220	23.8	0.6	6	117	1
230	24.4	0.6	6	118	1
240	24.9	0.5	5	118	0
250	25.5	0.6	6	119	1
260	26.2	0.7	7	119	0
270	26.8	0.6	6	120	1
280	27.5	0.7	7	120	0
290	28.3	0.8	8	120	0
300	29.0	0.7	7	121	1
310	29.8	0.8	8	121	0
BASIS:	409 trees			588 trees	

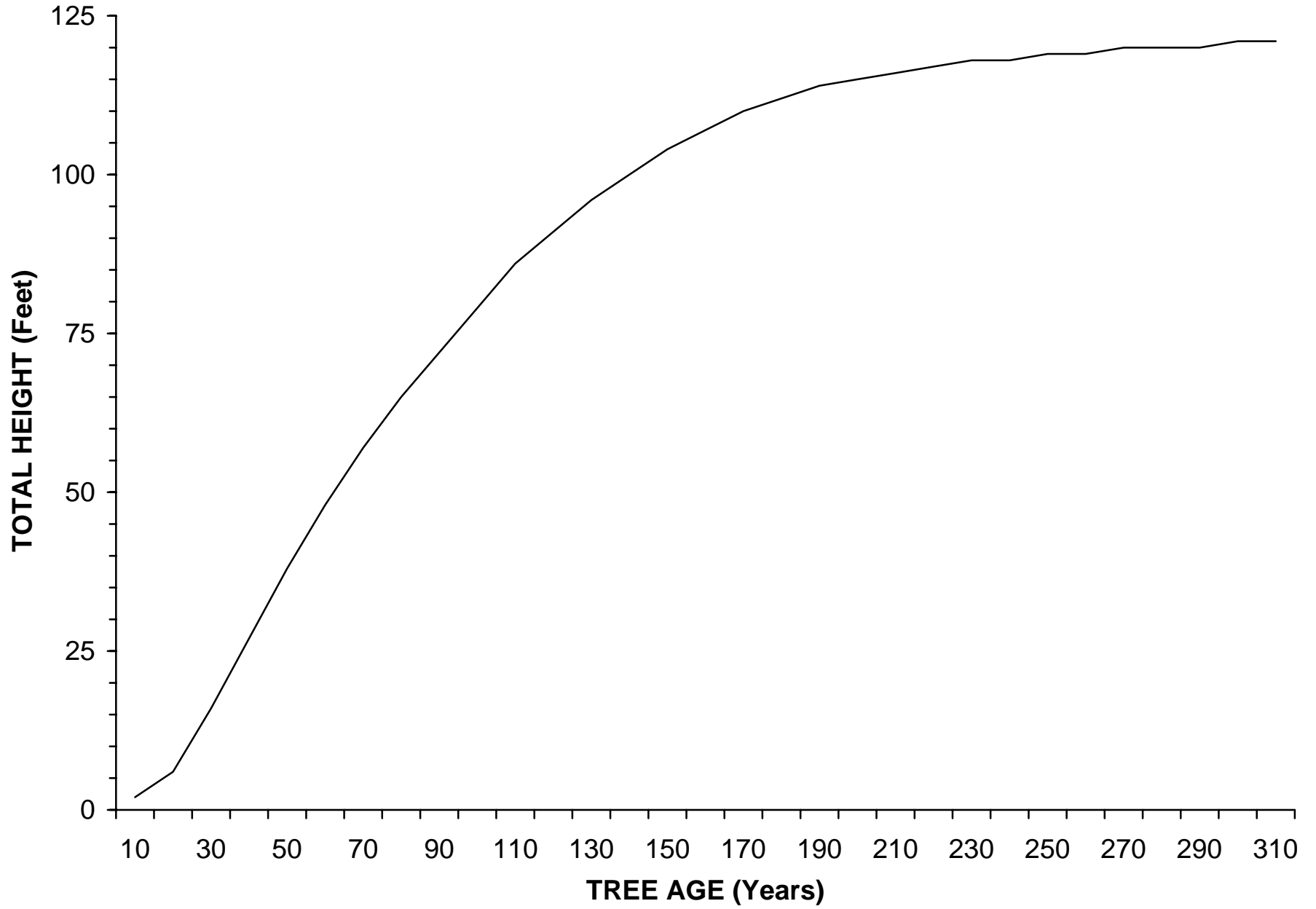
Lookingglass Creek Diameter Accretion (Based on 409 Trees)







Lookingglass Creek Height Accretion (Based on 588 Trees)



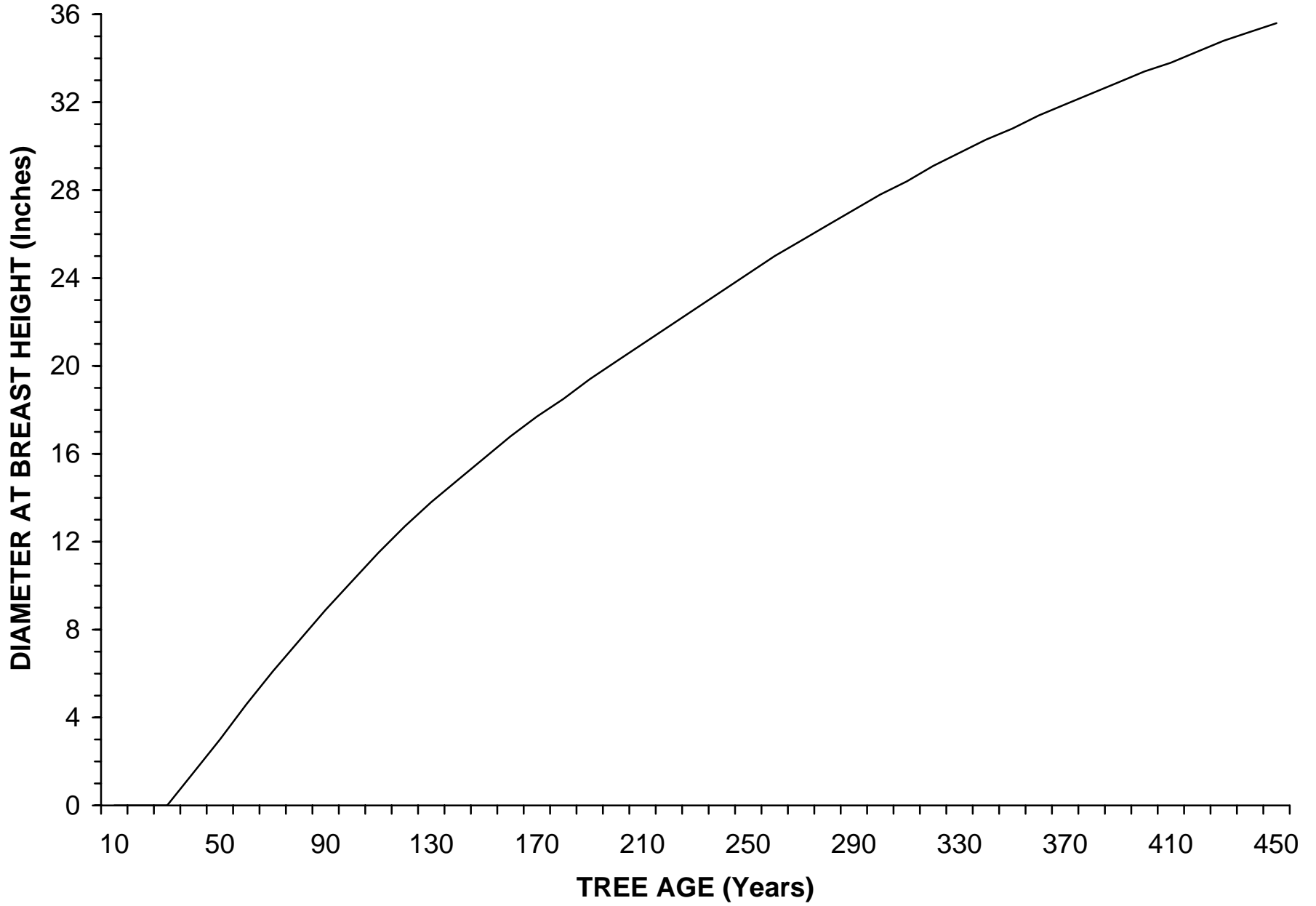
GROWTH SUMMARY FOR PARKER'S MILL TRACT (Bright 1912)

AGE	DBH (Inches)	DBH GROWTH (Inches)	RADIAL GROW (20ths)
10	0.0		
20	0.0	0.0	0
30	0.0	0.0	0
40	1.5	1.5	15
50	3.0	1.5	15
60	4.6	1.6	16
70	6.1	1.5	15
80	7.5	1.4	14
90	8.9	1.4	14
100	10.2	1.3	13
110	11.5	1.3	13
120	12.7	1.2	12
130	13.8	1.1	11
140	14.8	1.0	10
150	15.8	1.0	10
160	16.8	1.0	10
170	17.7	0.9	9
180	18.5	0.8	8
190	19.4	0.9	9
200	20.2	0.8	8
210	21.0	0.8	8
220	21.8	0.8	8
230	22.6	0.8	8
240	23.4	0.8	8
250	24.2	0.8	8
260	25.0	0.8	8
270	25.7	0.7	7
280	26.4	0.7	7
290	27.1	0.7	7
300	27.8	0.7	7
310	28.4	0.6	6
320	29.1	0.7	7
330	29.7	0.6	6
340	30.3	0.6	6
350	30.8	0.5	5
360	31.4	0.6	6
370	31.9	0.5	5
380	32.4	0.5	5
390	32.9	0.5	5
400	33.4	0.5	5
410	33.8	0.4	4
420	34.3	0.5	5
430	34.8	0.5	5
440	35.2	0.4	4
450	35.6	0.4	4

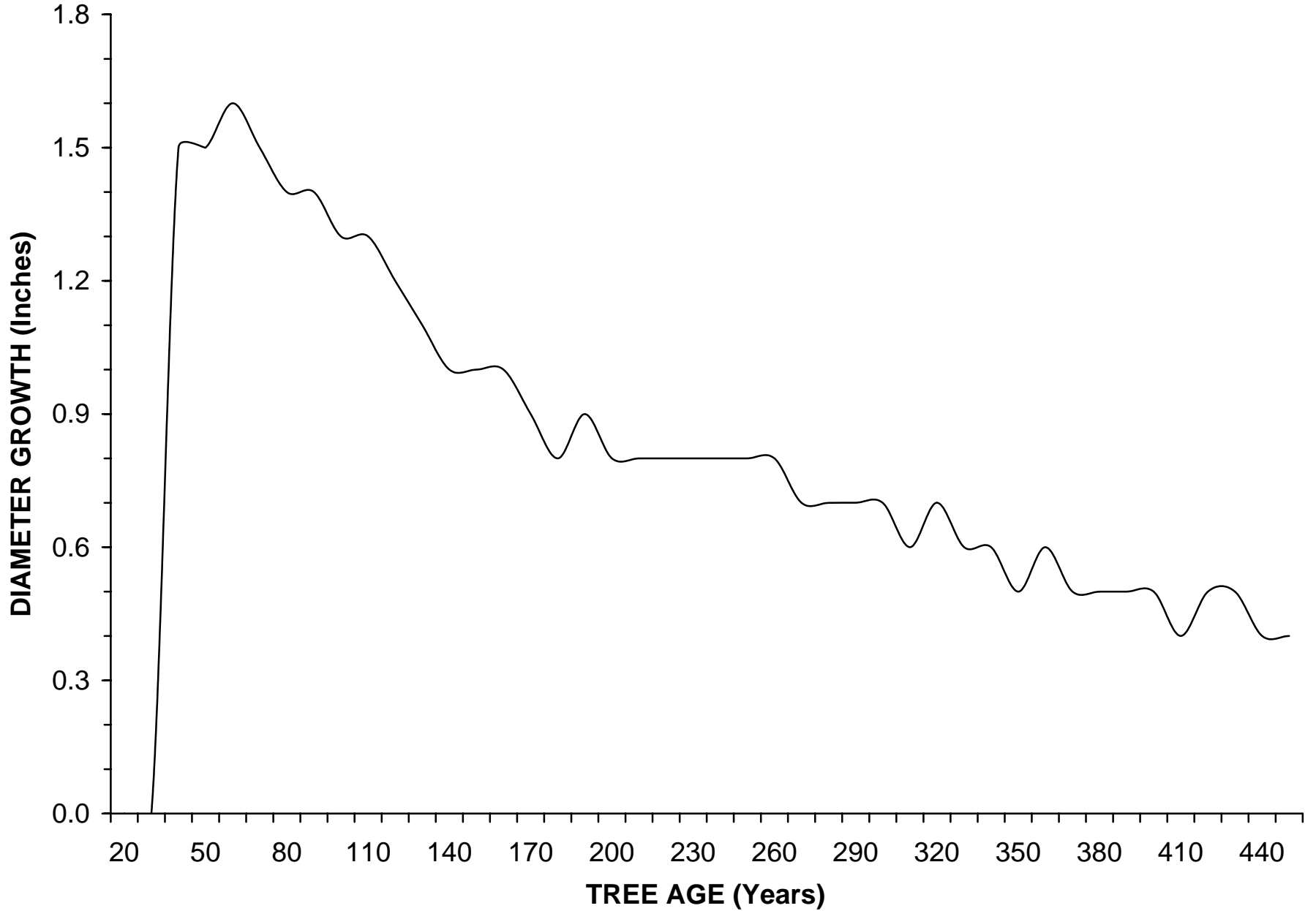
BASIS: 245 trees Measurement Year: 1911

Tract description: T5S, R26E; 1 mile north of the boundary of the Umatilla National

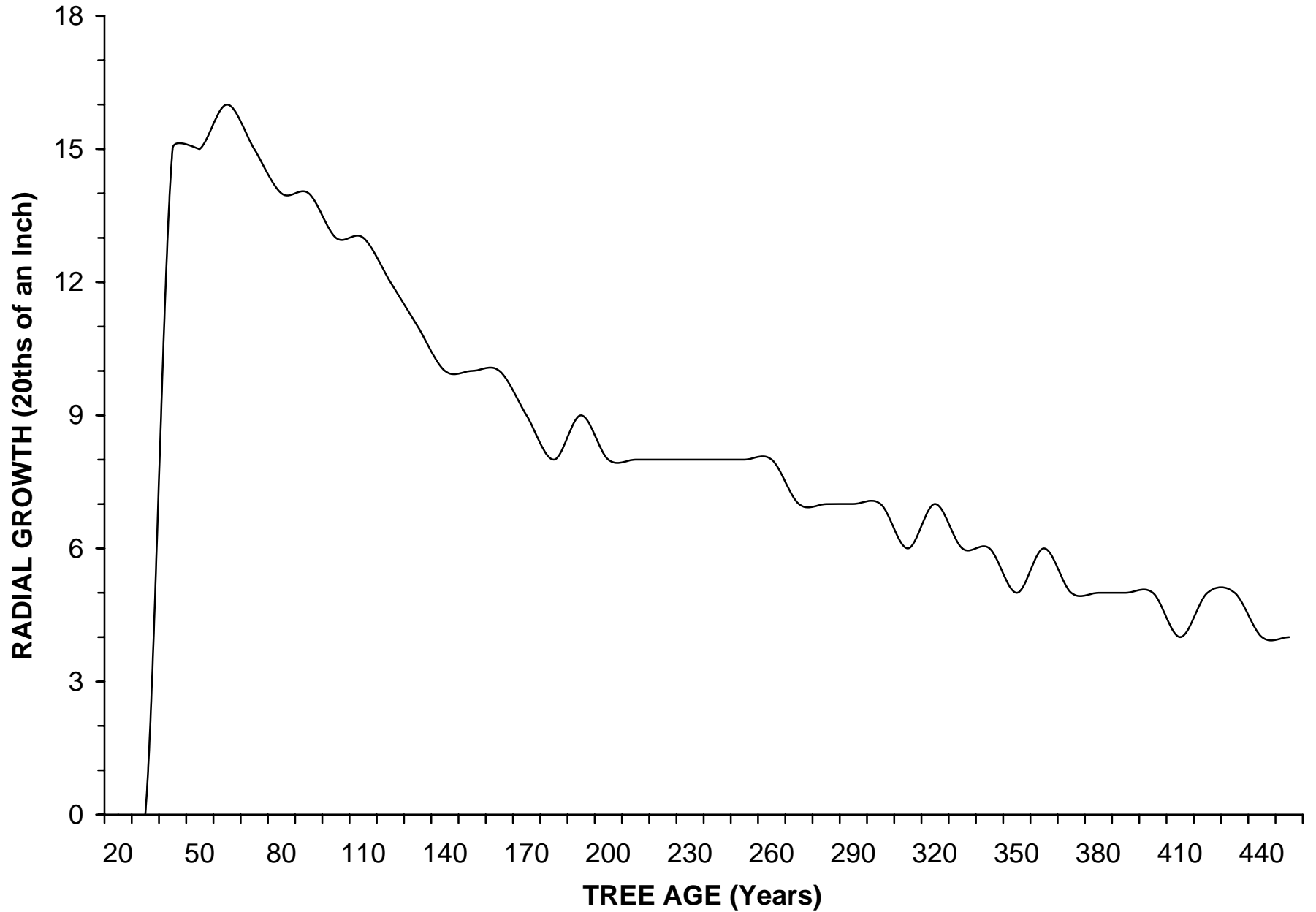
Parker's Mill Diameter Accretion (Based on 245 Trees)



Parker's Mill Diameter Growth Summary



Parker's Mill Radial Growth Summary

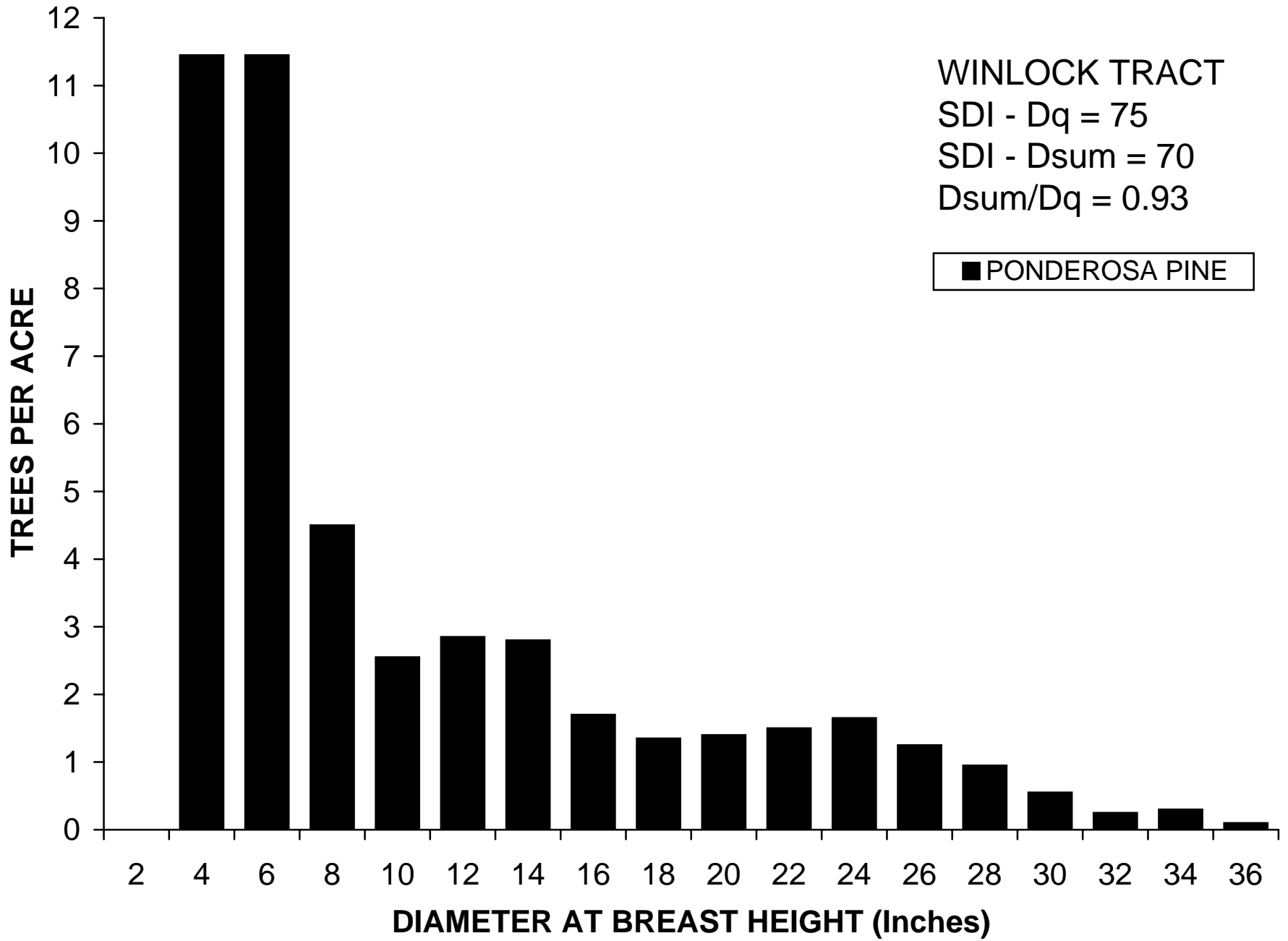


DENSITY SUMMARY FOR WINLOCK'S MILL TRACT (1911)

DBH CLASS	BA PER TREE	TPA Pine	BAA Pine	SDI/ACRE Pine
2	0.02	0.00	0.00	0.00
4	0.09	11.45	1.00	2.26
6	0.20	11.45	2.25	4.64
8	0.35	4.50	1.57	3.03
10	0.55	2.55	1.39	2.55
12	0.79	2.85	2.24	3.94
14	1.07	2.80	2.99	5.08
16	1.40	1.70	2.37	3.91
18	1.77	1.35	2.39	3.82
20	2.18	1.40	3.05	4.77
22	2.64	1.50	3.96	6.06
24	3.14	1.65	5.18	7.77
26	3.69	1.25	4.61	6.78
28	4.28	0.95	4.06	5.88
30	4.91	0.55	2.70	3.84
32	5.59	0.25	1.40	1.96
34	6.30	0.30	1.89	2.62
36	7.07	0.10	0.71	0.97
TOTAL		46.60	43.76	69.87

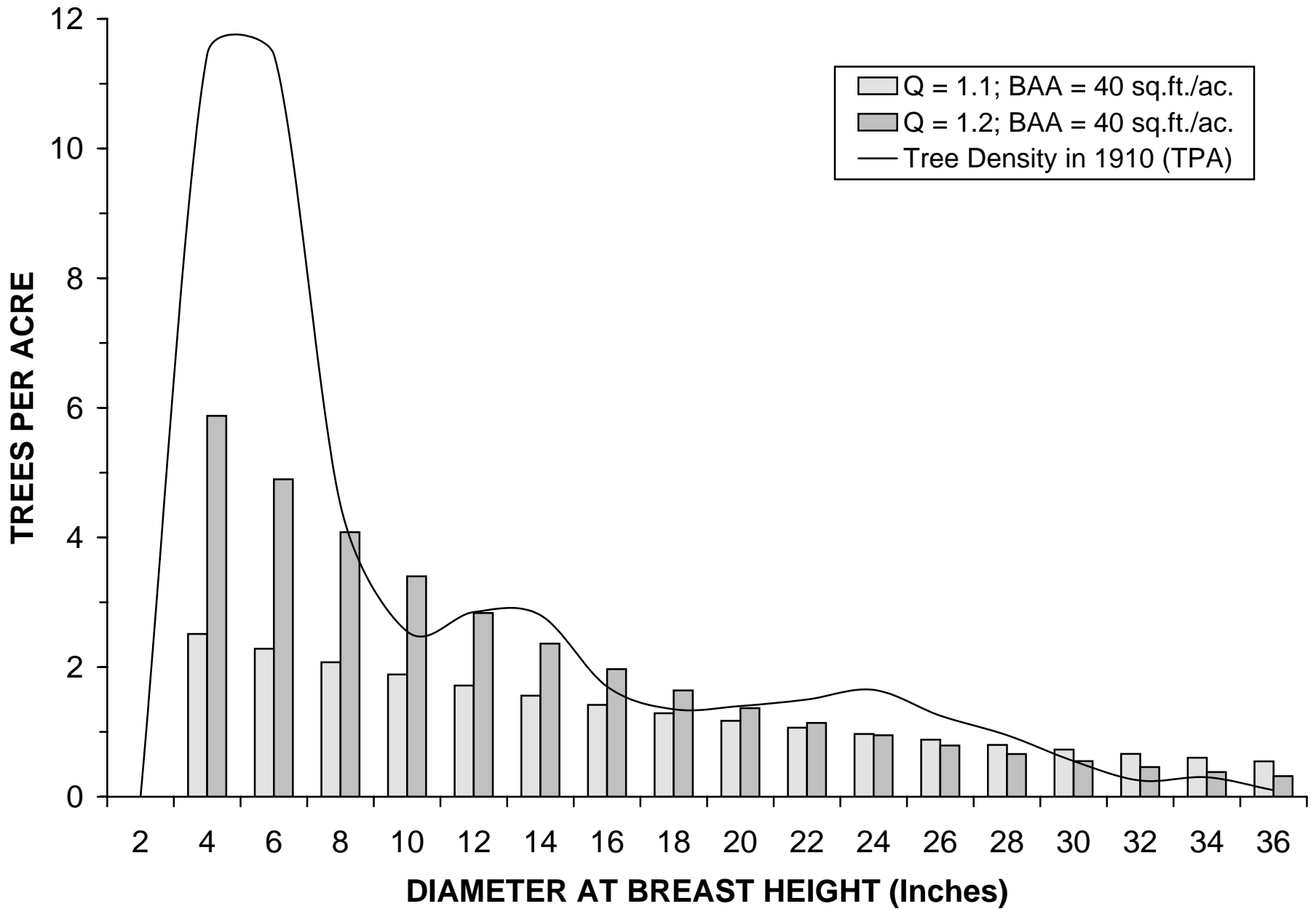
Percent Over 21" DBH	14.1	56.0	51.3
Quad Mean Diameter (In.)	13.1		
Stand Density Index-Dq	75.4		
Dsum/Dq SDI Ratio	0.93		
Equilateral Spacing (Ft)	32.9		
Canopy Cover (Percent)	43		
Leaf Area Index	3.2		

Tract Description: Winlock's Mill, Wheeler County -- pure pine stand on hot, dry, south slope at 3300 feet. Soil: fairly deep, loamy, decomposed basalt. Undergrowth: pinegrass and weeds. Good pine reproduction. Area measured: 20 acres. Source: Munger (1912).
 T7S, R24E; 1 mile south of the Umatilla NF boundary; app. 500 feet above the John Day River.



UNEVEN-AGED ANALYSIS FOR WINLOCK'S MILL TRACT (1911)

DBH CLASS	BA PER TREE	SDI PER TREE	EXISTING DENSITY IN 1910			Q=1.1; BAA=40				Q=1.2; BAA=40				
			TPA	BAA	SDI	TPA	BAA	BY GROUP BAA SDI		TPA	BAA	BY GROUP BAA SDI		
2	0.02	0.06	0.00	0.00	0.00									
4	0.09	0.20	11.45	1.00	2.26	2.51	0.22	0.67	1.42	5.88	0.51	1.47	3.14	
6	0.20	0.40	11.45	2.25	4.64	2.28	0.45			4.90	0.96			
8	0.35	0.67	4.50	1.57	3.03	2.08	0.72			4.08	1.42			
10	0.55	1.00	2.55	1.39	2.55	1.89	1.03	3.10	5.65	3.40	1.85	5.51	10.06	
12	0.79	1.38	2.85	2.24	3.94	1.72	1.35			2.83	2.23			
14	1.07	1.81	2.80	2.99	5.08	1.56	1.67			2.36	2.52			
16	1.40	2.30	1.70	2.37	3.91	1.42	1.98	5.92	9.73	1.97	2.75	8.17	13.45	
18	1.77	2.83	1.35	2.39	3.82	1.29	2.28			1.64	2.90			
20	2.18	3.41	1.40	3.05	4.77	1.17	2.56			1.37	2.98			
22	2.64	4.04	1.50	3.96	6.06	1.06	2.81	8.41	12.85	1.14	3.01	8.97	13.73	
24	3.14	4.71	1.65	5.18	7.77	0.97	3.04			0.95	2.98			
26	3.69	5.43	1.25	4.61	6.78	0.88	3.24			0.79	2.92			
28	4.28	6.19	0.95	4.06	5.88	0.80	3.42	10.24	14.81	0.66	2.82	8.43	12.21	
30	4.91	6.99	0.55	2.70	3.84	0.73	3.57			0.55	2.70			
32	5.59	7.84	0.25	1.40	1.96	0.66	3.69			0.46	2.56			
34	6.30	8.72	0.30	1.89	2.62	0.60	3.79	11.35	15.70	0.38	2.40	7.21	9.98	
36	7.07	9.65	0.10	0.71	0.97	0.55	3.86			0.32	2.25			
TOTAL			46.60	43.76	69.87	22.16	39.68	39.68	60.17	33.67	39.76	39.76	62.58	

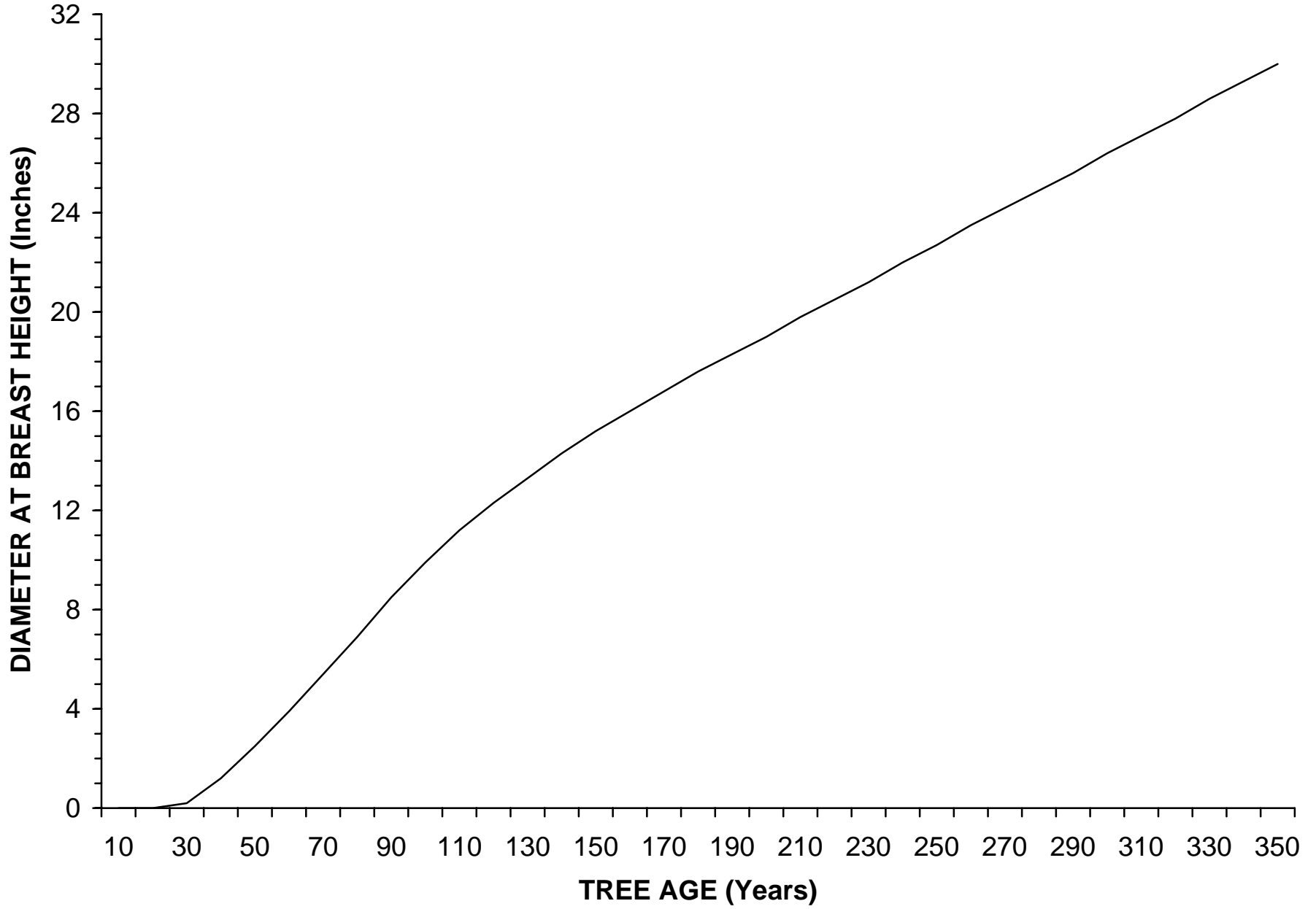


GROWTH SUMMARY FOR WINLOCK'S MILL TRACT (Bright 1912)

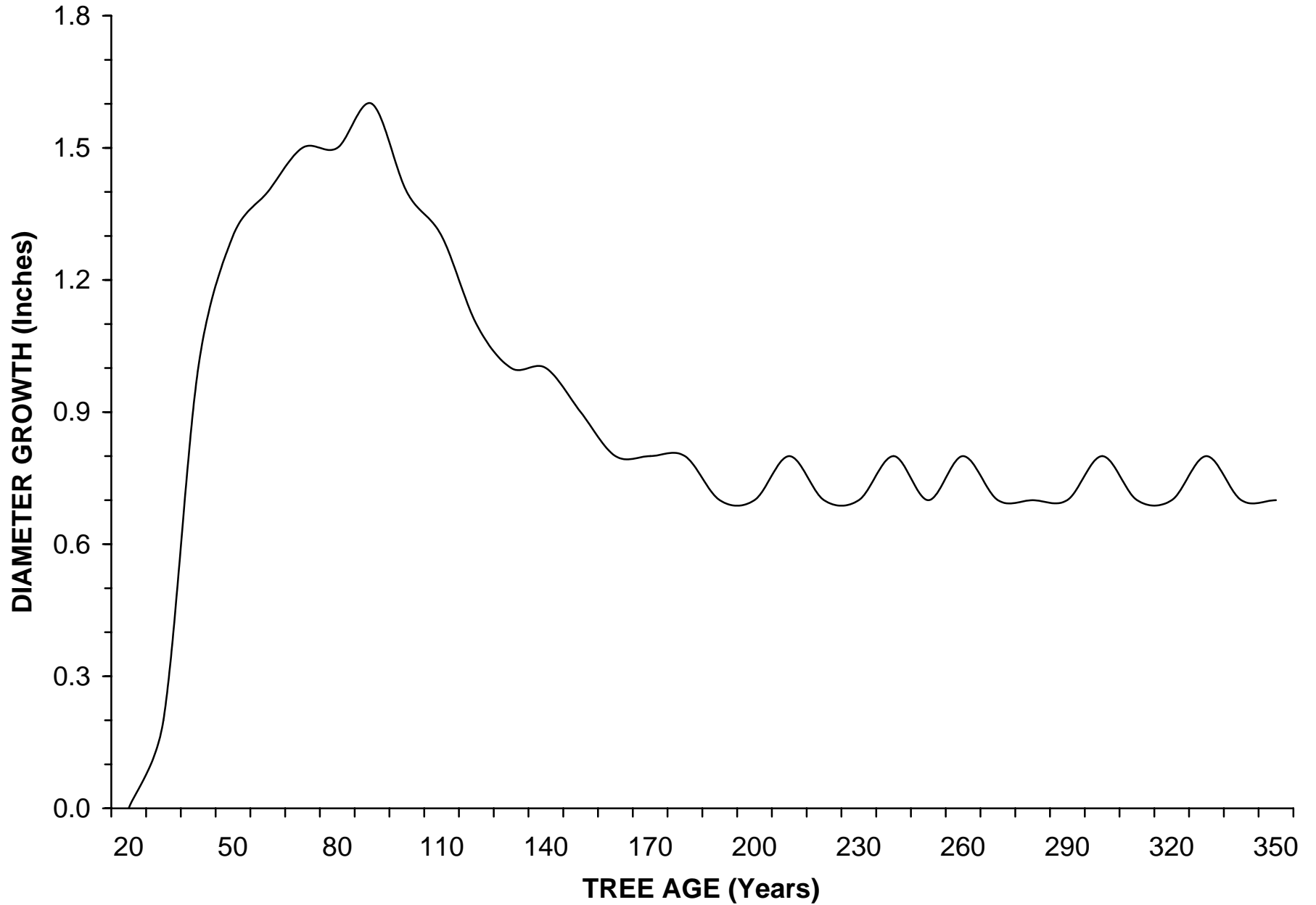
AGE	DBH (Inches)	DBH GROWTH (Inches)	RADIAL GROW (20ths)
10	0.0		
20	0.0	0.0	0
30	0.2	0.2	2
40	1.2	1.0	10
50	2.5	1.3	13
60	3.9	1.4	14
70	5.4	1.5	15
80	6.9	1.5	15
90	8.5	1.6	16
100	9.9	1.4	14
110	11.2	1.3	13
120	12.3	1.1	11
130	13.3	1.0	10
140	14.3	1.0	10
150	15.2	0.9	9
160	16.0	0.8	8
170	16.8	0.8	8
180	17.6	0.8	8
190	18.3	0.7	7
200	19.0	0.7	7
210	19.8	0.8	8
220	20.5	0.7	7
230	21.2	0.7	7
240	22.0	0.8	8
250	22.7	0.7	7
260	23.5	0.8	8
270	24.2	0.7	7
280	24.9	0.7	7
290	25.6	0.7	7
300	26.4	0.8	8
310	27.1	0.7	7
320	27.8	0.7	7
330	28.6	0.8	8
340	29.3	0.7	7
350	30.0	0.7	7

BASIS: 407 trees

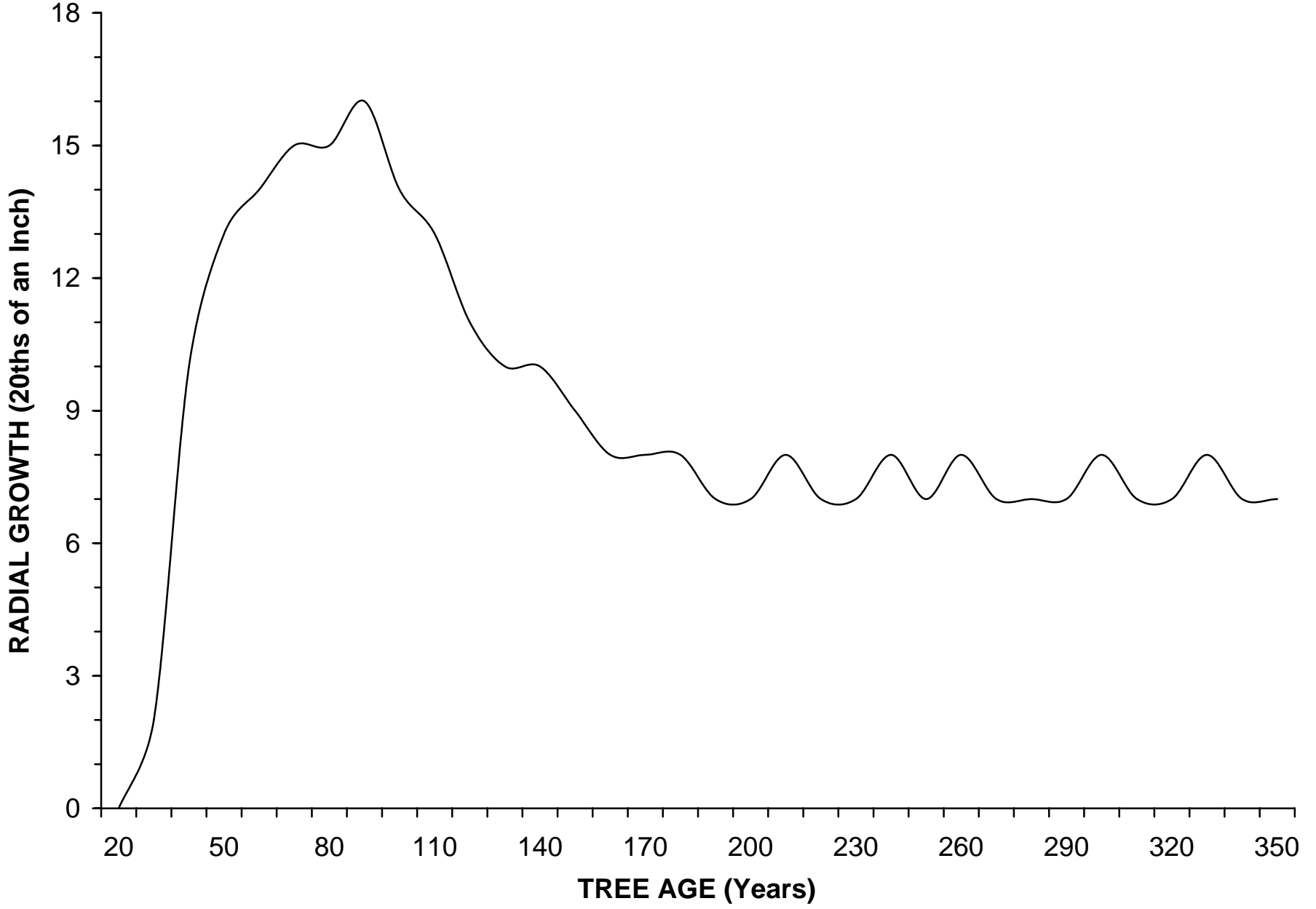
Winlock's Mill Diameter Accretion (Based on 407 Trees)



Winlock's Mill Diameter Growth Summary



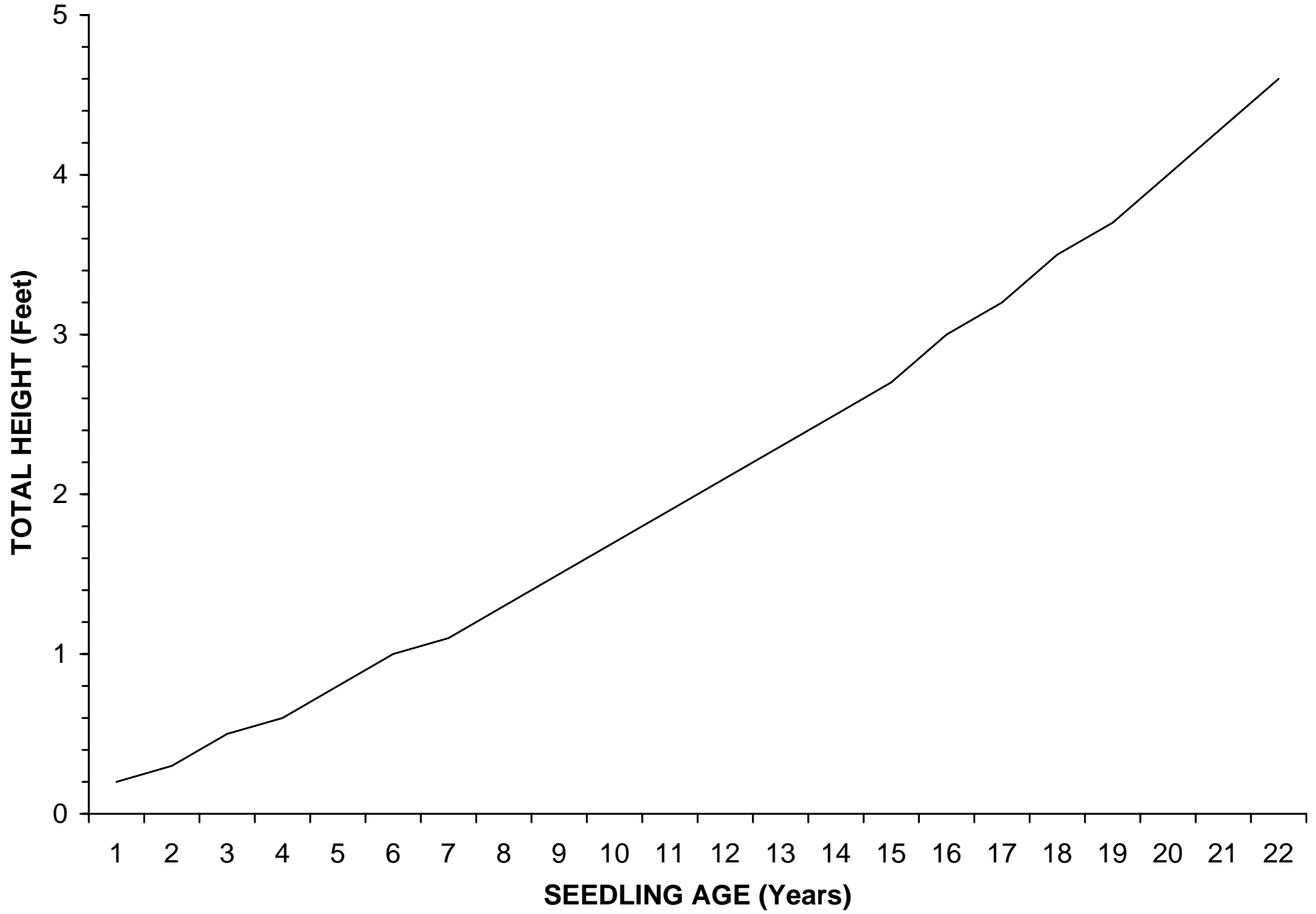
Winlock's Mill Radial Growth Summary



SEEDLING HEIGHT GROWTH (Bright 1912)

AGE	SEEDLING HEIGHT GROWTH, IN FEET	
	Baker, Grant, Union Counties	Winlock's Mill
1	0.2	0.2
2	0.3	0.3
3	0.5	0.4
4	0.6	0.5
5	0.8	0.5
6	1.0	0.6
7	1.1	0.7
8	1.3	0.8
9	1.5	0.9
10	1.7	1.0
11	1.9	1.1
12	2.1	1.2
13	2.3	1.3
14	2.5	1.4
15	2.7	1.6
16	3.0	1.7
17	3.2	1.8
18	3.5	2.0
19	3.7	2.2
20	4.0	2.3
21	4.3	2.5
22	4.6	2.6
23		2.7
24		2.9
25		3.1
BASIS:	1,182 trees	1,239 trees
Measurement Year:	1910	1911

Baker/Grant/Union Seedling Height Accretion (Based on 1,182 Trees)



Winlock's Mill Seedling Height Accretion (Based on 1,239 Trees)

