

10m Site Classification Method

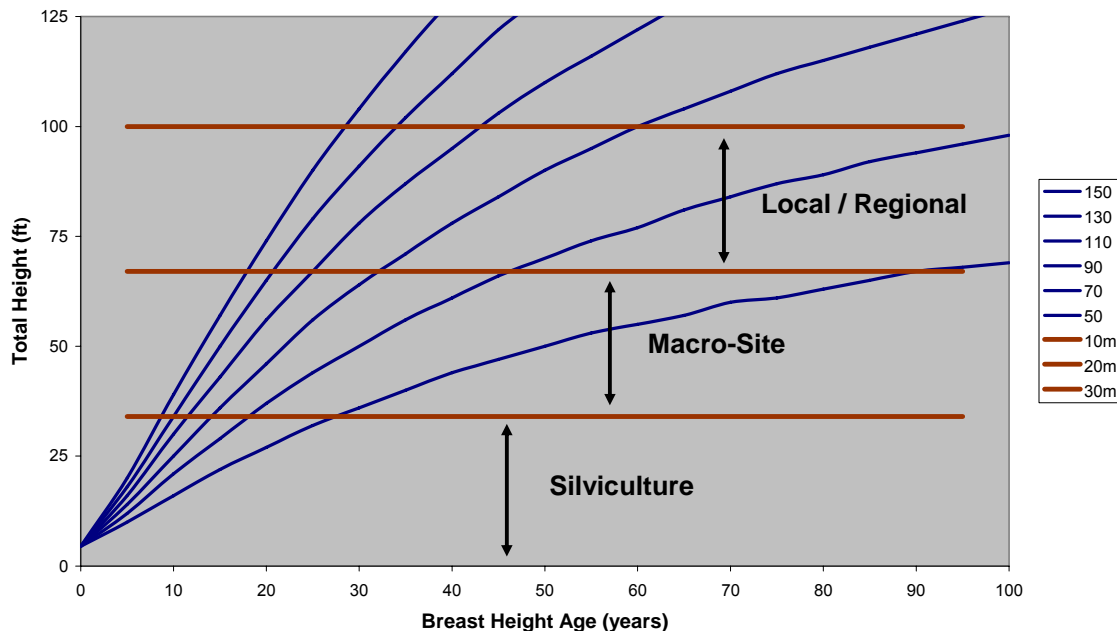
Background

- ▶ Height Growth / Age Indexed at Fixed Age
- ▶ Macro-Site Capacity Defined by Height / Age
- ▶ Assumed to be Independent of Silviculture
- ▶ Traditional Methods:
 - Historically Height at 100 years (Total Age)
 - West Coast – Height at 50 years (Breast Height)
 - Southeast – Height at 25 years (Total Age)
- ▶ Site Class = a given Yield Capacity (MAI)

Method

- ▶ Use Boris Zeide's (1978) Two-Point Principal
 - Measure Two Heights on the Same Tree
 - Record the Number of Years between Measurements
 - Site Index based on Two Upper-Stem Measurements
- ▶ Move the Base Age from BH to 10-meter Height (33 feet plus 1-foot stump)
- ▶ Site Capacity equals #Years from 10 to 20 meters (34 to 67 feet)
- ▶ Site Shape equals #Years from 20 to 30 meters (67 to 100 feet)
- ▶ Site Index = Height Growth in Meters / Decade
 - = $100 / (\# \text{Years from 10m to 20m Ht})$
- ▶ 10m Site Method may be Applied Anywhere / Any Species

**Conventional Breast Height Age - Site Curves
Height Growth Intercepts (10, 20, 30 meters)**



- ▶ BH Site (50yr) = $30 + 10 * 10\text{m Site}$ (approximation back to traditional)
- ▶ Tot Age Site (25yr) = $30 + 5 * 10\text{m Site}$ (approximation for Southeast)

FBRI Tree Silviculture, Site and Taper Record

Tree #: 1
Species: PP

Msmt	Dob	Dbt	Height	# Rings
Top				
100-ft	0.0	0.0	86.0	0
67-ft	5.6	0.2	69.0	32
34-ft	14.0	0.8	34.0	73
Crn Base			37.0	
80% Dbh				
Breast Ht	18.1	1.5	4.5	137
Stump Ht	22.4	3.8	1.0	143

Increment:

34 to 67	35.0	38.4
67 to 100	17.0	61.7
Site Index:		2.6
Shape Index:		62%

Tree #: 2
Species: PP

Msmt	Dob	Dbt	Height	# Rings
Top				
100-ft	0.0	0.0	88.2	0
67-ft	7.7	0.5	67.2	28
34-ft	16.3	1.0	34.2	59
Crn Base			44.0	
80% Dbh				
Breast Ht	19.6	2.3	4.5	93
Stump Ht	23.1	3.2	1.2	97

34 to 67	33.0	30.8
67 to 100	21.0	43.7
Site Index:		3.2
Shape Index:		70%

Tree #: 3
Species: PP

Msmt	Dob	Dbt	Height	# Rings
Top				
100-ft	0.0	0.0	69.2	0
67-ft	1.0	0.2	67.3	3
34-ft	10.6	0.7	34.2	42
Crn Base			30.0	
80% Dbh				
Breast Ht	16.7	2.2	4.5	94
Stump Ht	19.4	2.8	1.0	111

Increment:

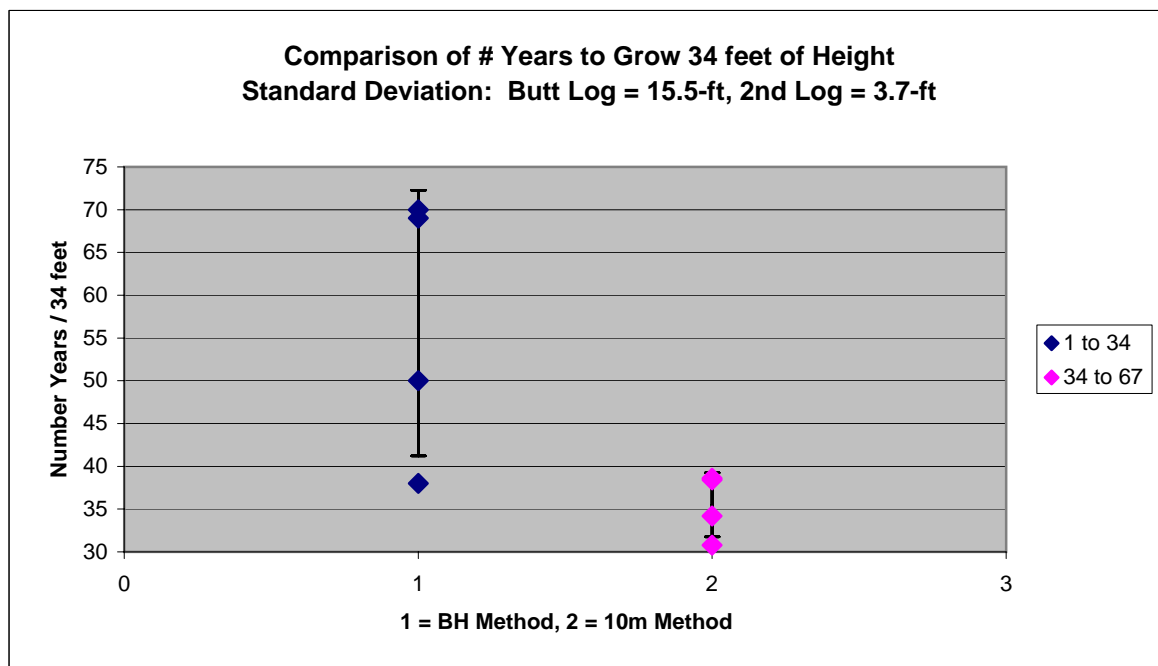
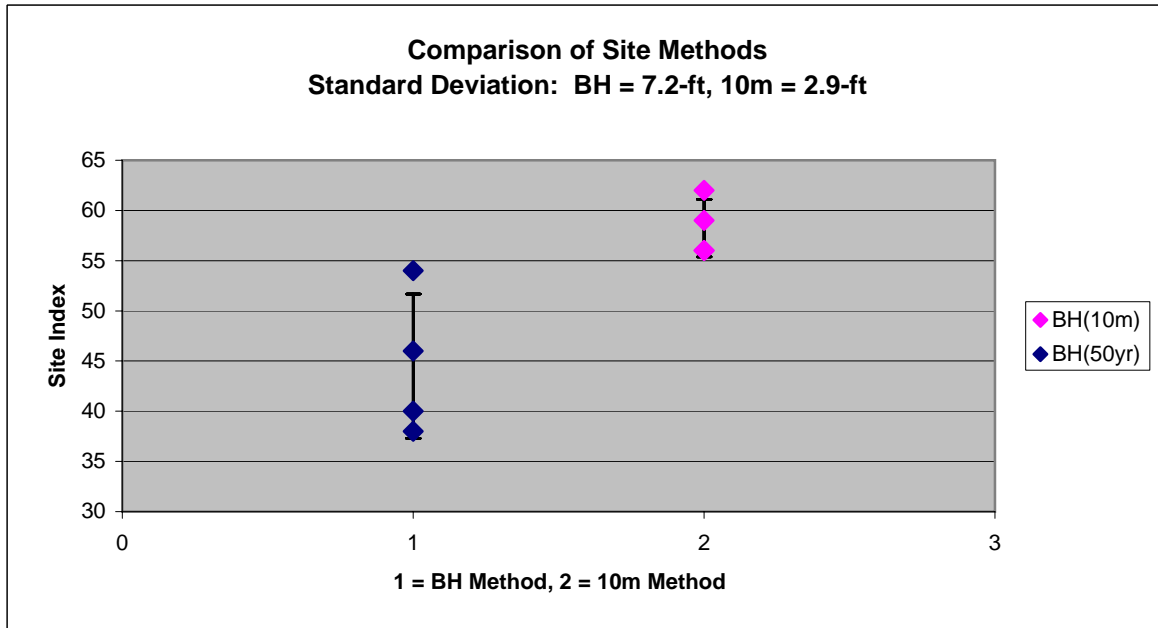
34 to 67	33.1	38.6
67 to 100	1.9	51.8
Site Index:		2.6
Shape Index:		75%

Tree #: 4
Species: PP

Msmt	Dob	Dbt	Height	# Rings
Top				
100-ft	0.0	0.0	70.6	0
67-ft	1.6	0.2	67.6	4
34-ft	9.3	0.8	34.0	39
Crn Base			29.2	
80% Dbh				
Breast Ht	13.9	1.6	4.5	82
Stump Ht	17.2	4.2	1.2	89

34 to 67	33.6	34.2
67 to 100	3.0	43.7
Site Index:		2.9
Shape Index:		78%

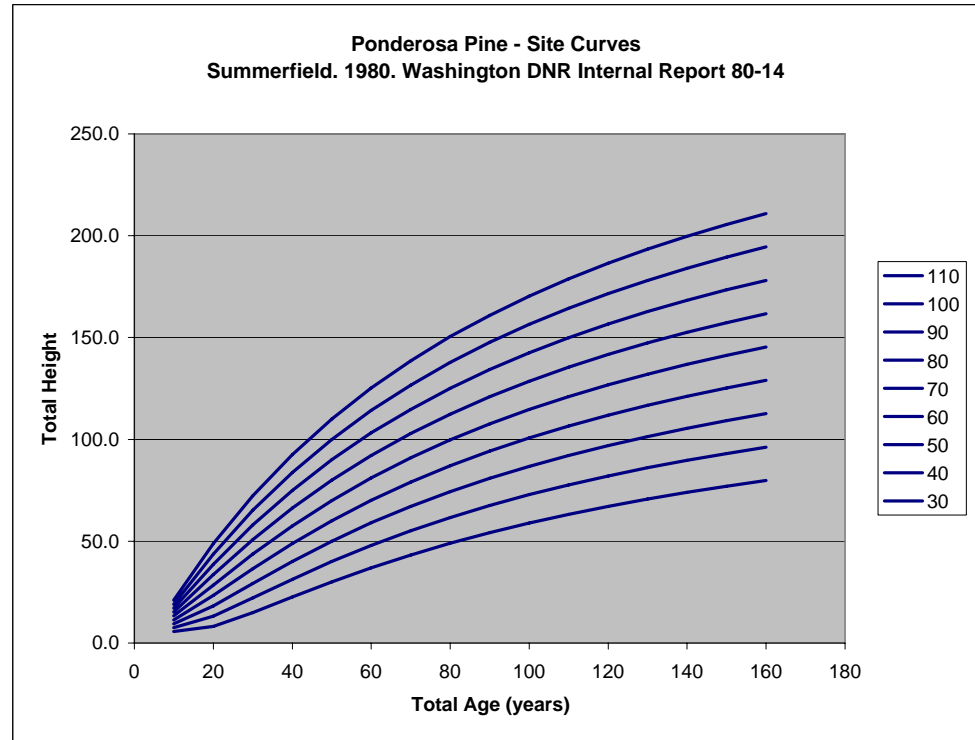
Tree #	BH Basis	Estimated Site Index by Tree				# Years to Grow 34ft	
		BH(50yr)	10m Basis	BH(10m)	10m Site	1 to 34	34 to 67
1	1	38	2	56	2.6	70	38.4
2	1	54	2	62	3.2	38	30.8
3	1	40	2	56	2.6	69	38.6
4	1	46	2	59	2.9	50	34.2
Average		44.5		58.3	2.8	56.8	35.5
Std Dev		7.19		2.87	0.29	15.52	3.73



Site Index and Height Growth of Ponderosa Pine in Eastern Washington, Ed Summerfield, 1980, Washington DNR

Site Curves based on 50-years breast height age

BH Age	Site Class									
	30	40	50	60	70	80	90	100	110	110
10	5.6	7.5	9.5	11.4	13.3	15.2	17.2	19.1	21.0	
20	8.1	13.2	18.3	23.4	28.5	33.5	38.6	43.7	48.8	
30	14.9	22.1	29.3	36.4	43.6	50.8	58.0	65.1	72.3	
40	22.6	31.3	40.0	48.8	57.5	66.3	75.0	83.8	92.5	
50	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0	110.0	
60	36.9	48.0	59.0	70.0	81.1	92.1	103.2	114.2	125.2	
70	43.2	55.2	67.1	79.0	90.9	102.9	114.8	126.7	138.6	
80	49.0	61.7	74.4	87.0	99.7	112.4	125.1	137.8	150.5	
90	54.2	67.5	80.9	94.2	107.6	120.9	134.3	147.6	161.0	
100	58.9	72.8	86.8	100.7	114.6	128.6	142.5	156.5	170.4	
110	63.2	77.6	92.1	106.6	121.0	135.5	149.9	164.4	178.9	
120	67.1	82.0	97.0	111.9	126.8	141.7	156.7	171.6	186.5	
130	70.7	86.0	101.4	116.7	132.1	147.4	162.8	178.1	193.4	
140	74.0	89.7	105.4	121.2	136.9	152.6	168.3	184.0	199.8	
150	77.0	93.1	109.2	125.2	141.3	157.4	173.4	189.5	205.5	
160	79.8	96.2	112.6	129.0	145.3	161.7	178.1	194.5	210.8	
10m	55.7	43.0	34.3	28.1	23.6	20.3	17.8	15.9	14.4	
20m	119.6	89.0	69.9	56.8	47.5	40.5	35.2	31.0	27.6	
30m	262.0	173.3	126.7	98.8	80.3	67.2	57.5	50.0	44.1	
Yrs1	63.9	46.0	35.6	28.7	23.9	20.3	17.4	15.1	13.2	
Yrs2	142.4	84.3	56.8	42.0	32.8	26.7	22.4	19.1	16.5	
10mSite	1.6	2.2	2.8	3.5	4.2	4.9	5.7	6.6	7.6	
10mShp	0.45	0.55	0.63	0.68	0.73	0.76	0.78	0.79	0.80	
BH 50yr	46	52	58	65	72	79	87	96	106	
YrsBH	11.0	10.0	9.0	8.0	7.0	6.0	5.0	4.0	3.0	
BH-6m	37.0	28.0	22.0	17.4	14.5	12.6	11.3	10.3	9.7	
Yrs6m	48.0	38.0	31.0	25.4	21.5	18.6	16.3	14.3	12.7	



A1	4.5	B1	-1.23154
A2	7.2259	B2	3.23674
A3	0.43169	B3	-0.00699
A4	0.004324	B4	0.30473
MSI	67.6		