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Site Index Curve and Table for Trembling Aspen in the Boreal White and Black Spruce Zone of British Columbia

Site index curves and tables for estimating site index of trembling aspen in BC have been adopted from the Alberta site index model. However, we found that the Alberta model produces biased estimates of site index of aspen stands in this province. To provide more accurate estimates of site index for BC aspen stands, we sampled naturally established, undamaged, closed-canopy stands over a wide range of sites in the Boreal White and Black Spruce (BWBS) zone. A total of 33 stands were used in the analysis with breast-height ages of dominant trees over 50 years. In each stand, three dominant trees were selected and felled for stem analysis. From these data, we constructed a height growth model:

$$H = 1.3 + 1.418\left[(S-1.3)^{1.076}(1-e^{-0.017A})^{p}\right]$$

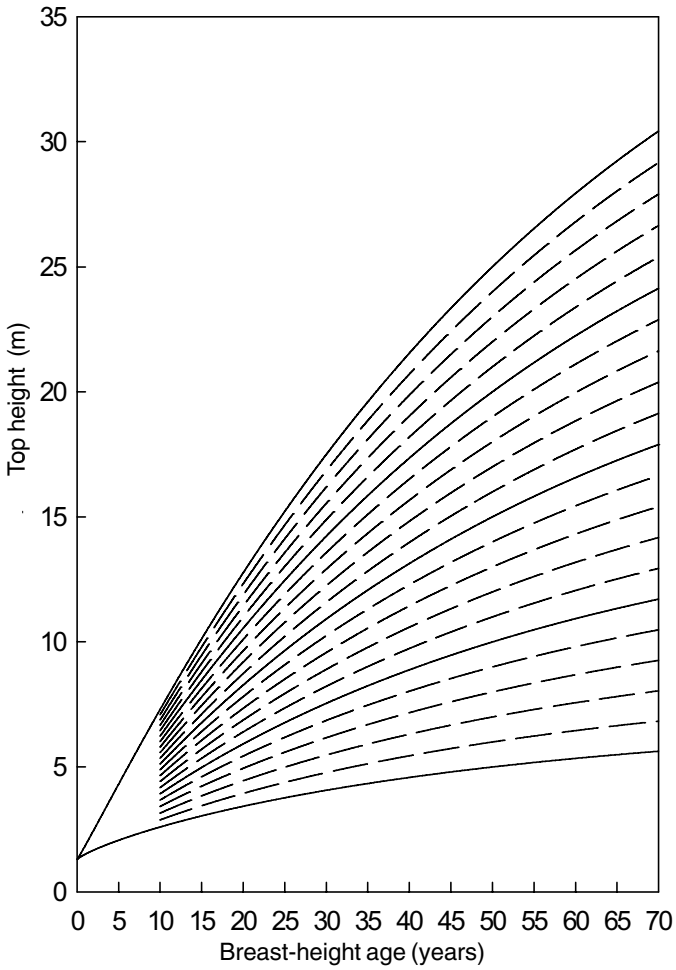
where: $$p = \frac{\ln\left(\frac{(S-1.3)^{-0.076}}{1.418}\right)}{\ln\left(1-e^{-0.017\times 50}\right)}$$

where: H = top height (m); S = site index (height at 50 year breast-height age); A = breast-height age (year); e = the base of exponential function; and ln = natural logarithm.

The height growth curves and site index table derived from the above model presented here are recommended for use across the eastern portion of the BWBS zone for estimating site index of aspen stands aged 15 - 70 years at breast-height.

Reference

Chen H.Y., K. Klinka and R. Kabzems. 1998. Height growth and site index models for trembling aspen (*Populus tremuloides* Michx.) in northern British Columbia. For. Ecol. Manage. 102:157-165

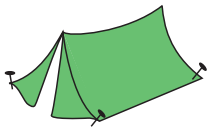


Height growth curve for aspen stands in the Boreal White and Black Spruce zone.

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Site index table for naturally established aspen stands in the Boreal White and Black Spruce zone.

Age @ bh (yrs)	Site index: top height (m) @ breast height age 50																				
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	Top height (m)																				
10	2.6	2.9	3.2	3.4	3.7	3.9	4.2	4.4	4.7	4.9	5.1	5.4	5.6	5.8	6.0	6.2	6.5	6.7	6.9	7.1	7.3
11	2.7	3.0	3.3	3.6	3.9	4.2	4.4	4.7	5.0	5.2	5.5	5.7	6.0	6.2	6.5	6.7	6.9	7.2	7.4	7.6	7.9
12	2.8	3.1	3.4	3.8	4.1	4.4	4.7	5.0	5.2	5.5	5.8	6.1	6.4	6.6	6.9	7.2	7.4	7.7	7.9	8.2	8.5
13	2.9	3.2	3.6	3.9	4.3	4.6	4.9	5.2	5.5	5.8	6.1	6.4	6.7	7.0	7.3	7.6	7.9	8.2	8.5	8.7	9.0
14	3.0	3.3	3.7	4.1	4.4	4.8	5.1	5.5	5.8	6.1	6.5	6.8	7.1	7.4	7.7	8.0	8.4	8.7	9.0	9.3	9.6
15	3.0	3.5	3.8	4.2	4.6	5.0	5.3	5.7	6.1	6.4	6.8	7.1	7.5	7.8	8.1	8.5	8.8	9.1	9.5	9.8	10.1
16	3.1	3.6	4.0	4.4	4.8	5.2	5.6	6.0	6.3	6.7	7.1	7.5	7.8	8.2	8.5	8.9	9.3	9.6	10.0	10.3	10.7
17	3.2	3.7	4.1	4.5	5.0	5.4	5.8	6.2	6.6	7.0	7.4	7.8	8.2	8.6	8.9	9.3	9.7	10.1	10.5	10.8	11.2
18	3.3	3.8	4.2	4.7	5.1	5.6	6.0	6.4	6.8	7.3	7.7	8.1	8.5	8.9	9.3	9.7	10.1	10.5	10.9	11.3	11.7
19	3.4	3.9	4.3	4.8	5.3	5.7	6.2	6.7	7.1	7.5	8.0	8.4	8.9	9.3	9.7	10.1	10.6	11.0	11.4	11.8	12.3
20	3.4	3.9	4.5	4.9	5.4	5.9	6.4	6.9	7.3	7.8	8.3	8.7	9.2	9.6	10.1	10.5	11.0	11.4	11.9	12.3	12.8
21	3.5	4.0	4.6	5.1	5.6	6.1	6.6	7.1	7.6	8.1	8.6	9.0	9.5	10.0	10.5	10.9	11.4	11.9	12.3	12.8	13.3
22	3.6	4.1	4.7	5.2	5.7	6.3	6.8	7.3	7.8	8.3	8.8	9.3	9.8	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.8
23	3.6	4.2	4.8	5.3	5.9	6.4	7.0	7.5	8.1	8.6	9.1	9.6	10.2	10.7	11.2	11.7	12.2	12.7	13.2	13.8	14.3
24	3.7	4.3	4.9	5.5	6.0	6.6	7.2	7.7	8.3	8.8	9.4	9.9	10.5	11.0	11.6	12.1	12.6	13.2	13.7	14.2	14.7
25	3.8	4.4	5.0	5.6	6.2	6.8	7.4	7.9	8.5	9.1	9.7	10.2	10.8	11.3	11.9	12.5	13.0	13.6	14.1	14.7	15.2
26	3.8	4.5	5.1	5.7	6.3	6.9	7.5	8.1	8.7	9.3	9.9	10.5	11.1	11.7	12.3	12.8	13.4	14.0	14.5	15.1	15.7
27	3.9	4.5	5.2	5.8	6.5	7.1	7.7	8.3	9.0	9.6	10.2	10.8	11.4	12.0	12.6	13.2	13.8	14.4	15.0	15.6	16.2
28	4.0	4.6	5.3	5.9	6.6	7.2	7.9	8.5	9.2	9.8	10.4	11.1	11.7	12.3	12.9	13.5	14.2	14.8	15.4	16.0	16.6
29	4.0	4.7	5.4	6.1	6.7	7.4	8.1	8.7	9.4	10.0	10.7	11.3	12.0	12.6	13.2	13.9	14.5	15.2	15.8	16.4	17.1
30	4.1	4.8	5.5	6.2	6.9	7.5	8.2	8.9	9.6	10.2	10.9	11.6	12.2	12.9	13.6	14.2	14.9	15.5	16.2	16.8	17.5
31	4.1	4.9	5.6	6.3	7.0	7.7	8.4	9.1	9.8	10.5	11.2	11.8	12.5	13.2	13.9	14.6	15.2	15.9	16.6	17.3	17.9
32	4.2	4.9	5.7	6.4	7.1	7.8	8.6	9.3	10.0	10.7	11.4	12.1	12.8	13.5	14.2	14.9	15.6	16.3	17.0	17.7	18.4
33	4.2	5.0	5.7	6.5	7.2	8.0	8.7	9.4	10.2	10.9	11.6	12.3	13.1	13.8	14.5	15.2	15.9	16.6	17.4	18.1	18.8
34	4.3	5.1	5.8	6.6	7.4	8.1	8.9	9.6	10.4	11.1	11.9	12.6	13.3	14.1	14.8	15.5	16.3	17.0	17.7	18.5	19.2
35	4.3	5.1	5.9	6.7	7.5	8.2	9.0	9.8	10.5	11.3	12.1	12.8	13.6	14.3	15.1	15.9	16.6	17.4	18.1	18.9	19.6
36	4.4	5.2	6.0	6.8	7.6	8.4	9.2	10.0	10.7	11.5	12.3	13.1	13.8	14.6	15.4	16.2	16.9	17.7	18.5	19.2	20.0
37	4.4	5.3	6.1	6.9	7.7	8.5	9.3	10.1	10.9	11.7	12.5	13.3	14.1	14.9	15.7	16.5	17.3	18.0	18.8	19.6	20.4
38	4.5	5.3	6.2	7.0	7.8	8.6	9.5	10.3	11.1	11.9	12.7	13.5	14.3	15.2	16.0	16.8	17.6	18.4	19.2	20.0	20.8
39	4.5	5.4	6.2	7.1	7.9	8.8	9.6	10.4	11.3	12.1	12.9	13.8	14.6	15.4	16.2	17.1	17.9	18.7	19.5	20.4	21.2
40	4.6	5.4	6.3	7.2	8.0	8.9	9.7	10.6	11.4	12.3	13.1	14.0	14.8	15.7	16.5	17.4	18.2	19.0	19.9	20.7	21.5
41	4.6	5.5	6.4	7.3	8.1	9.0	9.9	10.7	11.6	12.5	13.3	14.2	15.1	15.9	16.8	17.6	18.5	19.4	20.2	21.1	21.9
42	4.7	5.6	6.5	7.4	8.2	9.1	10.0	10.9	11.8	12.7	13.5	14.4	15.3	16.2	17.0	17.9	18.8	19.7	20.5	21.4	22.3
43	4.7	5.6	6.5	7.4	8.3	9.2	10.1	11.0	11.9	12.8	13.7	14.6	15.5	16.4	17.3	18.2	19.1	20.0	20.9	21.8	22.6
44	4.8	5.7	6.6	7.5	8.4	9.4	10.3	11.2	12.1	13.0	13.9	14.8	15.7	16.6	17.6	18.5	19.4	20.3	21.2	22.1	23.0
45	4.8	5.7	6.7	7.6	8.5	9.5	10.4	11.3	12.3	13.2	14.1	15.0	16.0	16.9	17.8	18.7	19.7	20.6	21.5	22.4	23.3
46	4.8	5.8	6.7	7.7	8.6	9.6	10.5	11.5	12.4	13.4	14.3	15.2	16.2	17.1	18.1	19.0	19.9	20.9	21.8	22.7	23.7
47	4.9	5.8	6.8	7.8	8.7	9.7	10.6	11.6	12.6	13.5	14.5	15.4	16.4	17.3	18.3	19.3	20.2	21.2	22.1	23.1	24.0
48	4.9	5.9	6.9	7.8	8.8	9.8	10.8	11.7	12.7	13.7	14.7	15.6	16.6	17.6	18.5	19.5	20.5	21.4	22.4	23.4	24.4
49	5.0	5.9	6.9	7.9	8.9	9.9	10.9	11.9	12.9	13.8	14.8	15.8	16.8	17.8	18.8	19.8	20.7	21.7	22.7	23.7	24.7
50	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0
51	5.0	6.0	7.1	8.1	9.1	10.1	11.1	12.1	13.1	14.2	15.2	16.2	17.2	18.2	19.2	20.2	21.3	22.3	23.3	24.3	25.3
52	5.1	6.1	7.1	8.1	9.2	10.2	11.2	12.3	13.3	14.3	15.3	16.4	17.4	18.4	19.4	20.5	21.5	22.5	23.6	24.6	25.6
53	5.1	6.1	7.2	8.2	9.3	10.3	11.3	12.4	13.4	14.5	15.5	16.5	17.6	18.6	19.7	20.7	21.8	22.8	23.8	24.9	25.9
54	5.1	6.2	7.2	8.3	9.3	10.4	11.4	12.5	13.6	14.6	15.7	16.7	17.8	18.8	19.9	20.9	22.0	23.1	24.1	25.2	26.2
55	5.2	6.2	7.3	8.4	9.4	10.5	11.6	12.6	13.7	14.8	15.8	16.9	18.0	19.0	20.1	21.2	22.2	23.3	24.4	25.5	26.5
56	5.2	6.3	7.4	8.4	9.5	10.6	11.7	12.7	13.8	14.9	16.0	17.1	18.1	19.2	20.3	21.4	22.5	23.6	24.6	25.7	26.8
57	5.2	6.3	7.4	8.5	9.6	10.7	11.8	12.8	13.9	15.0	16.1	17.2	18.3	19.4	20.5	21.6	22.7	23.8	24.9	26.0	27.1
58	5.3	6.4	7.5	8.6	9.7	10.8	11.9	13.0	14.1	15.2	16.3	17.4	18.5	19.6	20.7	21.8	22.9	24.0	25.2	26.3	27.4
59	5.3	6.4	7.5	8.6	9.7	10.8	12.0	13.1	14.2	15.3	16.4	17.5	18.7	19.8	20.9	22.0	23.2	24.3	25.4	26.5	27.7
60	5.3	6.5	7.6	8.7	9.8	10.9	12.1	13.2	14.3	15.4	16.6	17.7	18.8	20.0	21.1	22.2	23.4	24.5	25.7	26.8	27.9
61	5.4	6.5	7.6	8.8	9.9	11.0	12.2	13.3	14.4	15.6	16.7	17.9	19.0	20.1	21.3	22.4	23.6	24.7	25.9	27.0	28.2
62	5.4	6.5	7.7	8.8	10.0	11.1	12.2	13.4	14.5	15.7	16.9	18.0	19.2	20.3	21.5	22.6	23.8	25.0	26.1	27.3	28.5
63	5.4	6.6	7.7	8.9	10.0	11.2	12.3	13.5	14.7	15.8	17.0	18.2	19.3	20.5	21.7	22.8	24.0	25.2	26.4	27.5	28.7
64	5.5	6.6	7.8	8.9	10.1	11.3	12.4	13.6	14.8	15.9	17.1	18.3	19.5	20.7	21.9	23.0	24.2	25.4	26.6	27.8	29.0
65	5.5	6.7	7.8	9.0	10.2	11.3	12.5	13.7	14.9	16.1	17.3	18.5	19.6	20.8	22.0	23.2	24.4	25.6	26.8	28.0	29.2
66	5.5	6.7	7.9	9.0	10.2	11.4	12.6	13.8	15.0	16.2	17.4	18.6	19.8	21.0	22.2	23.4	24.6	25.8	27.0	28.3	29.5
67	5.5	6.7	7.9	9.1	10.3	11.5	12.7	13.9	15.1	16.3	17.5	18.7	19.9	21.2	22.4	23.6	24.8	26.0	27.3	28.5	29.7
68	5.6	6.8	8.0	9.2	10.4	11.6	12.8	14.0	15.2	16.4	17.6	18.9	20.1	21.3	22.6	23.8	25.0	26.2	27.5	28.7	30.0
69	5.6	6.8	8.0	9.2	10.4	11.6	12.9	14.1	15.3	16.5	17.8	19.0	20.2	21.5	22.7	24.0	25.2	26.4	27.7	28.9	30.2
70	5.6	6.8	8.0	9.3	10.5	11.7	12.9	14.2	15.4	16.7	17.9	19.1	20.4	21.6	22.9	24.1	25.4	26.6	27.9	29.2	30.4