Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

A99.12
F763

SITE INDEX CURVES
FOR
SOME FOREST SPECIES
IN THE
EASTERN UNITED STATES

Prepared by
Division of State & Private Forestry
Eastern Region — Forest Service
U. S. Dept. of Agriculture
Upper Darby, Pennsylvania
1964

AD-33 Bookplate
(2-68)

NATIONAL

**A
G
R
I
C
U
L
T
U
R
A
L**

LIBRARY

RESERVE

89636

A99.12

F763

+ 3

SITE INDEX CURVES
FOR
SOME FOREST SPECIES
IN THE
EASTERN UNITED STATES

≡ ≡ // +

Prepared by
Division of State & Private Forestry
Eastern Region, Forest Service, 205
U. S. Dept. of Agriculture, 205
Upper Darby, Pennsylvania. 11
1964, 11

U. S. DEPT. OF AGRICULTURE
NATIONAL AGRICULTURAL LIBRARY

NOV 10 1965

Frederick E. Hampf

C & R-PREP.

100

100

CONTENTS

	<u>Page</u>
FOREWORD	1
SITE INDEX CURVES	
Figure 1.-- Eastern redcedar	3
Figure 2.-- Atlantic white-cedar	4
Figure 3.-- Balsam fir	5
Figure 4.-- Jack pine	6
Figure 5.-- Loblolly pine	7
Figure 6.-- Longleaf pine	8
Figure 7.-- Pitch pine	9
Figure 8.-- Red pine	10
Figure 9.-- Shortleaf pine	11
Figure 10.-- Slash pine	12
Figure 11.-- Virginia pine	13
Figure 12.-- White pine	14
Figure 13.-- Black spruce	15
Figure 14.-- Red spruce	16
Figure 15.-- White spruce	17
Figure 16.-- White ash	18
Figure 17.-- Aspen	19
Figure 18.-- Beech	20
Figure 19.-- White birch	21
Figure 20.-- Yellow birch	22

CONTENTS

REVIEWS

THE INDEX

1	1. The Index
2	2. The Index
3	3. The Index
4	4. The Index
5	5. The Index
6	6. The Index
7	7. The Index
8	8. The Index
9	9. The Index
10	10. The Index
11	11. The Index
12	12. The Index
13	13. The Index
14	14. The Index
15	15. The Index
16	16. The Index
17	17. The Index
18	18. The Index
19	19. The Index
20	20. The Index
21	21. The Index
22	22. The Index

	<u>Page</u>
Figure 21.-- Black cherry	23
Figure 22.-- Eastern cottonwood	24
Figure 23.-- Hickories	25
Figure 24.-- Black locust	26
Figure 25.-- Red maple	27
Figure 26.-- Sugar maple	28
Figure 27.-- Red oaks	29
Figure 28.-- Upland oaks	30
Figure 29.-- White oaks	31
Figure 30.-- Sweetgum	32
Figure 31.-- Black walnut	33
Figure 32.-- Yellow-poplar	34

100

101 1000 1000 — 1000 1000
 102 1000 1000 — 1000 1000
 103 1000 1000 — 1000 1000
 104 1000 1000 — 1000 1000

105 1000 1000 — 1000 1000
 106 1000 1000 — 1000 1000
 107 1000 1000 — 1000 1000
 108 1000 1000 — 1000 1000

109 1000 1000 — 1000 1000
 110 1000 1000 — 1000 1000
 111 1000 1000 — 1000 1000
 112 1000 1000 — 1000 1000

FOREWORD

Indices of site quality are important to forest management. They indicate the relationships between productivity and the many environmental factors influencing an ecosystem. Site Index is a single, quantitative expression of the multitude of factors that make up site quality. Lesser influencing factors of tree growth, such as stand density, may be disregarded. For a single tree species, variations in height growth due to variations in the site factors have been found to be closely and positively correlated, more so than variations in diameter or volume growth. For this reason, height growth is the factor in common use in this country as an index of site. The height attained by the average dominant and codominant trees at the age of 50 years is generally used in the Eastern United States as the index of site quality and is known as Site Index.

For years, foresters have prepared tables and graphs showing the site index for a specific species, stand or area. Some of this information is therefore limited in application, and the publications are not generally available to the practicing forester. To make it possible for foresters to have curves for several species under one cover, all available data in the Regional Office was studied and correlated. Tables were prepared showing site index curves for thirty-two eastern species.

These curves are only as accurate in application as the original data on which they are based. They may not fit perfectly in all situations. However, these curves will enable foresters to come up with a good estimate of site index (total height in feet at 50 years of age) from measurements taken on trees which are more than or less than 50 years of age.

The sources of information used are shown at the bottom of each table. Some existing data may have been overlooked. Any such data, if made available, would be considered for possible revisions of the curves.

THE UNIVERSITY OF CHICAGO
 
E-MAIL: CHEM@UCHICAGO.EDU

HEIGHT IN FEET OF AVERAGE DOMINANT TREES, BY SITE INDEX
AT 50 YEARS, THROUGHOUT THE TENNESSEE VALLEY.

SOURCE: USDA-SCS- SPARTANBURG, S.C., 1956, BASED ON 271
OBSERVATIONS FROM PLOTS THROUGHOUT TENNESSEE
VALLEY, SUMMER, 1948.

HEIGHT IN FEET OF AVERAGE SECOND-GROWTH DOMINANT TREES,
BY SITE INDEX AT 50 YEARS, IN NATURAL RANGE.

SOURCE: KORSTIAN, C.F., BRUSH, W.D., SOUTHERN WHITE CEDAR,
U.S.D.A. TECH. BULL. NO. 251, SEPT. 1931.

Figure 2.--ATLANTIC WHITE-CEDAR

HEIGHT IN FEET OF AVERAGE DOMINANT & CODOMINANT TREES,
BY SITE INDEX AT 50 YEARS, IN THE LAKE STATES

SOURCE: MEYER, W.H., U.S.D.A. TECH. BULL. # 142, 1929. GEVORKIANTZ
S.R., LAKES STATES FOR. EXP. STA. TECH. NOTES # 465,
OCT, 1956

HEIGHT IN FEET OF AVERAGE DOMINANT & CODOMINANT TREES IN EVEN-AGED STANDS, BY SITE INDEX AT 50 YEARS, IN LAKE STATES.

SOURCE: GEVORKIANTZ, S.R., LAKE STATES FOR. EXP. STA. TECH. NOTES NO. 463, OCT. 1956. EYRE, F.H., & LE BARRON, R.K., U.S.D.A. TECH. BULL. NO. 863, 1944. STERRETT, W.D., U.S.D.A. BULL NO. 820, MAY, 1920. WACKERMAN, A.E., ZON, R., WILSON, F.G., U. OF WISCONSIN RES. BULL. NO. 90, MARCH, 1929.

HEIGHT IN FEET OF AVERAGE DOMINANT TREES, BY SITE INDEX AT
50 YEARS, COASTAL & PIEDMONT AREAS SOUTHEAST.

SOURCE: VOLUME, YIELD & STAND TABLES FOR SECOND-GROWTH
SOUTHERN PINES, U.S. DEPT. AGR. MISC. PUBL. NO. 50 (1929).
REVISED BY COILE & SCHUMACHER, JOUR. OF FOR., JUNE 1953.

HEIGHT IN FEET OF SECOND GROWTH DOMINANT TREES, BY SITE INDEX AT 50 YEARS, IN NATURAL RANGE.

SOURCE: U.S.D.A. MISC. PUBL. NO. 50, SEPT. 1929. CRUIKSHANK, J.W., S.E. FOR. EXP. STA. RES. NOTES NO. 50, JAN. 1954. (ABOVE CURVES AGREE CLOSELY WITH THOSE PREPARED BY SCHUMACHER, F.X. & COILE, T.S., PUBLISHED JAN. 1960.)

HEIGHT IN FEET OF AVERAGE DOMINANT TREES, BY SITE INDEX AT 50 YEARS, THROUGHOUT PENNSYLVANIA.

SOURCE: ILLICK, J.S. & AUGHANBAUGH, J.E., PITCH PINE IN PENNSYLVANIA, PA. DEPT OF FORESTS & WATERS RES. BUL. NO. 2, 1930.

Figure 7.-- PITCH PINE

HEIGHT IN FEET OF EVEN-AGED DOMINANT & CODOMINANT TREES, BY
SITE INDEX AT 50 YEARS, IN THE LAKE STATES.

SOURCE: GEVORKIANTZ, S.R., LAKE STATES FOR. EXP. TECH. NOTES
NO. 484, APRIL 1957. EYRE, F.H., & ZEHNGRAFF, U.S.D.A.
CIR. 778, MAY 1948. BUCKMAN, R.E., TECH. BULL. NO. 1272,
OCT. 1962.

HEIGHT IN FEET OF AVERAGE DOMINANT TREES, BY SITE INDEX
AT 50 YEARS, IN THE SOUTHEAST.

SOURCE: VOLUME, YIELD AND STAND TABLES FOR SECOND-GROWTH
SOUTHERN PINES, U.S.D.A. MISC. NO. 50 (1929)

Figure 9.--SHORTLEAF PINE

HEIGHT IN FEET OF SECOND-GROWTH DOMINANT TREES, BY SITE INDEX
AT 50 YEARS, IN NATURAL RANGE.

SOURCE: U.S.D.A. MISC. PUBL. NO. 50, SEPT. 1929. CRUIKSHANK,
J.W., S.E. FOR. EXP. STA. RES. NOTES NO. 50, JAN. 1954.
(ABOVE CURVES AGREE CLOSELY WITH THOSE PRE -
PARED BY SCHUMACHER, F.X. & COILE, T.S., PUBLISHED
JAN. 1960.

HEIGHT IN FEET OF AVERAGE DOMINANT TREES, BY SITE INDEX
AT 50 YEARS, IN THE EASTERN U.S.

SOURCE: CHAIKEN, L.E., & NELSON, T.C., S.E. FOREST EXP. STA.
RESEARCH NOTES NO. 135 NOV. 1959. N.C. STATE
COLLEGE TECH. BULL. 100, '58.

HEIGHT IN FEET OF AVERAGE DOMINANT & CODOMINANT TREES, BY
SITE INDEX AT 50 YEARS, IN EASTERN U.S.

SOURCE: DOOLITTLE, W.T. & VIMMERSTEDT, J.P., S.E. FOR. EXP. STA. RESEARCH NOTES NO. 141 MARCH, 1960. GEVORKIANTZ, S.R., LAKE STATES FOR. EXP. STA. TECH. NOTES NO. 483, APRIL, 1957. HUSCH, & FORESTRY MIMEO NO. 1, U. OF N.H., SEPT. 1954. FROTHINGHAM, E.H., U.S.D.A. BULL. NO. 13, 1914.

HEIGHT IN FEET OF AVERAGE DOMINANT TREES IN EVEN-AGED STANDS, BY SITE INDEX AT 50 YEARS, IN LAKE STATES.

SOURCE: BOWMAN, A.B., MICH. AGR. EXP. STA. TECH. BULL. NO. 188, 1944.
 FOX, G.D. & KRUSE, G.W., JOURNAL OF FORESTRY 37:565-567, 1939.
 LEBARRON, R.K., U.S.D.A. CIRCULAR NO. 791, OCT. 1948.
 MILLAR, J.B., FORESTRY CHRON. 15:93-96, 1939.

Figure 13.--BLACK SPRUCE

HEIGHT IN FEET OF AVERAGE DOMINANT & CODOMINANT TREES,
BY SITE INDEX AT 65 YEARS, IN NORTHEAST.

SOURCE: W.H. MEYER, YIELDS OF SECOND-GROWTH SPRUCE & FIR.
IN THE NORTHEAST, U.S.D.A. TECH. BULL. NO. 142 1929.
MURPHY, L.S., THE RED SPRUCE, U.S.D.A. BULL. NO. 544, OCT. 1917.

HEIGHT IN FEET OF AVERAGE DOMINANT & CODOMINANT TREES, BY
SITE INDEX AT 65 YEARS, IN NORTHEAST.

SOURCE: W.H. MEYER, YIELDS OF SECOND-GROWTH SPRUCE & FIR
IN THE NORTHEAST, U.S.D.A., TECH. BULL. NO. 142 (1929).

HEIGHT IN FEET OF AVERAGE DOMINANT & CODOMINANT TREES,
BY SITE INDEX AT 50 YEARS, IN VERMONT.

SOURCE: CONSTRUCTED FROM FORMULA DEVELOPED BY R.O. CURTIS & B.W. POST, BULL. 629, AGR. EXP. STA. U. OF VERMONT & STATE AGRIC. COLLEGE, AUGUST, 1962.

HEIGHT IN FEET OF AVERAGE DOMINANT TREES, BY SITE INDEX
AT 50 YEARS, IN LAKE STATES.

SOURCE: GEVORKIANTZ, S.R., LAKES STATES FOREST EXP. STA., TECH.
NOTES NO. 464 OCT. 1956.

Figure 17.-- ASPEN

HEIGHT IN FEET OF AVERAGE DOMINANT & CODOMINANT TREES, BY
SITE INDEX AT 50 YEARS, IN THE NORTHEAST.

SOURCE: CONSTRUCTED FROM UNPUBLISHED DATA, N.E. FOR. EXP.
STA., UPPER DARBY, PA.

HEIGHT IN FEET OF AVERAGE DOMINANT & CODOMINANT TREES,
BY SITE INDEX AT 50 YEARS, IN EASTERN U.S.

SOURCE: CONSTRUCTED FROM FORMULA DEVELOPED BY R.O. CURTIS & B.W. POST, BULL. 629, AGR. EXP. STA. U. OF VERMONT & STATE AGRIC. COLLEGE, AUGUST, 1962. COOLEY, J.H., LAKE STATES FOR. EXP. STA. TECH. NOTES NO. 541, OCT. 1958.

HEIGHT IN FEET OF AVERAGE DOMINANT & CODOMINANT TREES,
BY SITE INDEX AT 50 YEARS, IN VERMONT.

SOURCE: CONSTRUCTED FROM FORMULA DEVELOPED BY R.O. CURTIS & B.W. POST, BULL. 629 AGR. EXP. STA., U. OF VERMONT & STATE AGR. COLLEGE, AUGUST, 1962.

HEIGHT IN FEET OF AVERAGE DOMINANT TREES, BY SITE INDEX
AT 50 YEARS, IN THE NORTHEAST.

SOURCE: PREPARED FROM A THESIS FOR GRADUATE DEGREE BY S.E.
DEFLER, N.Y. STATE COLLEGE OF FORESTRY, 1937.

HEIGHT IN FEET OF AVERAGE DOMINANT & CODOMINANT TREES, BY
SITE INDEX AT 25 YEARS, IN MISSISSIPPI VALLEY STATES.

SOURCE: WILLIAMSON, A.W., U.S.D.A. BULL. NO. 24, 1913. NEEBE, D.J., & BOYCE, S.G., CENTRAL STATES FOR. EXP. STA., STATION NOTE NO. 126, APRIL 1959. BROADFOOT, W.M., SOUTH FOR. EXP. STA. OCCAS. PAPER NO. 178, 1960.

HEIGHT IN FEET OF AVERAGE DOMINANT TREES, BY SITE INDEX
AT 50 YEARS, IN EASTERN UNITED STATES.

SOURCE: BOISEN, A.T. & NEWLIN, J.A., THE COMMERCIAL HICKORIES,
USDA, FOREST SERVICE BULL. NO. 80, 1910.

HEIGHT IN FEET OF AVERAGE DOMINANT TREES, BY SITE INDEX
AT 50 YEARS, IN CENTRAL STATES REGION.

SOURCE: KELLOGG, L.F., SITE INDEX CURVES FOR PLANTATION BLACK LOCUST, CENTRAL STATES REGION, CENTRAL STATES EXP. STA. NOTE 36, 1939.

Figure 24.-- BLACK LOCUST

HEIGHT IN FEET OF AVERAGE DOMINANT & CODOMINANT TREES, BY SITE INDEX AT 50 YEARS, IN NEW ENGLAND & N.Y.

SOURCE : CONSTRUCTED FROM DATA REPORTED BY R.W. FORESTER, FOREST SCIENCE, VOL. 5, NO.3, SEPT, 1959.

Figure 25.--RED MAPLE

HEIGHT IN FEET OF AVERAGE DOMINANT & CODOMINANT TREES, BY
SITE INDEX AT 50 YEARS, IN VERMONT.

SOURCE: CONSTRUCTED FROM FORMULA DEVELOPED BY R.O. CURTIS
& B.W. POST, BULL. 629, AGR. EXP. STA., U. OF VERMONT &
STATE AGR. COLLEGE, AUGUST, 1962.

HEIGHT IN FEET OF AVERAGE DOMINANT & CODOMINANT TREES, BY
SITE INDEX AT 50 YEARS, IN EASTERN UNITED STATES.

SOURCE: DOOLITTLE, W.T., SOIL SCIENCE, VOL. 22, NO. 5, SEPT.-OCT., 1958
SCHNUR, G.L., U.S.D.A., TECH. BULL, NO. 560 (1937).
GEVORKIANTZ, S.R., LAKE STATES EXP. STA. TECH. NOTE NO. 485,
1957.

HEIGHT IN FEET OF AVERAGE DOMINANT & CODOMINANT TREES
BY SITE INDEX AT 50 YEARS, IN OAK-HICKORY FORESTS.

SOURCE: G.L. SCHNUR, YIELD STAND, & VOLUME TABLES FOR
EVEN-AGED UPLAND OAK FORESTS, U.S.D.A., TECH.
BULL. NO. 560 (1937). D.J. OLSON, JR, S.E. FOREST
EXP. STA. RESEARCH NOTES NO. 125 APRIL 1959.

HEIGHT IN FEET OF AVERAGE DOMINANT & CODOMINANT
TREES, BY SITE INDEX AT 50 YEARS, IN EASTERN U.S.

SOURCE: DOOLITTLE, W.T., SOIL SCIENCE, VOL. 22, NO. 5, SEPT.-OCT, 1958.
SCHUR, G.L., U.S. DA., TECH. BULL. NO. 560 (1937).
OLSON, JR., D.J., SE. FOR. EXP. STA. RES. NOTES No. 125, ('59).

HEIGHT IN FEET OF AVERAGE DOMINANT TREES, BY SITE INDEX
AT 50 YEARS, IN SOUTHEASTERN U.S.

SOURCE: ROBERT K. WINTERS & J.G. OSBORNE, GROWTH & YIELD OF
SECOND-GROWTH REDGUM IN FULLY STOCKED STANDS ON
ALLUVIAL LANDS IN THE SOUTH, SOUTHERN FOREST &
RANGE EXP. STA., OCC. PAPER NO. 54 (1935). BROADFOOT,
W.M., & KRINARD, R.M., SOUTH. FOR: EXP. STA. OCCAS. PAPER 176.

HEIGHT IN FEET OF AVERAGE DOMINANT TREES, BY SITE INDEX
AT 50 YEARS, IN CENTRAL STATES REGION.

SOURCE: KELLOGG, L.E., SITE INDEX CURVES FOR PLANTATION BLACK WALNUT, CENTRAL STATES REGION, CENTRAL STATES FOR. EXP. STA. NOTE # 35, 1939.

Figure 31.--BLACK WALNUT

HEIGHT IN FEET OF AVERAGE DOMINANT & CODOMINANT TREES, BY
SITE INDEX AT 50 YEARS, IN SOUTHEAST U.S.

SOURCE: DONALD E. BECK, YELLOW-POPLAR SITE INDEX CURVES,
SOUTHEASTERN FOREST EXP. STA., RESEARCH NOTES NO.
180, OCTOBER, 1962. DOOLITTLE, W.T., SOIL SCIENCE, VOL.
22, NO. 5, SEPT.-OCT. 1958.

Figure 32.-- YELLOW POPLAR