



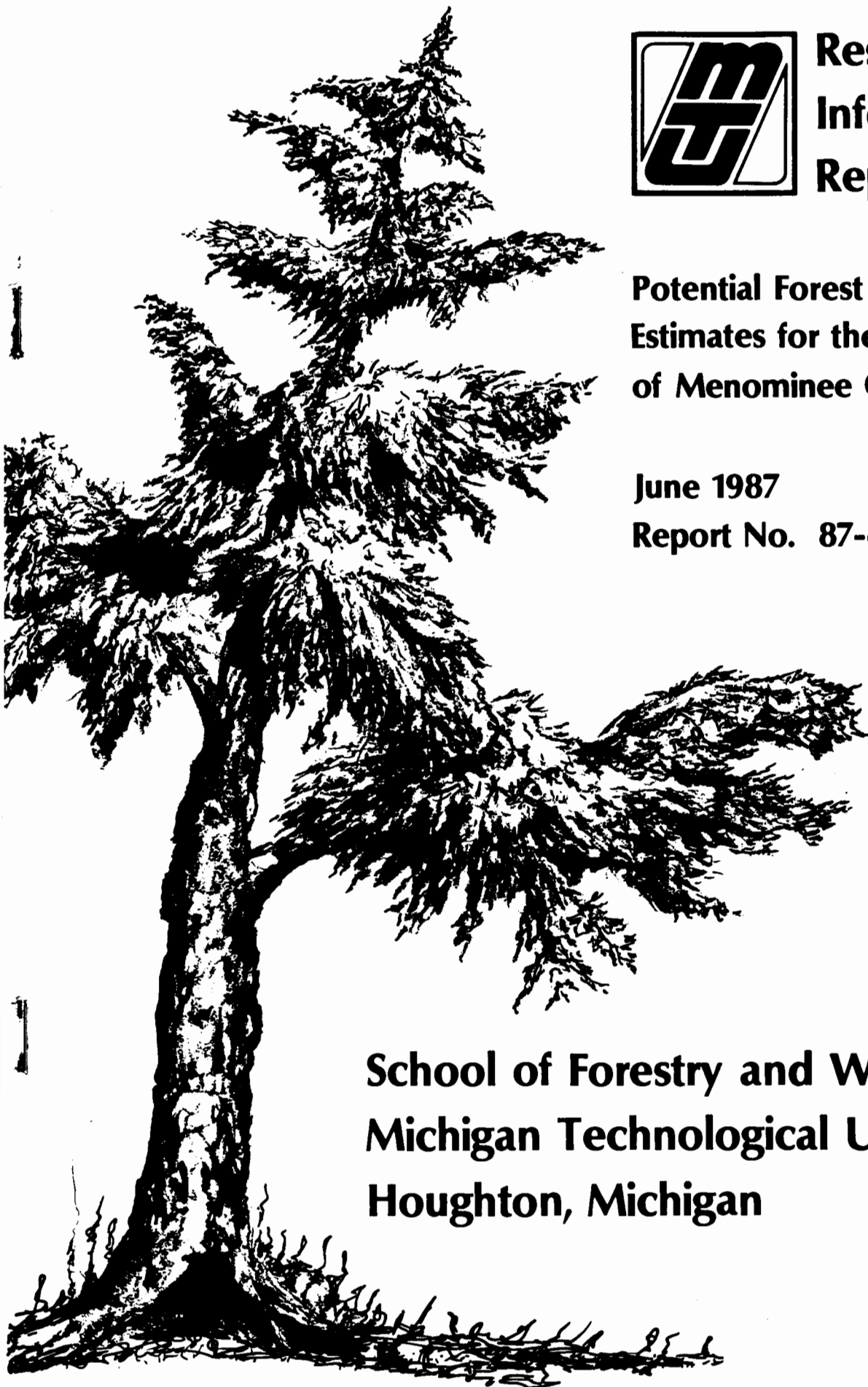
**Research
Information
Report**

**Potential Forest Productivity
Estimates for the Soil Survey
of Menominee County, Michigan**

June 1987

Report No. 87-4

**School of Forestry and Wood Products
Michigan Technological University
Houghton, Michigan**



**POTENTIAL FOREST PRODUCTIVITY ESTIMATES
FOR THE SOIL SURVEY OF
MENOMINEE COUNTY, MICHIGAN**

RESEARCH INFORMATION REPORT No. 87- 4

By:

C.C. Trettin

**School of Forestry and Wood Products
Michigan Technological University
Houghton, Michigan**

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INTRODUCTION

Soil surveys are used for land planning and management activities. The survey describes the types of soils which occur in a county, and it shows the distribution of these soils on the landscape. The soil survey also contains predictions of soil behavior for selected uses; these behavior characteristics are interpreted to provide important information to farmers, foresters, agronomists, community officials, developers, conservationists in addition to other user groups. Soil interpretations constitute an information base for applying land management decisions and evaluating the impacts of land uses.

Research findings provide the basis for developing and applying soil use interpretations. These interpretations are based on the relationship of soil and site properties to the particular use. Accordingly, as new research results become available, opportunities exist to improve specific interpretations. The purpose of this publication is to present current forest productivity interpretations for the Soil Survey of Menominee County, Michigan.

This publication is a supplement to the Soil Survey of Menominee County, Michigan. It is to be used as a source for improved forest yield information only. Readers must use the Soil Survey for descriptions of the soils, map units, and other forestry interpretations. The Soil Survey is available from the Soil Conservation Service, Michigan Department of Agriculture, or the Cooperative Extension Service. Readers requiring more detailed information on forest soil uses are referred to : A Field Guide to Forest Soils, by S.G. Shetron (1985).

DISCUSSION

Measures of Yield

Soil surveys provide two interpretations to estimate potential forest productivity of a soil: site index and volume. Site index is the average height of dominant and co-dominant trees at age 50. It is expressed by species, and applies to fully stocked, even-aged, unmanaged stands. Volume refers to the mean annual increment and is expressed as merchantable cubic feet per acre. Volume is also expressed by species and applies to fully stocked, even-aged, unmanaged stands.

Site Index

The site index values used in this report are those which are presented in the Woodland Management and Productivity Table, of the Menominee County Soil Survey. These values are based on direct field measurements, soil characterization studies, and soil series interpretation records.

Volume

Potential productivity interpretations for stand volume growth are based on yield tables. Yield tables are typically derived for local areas or small regions. Pflughoeft and others (1987) developed a yield table for nine species, specifically for northern Michigan. The yields presented in that table are based on observed site indices in the region and a recognized growth potential model. Accordingly, those yields more accurately reflect the potential growth rates in northern Michigan, than previously reported literature.

Volume growth estimates for Menominee County soils have been determined using the site index value for the soil series and the Michigan based yield table (Pflughoeft et. al., 1987). Yields for species not contained in the Michigan yield table were assigned values corresponding to those in the Survey report, which are based on the Soil Survey Technical Guide.

Potential Productivity Table

The potential forest productivity by soil type for Menominee County, Michigan is presented in Table 1. This table is a guide to potential productivity; actual yields can be expected to vary as do actual stand conditions.

Table 1. is based on the Woodlands Management and Potential Productivity Table, from the Menominee County Soil Survey. The following is a listing of the table headings and their meaning:

Map Unit: Map unit symbol; common map units differentiated by slope class were grouped when the site index was the same.

Series: Soil Series comprising the map unit.

Species: Species which had measured site index data; considered commercially important species for the soil series.

Site Index: Site index in feet, base age = 50 yrs.

Volume: Average merchantable cubic feet per acre per year growth.

LITERATURE CITED

Pflughoeft, J.R., D.D. Reed, E.A. Jones, C.C. Trettin. 1987. Potential Mean Annual Increment Values for Selected Commercial Tree Species in the Upper Great Lakes Region. Res. Info. Rept. 87-1. School of Forestry and Wood Products. Michigan Technological University, Houghton, MI. 5 pp.

Shetron, S.G. 1985. Field Guide to Forest Soils. CROFS, School of Forestry and Wood Products, Michigan Technological University, Houghton, MI. 78 pp.

Table 1. Potential forest productivity estimates for Menominee County, Michigan.

Map Unit(s)	Series	Species	Site Index	Volume
10 B,D	Onaway	Sugar Maple	65	108
		American Basswood	65	40*
11 B	Posen	Sugar Maple	62	104
12 B,D	Nadeau	Sugar Maple	55	93
		Big Tooth Aspen	63	73
		Northern Red Oak	65	87
		Red Maple	55	73
14	Minocqua	Balsam Fir	54	105*
		Tamarack	55	50*
		Balsam Fir	40	71*
		Quaking Aspen	60	62
		White Pine	53	122
15 A	Gladwin	Red Maple	56	74
		Big Tooth Aspen	60	72
		Balsam Fir	53	102*
		Paper Birch	55	80
		White Spruce	53	103*
		Red Maple	62	78
		Balsam Fir	60	118*
		Balsam Fir	40	71*
16	Ensley	Northern White Cedar	15	20*
		Tamarack	35	23*
		Black Spruce	15	23*
		Red Maple	62	78
		Balsam Fir	60	118*
		Balsam Fir	46	86*
17	Cathro	Balsam Fir	40	71*
		Northern White Cedar	15	20*
		Tamarack	35	23*
		Black Spruce	15	23*
		Red Maple	62	78
		Balsam Fir	60	118*
		Balsam Fir	20	29*
		Balsam Fir	46	86*
18	Lupton	Balsam Fir	40	71*
		Northern White Cedar	15	20*
		Tamarack	35	23*
		Black Spruce	15	23*
19	Loxley	Black Spruce	15	23*
		Black Spruce	15	23*
20 A	Dawson	Black Spruce	15	23*
21	Solona	Sugar Maple	64	107
22	Deford	Quaking Aspen	60	62
22 A	Wainola	Quaking Aspen	70	73
		Red Maple	55	73
		Quaking Aspen	65	63
23 B,D	Rousseau	Paper Birch	65	90
		Quaking Aspen	65	63
24	Arnheim	White Spruce	38	-
		Northern Red Oak	55	83
25 B	Moquah	Sugar Maple	65	108
		American Basswood	65	40*
		Quaking Aspen	65	63
		Paper Birch	65	90

Table 1 cont'd. Potential forest productivity estimates for Menominee County, Michigan Soil Survey Report.

Map Unit(s)	Series	Species	Site Index	Volume	
26 B	Rubicon	Jack Pine	53	61	
		Red Pine	50	130	
		Quaking Aspen	60	62	
		Eastern White Pine	45	75*	
27 A	Rousseau	Quaking Aspen	65	63	
		Paper Birch	65	90	
28 A	Ingalls	Quaking Aspen	60	62	
29	Burleigh	Quaking Aspen	40	22*	
30 B	Cunard	Sugar Maple	60	101	
	Onaway	Sugar Maple	65	108	
		American Basswood	65	40*	
32 A	Sundell	Red Maple	55	73	
	Ensign	Sugar Maple	53	92	
33	Nahma	Balsam Fir	35	60*	
	Ruse	Balsam Fir	40	71*	
34	Dcford	Quaking Aspen	60	62	
35	Lupton	Black Spruce	20	29*	
		Balsam Fir	46	89*	
	Tawas	Balsam Fir	40	71*	
	36	Chippeny	Balsam Fir	35	60*
		Nahma	Balsam Fir	35	60*
	37 B	Mancelona	Sugar Maple	58	98
Nadcau			Sugar Maple	55	93
Rousseau		Big Tooth Aspen	63	73	
		Northern Red Oak	65	87	
38 A	Rousseau	Quaking Aspen	65	63	
		Paper Birch	65	90	
44	Tawas	Balsam Fir	40	71*	
	Dcford	Quaking Aspen	60	62	
45 C	Dcford	Quaking Aspen	60	62	
		Wainola	Quaking Aspen	70	65
	Rousseau	Red Maple	55	73	
		Quaking Aspen	65	63	
		Paper Birch	65	90	
		Pickford	White Spruce	45	84*
46	Pickford	Balsam Fir	45	83*	
		Balsam Fir	40	71*	
		Northern White Cedar	15	20*	
49 C	Cathro	Tamarack	35	23*	
		Black Spruce	15	23*	
		Solona	Sugar Maple	64	107
	Onaway	Sugar Maple	65	108	
		American Basswood	65	40*	
50 B	Grayling	Jack Pine	48	59	
		Northern Red Oak	43	28*	

Table 1 cont'd. Potential forest productivity estimates for Menominee County, Michigan Soil Survey Report.

Map Unit(s)	Series	Species	Site Index	Volume
51 B	Pemene	Northern Red Oak	65	87
		Sugar Maple	60	101
	Rubicon	Quaking Aspen	60	62
		Jack Pine	53	61
		Red Pine	50	130
		Eastern White Pine	45	75*
52 B,D	Onaway	Sugar Maple	65	108
		American Basswood	65	40*
	Nadcau	Sugar Maple	55	93
		Big Tooth Aspen	63	73
		Northern Red Oak	65	87
		Northern Red Oak	65	87
53 B	Pemene	Northern Red Oak	65	87
		Sugar Maple	60	101
	Rousseau	Quaking Aspen	65	63
		Paper Birch	65	90
		Balsam Fir	40	71*
		Sugar Maple	54	92
54 C	Tawas	Sugar Maple	55	93
		Big Tooth Aspen	63	73
	Banat	Northern Red Oak	65	87
		Sugar Maple	55	93
		Big Tooth Aspen	63	73
		Northern Red Oak	65	87
55 B	Nadcau	Sugar Maple	55	93
		Big Tooth Aspen	63	73
	Summerville	Northern Red Oak	65	87
		Sugar Maple	61	102
		Paper Birch	53	78
		Sugar Maple	62	104
56 A	Amasa	Quaking Aspen	70	65
		Sugar Maple	54	92
58 A	Banat	Sugar Maple	54	92
		Balsam Fir	35	60*
59 B	Nahma	Red Maple	55	73
		Sugar Maple	61	102
	Sundell	Paper Birch	53	78
		Sugar Maple	65	108
		American Basswood	65	40*
		Sugar Maple	64	107
60 B	Onaway	Northern Red Oak	65	87
		Sugar Maple	60	101
	Solona	Sugar Maple	55	93
		Big Tooth Aspen	63	73
		Northern Red Oak	65	87
		Sugar Maple	61	102
61 B	Pemene	Paper Birch	53	78
		Sugar Maple	60	101
	Nadcau	Sugar Maple	55	93
		Big Tooth Aspen	63	73
		Northern Red Oak	65	87
		Sugar Maple	61	102
62 B	Summerville	Paper Birch	53	78
		Sugar Maple	60	101
	Cunard	Sugar Maple	60	101
		Balsam Fir	54	105*
		Sugar Maple	60	101
		Quaking Aspen	60	62
63 B	Bowers	Balsam Fir	54	105*
		Quaking Aspen	60	62
	Ingalls	Quaking Aspen	60	62

Table 1 cont'd. Potential forest productivity estimates for Menominee County, Michigan Soil Survey Report.

Map Unit(s)	Series	Species	Site Index	Volume
64 A	Solona	Sugar Maple	64	107
	Ingalls	Quaking Aspen	60	62
66 B	Johnswood	Sugar Maple	61	102
	Detour	Balsam Fir	50	96*
67 B,D	Pemene	Northern Red Oak	65	87
		Sugar Maple	60	101
68	Cunard	Sugar Maple	60	101
	Sundell	Red Maple	55	73
69 B	Onaway	Sugar Maple	65	108
		American Basswood	65	40*
	Rousseau	Quaking Aspen	65	63
		Paper Birch	65	90
	Solona	Sugar Maple	64	107

* Yield from Woodland Management and Potential Productivity Table, Menominee County Michigan Soil Survey Report.