

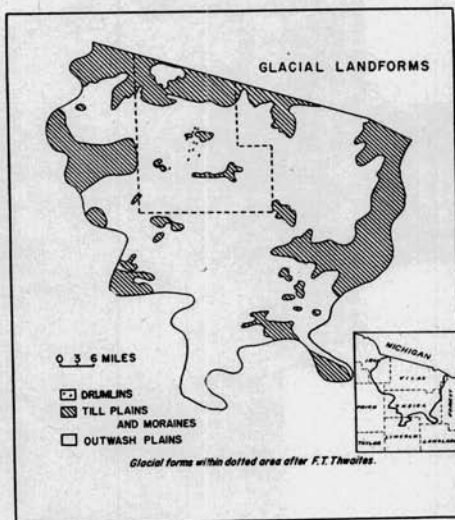
ORIGINAL FOREST VEGETATION IN A GLACIATED AREA

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The Northern Lakes Region of Wisconsin may be considered as an area representative of the glaciated portions of the Upper Lakes States Region. Approximately sixty percent of the surface of this sub-region is composed of outwash materials, parts of which are extremely level while other portions are broken or choppy. These latter irregular surfaces are due to the presence of numerous kettle holes or post-glacially eroded channels. The remaining forty percent of the region, primarily found in the peripheral sections, has a surface of till material. The surface configuration of the ice deposited debris ranges from rolling through choppy to rough. In all portions of the region lakes, marshes and swamps are to be found located in kettle holes, post glacial channels or blocked pre-glacial valleys.

The natural dynamics of forest ecology in this region of youthful landforms was abruptly terminated with the advent of lumbering activity during the late 19th and early 20th centuries. Since the last ice retreat many adjustments of vegetation to the numerous environmental conditions had been made, while others were in progress when the disruption by man occurred. One of the chief adjustments of vegetation to habitat was found to be between forest species and glacial material, for as can be seen from a comparison of the two accompanying maps, vegetational types in the core of the area, which is composed of glacio-fluvial material, contrast with those in the peripheral sections where till materials are found. In general, the exclusively softwood, predominantly softwood and the mixed forest associations prevailed on the more sandy and droughty outwash while the predominantly and exclusively hardwood (including hemlock) associations were limited to the heavier morainic materials.

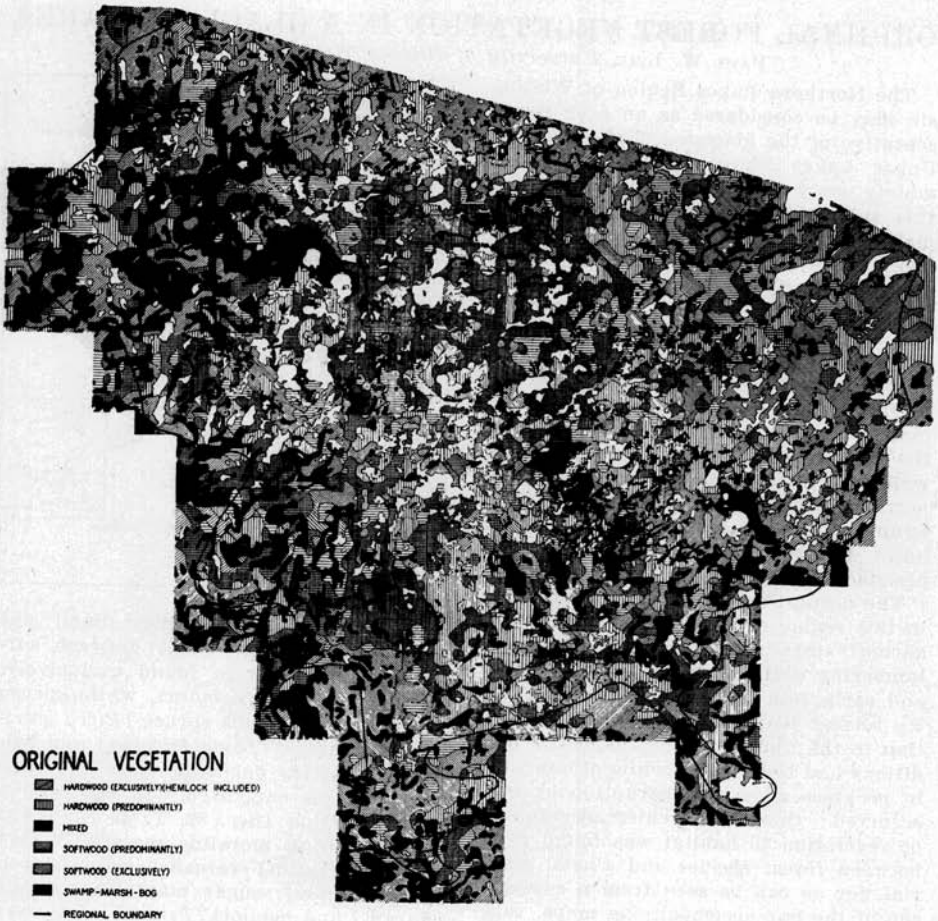
The close correlation between glacial surfaces and vegetation can readily be shown by representative survey sections in the contrasting glacial types and noting the forest species which were found there by the surveyors of the original land survey. On the section lines bounding section 33 in T. 42 N., R.



10 E., an area of Plainfield Sand soil developed on a flat, sandy outwash surface, softwoods were found exclusively. Red pine (*Pinus resinosa*), white spruce (*Picea glauca*), black spruce (*Picea mariana*), tamarack (*Larix laricina*) and balsam fir (*Abies balsamea*) were the softwood species supported. In contrast, a survey section (Sec. 32, T. 42 N., R. 12 E.) in rolling morainic material (Kenman Silt Loam) revealed yellow birch (*Betula lutea*), sugar maple (*Acer saccharum*) and hemlock (*Tsuga canadensis*) on the well drained sites with some white cedar (*Thuja occidentalis*) and tamarack in the swamps. Many portions of the outwash plain contain varying amounts of reworked till of earlier origin, allowing for the presence of a greater component of fine soil particles in such areas. (Example: Sec. 9, T. 41 N., R. 8 E.; Vilas Sandy Loam). Likewise, sections of ground moraine in the eastern marginal areas contain a fair percentage of sand particles in the glacial till. (Example: Sec. 30, T. 41 N., R. 11 E.; Kennan Fine Sandy Loam). In both instances the vegetational cover consisted of mixed forest species.¹

The representative, contrasting, forest associations were found almost exclusive-

¹ See Wilde, S. A. The Relation of Soils and Forest Vegetation of the Lake States Region, *Ecology* Vol. 14, No. 2, 1933, pp. 94-105 for a detailed treatment of relation of forest vegetation to soil texture, structure, moisture content and parent material.



ly on sites where root penetration was entirely above the ground water level. Surfaces intermediate in height between swamp and upland levels where roots were periodically influenced by the ground water level had different admixtures of soft and hardwood trees. Swamp lands supported still other forest associations, the particular type dependent upon the variety of peat present and the percentage of mineral matter contained in the "soil".

The distribution of original forests in this geographical area was of great significance in determining the present cultural patterns. The highly coveted pine timber of the outwash plains was responsible for the extension of railroads into and through those sections. A few of these routes remain as rail lines while others have been converted for use as automobile roads or fire lanes. Likewise,

many of the settlements of the pineries, originally functioning as lumber towns, are now flourishing recreational settlements. The hardwood lands, on the other hand, having been lumbered later, contain fewer cultural phenomena, as portable sawing equipment in use later and the trucking of logs to previously established settlements lessened the necessity of town and railway construction in the morainic sections. The apparent anomaly of greater concentration of agricultural development on the light, droughty outwash instead of on the heavier more fertile till material is primarily due to the fact that the latter areas are often excessively bouldery or extremely irregular in surface. Furthermore, by the time most of the hardwood lands were logged over few additional acres were being cleared owing to the occurrence of the nation-wide agricultural depression.