Consequences of Corporate Timberland Ownership Change in Michigan's Upper Peninsula

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Abstract

Corporate forestland ownership in Michigan's Upper Peninsula (UP) has undergone a significant change in recent years. This has raised concerns about the impact on local economies, communities, environments, and potential for accelerated sales into higher valued uses. We address two main objectives: the rate and pattern of timberland ownership change and the potential impacts of the land sales on the UP economy. UP wide spatial databases of corporate forestland ownership were developed at two points in time and ownership change was characterized. We described spatially lands with relatively higher potential for conversion to non-forest uses, and present results from economic change analyses. Ownership change data support the hypothesis that large-tract corporate forestlands are increasingly fragmented. The economic assessment highlights the small role that the UP plays in the overall Michigan economy, but the very important role it plays for Michigan's forest products industries, a key element in the region's prosperity.

Keywords: corporate forestland, higher and better use, Michigan, ownership change, parcelization.

[1] Paper presented at the 2007 National Convention of the Society of American Foresters in Portland, OR, October 23-27.

Introduction

National trends in forestland ownership represent a transition from vertically integrated wood product companies to institutional investors and investment trusts (Block and Sample 2001, Hagen et al. 2005, Irland 2005, Sampson et al. 2000). Concerns over the effects of this change in forestland management on forest condition are potentially far reaching. For example, increased alternative land uses created by the demand for residences with rural amenities has resulted in the "parcelization" of forestland and increases in property values (Gustafson et al. 2005, Stein et al. 2005, Irland 2005, Kilgore and MacKay 2007). One concern raised with regard to the change in management of large-tract forest holdings is that the new class of ownerships will be more willing to divest lands of higher alternate use value than the previous ownerships (Browne 2000).

Recently, large changes in industrial timberland ownership in the Upper Peninsula of Michigan (UP), which mirror the national trend, have heightened concerns about impacts on forests and communities in the region. More than 50% of the corporate timberland in the UP, held by vertically integrated timber products companies, were sold in two transactions in 2005-06. The new owners are institutional investors and trusts; they own no processing facilities in the region. Most of these lands have been open for hunting and recreational uses, and the link to the forest products industries is substantial. Over half of the employee compensation in the manufacturing sector in the UP was associated with forest products industries in 2003 (Leefers 2007). Hence, potential threats to access of forestlands, such as sales for higher and better uses, concern many people because their livelihoods are linked to the resource base.

In the UP, this ownership change has been relatively recent and now represents the majority of large-tract forestland holdings. Land ownership in the UP follows a history of large holdings dominated by mineral extraction interests, forest products companies, and governmentally held public lands (Figure 1). The majority of the privately held large tracts of forestland have been consistently enrolled in Michigan's Commercial Forest Program (CFP – MiDNR 2007). This program greatly reduces the tax burden placed on enrolled properties helping the owner avoid the "investment trap" often associated with the long-term nature of forest management in exchange for access for public hunting and fishing. The private owners are required to have an accepted long-term management plan helping the State avoid "liquidation harvests" that reduce the resource base. The public access rights established by the CFP, in addition to other low-impact uses allowed by the owners' "goodwill" on these privately held lands, and the connectivity to public lands provides the perception of "openness" in the landscape for public use.

Parcelization of large-tract forestlands generally decreases the average parcel size while increasing the number of owners per given area (King and Butler 2003). Consequences of forest parcelization include fragmentation of both the contiguous forest cover and the management of the forest resource (Radeloff et al. 2004, Wear 2005). Public access and wildlife habitat are often compromised by fragmentation. Measurement of the parcelization rate of large-tract forestland ownerships with qualitative information regarding a given parcel's landscape attributes is important to begin understanding the contributing factors of parcelization. These measurements are limited however by the lack of consistent, easily accessible, and spatially formatted regional parcel ownership data.

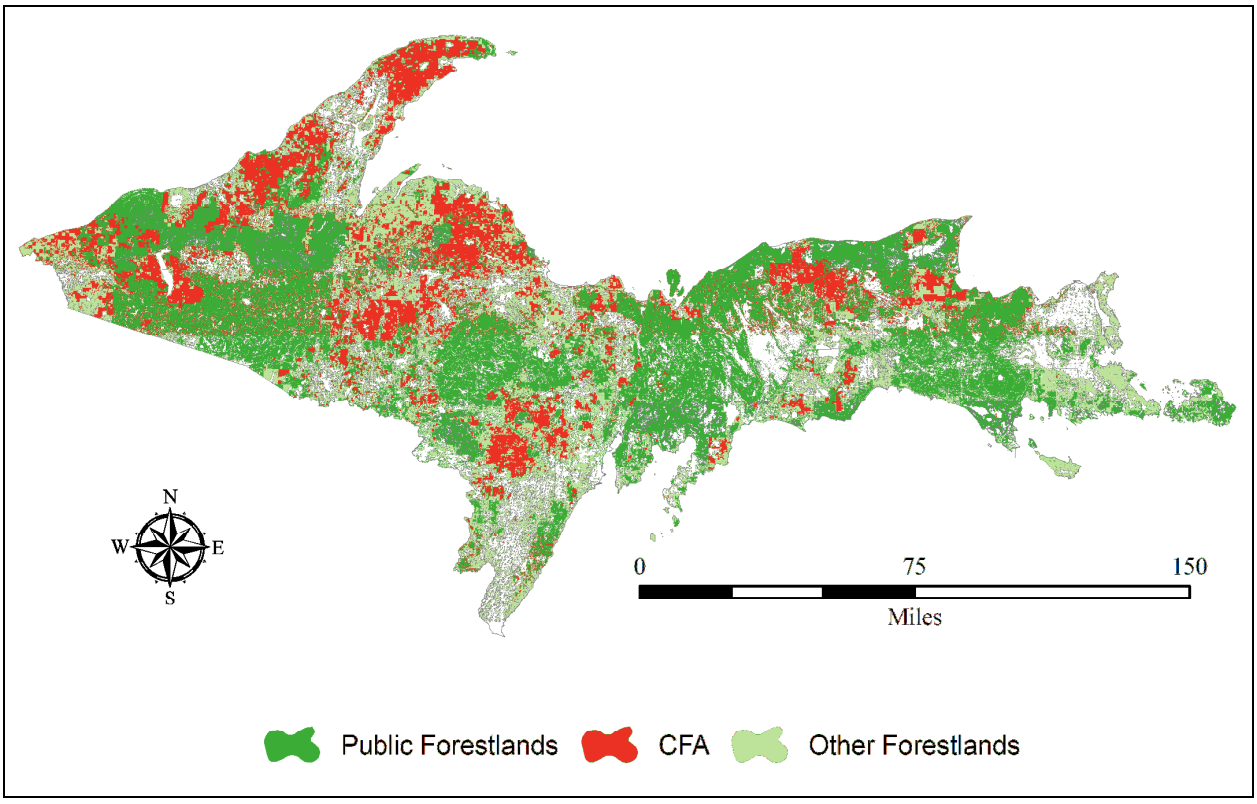

Figure 1. Forest Lands in the Upper Peninsula of Michigan by major owner-class.

Purpose

The purpose of this study was to facilitate landscape level planning efforts in the UP. We approached this by spatially representing ownership information in a consistent format across a region and quantifying the rate and pattern of change in large-tract forest holdings from data gathered at two points in time. Proximity of a parcel to certain landscape features (e.g., water bodies) was measured to better characterize those lands leaving large-tract ownerships with an assessment of remaining parcels of similar location attributes still held in the large-tract category.

This analysis supports policy proposals to sustain the economic viability of forest-based industries in the UP (Froese et al. 2007). The broader report, "Large-tract Forestland Ownership Change: Land Use, Conservation, and Prosperity in Michigan's Upper Peninsula", focuses on economic and policy dimensions of ownership changes in the UP.

Methods

Study Area

The UP is an area of nearly 11 million acres, bounded by the St. Mary's River to the east, Lake Huron, the State of Wisconsin and Lake Michigan to the south, and Lake Superior to the north. This region is part of a contiguous forest that stretches across its entire east-west length

Table 1. Summary of corporate forestland area by major owner class and leading corporate owner, by county.

County	Major Owner Class			Leading Corporate Owner	Corporate % of Major
	Corporate	State	Federal		
Alger	169,159	99,485	158,599	The Forestland Group	40%
Baraga	234,117	80,244	44,673	Plum Creek	55%
Chippewa	46,861	225,977	242,762	Plum Creek	11%
Delta	62,527	71,564	244,397	Plum Creek	15%
Dickinson	48,602	228,916	0	GMO Renewable Resources	11%
Gogebic[2]	166,442	21,116	305,714	Keweenaw Land Association	39%
Houghton	144,615	63,252	155,839	The Forestland Group	34%
Iron	166,728	99,255	176,496	The Forestland Group	39%
Keweenaw[1]	144,634	4,948	0	GMO Renewable Resources	34%
Luce	111,226	298,061	0	The Forestland Group	26%
Mackinac	19,679	209,397	152,150	Plum Creek	5%
Marquette	358,462	270,692	18,147	Plum Creek	84%
Menominee	115,970	100,299	0	Plum Creek	27%
Ontonagon	179,079	77,578	284,062	Plum Creek	42%
Schoolcraft	64,141	297,949	215,347	Plum Creek	15%

[1]Keweenaw County areas exclude Isle Royale.
[2]Gogebic County also has 50,290 acres of county forest in public ownership.

(approximately 320 miles) and extends westward and northward into Wisconsin, Minnesota and Canada. The UP has 15 counties and 149 township government units serving a resident population of 317,258 people (2000 census). The population density is less than 20 people per square mile. The largest metropolitan area is the city of Marquette, with a population of 19,661.

UP forests cover approximately 8.4 million acres and are home to high-value northern hardwoods, producing (among other products) birdseye maple of unsurpassed quality (Figure 1). Roughly, half of the forested lands in the UP are in public ownership, mostly national and state forests. This area is rich in natural amenities and wildlife habitat, and its remote location and rugged winters have allowed many pristine areas to remain.

Data

Michigan utilizes a township form of government where smaller, local units of government assess and collect property taxes from private landowners as well as providing other local services. These taxes and other ownership information are then aggregated at the county level of government. While new information systems including GIS capabilities can be found in UP governmental units, consistent implementation and ease of accessibility to local data are lacking.

Each county periodically publishes a plat atlas identifying parcel ownerships. Utilizing these plats, large-tract forestland ownership information was manually input to ArcGIS Desktop 9.1 (ESRI, Inc. 1999-2005) utilizing available spatial boundary datasets for UP counties and quarter-quarter section layers (MICGI 2006). Based on visual inspection of a given plat map, irregularly shaped parcels and parcels of less than 40 acres were created by cutting the quarter-quarter sections. Parcels of size less than or equal to five acres were eliminated as process artifacts to produce a coarse-scale spatial dataset of large-tract forestland ownerships at two points in time

Table 2. Summary of corporate forestland area by county and change in recent years.

County	Sampling Year		Corporate Forestland (acres)			Rate of Change ($ac \cdot yr^{-1}$)
	Historic	Recent	Historic	Recent	Change	
Alger	1992	2004	174,578	169,159	-5,419	-452
Baraga	1995	2006	247,817	234,117	-13,700	-1,245
Chippewa	1994	2003	54,174	47,144	-7,030	-781
Delta	1990	2004	68,691	62,527	-6,164	-440
Dickinson	1990	2006	67,422	48,602	-18,820	-1,176
Gogebic	1991	2005	176,284	166,442	-9,842	-703
Houghton	1997	2006	145,892	144,615	-1,277	-142
Iron	1995	2006	176,232	166,728	-9,504	-864
Keweenaw	1994	2006	167,208	144,634	-22,574	-1,881
Luce	1994	2005	122,034	111,226	-10,808	-983
Mackinac	1996	2006	21,995	19,679	-2,316	-232
Marquette	1995	2006	407,670	358,462	-49,208	-4,473
Menominee	1996	2003	116,861	115,970	-891	-127
Ontonagon	1993	2004	208,483	179,079	-29,404	-2,673
Schoolcraft	1993	2005	77,083	64,141	-12,942	-1,079

for all 15 counties of the UP. Non-uniform publication dates of plat atlases across UP counties combined with the inability to procure timely historic publications limited the regional scope of analysis. Most current plat publications ranged from 2003 to 2006 and the sample period ranged from seven years to 16 years, averaging 11 years for the 15 counties. Actual sampling dates of these publications are unknown and ownership information reflected in the plat atlas may not represent current ownership.

Analysis

We defined "large-tract forestland owner" for this study based on data obtained from the 2006 Michigan Department of Natural Resource's Hunter's List (MiDNR 2006). These tabular data described the ownership and location of CF enrolled lands available for public hunting and fishing. From this list, UP-wide ownerships of over 10,000 CF enrolled acres were chosen and categorized as large-tract owners. Historic CF data were not available for definition of this group. Instead, owners were selected for this category based on total acres owned in the UP (greater than or equal to 10,000) and press releases of forestland ownership transfers. If a company or entity met the criteria for inclusion at either point in time, it was included in both sets.

The historic and current spatial ownership layers for each county were compared to show the pattern and amount of land transfers within the large-tract ownership base for a given county's sampling period. Those parcels that left or entered this base could only be quantified and spatially depicted as one category since only large-tract ownership information was captured, and in the comparison of data layers these parcels reflect the same ownership. This restriction greatly limited the assessment of the degree of parcelization of forestland in the UP because fine-scale changes were not captured. However, characterization of the location and measurement of the amount and rate of lands in total transferring with the large-tract category could be obtained.

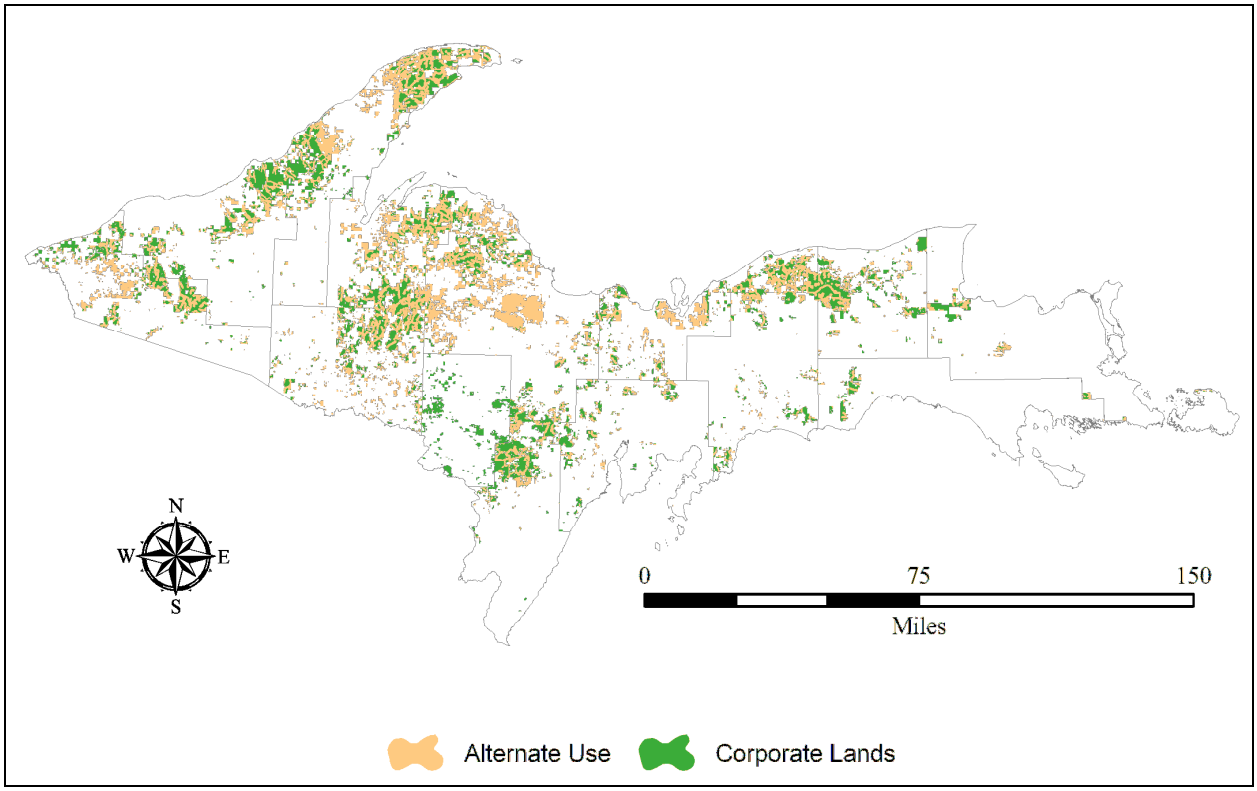

Figure 2. Forest Lands in the Upper Peninsula of Michigan that fall into the definition of potential have Higher and Better Use.

To further characterize the large-tract lands, proximities to the landscape features of Great Lakes shorelines, inland lakes, rivers, roads, and urban areas were measured and compared across a county's sampling period. These features were chosen based on a wide variety of sources and are used as indicators of factors that promote higher alternate use values. We utilized the quarter-quarter section parcel definition with a maximum parcel size of approximately 40 acres to identify adjacency of a parcel to a landscape feature. These parcels were counted as adjacent to a landscape feature if the distance to the feature from any point of the parcel was less than or equal to 10 meters, which falls within the allowable error of national map standards.

To quantify the percent of the UP large-tract forestland holdings that may exhibit higher value alternate uses, buffers were constructed around each of the selected features and then merged to delineate potential lands. The buffers were constructed to act as a coarse-filter to identify larger-tract forestlands with potential for higher-valued uses. Buffer widths of a quarter mile were used for the features (i.e., shoreline, lakes, rivers, roads and five miles around urban areas). These buffers were then intersected with the large-tract ownership data layers for quantification and spatial location. The reported large-tract area found within these buffers includes those reported as adjacent.

Information about the contiguous nature of large-tract forest holdings in the UP was presented by removing artificial ownership boundaries of the large-tract category of owners and measuring for comparison the area, perimeter, and number of contiguous parcels under large-tract management.

Results

Current large-tract corporate forestland ownership is substantial, at over 2 million acres (Table 1). Notably, the about 8 million acres of forestland in the UP are equally divided among the four main owner-classes: large-tract corporate, state, federal and other small-tract owners. The latter includes small corporate holdings, private owners, municipalities, schools and trusts. However, the relative importance of corporate forestland varies dramatically by county. For example, in Marquette county, corporate forestland amounts to 84% of the total area in the first three owner classes, while in Mackinac County, corporate forestland amounts to only 5%.

Large-tract forestland holdings in the 15 counties of the UP declined an average annualized rate of 1,682 $ac \cdot yr^{-1}$, when weighted by the county-level contribution of these types of lands to the UP total. At the county level, these declines ranged from as little as 127 $ac \cdot yr^{-1}$, in Menominee county, up to 4,473 $ac \cdot yr^{-1}$ in Marquette county (Table 2). Total holdings declined from approximately 2.2 million acres to 2 million acres over an average 11-year period (source). This decline of nearly 200,000 acres in large-tract holdings is represented by the balance of 280,000 acres divested from the large-tract category and 80,000 acres transferring into the category over the various sample periods aggregated as “historic” and “current”. Nearly 1.1 million acres transferred between large-tract ownerships over the sampling periods (e.g., MeadWestvaco to Plum Creek, LLC). The changes in forestland ownership from traditional to institutional entities have been only partially represented by our spatial ownership datasets and the 2006 CF database.

Disparity is found in the time difference between recorded transactions and publication dates, the variation in plat publication dates across counties, and the unavailability of timelier historic atlases (Table 2). Interpretation of the data should also be cautioned regarding a direct link between the owner of a historic parcel and the current owner as no transaction flow data between the sampling dates for a given county were obtained and intermediate transfers may have occurred. Generally, however, transfers from historic large-tract owners to current large-tract ownerships found in our data over the time periods studied agree with recorded press releases of land transfer announcements.

General declines were found in large-tract holdings adjacent to the landscape features of Great Lakes shorelines, inland lakes, rivers, roads, and urban areas. In some counties these types of lands, such as shoreline, have completely disappeared from large-tract holdings. Many of these transactions occurred prior to recent acquisitions by institutional investors. The percentage of large-tract forestland ownerships that fall within the buffered areas of potential higher alternate use value is quite pronounced across the UP ranging from 38% to 76% (Figure 2). These delineated large-tract lands declined over the sampling periods an estimated 1,469 acres per year weighted by the county portion of total buffered areas in the UP.

Measurements of the contiguous nature of large-tract forest holdings in the UP revealed that in general, the maximum parcel area of large-tract holdings is declining. Five counties in the UP

showed slight increases in mean parcel area which may be due to divestiture of smaller parcels or strategic acquisitions designed to make holdings contiguous to decrease the cost of forest operations.

Discussion

Spatial datasets of large-tract forestland ownerships in the Upper Peninsula of Michigan were produced for each of the 15 counties at two points in time to act as a beginning assessment of the amount and nature of large, private forestland holdings and as input to landscape level planning efforts. These datasets were limited by the quality, consistency, and timeliness of available ownership information.

The nearly two million acres of large-tract private timberland holdings in the UP approximate a quarter of total timberland found in this peninsula. Not fully recognized in this analysis is the transition of forestland from vertically integrated companies to new institutional type ownerships. These types of transfers have essentially been completed in the UP with approximately 85% of large-tract forestland holdings defined for this study now owned by these new types of forestland owners represented by three companies.

So, what are the impacts of these changes? How are wildlife habitat, recreation access, and the forest products industries affected by the change in ownership and potential sales of lands for higher and better uses? At this juncture, we cannot estimate the impacts. However, some anecdotes shared with us at public meetings in the UP include examples where traditional access to forested areas has changed due to ownership changes (Froese et al. 2007). For example, private roads may be closed by the new owners, restricting access previously taken for granted.

Clearly, additional home construction in forested areas will increase habitat fragmentation, but the extent of this effect depends on the scale of development. New home construction contributes to local economic activity. Finally, the forest products industries may be affected if parcel sizes decrease creating more challenges for access to raw material. But again, this is an issue of scale. The new institutional owners of forestlands will continue harvesting timber and selling it to mills; this is guaranteed in some cases with long-term sales arrangements that were negotiated as part of the land sale (Leefers 2007).

The bottom line is that there has been a significant shift in forestland ownership in the UP. The new owners have a responsibility to their investors to provide acceptable returns on the investments. In some cases this will lead to sales of parcels for higher and better uses. The extent of these future sales is unknown presently. But we do know they will have potential effects on hunting, fishing, tourism, and the forest products industries.

Ongoing study assigns parcel ownerships beyond the large-tract category to allow better measures of parcelization and improved location characterization for use in land use predictive modeling. Future work further refines these spatial data layers by adding more recent ownership information where available with further investigation into the motivations of forestland owners.

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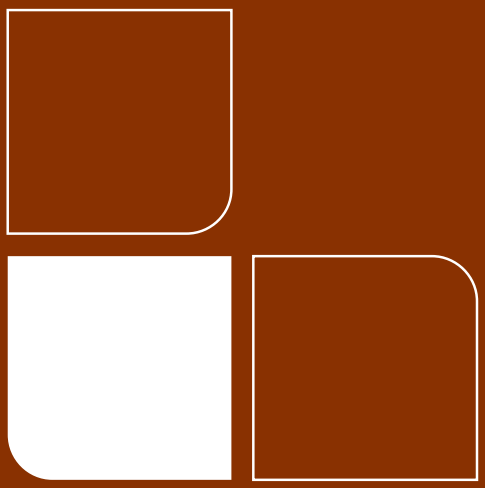

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