

FOREST LAND PARCELIZATION AND FRAGMENTATION

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Abstract

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Abstract

New information from forest-land owners in New York has given us fresh insight into the process of forest parcelization. About one-third of the private forest-land owners acquired their forest land since 1980. Of the remaining two-thirds of the owners who had forest in 1980, many have been active in the land market. The actions of both groups and public agencies have changed the mosaic of land uses and the texture (parcelization) of the forests of New York. Harvesting a maturing resource also can change the texture of the forest by creating forest opening and edge effects (fragmentation).

Introduction

In 1968, forest inventory plots became the sample frame to study forest ownership and timber supply in New York (Canham 1973). In 1972, the forest inventory project at the Northeastern Forest Experiment Station using inventory plots as the sapling frame began statewide forest-land owner studies, with New York being surveyed a second

time in 1980 (Birch 1983). The results of a third survey of New York owners are being reported at this conference. The objective of this paper is to review parcelization and fragmentation trends in New York ownership. The data for the third study are from 1,062 ownership questionnaires. The 2,491 owners of the 2,765 privately owned forested sample plots received questionnaires as part of the fourth forest inventory of New York. The 1,062 responses represent 1,255 sample locations.

Private Forest Owners

In New York, private timberland (14,367,000 acres) accounts for nearly 77 percent of the forest resource. About 491,300 ownership units hold this area. In 1980, about 506,500 ownerships had 14,426,800 acres. The average private ownership in New York stayed essentially unchanged at about 30 acres of forest land. If you looked no further, one could conclude that there was nothing happening in terms of parcelization (dividing the ownership of land into smaller tracts or parcels) and fragmentation (breaking the forest into smaller contiguous unbroken conditions) of the forest resource. Many times, parcelization is the first step toward fragmentation. For this paper, divide New York into four geographic regions (Fig. 1). These four regions have distinct differences in ownership patterns. The four regions are aggregations of the eight forest inventory units. It is easy to make direct comparisons for all four regions with those in the 1980 study of New York forest-land owners (Birch 1983). Canham used four similar regions for analysis of the 1968 data (Canham 1973). The Lake Plain and Southwest regions were the same. Three counties (Washington, Saratoga, and Montgomery counties) were part of the Adirondack region that are now in the Southeast region. Figure 1. Distribution of private ownerships, by geographic region, New York, 1980 and 1994.

Adirondack Region

The private forests of this region have received a great deal of study since 1980. The Northern Forest Lands Study and the Northern Forest Lands Council's reports document the results from the sale of the lands owned by Diamond International Corporation (Northern Forest Lands Council 1994). Some of these lands were sold to developers for resale as recreational and residential properties. Conservation organizations and state government bought part of these lands outright or purchased easements. Even with these changes in ownership, most of these lands have not changed in their usage from that of the past. This region has the largest concentration of large ownerships (Fig. 2). Acreage in ownerships with more than 1,000 acres of forest land decreased from 1.9 million acres in 1980 to 1.3 million acres in 1994. Most of the forest industry lands in New York are in this region and forest industry owns most of the larger tracts. Acreage in ownerships with 100 to 499 acres of forest land each

increased from 1,460,000 acres in 1980 to 1,812,000 acres. The number of forest ownerships with fewer than 10 acres of forest decreased. Remeasured inventory plots indicate that many of these properties were subdivided, developed, and are no longer in the forest-land base. Figure 2. Distribution of private ownerships, by size class of ownership, Adirondack region, New York, 1968, 1980, and 1994.

Lake Plain Region

This region is the least forested part of the state. In 1980, about 100,000 owners with fewer than 10 acres of forest land controlled 346,200 acres of forest land (17 percent of the private forest land in the region). In 1994, approximately 59,200 ownerships with fewer than 10 acres of forest each have 216,00 acres of forest (9 percent)(Fig. 3). All size classes of ownership from 10 to 1,000 acres increased in number of forest ownerships and acres of forest land. This region experienced a 20-percent increase in forest land during the 1968 to 1980 period; the trend of increasing forest area continued from 1980 to 1993, but at a decreasing rate. Figure 3. Distribution of private ownerships, by size class of ownership, Lake Plain region, New York, 1968, 1980, and 1994.

Southwest Region

Private forest acreage in this region decreased slightly, which reverses the trend from the pervious decade. In 1980, approximately 64,900 owners of 10 to 99 acres of forest had 2,074,800 acres of forest (55 percent of the private forest in the region)(Fig. 5). In 1994, about 52,000 ownerships with 1,739,000 acres of forest (46 percent of the private forest in the region) are in the same size classes. Ownerships with fewer than 10 acres of forest land increased from 39,000 ownerships in 1980 to 64,100 ownerships in 1994 . Acreage in ownerships with fewer than 10 acres of forest increased from 161,000 acres to 211,000 acres. Ownerships with 100 to 999 acres increased and those with more than 1,000 acres decreased. Figure 4. Distribution of private ownerships, by size class of ownership, Southwest region, New York, 1968, 1980, and 1994.

Southeast Region

The Southeast region experienced a decreased in private forest acreage from 3,523,500 acres in 1980 to 3,443,000 in 1994. The region had 3,165,000 acres of private forest in 1968 (Ferguson and Mayer 1970). This region has the highest proportion of private forest area in ownerships with fewer than 10 acres of forest land (Fig. 5). At the same time, it is second in the percentage of area in ownerships of more than 1,000 acres of forest. This region contains the heavily forested Catskill Preserve and most of the

state's population. Figure 5. Distribution of private ownerships, by size class of ownership, Southeast region, New York, 1968, 1980, and 1994.

Statewide

The distribution statewide by size class of ownership has changed little since 1980 (Fig. 6). A notable exception was the decrease in the over 1,000-acre class from 18 to 12 percent of the private forest land and an increase in the 100 to 499-acre class from 29 to 34 percent. This continues movement in the same classes from 1968 to 1980 (Canham 1973 and Birch 1983). Roughly half of the private forest land is in ownerships of greater than 100 acres. Figure 6. Distribution of private ownerships, by size class of ownership, New York, 1968, 1980, and 1994. Figure 7. Distribution of private ownerships, by size class of ownership, New York, 1980 and 1994. Nearly 93 percent of the half million private ownerships have fewer than 100 acres of forest land each. They control the other half of the private forest land (Fig. 7). It is this half of the resource where concern about fragmentation and rapid turnover is concentrated. While many of these owners do not have timber harvesting as their primary reason for owning forest land, many of these owners have and will harvest trees for sale to forest products companies. The implications of changing ownership patterns are significant. The yearly transition to many new forest owners makes communication of information about management and new programs difficult. The Forest Stewardship and the Stewardship Incentives Program are examples. The use of mass communication, especially the electronic media, is essential (Birch and Pywell 1986). New York's Department of Environmental Conservation, Division of Lands and Forests feels that: '...our most effective tools are having a service forester presence in each county coupled with developing a strong local chapter or affiliate of the New York Forest Owners' Association (NYFOA). Where our service foresters are assisting NYFOA with woodswalks, seminars and other educational events, we gain media attention, interested land owners and effective communication.'

The 'New' Owners

More than one-third of the private ownerships first acquired forest land since 1980, and these 'new' owners control 28 percent of the private forest land (Fig. 8). Figure 8. Distribution of private ownerships, by year owner first acquired forest land, New York, 1980 and 1994. In general, the new individual private forest-land owner in New York is younger, better educated, and has a higher income than the owners that held forest land in 1980. The Adirondack region had the highest proportion of new owners (47%), but the lowest proportion of forest owned by new owners (24%) (Fig 9.). The Southwest region had the highest proportion of forest held by new owners (33%) and the second highest proportion of new owners (44%). Figure 9. Distribution of 'new'

private ownerships, by geographic region, New York, 1980-94. In 16 counties of New York, population densities declined from 1980 to 1990 (U.S. Bureau of Census 1991). There has been a big increase in forest area owned by retired owners. The biggest decrease by occupation group has been in numbers of owners whose primary occupation is farmer. Many farmers have retired in the last decade and the tillable portion of their farms leased to others. This could explain some of the lower turnover in ownerships in the Lake Plain region. Most of the 'new' owners own fewer than 50 acres of forest land each (Fig. 10). The largest acreage in 'new' ownerships is in the 100 to 499-acre class, about 10 percent of the private forest acreage in the state belongs to new ownerships in this group. Second in importance is the 10 to 49-acre class. Nine percent of the private acreage in the state is in this group of 'new' ownerships. Figure 10. Distribution of private ownerships, by size class of ownership, New York, 1994.

The 'Old' Owners

The many of the 'old' owners, those who had forest in 1980, also have been active in the land market. Approximately 7 percent of the owners (Fig. 11) acquired some additional forest lands in the last 12 years; these owners have 12 percent of the private forest land in New York. An additional 7 percent of the owners decreased the size of their forest holdings in the last 12 years; they have 8 percent of the forest in the state. A third group of owners (6 percent of the owners) acquired and disposed of some forest acreage; they have 10 percent of the forest in the state. Owners that had no land transactions in the last 12 years are the remaining 46 percent of the private owners with 42 percent of the private forest acreage. Figure 11. Distribution of private ownerships, by acquisition group, New York, 1994. The most acquisition activity in the last 13 years was from those who first acquired forest land in the 1970's (Fig. 12). Second in importance, by acreage, are the owners who first acquired their forests prior to 1950. Very few owners in this group were active, but the ones who were own 10 percent of the private forest land in the state. Figure 12. Distribution of private ownerships, by year owner first acquired forest land and acquisition activity in last 12 years, New York, 1994.

Timber Harvesting Behavior

There is a positive attitude among forest owners toward and experience with timber harvesting in New York. An estimated 39 percent of the owners have removed timber products from their land and they control 63 percent of the private forest land (Fig. 13). Figure 13. Harvesting experience of private ownerships and acres of forest land owned by harvesters and non-harvesters, New York, 1994. Thirty-five percent of all private forest land owners stated that they intend to harvest in the next 10 years. Acreage owned by those intending to cut in the next decade is 54 percent. Conversely, 26

percent of the owners say they never intend to harvest and they own only 14 percent of the private acreage (Fig. 14). One-third of the owners are indefinite about their harvest plans. These owners control 29 percent of the private forest land. Figure 14. Harvest intentions of private ownerships and acres of forest land owned, New York, 1994. Timber harvesting can change the texture of the forest by creating openings and edge effects. Most forest management activities alter successional patterns of the forest landscape. How these activities alter, maintain, or enhance wildlife habitats have been described (DeGraaf and others 1991). Because the forests of New York are in a maturing stage, harvesting will regenerate forest stands by either an even-aged or uneven-aged method. Each system will produce different forest structure, including opening and edge effects for wildlife. "A northern hardwood forest under even aged management, for example, supports approximately twice as many breeding bird species as does an extensive uneven-aged forest. The lack of distinct, early successional stages in the uneven-aged hardwood forest means that species associated with those habitats -- willow flycatchers, cedar waxwings, eastern bluebirds, chestnut-sided and mourning warblers, among others -- will not likely be present" (DeGraff 1987). There are areas of New York where farms are reverting to forests; these areas provide some early successional habitats. Areas where there little land use change (e.g., the Adirondacks) and where timber harvesting is restricted over extensive areas, timber harvesting on the remaining areas provide the only other early successional habitats.

Conclusion

How the private forests of New York are parceled and fragmented in the future will depend on the same complex set of interrelated factors that operated in the past. The preferences of the owners of forest land are influenced by changes in the production, marketing, and utilization of wood products and their substitutes. Other influences include: the strength of the American dollar, trade deficits, inflation, taxes, and other economic forces. The attitudes of other citizenry toward timber management and cutting have had major influences on the local business climates and living environments in New York. Only time will tell how this dynamic situation will change. For now, watchful monitoring and good stewardship are needed to maintain the productivity of forested ecosystems for future generations.

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