

**A LOOK AT PAST AND PRESENT FOREST LANDOWNER
PREFERENCES AND INTENTIONS IN NORTHERN
MINNESOTA**

By

Jacob S. Donnay, Michael A. Kilgore, and Stephanie A. Snyder

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Department of Forest Resources

College of Natural Resources and Agricultural Experiment Station
University of Minnesota
St. Paul, MN 55108

For more information about the Department of Forest Resources
And its teaching, research, and outreach programs, contact the
Department at:

Department of Forest Resources
University of Minnesota
115 Green Hall
1530 Cleveland Avenue North
St. Paul, MN 55108-6112
Ph: 612-624-3400
Fax: 612-625-5212
Email: forest.resources@umn.edu
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By

Jacob S. Donnay, Michael A. Kilgore¹, and Stephanie A. Snyder²

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¹ Research Fellow and Assistant Professor, respectively, Department of Forest Resources, University of Minnesota, St. Paul, MN

² Operations Research Analyst, USDA Forest Service, North Central Research Station, St. Paul, MN.

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EXECUTIVE SUMMARY

Over the past two decades, a number of important economic, demographic, and social changes have occurred that have the potential to influence the management and use of Minnesota's non-industrial private forest (NIPF) lands. Among these include forest fragmentation and parcelization, increasing land values, and increasing timber values. In light of these and other important influences on NIPF lands and their owners, this study sought to evaluate the preferences and attitudes of individuals who recently acquired forest land in northern Minnesota, with a focus on assessing how these may have changed. Specific objectives of the study were to evaluate:

- Reasons why individuals acquire forest land.
- Physical characteristics of the forest land acquired.
- Intended uses of the forest land that was acquired.
- Preferences and attitudes of individuals purchasing forest land.
- Extent to which the attitudes and preferences for owning Minnesota forest land have changed over time.
- Processes used and information consulted by individuals who purchased forest land.

Minnesota Forest Landowners and Their Preferences and Intentions

To accomplish these objectives, a survey was mailed to 389 individuals who purchased forest land located in St. Louis County, Minnesota during 2001 or 2002. The survey requested information on the reasons individuals acquired their forest land, characteristics of their acquired forest land, the process they experienced when acquiring their property, and their past and intended uses for their forest land. A total of 288 completed questionnaires were returned, resulting in a 74 percent useable response rate. Major findings of the survey include:

Real price per acre paid. The Consumer Pricing Index (All Urban Consumers) was used to translate the reported sale prices among the two years included in the study to real (i.e.,

inflation free) dollars. Sixty percent of the respondents paid \$749 or less per acre for their forest land. Nearly one-quarter of the respondents paid more than \$1,000 per acre for their forest land with 13 percent paying more than \$2,000 per acre for their property. The mean sale price per acre was \$965 whereas the median sale price per acre was found to be \$617.

Reasons for Acquiring Forest Land. Among the landowners surveyed, the primary reason for forest land ownership included (in order of decreasing frequency): recreation (i.e., both hunting and other forms), real estate investment, establishing a permanent residence and establishing a secondary (i.e., seasonal) residence. When asked to rate the level of importance of various reasons for acquiring their forest land, the following were considered important reasons by survey respondents (in order of descending importance): a place to enjoy wildlife, a place to enjoy other forms of recreation, proximity to areas of interest, a place to hunt, and for real estate investment purposes.

Landowner Preferences for Forest Land. The mean size of forest land purchased of all forest landowners was 48 acres. Most (42 percent) purchasers lived greater than 100 miles from their property. The most common type of road access was a year round gravel or dirt road (36 percent) followed by a year round paved road (26 percent). The majority of property purchased contained trees greater than 10 years old along with some portion of their property (usually 30 percent or less) in non-forested swamp or wetlands. Very few respondents acquired forest land that had any agricultural uses associated with it. The most common tree size classes on the acquired properties were three to nine inches diameter (46 percent of respondents) followed by 10 to 15 inches (38 percent of respondents). Forty-four percent of respondents considered the game habitat on their property as being good while 35 percent indicated the habitat was excellent. For non-game wildlife species, 43 percent of respondents indicated the habitat was good and 25 percent indicated habitat as being excellent.

Forest Landowner Intentions for Their Land. A majority (71 percent) of respondents indicated they have no intention of selling their forest land. Forty-five percent of such respondents indicated they had no plans to build any structures. Twenty-two percent of respondents indicated they had plans to build a hunting cabin and another 22 percent indicated their intent to build a permanent or secondary residence. Of those intending to sell their forest land, 42 percent plan to do so in a subdivided condition.

Changes in Northern Minnesota's NIPF Ownership Preferences

Northern Minnesota NIPF landowners have been the focus of a number of surveys during the past 30 years with regards to their role in providing timber supplies in the face of shortfalls from federal and state timber sources. Many of these studies have focused on landowner attitudes and objectives, reasons for ownership, ownership forms, and many other characteristics. The findings from two previous studies of northern Minnesota forest land (Krmpotich 1980; Baughman 1986), both of which included St. Louis County, were compared to the results of this study to identify important trends and locate major differences in landowner characteristics between the three survey periods. Major trends include:

Per Acre Sale Price. When adjusted for inflation, 2001-02 forest land buyers were willing to pay higher prices per acre for northern Minnesota forest land than 20 years ago.

Main Reason for Acquiring Forest Land. Individuals interested in acquiring land with the main reason for recreation increased from 15 percent to 36 percent during the past 25 years. Acquiring land as a real estate investment also increased from approximately 7 percent in the mid-1970s to over 15 percent during 2001-02. Comparing landowners surveyed by Baughman in 1983-84 and the 2001-02 landowners surveyed in this study, the percent interested in establishing a permanent residence decreased substantially while the percentage of those interested in establishing a second residence more than doubled.

Total Acres Owned. Forest landowners owning between 10 and 49 acres constituted the largest cohort of survey respondents in each of the three surveys. The percentage of forest landowners owning a total of 50 to 99 acres was similar between Krmpotich's and Baughman's surveys, but has slightly increased over the past two decades as indicated by the results of this study.

Road Access. Baughman found the most common types of access to landowners' woodlands were gravel or dirt roads, followed in frequency by paved roads. Forest parcels with no road access were the least common. This parallels the 2001-02 landowners who indicated the most common type of road access on their forest land was a gravel or road dirt followed by a year round paved road. Having no road access to their property was also the least common among those acquiring land in 2001 and 2002.

Forest Land Acquisition in Northern Minnesota

With respect to the information sources consulted and processes purchasers used to acquire forest land, the following was concluded.

Buyer Awareness of Forest Land Purchased. One-quarter of the respondents first became aware of the forest land they acquired through their local realtor. Another 23 percent indicated they first became aware of the property they purchased directly through the seller. The internet, friends or relatives, and newspaper and magazine ads were other sources used to identify forested property that was purchased.

Length of Time to Acquire. Seventy-two percent of the respondents acquired their forest land in less than six months from the time they first became aware the property was for sale. Nine percent of forest land purchasers took between seven and twelve months to acquire their forest land while another 9 percent took between one and two years. The remaining 9 percent took greater than two years between the time they first became aware of their property to the time acquired.

Buyer's Prior Knowledge of Seller. Nearly 70 percent of the respondents who acquired forest land did not have prior knowledge of the previous owner. Twenty percent of the respondents knew the previous owner for more than five years and 9 percent knew the previous owner for less than a year to five years. Only 4 percent indicated the previous owner was a relative.

Buyer's Initial Contact with Seller. Twenty-nine percent of respondents indicated they approached the owner about buying their forest land prior to the property being listed for sale. Nearly seven of 10 such purchasers ended up acquiring their property before it was publicly listed for sale.

Sources Consulted When Seeking Forest Land For Purchase. The sources most often consulted by those searching for forest land to purchase included a local realtor, newspaper or real estate advertisement, and friends or relatives. These buyers perceived the most useful sources to be the internet, local realtor, and friends or relatives. The county assessor's office along with magazines and newsletters were often not consulted and, when they were consulted, were not found to be very helpful.

Sources Consulted When Researching Physical Characteristics of Forest Land. The sources most often consulted by prospective forest landowners when researching the physical characteristics of the forest land they acquired included a personal inspection of the property (93 percent), topographic maps (56 percent), and aerial photos (48 percent). Each of these were found to be moderately to very valuable as an information source. Soil maps and forest management plans were infrequently consulted and found to be minimally to moderately valuable as an information source.

Sources Consulted When Determining Forest Land Value. Very few prospective landowners consulted outside sources when trying to determine the value of their forest land. Thirty-eight percent of the survey respondents indicated they asked the previous owner about the value of the land while less than one-fourth consulted the county land

department. With the exception of the advice of the previous owner, survey respondents indicated the sources they consulted were less than moderately valuable when determining their forest land's value.

Summary Observations

Based on the NIPF landowner survey results, a number of summary observations were made regarding the following:

Landowners' reasons for ownership. Recreation, and more specifically, hunting, was the most common reason why forest landowners choose to acquire land.

Trends in reasons for ownership. The comparison between Krmpotich's (1980), Baughman's (1986) and this study's findings indicate an increasing number of northern Minnesota landowners are acquiring land for recreation-related benefits, even though stumpage prices have increased substantially during this period. However, the percentage of northern Minnesota NIPF owners acquiring land for investment reasons more than doubled from 7 percent to 15 percent during the past twenty-five years.

Physical characteristics of acquired forest lands. Findings of this research indicate that forest landowners, on average, acquired 48 acres with very little agricultural use associated with their property. They acquired land with at least 70 percent of the property in trees greater than 10 years old, most often three to nine inches in diameter, with a majority of the land in hardwoods. This size class suggests the parcels are large enough for economically viable forest management and contain trees species and diameter classes in demand by Minnesota's forest products industry.

Forest landowner characteristics. In Minnesota, it appears the number of absentee NIPF landowners may be increasing along with the average distance between their forest land and primary residence. This is accompanied by a smaller number of days spent per month by absentee owners at their forest land as compared to resident or local owners. These

absentee landowners are often considered unlikely to participate in forest management activities largely due to the complexity of managing their property from great distances and their interest in owning land solely as a retreat from urban life.

Forest land acquisition. The results of this study characterize a forest land sale as one taking less than six months and involving sales between individuals with no prior knowledge of each other. In cases where the respondent approached the owner about buying the property before it was listed for sale (nearly 30 percent of the sales in this study), seven out of 10 times the acquisition process was completed before the property was ever listed for sale.

Literature describing the acquisition process experienced by individuals interested in acquiring forest land is scant. The information gleaned from this study begins to paint a picture of this process by describing the duration of the forest land transaction process, the sources prospective landowners consult in their search for forest land, the length of time the buyer knew the seller, and numerous other variables. This information will be of considerable interest to researchers, state agencies, and county officials as evidence suggests increases in the number of forest land sales, parcelization and forest fragmentation in Minnesota. These entities will likely find utility in this information as they develop policies and programs which mitigate the effects associated with these land management challenges.

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STUDY NEED AND OBJECTIVES

Problem Statement

The nation's private forests are extensive. Comprising more than half of all forest land in the United States, this forest land base plays a critical role in providing a wide range of ecological and economic benefits desired by society (National Research Council 1998). Over the past two decades, a number of important economic and social changes have occurred that have the potential to influence the management and use of private forest lands. Among these are the following: parcelization, increasing land value, and increasing timber value.

Parcelization

Numerous studies suggest the number of individuals owning forest land is increasing. Decoster (1998) stated the average parcel size has been steadily decreasing and the number of non-industrial private forest (NIPF) landowners has been rising since the early 1900s. Birch (1996c) reported an increase in individual owners from 6.8 million in 1978 to over 9.3 million in 1994. Most recently, the 2002-2003 National Woodland Owner Survey (NWOS) reported an 11 percent increase in the number of family forest owners over the past ten years totaling 10.3 million nationally (Butler and Leatherberry 2004). These trends provide support that forest land in the United States is likely being parcelized into smaller ownership blocks.

Minnesota's NIPF lands have not been immune to the national trend of increases in ownership and parcelization. For instance, Carpenter et al. (1986) estimated 120,000 individuals owned forest land in Minnesota in the early 1980s. Birch (1996a) reported that the number of these individuals in Minnesota increased to over 130,000. According to Butler and Leatherberry's (personal communication, May 23, 2005) preliminary findings in the NWOS, approximately 170,000 family forest owners (i.e., excluding corporations, partnerships, tribes, and other non-family organizations) are currently found in Minnesota. Associated with the influx of new family forest owners is the increase in ownership fragmentation. Fleury and Blinn (1996) studied the status and character of

parcelization between 1965 and 1990 and concluded that ownership fragmentation is likely occurring in northern Minnesota. Further, Kilgore and MacKay (2005) suggest that parcelization may be present in Minnesota as the average size of parcels sold decreased from 72 acres in 1989 to 57 acres in 2002—an average of 2 percent over these 12 years. Additionally, these two reported that the number of tracts between 20 to 40 acres in size increased from 51 percent of the sales in 1989 to 63 percent in 2003.

Increasing land value

Aronow et al. (2004) estimated the increase in per acre value of timberland between 1987 and 2003 using the timberland property index established by the National Council of Real Estate Investment Fiduciaries. Their study identified an increase in the South's timber land value from roughly \$600 per acre in 1987 to almost \$1,000 per acre in 2003. The value of timber land nearly tripled in the Pacific Northwest from approximately \$600 per acre to nearly \$1,800 per acre during the same time period. Kilgore and MacKay (2005) studied trends in Minnesota's forest land values between 1989 and 2003 and found that median forest land prices increased 13 percent per year from \$175 per acre for all sales in 1989 to \$981 per acre in 2003. They concluded that owners may be susceptible to selling pressures as the opportunity costs associated with owning forest land increases.

Increasing timber value

In the northeastern United States, Wagner and Sendak (2005) reported a 5 percent increase in real and nominal stumpage prices for hardwood sawtimber between 1961 and 2002. During this same time period, they found a 1 percent annual increase in real stumpage prices for both hardwood and softwood pulpwood. Between 1982 and 2002, Wagner and Sendak (2005) also discovered a 2 percent average annual increase in real softwood sawtimber stumpage prices. In the South, Nagubadi and Munn (1997) examined Southern stumpage prices for the period 1977 to 1996. During this time period, they found positive rates of change in real prices for hardwood pulpwood (6 percent), hardwood sawtimber (3 percent), and pine pulpwood (2 percent). Adams (2002) predicted both South and Pacific Northwest real softwood sawtimber prices will increase at a rate of 0.4 percent between 2005 and 2050 while rates in the North will be

constant at 0.9 percent. During the next 50 years, growth in the South's hardwood sawtimber prices is estimated at 2 percent while price increases in the North are expected to be slower at 0.4 percent. Adams (2002) projected growth in hardwood pulpwood prices in the South while prices in the North will begin to stabilize.

Minnesota has also experienced increases in the average stumpage price for many of the state's major pulpwood and sawtimber species. Kilgore and MacKay (2005) suggest that Minnesota's dominant tree species, aspen, can be used as a proxy for general stumpage price trends as it accounted for 57 percent of the total harvest by volume and 70 percent of the pulpwood volume in 2002. A review of public stumpage prices made available by the Minnesota Department of Natural Resources suggests the average dollars per cord paid for aspen pulpwood increased an average of 11 percent each year between 1996 and 2004 (Minnesota Department of Natural Resources 2005). During this same time period, stumpage prices for aspen sawtimber increased an average of nearly 9 percent per year.

Study Objectives

In light of these important changes that have the potential to influence the management and use of private forest land, this study sought to evaluate:

- Reasons why individuals acquire forest land.
- Physical characteristics of the forest land acquired.
- Intended uses of the forest land that was acquired.
- Preferences and attitudes of individuals purchasing forest land.
- Extent to which the attitudes and preferences for owning Minnesota forest land have changed over time.
- Processes used and information consulted by individuals who purchased forest land.

REVIEW OF RELEVANT LITERATURE

Numerous surveys have been conducted at the national, regional and state level to better understand NIPF landowner characteristics. In this section, a subset of these studies is reviewed to identify forest landowners' reasons for acquiring their property, intentions for their forest land, extent of ownership (e.g., number of acres and parcels owned), and the distance to their forest estate. In addition, studies investigating trends associated with these characteristics are examined to determine how this landowner class may be changing during a time when a number of important economic, social and demographic changes are occurring that have the potential to influence the management of the NIPF landscape. Studies evaluating the forest land acquisition process are also examined.

National Surveys of Private Forest Landowners

Birch (1996c) surveyed over 23,000 owners of private forests across the United States using plots from the USDA-Forest Service Forest Inventory and Analysis (FIA) and Natural Resource Inventory (NRI) programs. Among the 11,742 respondents, roughly 40 percent indicated their forest land was part of the farm or residence (Birch 1996c). The primary reason for owning forest land was for recreation or aesthetic enjoyment (23 percent) while 9 percent listed land investment as the single most important reason for ownership.

The first cycle of the NWOS was completed in 2002 and 2003. The survey acts as a compliment to the FIA program's biological resource inventory and is completed annually in various regions across the country to characterize the nation's private forest landowners' reasons and intentions for ownership. Butler and Leatherberry (2004) drew responses from over 6,000 (46 percent response rate) private landowners across the lower 48 states. In their survey, they found the main reasons family forest landowners owned forest land were (in descending order of importance) to enjoy nature or aesthetics; privacy, home, or farm; family legacy; hunting or other recreation; land investment; and timber production. The NWOS also observed that 70 percent of the landowners maintained a primary residence within one mile of their property while 12 percent had a

secondary home within the same distance. Butler and Leatherberry (2004) reported that 90 percent of landowners controlled between 1 and 49 acres.

Regional Studies of Private Forest Landowners

Various regional and state surveys of northern, southern and western NIPF owners have been conducted to better characterize these owners. What follows is a review of these regional and state studies to better understand how private forest landowner characteristics vary across different regions of the United States.

Northern studies

Birch and Stelter (1993) characterized Pennsylvania's private forest landowners by surveying more than 2,200 private forest owners with approximately 800 responding. Their results indicate that the average land holding among private owners in 1993 was 25 acres. Approximately half of Pennsylvania's private forest landowners owned greater than 100 acres while 30 percent of landowners owned between 1 and 49 acres. They reported that 30 percent of the forest landowners cited recreation and aesthetic enjoyment as the primary reason for forest land ownership while approximately one-quarter owned land primarily as part of the farm or residence. Nine percent indicated they own land for investment purposes (Birch and Stelter 1993).

Birch (1996a) estimated there are 3.9 million private forest land ownership units (i.e., individuals, partnerships, corporations, and others) in the northern United States with approximately 130 million acres of forest land. Ninety-four percent of these landowners were individuals with the remaining 6 percent as partnerships or corporations. Over 54 percent of these individuals held between 1 and 9 acres of forest land while 32 percent held between 10 and 49 acres. The primary reasons for owning forest land among these owners were that it was part of their farm or residence; aesthetic enjoyment or recreation; farm or domestic use; and land investment. Birch (1996a) also reported important reasons for owning forest land among private owners in the Lake States. Reasons for ownership among these owners were consistent with the rest of the northern region.

In 2000, Baughman and Updegraff conducted a survey of Forest Stewardship Program participants in Illinois, Indiana, Iowa, Michigan, Minnesota and Wisconsin. Responses were included from over 1,700 landowners with Forest Stewardship plans written during the 1990s (Baughman and Updegraff, 2002). Their study found landowners of larger tracts typically owned their land for economic reasons whereas those with smaller land holdings primarily owned as part of a home site, farm or for recreational purposes. They found the most common reason for owning forest land was for recreation and aesthetic enjoyment followed by hunting or concern for the environment. Approximately half of the respondents in this survey indicated they live within one mile of their forest land while the mean distance for absentee owners (i.e., those living greater than one mile) was found to be 129 miles. Baughman and Updegraff (2002) reported that Minnesota's absentee owners, on average, lived 120 miles from their forest land.

Butler and Leatherberry (2004) estimated that 4.8 million individuals own forest land in the North. These individuals account for 94 million acres or 55 percent of the North's forest land. In this region, the largest number of landowners had landholdings between 1 and 49 acres with 70 percent of them owning between 1 and 9 acres. The main reasons outlined by the NWOS for owning forest land included enjoyment of beauty and scenery; privacy; and protection of nature and biological diversity. Nearly 80 percent of forest landowners in the North have a primary residence within 1 mile of their forest land.

Southern studies

In 1995, Kluender and Walkingstick (2000) conducted a mail survey of 2,400 private forest landowners across 12 Arkansas counties to explore their ownership objectives. Among the 866 respondents, over 50 percent owned greater than 75 acres. These landowners (i.e., those with greater than 75 acres) were more likely to have inherited the land; used it for recreational purposes; considered it an investment; and indicated a willingness to sell timber. Their study discovered that 70 percent of the individuals living on their land owned less than 50 acres with the main intention of providing wildlife habitat.

Birch (1996b) estimated there are 4.9 million private forest landowners holding 188 million acres in the southern United States. Among these landowners, 88 percent own between one and 49 acres with 24 percent owning between 10 and 49 acres. Ninety-three percent of the private forest land ownerships own less than 100 acres. In addition, Birch (1996b) found southern forest landowners' primary reasons for owning land (by percent of owners) include: part of the farm or residence (38 percent); land investment (12 percent); aesthetic enjoyment (11 percent); recreation (5 percent); and timber production (4 percent).

Hodge (1996) examined Virginia's NIPF landowners to identify their reasons and intentions for ownership in an effort to assist the state's Department of Forestry in implementing the Forest Stewardship Program. Included in the mail survey were over 1,300 Virginians who owned at least 20 acres. Hodge queried respondents regarding the level of importance of various reasons for owning forest land. Based on 531 usable responses, Hodge discovered that 63 percent indicated preserving nature was a "very important" reason for owning their forest land. This reason was followed by: maintaining scenic beauty (59 percent); viewing wildlife (47 percent), real estate investment (40 percent), wildlife for hunting (35 percent), second homesite (32 percent), nonwildlife recreation (29 percent); and producing commercial timber (27 percent).

In the Southern Region, the NWOS reported an estimated 4.3 million individuals own over 127 million acres of forest land (Butler and Leatherberry 2004). These owners' main interests included passing on land to heirs, enjoyment of beauty and scenery, and land investment. Seventy percent of the forest landowners' primary residence was located within 1 mile of their property. Generally, southern landowners owned between 1 and 49 acres with the majority owning between 1 and 9 acres.

Western studies

Force and Lee (1991) conducted a survey in 1988 of 1,226 individuals, groups or partnerships that had at least 10 acres of forest land in northern Idaho to discover their primary reasons for owning. Based on a 71 percent response (868 respondents), their

study revealed that 27 percent of the landowners owned between 10 and 25 acres while 47 percent owned between 26 and 100 acres. The most important reasons they found forest landowners acquired land was (in order of importance): preserve natural beauty and wildlife, personal or sentimental attachment, or to use for personal recreation.

Birch (1996d) estimated there are over one million western private forest landowners covering 76 million acres. Fifty-eight percent of these landowners owned between 1 and 9 acres while 28 percent owned between 10 and 49 acres. The main reason for owning forest land for nearly one-third of the landowners was that it was part of the farm or residence. Nineteen percent indicated enjoyment of owning was the primary reason for acquiring forest land while roughly 9 percent indicated land investment (Birch 1996d).

In 1998 and 1999, Blatner et al. updated Washington's NIPF landowner profile by surveying 1,600 NIPF landowners and 400 members of the Washington Farm Forestry Association. Based on 872 respondents, this study found the median acreage owned was 40 acres while the mean was 115 acres (Blatner et al. 2000). Further, they discovered that at least 85 percent of the owners rated attachment to land, legacy for children, satisfaction from owning land, privacy and scenic beauty as somewhat to very important. Contrary to many other NIPF landowner attitude surveys, their study reported that almost half indicated that producing income from the sale of timber was somewhat to very important. They also observed that one-third indicated ownership objectives including a place to hunt and fish, a place to ride ATVs, eventual commercial development, access to nearby recreation and income from future sale of land.

The NWOS found an estimated 1.3 million family forest owners owning approximately 28 million acres of forest land in the West (Butler and Leatherberry 2004). Consistent with the northern and southern regions, most landowners owned land holdings between 1 and 49 acres with over 70 percent owning between 1 and 9 acres. Seven out of 10 of these landowners lived greater than one mile from their forest land. The most common reasons for owning included enjoyment of beauty and scenery, pass land on to heirs, and privacy.

Studies of Minnesota NIPF Owners

In the early 1980s, Carpenter et al. (1986) collected background information on all of Minnesota's private forest landowners to assess their ownership objectives. Their reported results were based on 130,000 private ownership units. They found the mean size to be 57 acres when holdings less than 10 acres were excluded. Seventy percent of the owners were found to live within 25 miles of their property. Carpenter et al. research discovered the top three reasons for forest land ownership included: part of residence, aesthetic enjoyment, and recreation. Further, they found hunting to be the most popular recreational activity associated with their forest land and that Minnesota's landowners typically own their land for 10 to 15 years.

In 1996, Baughman et al. surveyed 1,000 private forest landowners across Minnesota in an effort to learn which forest management incentives are attractive to them. Their survey drew responses from 539 participants owning at least 20 acres (Baughman et al. 1998). As part of their survey, forest landowners indicated the reasons most important to them for acquiring their property. The top four responses (in order of importance) included wildlife habitat; recreation and scenic enjoyment; hunting or fishing; and part of the farm. It was determined that 53 percent of these landowners reside on their forest land while absentee owners lived an average of 62 miles from their forest land. These absentee landowners typically spent 24 days per year on their forest land. Their study observed approximately three-fourths of the forest landowners had either a permanent or seasonal home on their property.

Trends in NIPF Ownership, Objectives, and Attitudes

The number of private forest owners in the United States went from an estimated 7.8 million in 1978 to 9.9 million in 1994 (Birch 1996c) to 10.3 million in 2003 (Butler and Leatherberry 2004). The increase between 1978 and 1994 in individual forest landowners was accompanied by a decrease in corporate ownerships. A majority of the increase appeared in ownership classes between 10 and 49 acres where a 137 percent increase was experienced (Sampson and Decoster 1997). Sampson and Decoster (1997) also reported

that the increase in individual owners between 1978 and 1994 was significantly more than any other ownership category.

Butler and Leatherberry (2004) found that reasons for owning forest land have not noticeably changed between 1994 and 2004 with “part of the residence” remaining important. These two did note that reasons such as owning land to pass along to heirs, aesthetic enjoyment, and land investment have increased in importance while timber production decreased in importance (Butler and Leatherberry 2004).

A second objective of Birch and Stelter’s 1993 study was to review trends in Pennsylvania’s private forest land ownership between 1978 and 1992. Their study found the distribution of acres among forest landowners changed little in Pennsylvania from 1978 and 1992, with roughly 90 percent of owners holding between 1 and 49 acres during both time periods. In this same study, it was found that “part of the residence” as a primary reason for owning forest land decreased from 17 percent of owners in 1978 to 12 percent in 1992. During this same time period, recreation and aesthetic enjoyment increased from 27 to 30 percent while forest land held for investment decreased from 15 to 9 percent (Birch and Stelter 1993).

McCurdy (1993) reported on trends observed among private forest landowners from surveys completed in 1977, 1985 and 1991 in southeastern Illinois. Included in these surveys were private owners of large (i.e., greater than 100 acres) tracts of forest land. Landowners with large landholdings were often more likely to participate in management activities on their forest land. McCurdy (1993) confirmed this in his study as growing timber for sale was the most common use during the three survey periods; however, the percentage of owners who primarily recreate on their land increased by 10 percent during each survey from 13 percent in 1977 to 33 percent in 1991. Land investment as a reason for ownership decreased from 15 percent in 1977 to 4 percent in 1991. In all three surveys, greater than 90 percent indicated they intended to maintain ownership of their forest land for greater than 10 years. Further, at least 40 percent lived on their property at the time each survey was completed (McCurdy 1993).

Birch (1996e) reviewed private ownership trends and evaluated changes between 1980 and 1994 based on 1,062 responses to a New York statewide forest inventory. His research indicated the average holding size remained static at 30 acres between the two study periods. Birch (1996e) noted the percentage of private owners owning greater than 1,000 acres decreased from 18 to 12 percent. This decrease was accompanied by a 5 percent increase in the 100 to 400 acre size class (Birch 1996e). Using the same data set, Birch and Butler (2001) found the percentage of private owners stating they own land as part of a residence increased from 16 percent to 26 percent between the two periods. In addition, they found that recreation as the primary reason for owning increased from approximately 11 percent in 1980 to 19 percent in 1994 while those owning land for investment purposes declined from 12 percent to 5 percent. Birch and Butler (2001) discovered the percent of owners acquiring land for aesthetic enjoyment increased from 15 percent in 1980 to 20 percent in 1994.

Leatherberry (1999) utilized statewide forest landowner surveys conducted in each of the Lake States as well as FIA data from the North Central Research Station to better understand private forest land ownership trends in the 1980s and 1990s. To exclude forest industry and non-forest investment corporations, landowners included in this study owned less than 5,000 acres of forest land. In his study, Leatherberry discovered the average holding size for individual and joint owners remained constant at 32 acres between the 1980s and 1990s (Leatherberry 1999).

Key Findings of NIPF Studies

National studies of forest landowners:

- Often acquired land for reasons such as enjoying nature and aesthetics, recreation, or land investment.
- Most often lived within 1 mile of their property.
- Typically owned less than 50 acres.

Northern landowners:

- Frequently acquired land for aesthetic enjoyment, recreation, part of residence, or investment reasons.
- Most often lived within 1 mile of their property.
- In most cases owned less than 50 acres.

Southern landowners:

- Were more likely than other regions to own land for economic reasons such as selling timber or investment reasons; however, reasons such as aesthetic enjoyment, viewing wildlife and part of residence were also considered important reasons for owning land.
- Commonly owned less than 50 acres.
- Generally lived within 1 mile of their forest land.

Western landowners:

- Most often acquired land for reasons such as enjoying or preserving natural beauty, leaving a legacy to their children, satisfaction or enjoyment of owning, place to recreate, or personal attachment to the land.
- Usually lived greater than 1 mile from their forest land.
- Typically owned less than 50 acres.

Minnesota landowners:

- Commonly acquired land for reasons such as a place to recreate, aesthetic enjoyment, part of residence and wildlife habitat.
- Frequently resided on their property.
- Spent an average of 2 days per month on their forest land.

Key national trends include:

- The number of individual landowners has been increasing since the late 1970s with a majority of these individuals acquiring between 10 and 49 acres of forest land.
- Recreation as a reason for acquiring forest land has increased in popularity among NIPF landowners during the past thirty years.
- Forest land as part of a residence has remained an important reason for ownership over the past decade.
- Land investment as a reason for acquiring forest land has increased, especially over the past ten years; however, this has varied across the country as individual states (e.g., IL, PA, and NY) have experienced declines in the percentage of landowners acquiring land with this reason primarily in mind.

NIPF Land Acquisition Process

Limited literature exists that describe the type of information landowners consult when purchasing forest land. In one of the few such studies, Newman et al. (1996) surveyed Georgia's individual private landowners owning a minimum of 75 acres. The large acreage criterion was included to choose tracts that will be managed for timber-related purposes. Among the 475 respondents, the study documented that over 40 percent of the landowners did not consult any outside information sources when purchasing forest land. Among those seeking outside assistance in their forest land purchase, 10 percent consulted friends, 15 percent consulted a realtor and 25 percent consulted a forester. As a whole, very little research has focused on the NIPF owner's acquisition experience including the sources consulted, method of acquisition (e.g., inheritance, trade, or purchase), length of time, knowledge of previous owner and other factors.

STUDY METHODS AND DATA

Study Area and Population

The study focused on individuals who purchased land in St. Louis County, which is located in northeastern Minnesota (Figure 1). Encompassing nearly 7,000 square miles, it

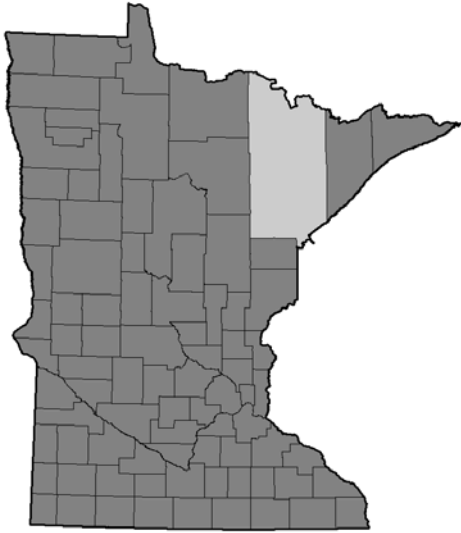


Figure 1. St. Louis County, MN

is the largest county east of the Mississippi River (St. Louis County 2005) and is home to approximately 200,000 people. The county's northern and southern borders adjoin Ontario, Canada and the north shore of Lake Superior, respectively. With over 500 lakes, parts of a national park and national forest, the Boundary Waters Canoe Area Wilderness, and four state parks within its borders, the county is known for its extensive recreational, aesthetic and tourism amenities. Duluth, the largest city in the county, is a major seaport on Lake Superior. Outside of

Duluth, mining, tourism, and wood and paper industries dominate. St. Louis County was chosen as the focus of the survey because of its large size and its predominant forest cover.

Survey participants were selected using landowner addresses obtained from the St. Louis County Assessor's Office. In particular, the Assessor's Office maintains records of all real estate transactions in the county known as the Certificate of Real Estate Value (CRV). CRVs identify the sales by their property tax classification. For the purposes of this study, only sales classed as undeveloped timberland and seasonal recreational land were included. These classifications were used as they capture most sales of undeveloped wooded property.

From this database, survey participants were identified as all individuals who purchased undeveloped timberland or seasonal recreational forest land in St. Louis County at least

10 acres in size during 2001 or 2002. Parcels smaller than 10 acres are often associated with establishing a primary or secondary residence. Best and Wayburn (2001) also suggest that 10 acres is the likely minimum parcel size below which forest land has been functionally converted to residential use. This selection criterion resulted in 408 forest land purchasers included in the survey.

Approximately three-fourths of the 408 sales were “arms-lengths” sales as defined by the Minnesota Department of Revenue’s Sales Ratio Study. These sales are defined as a willing buyer and a willing seller, both of whom desire to maximize their gain from the transfer (Minnesota Department of Revenue 2003). The remaining 25 percent of the sales were not considered “arms-length” for various reasons. An independent samples t-test was conducted to test the null hypothesis that the mean sale price per acre between “arms-length” and “non-arms-length” sales were equal. The observed significance level ($p=0.249$) suggested there was not enough evidence to conclude a difference exists in the mean price paid per acre between the “arms-length” and “non-arms-length” sales. As a result, these sales were included in the study.

Survey Design and Implementation

Questionnaire design

A questionnaire was used to gather information from St. Louis County forest landowners who purchased their property in 2001 or 2002. The questionnaire was eight pages (8.5” x 5.5”) and included 28 questions categorized under six section headings. The first section entitled, “Reasons for Acquiring Your Forest Land,” was designed to help understand the level of importance of various reasons (e.g., real estate investment, producing timber for income, recreation) that influence NIPF landowners’ decisions to acquire forest land. Section two, “Forest Land Characteristics,” was included to better understand the physical characteristics of the parcels NIPF landowners were interested in acquiring (e.g., percent forested, average tree diameter, game habitat quality). Section three, “Adjacent Lands Characteristics,” collected information on the forest land ownership types surrounding the respondents’ purchased property. Section four, “Acquisition Process,” contained questions regarding the process NIPF landowners experienced when acquiring

their forest land including the duration of the acquisition process, sources used during the acquisition process, and method of acquisition (e.g., purchase or trade). Section five, “Past and Intended Uses,” included questions regarding the amount of use, ownership tenure and landowner intentions. The final section, “About the Forest Landowner,” provided information on the age of NIPF landowners in northern Minnesota and the extent of their landholdings (i.e., total parcels owned, total acreage owned). Drafts of the questionnaire were pre-tested using a sample of private forest landowners and reviewed by experts who have conducted numerous NIPF landowner surveys. A copy of the questionnaire is included in Appendix A.

Survey implementation

Dillman’s Tailored Design Method (2000) describes a system of five compatible contacts with survey recipients including a brief prenotice letter, the questionnaire mailing, a thank you postcard, a replacement questionnaire and a final special contact. A modified version of Dillman’s method was used when surveying NIPF landowners in this study. The survey sequence began on March 15, 2004 with a prenotice postcard (Appendix A). One week later, the first questionnaire packet was sent to respondents. The packet included a cover letter (Appendix A), questionnaire and first-class stamped return envelope. Dillman (2000) demonstrated that using first-class postage on outgoing mail and return envelopes improves response rates several percentage points. To convey the importance of the survey, first-class metered postage was included on the questionnaire packet sent to participants as well as on the enclosed return envelopes. The following week (i.e., March 29, 2004), a reminder postcard (Appendix A) was mailed to participants reiterating the value of their response. The fourth contact consisted of a replacement questionnaire packet and was delivered two weeks after the reminder postcard. Included in the packet was a follow up letter (Appendix A), replacement questionnaire and a first-class stamped return envelope. The last contact used to elicit a response from survey participants was a concluding letter (Appendix A). The letter was sent out two weeks after the mailing of the replacement questionnaire packet (i.e., April 26, 2004) and stated the survey was drawing to a close. The final contact letter notified survey participants of the option to complete a questionnaire by phone.

Response Rate

Four hundred eight questionnaires were initially mailed out. Five of the participants' correct addresses could not be found, 12 respondents were later found to have purchased less than 10 acres (i.e., the minimum required to be included in the survey) and two respondents were unintentionally sent duplicate questionnaires for the same parcel they purchased. These groups were discarded from the survey resulting in a total sample size of 389 (n=229 (2001); n=160 (2002)). Of these 389, 94 percent were individual landowners. The remaining 6 percent were other individuals representing: limited liability corporations, land developers, investment companies, non-profits and others.

Forty percent responded following the initial questionnaire packet mailing (Table 1). The reminder post card elicited another 18 percent response. Following the second questionnaire mailing, an additional 14 percent of the participants responded. The final contact letter drew a 5 percent response. In total, 302 questionnaires were returned resulting in a 77 percent overall response rate. Of the 302 returned questionnaires, 14 were returned blank leaving 288 questionnaires and an overall usable response rate of 74 percent. Table 2 shows the number of usable surveys and parcel sizes between the two years included in the study.

Table 1. Survey response rate

Survey Contact	# Responses	Response Rate (%)	Cumulative Response Rate (%)
<i>First Questionnaire Packet</i>	155	40	40
<i>Reminder Post Card</i>	70	18	58
<i>Second Questionnaire Packet</i>	56	14	72
<i>Final Contact Letter</i>	21	5	77
Total	302	77	

The locations of the respondents' parcels (Figure 2) were distributed across St. Louis County with no indication of responses clustering around any particular location.

Although the 77 percent response rate diminished the likelihood those responding were significantly different than the population surveyed, a non-response bias check was performed. A t-test was used to evaluate whether non-respondents owned significantly different amounts of forest land acreage (which might suggest different owner attitudes and intentions) than survey respondents. The results of the t-test ($p=0.245$) did not allow for the rejection of the null hypothesis suggesting there was not enough evidence to conclude there was a significant difference in mean acres acquired between survey respondents and non-respondents. In other words, there was no difference in the mean number of acres acquired by survey respondents and non-respondents.

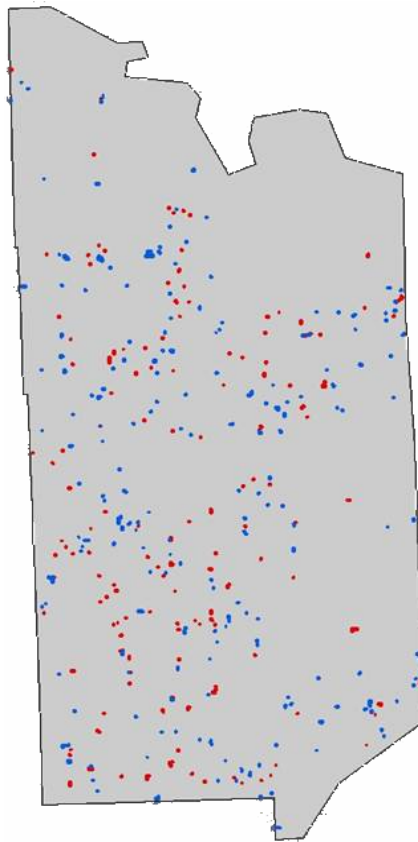


Figure 2. Location of respondent properties: 2001-02

Table 2. Number of usable surveys and parcel size by year acquired

Year Acquired	Number of Respondents	-----Acres-----		
		Minimum	Maximum	Mean
<i>2001</i>	165	10	313	50
<i>2002</i>	123	10	200	46
Total	288			

The number of acres acquired was the only variable collected for all survey participants (i.e., via CRV records) and therefore was the only variable available for non-response bias tests. Landowner age, the number of total parcels or acres owned, the number of days landowner used or visited property, or their length of intended ownership are other useful variables in identifying significant differences between respondents and non-respondents. Those who are older, own larger landholdings, spend a greater amount of time, or intend to own land for longer periods would more likely provide a response to the survey. However, the questionnaire used in the survey only collected this information from survey respondents and not all participants preventing further non-response bias tests.

Other Data

The CRV data used to identify addresses for those forest landowners participating in this study included other valuable information concerning the sale properties such as: sale price, sale acreage, sale date, legal description of property, and the parcel identification number. In addition to this information, the St. Louis County Assessor’s Office collects information on site characteristics (e.g., water frontage, access to parcel) from the local appraiser at the time of sale. This information is obtained by the county assessor’s office via a questionnaire sent to the local appraiser and is referred to as field card data. For most of the sales included in this study, the information contained on each parcel’s field card was obtained.

Data Management and Analysis

Microsoft Excel was utilized for both tracking participant responses to the survey and for data analysis. A majority of the data analysis, however, was accomplished using SPSS 13.0. The analysis assumed the respondent was the person who made the major management decisions for the parcel of forest land sampled. Further, in the case where a survey respondent purchased more than one parcel of forest land in St. Louis County during the 2001-2002 study period, the information provided by the respondent applied specifically to the parcel identified on the front of the questionnaire.

RESULTS

Minnesota Forest Landowners and Their Preferences and Intentions

Real price paid per acre

The Consumer Pricing Index (All Urban Consumers) was used to translate the reported sale prices among the two years included in the study to real (i.e., inflation free) dollars. The Consumer Pricing Index (CPI) measures the average change in prices over time in day to day consumption items (e.g., food, housing, apparel, medical care) and does not include investment items, such as stocks, bonds, or real estate (U.S. Bureau of Labor Statistics 2004). All sale prices were adjusted to the earliest reported sale date (i.e., January, 2001) and reflect the prices paid for bare land with no structures present on the property at the time of purchase. The sale price per acre is reported throughout this section to allow for comparison among prices individuals paid for forest land regardless of parcel size.

The survey results indicate that 60 percent of the respondents paid \$749 or less per acre for their forest land (Table 3). Most of the respondents (26 percent) paid between \$250 and \$499 per acre for their property while 35 percent indicated they paid between \$500 and \$999 per acre. Nearly one-quarter of the respondents paid more than \$1,000 per acre and 13 percent paid more than \$2,000 per acre for their property. The mean sale price per acre was \$965 whereas the median sale price per acre was found to be \$617.

Table 3. Real sale price per acre

Real Price per Acre	Percent	Cumulative
		Percent
\$0-\$249	16	16
\$250-\$499	26	42
\$500-\$749	18	60
\$750-\$999	17	77
\$1000-\$1499	8	85
\$1500-\$1999	3	88
Greater than \$2000	13	101.0
Total (n=286)	101.0*	

*Totals do not add to 100 due to rounding errors

Among the 2001-02 forest land buyers, the real price paid per acre and acres owned are negatively correlated at a significance level of 0.01 (2-tailed) suggesting that as the number of acres increased, the price paid per acre decreased. Further, the median price paid per acre for 10 to 40 acre parcels (\$740) was nearly twice the amount as those 100 acres or greater (\$402). This is consistent with Kilgore and Mackay's (2005) statewide evaluation of forest land sales between 1989 and 2003. They reported that, in Minnesota, larger parcels often sell for less on a per acre basis than smaller parcels and referred to this as the "wholesale to retail discount". The wholesale to retail discount helps explain the variation in the forest land sale prices per acre among the 2001-02 forest land buyers (see Figure 3 and Figure 4).

Figure 3 and Figure 4 demonstrate the distribution of the real sale price per acre were similar between the two years included in the study.

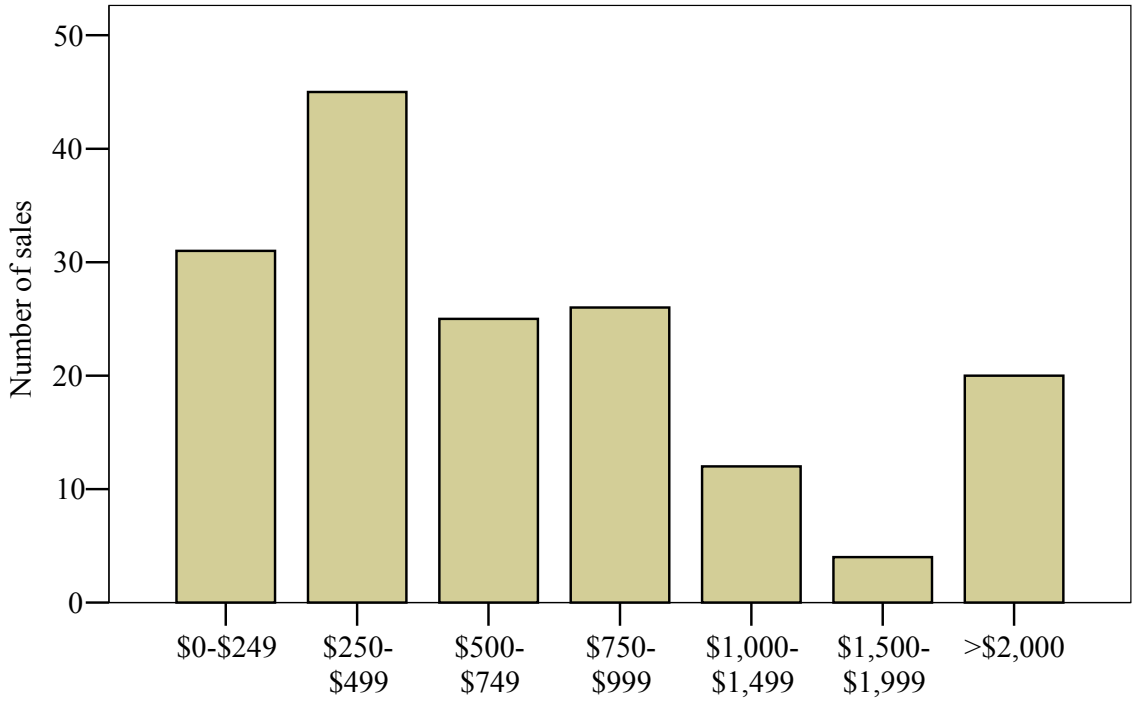


Figure 3. Real sale price per acre: 2001

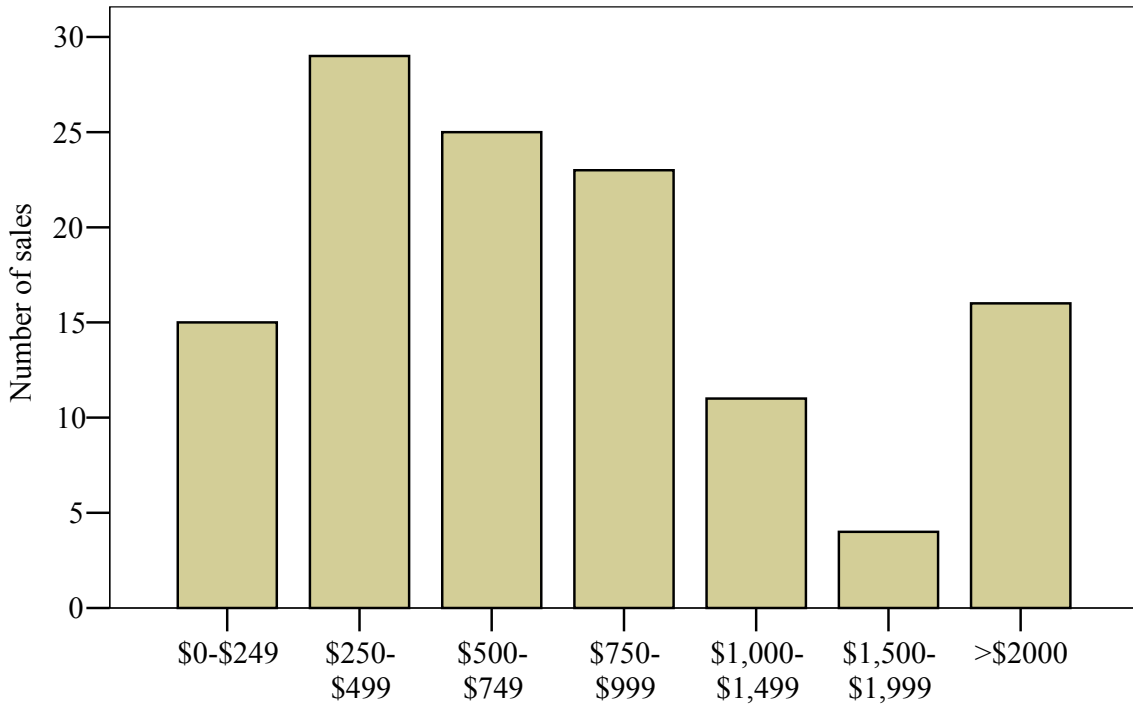


Figure 4. Real sale price per acre: 2002

Reasons for Acquiring Forest Land

Respondents were asked to rate the level of importance associated with each of 14 different reasons for acquiring their forest land using a Likert Scale (5= Very important, 1= Not at all important). Table 4 indicates “A place to enjoy wildlife” received the highest mean rating (4.1) followed by “a place to enjoy other forms of recreation (e.g., ATV use, hiking)” (3.8); “proximity to areas of interest” (3.7); and “a place to hunt” (3.6).

Table 4. Level of importance among various reasons for purchasing forest land

Reason	Mean Likert Scale Rating
<i>Place to enjoy wildlife (n=283)</i>	4.1
<i>Place to enjoy other forms of recreation (n=283)</i>	3.8
<i>Proximity to areas of interest (n=284)</i>	3.7
<i>Place to hunt (n=283)</i>	3.6
<i>Real estate investment (n=283)</i>	3.4
<i>Access to adjacent public land (n=283)</i>	2.7
<i>Establish second residence(n=284)</i>	2.6
<i>Establish permanent residence (n=281)</i>	2.4
<i>Preventing subdivision and development (n=282)</i>	2.4
<i>Family heritage (n=284)</i>	2.2
<i>Acquiring adjacent property (n=283)</i>	2.1
<i>Produce timber for income (n=283)</i>	1.7
<i>Subdividing and developing property (n=284)</i>	1.4

* mean rating where 5=Very important, 1= Not at all important

After ranking each reason on the Likert scale, respondents were asked to identify the single most important reason they acquired their forest land. The most common primary reason for purchasing forest land was for a place to hunt (Table 5). Purchasing forest land as a real estate investment and to establish a permanent or seasonal residence were the second and third most commonly cited primary reason for ownership, respectively. The

least frequently cited primary reason for acquiring forest land was producing timber for income. Among absentee landowners (i.e., those living 100 miles or further from their property) the three most important reasons for acquisition were hunting, establishing a secondary residence and as a real estate investment.

Table 5. Most important reason for purchasing forest land by percentage of respondents

Reason	Percent (n=268)
<i>Place to hunt</i>	24
<i>Real estate investment</i>	15
<i>Establish second residence</i>	12
<i>Establish permanent residence</i>	12
<i>Acquiring adjacent property</i>	8
<i>Place to enjoy wildlife</i>	6
<i>Place to enjoy other forms of recreation</i>	5
<i>Family heritage</i>	4
<i>Proximity to areas of interest</i>	3
<i>Subdividing and developing property</i>	2
<i>Preventing subdivision and development</i>	2
<i>Produce timber for income</i>	1
<i>Access to adjacent public land</i>	<1
<i>Other</i>	6
Total	100

Prices paid per acre for various ownership reasons

Those acquiring land primarily for hunting owned an average of 60 acres with a mean price per acre of \$529. Landowners who purchased their land as a real estate investment owned an average of 43 acres and paid \$883 per acre. Landowners primarily interested in land for a primary residence acquired an average of 55 acres while those interested in land for a secondary residence acquired 31 acres. The mean price per acre among those acquiring for a primary residence was \$1,101 while those acquiring for a secondary residence paid \$1,818. Although the average tract size varied somewhat among the four

groups, the differences were considered large enough to have a substantial influence on per acre prices paid.

For each of the 14 different reasons landowners acquire forest land, the Likert scale ratings were aggregated from five to three ordinal categories (1 = Not at all important = NI; 2-4 = Somewhat important = SI; and 3 = Very important =VI). These three categories were compared using a one-way analysis of variance (ANOVA) to determine if significant differences in the real price paid per acre exist for each of the different reasons for acquisition. Only significant differences are reported.

The F ratio among the NI, SI and VI groups regarding seasonal residences as a reason for acquisition was determined to be 10.35 (df = 2, 254, p=0.0005). Tukey's studentized range test (p=0.05) showed the mean real price paid per acre among those indicating "establishing a secondary (seasonal) residence" was VI (mean= \$1,557) was significantly different than those indicating NI (mean= \$830) or SI (mean= \$785). These results suggest that those forest landowners who indicated that establishing a seasonal residence was a very important reason for acquiring their forest land paid significantly higher prices per acre than did those indicating this reason was somewhat or not important.

The mean real price per acre was also found to be significantly different (F=3.78; df= 2, 254; p=0.024) among the three groups regarding the acquisition reason "For a place to hunt." Tukey's studentized range test (p=0.05) showed the mean real price paid per acre among those indicating a place to hunt was VI (mean= \$1,342) was significantly different than those indicating NI (mean= \$812). The results of the ANOVA indicate that those acquiring forest land primarily for hunting reasons paid significantly more per acre than those indicating hunting was not at all important.

The F ratio among the NI, SI and VI groups regarding "proximity to areas of interest" as a reason for acquisition was 11.27 (df = 2 ,254, p=0.0005). Tukey's studentized range test showed the mean real price paid per acre among the VI group (mean= \$1,373) was significantly different than the NI (mean= \$632) and SI (mean= \$735) groups. These

results suggest that those very interested in acquiring land near areas of interest paid significantly higher prices per acre than did groups who were not at all or only somewhat interested.

Landowner Preferences for Forest Land

Acres of woodland

The minimum acreage acquired by forest landowners was found to be 10 acres whereas the maximum was 313 acres. Table 6 shows the majority of landowners purchased between 10 and 40 acres during both years included in the study. The mean size of all forest land included in the study was 48 acres. Landowners who indicated their primary residence is located adjacent to the acquired property purchased an average of 44 acres. Fifty-two acres was the mean acreage purchased among those living between 1 and 25 miles from their forest land. The mean number of acres among those living greater than 100 miles from their property was 47 acres.

Table 6. Estimated number of ownership units by parcel size class and year acquired

Year Acquired	Acres				Total
	10-40	41-100	101-200	> 200	
<i>2001</i>	111	39	13	2	165
<i>2002</i>	92	24	7	0	123
Total	203	63	20	2	288

Distance to forest land

The distance from landowners' permanent residence to their forest land varied from 0 miles (permanent residence located on or adjacent to their forest land) to 2,000 miles with the mean distance being 129 miles. Forty-two percent of the forest land buyers lived greater than 100 miles from the property they purchased (Table 7). Thirty-two percent lived up to 25 miles from the property and 14 percent resided directly on or adjacent to their property (i.e., zero miles from their property). The least common distance to landowners' property was between 26 and 100 miles. Landowners who resided on or

adjacent to their property, on average, paid \$956 per acre for their forest land. Those landowners whose residence was between 0 and 25 miles from their property paid \$666 per acre while those residing further than 100 miles paid \$1,261 per acre.

Table 7. Distance from residence to acquired forest land property

Distance from residence to property (miles)	Percent	Mean Price Paid/Acre
0 --live on property (i.e., resident owner)	14	\$956
Between 0 and 25 (i.e., local owner)	32	\$666
26 to 100 (i.e., intermediate owner)	12	\$658
More than 100 (i.e. absentee owner)	42	\$1,261
Total (n= 266)	100	

The vast majority (93 percent) of the respondents were Minnesota residents as indicated by their mailing addresses. Minnesota residents owned 93 percent of the parcels and 94 percent of the acreage.

Road access

Access to respondents' forested property varied among the forest landowners. The most common type of road access was a year round gravel or dirt road followed by a year round paved road (Table 8). The third most common type of road access was a seasonal gravel or dirt road. Approximately 16 percent stated they did not have any road access to their property. For those who did not have road access, respondents were asked to indicate the distance from the road to their parcel. Among those individuals, the average distance from their property's border to the nearest road was 0.75 miles.

Table 8. Type of road access to property

Road type	Percent
<i>Year round, gravel or dirt road</i>	36
<i>Year round, paved</i>	26
<i>Seasonal gravel or dirt road</i>	23
<i>No road access</i>	16
Total (n=282)	101*

*Totals do not add to 100 due to rounding errors

Landowners with a year round, paved road on average paid \$937 per acre while those with a year round gravel or dirt road paid \$944 per acre. Those without any road access to their property paid significantly less at \$590 per acre.

Land use type

Survey participants were asked to indicate the proportion of their property that was in various land uses (i.e., forested, non-forested, tillable, pasture and hay land) at the time they acquired their property. In general, those interested in attaining forest land acquired parcels with a majority of their property with trees greater than 10 years old (Table 9), along with some portion of their property in non-forested swamp or wetlands. In addition, those interested in acquiring forest land often did not acquire property associated with any type of agricultural use (i.e., tillable, pasture or hay land).

Nineteen percent of the respondents acquired land containing between 91 and 100 percent of their property in trees greater than 10 years old (Table 9). For those who had a majority (i.e., greater than 50 percent) of their land in trees greater than 10 years old, the mean real price paid per acre was \$1,264 whereas those with less than 50 percent paid \$648.

Nearly 47 percent of the respondents indicated their property did not contain any forest land with trees less than 10 years old at the time they acquired it (Table 9). Landowners

who acquired forest land with a majority in trees less than 10 years old paid an average of \$693 per acre.

Table 9. Extent of various land cover types on acquired forest land parcels

	---Forest Land---		-----Non-Forest Land-----			
	Trees > 10 yrs.	Trees < 10 yrs.	Hay Land	Pasture Land	Tillable Land	Swamp or Wetland
Percent of Tract	-----Percent of Respondents-----					
<i>Not Present (0%)</i>	5	47	91	90	91	32
<i>1-10 %</i>	10	15	4	4	5	24
<i>11-20 %</i>	10	8	2	3	2	13
<i>21-30 %</i>	9	7	<1	2	<1	13
<i>31-40 %</i>	4	3	1	<1	<1	5
<i>41-50 %</i>	9	7	<1	<1	1	6
<i>51-60 %</i>	6	2	1	0	0	3
<i>61-70 %</i>	9	5	<1	<1	0	1
<i>71-80 %</i>	10	3	<1	<1	<1	1
<i>81-90 %</i>	9	2	0	0	0	1
<i>91-100 %</i>	19	2	0	0	0	1
Total (n=278)	100	101*	100	100	100	100

*Totals do not add to 100 due to rounding errors

Approximately one-third of the respondents stated they acquired land without any swamps or wetlands (Table 9). Almost 70 percent of respondents acquired land with 20 percent or less of their land in non-forested swamps or wetlands. The mean real sale price per acre among those landowners who acquired land without any of their property in non-forest swamp or wetland was \$1,221. For those who acquired forest land with greater than 20 percent of their property in non-forest swamp or wetland, the mean real sale price per acre was \$805.

Very few respondents acquired forest land that had any agricultural uses associated with it. In fact, 90 percent or more of the respondents indicated they purchased land without any acres of hay land, pasture land or tillable land present at the time of acquisition.

Tree type and size

Respondents were asked to indicate the average diameter of their property's trees at the time they acquired their forest land by selecting one of four ordinal categories containing ranges of tree diameters. The most common tree size class was three to nine inches diameter, followed by 10 to 15 inches (Figure 5). Forty-six percent of forest landowners acquired land with trees between 3 and 9 inches, while 38 percent acquired land with trees between 10 and 15 inches.

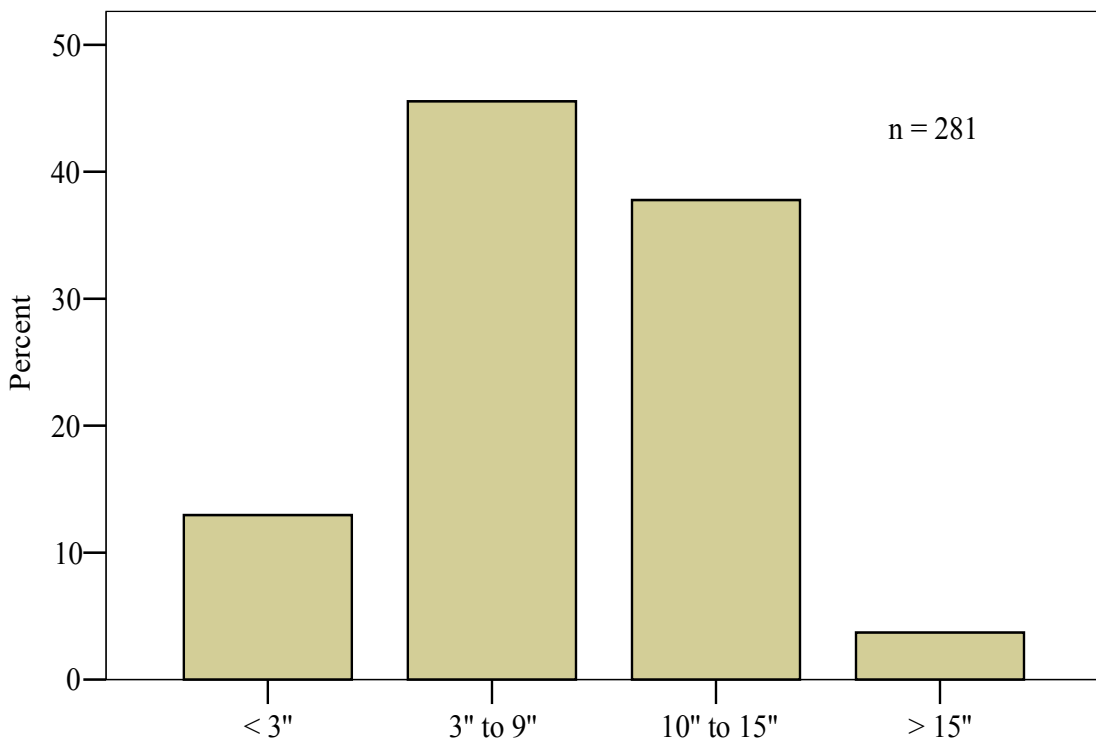


Figure 5. Average diameter (inches) of trees on acquired properties

Forest land buyers acquiring land with trees 3 to 9 inches paid an average of \$872 per acre. The mean real sale price paid among properties possessing trees 10 to 15 inches in

diameter was \$1,160 per acre whereas properties with trees less than 3 inches in diameter paid \$500 per acre.

A one way ANOVA was used to determine whether a significant difference exists in mean real price paid per acre among the four different tree size groups. A statistically significant F ratio ($F=3.587$) suggested that it was unlikely that the four population means were equal. A subsequent Tukey- Kramer post hoc test was conducted to identify which size class has associated with it different per acre sale prices. The test found that the mean real price paid per acre among those acquiring forest land with the average tree diameter less than 3 inches was significantly less ($p=0.05$) than those acquiring forest land with average tree diameters between 10 and 15 inches. A one way ANOVA was also used to determine whether a significant difference existed in the average acres owned among landowners whose forest land contains trees in the four different tree size classes. The F ratio among the four groups was 1.557 ($df= 3, 268$; $p=0.05$) suggesting no significant differences existed ($p=0.05$) in the number of acres owned among the four groups.

Respondents indicated that, on average, 53 percent of the trees on their acquired forest land were hardwoods while 45 percent were softwoods. For those forest land buyers acquiring land with mostly softwoods (i.e., greater than 50 percent softwoods), the mean price paid per acre was \$1,023 whereas those forest land buyers with mostly hardwoods paid \$855 per acre.

Wildlife habitat

Survey recipients were given a five point Likert Scale to indicate their perception of the quality of wildlife habitat their property provided for both game (e.g., deer, grouse) and non-game animals (e.g., songbirds, wolves). Forty-four percent of respondents indicated that game habitat on their property was good while 35 percent indicated the habitat was excellent (Table 10). On average, respondents indicated that game habitat on their property was between good and excellent.

Table 10. Perceived quality of game habitat by forest land purchasers

Game Animal Habitat	Percent	Cumulative Percent
<i>Very poor</i>	<1	<1
<i>Poor</i>	4	4
<i>Fair</i>	17	21
<i>Good</i>	44	65
<i>Excellent</i>	35	100
Total (n=281)	100	

For non-game habitat, 43 percent of respondents indicated the habitat was good and 25 percent indicated habitat as excellent (Table 11). On average, respondents indicated the quality of their property for non-game habitat was between fair and good.

Table 11. Perceived quality of non-game habitat by forest land purchasers

Non-Game Animal Habitat	Percent	Cumulative Percent
<i>Very poor</i>	<1	<1
<i>Poor</i>	5	6
<i>Fair</i>	26	32
<i>Good</i>	43	75
<i>Excellent</i>	25	100
Total (n=280)	100	

The mean price per acre among those respondents indicating they acquired excellent game species habitat was \$1,014 whereas those with poor or very poor game species habitat paid \$694 per acre. The mean price per acre for those acquiring excellent non-game species habitat was \$1,232 as compared to those who paid an average of \$942 for poor or very poor non-game species habitat.

Adjacent landowners

The questionnaire asked respondents to indicate who owned the properties that surrounded the forest land they acquired. Approximately 15 percent of the respondents indicated they owned property surrounding the forest land they acquired (Table 12). Seventy-seven percent of the respondents indicated other private individuals or families owned adjacent property at the time of purchase. Roughly 20 percent of the respondents stated that forest industry owned property surrounding their forest land while some form of public ownership (i.e., federal, state or county government) was cited as an owner of adjacent land approximately 52 percent of the time. Other landowners adjacent to the respondents' acquired property included commercial businesses, private clubs or organizations, and family or relatives. These other landowners owned 7, 2, and 4 percent, respectively.

Table 12. Adjacent landowners at the time forest land was acquired

Owner of adjacent acquired property*	Percent
<i>Other private individuals or families</i>	77
<i>Government (i.e., County, State, Federal)</i>	52
<i>Forest industry</i>	20
<i>Respondent</i>	15
<i>Other commercial business</i>	7
<i>Family/ relative</i>	4
<i>Don't know</i>	3
<i>Private club or organization</i>	2

*n=288

Individuals owning property adjacent to the parcel they acquired paid an average of \$773 per acre. Among those who did not indicate they owned property adjacent to the acquired property paid \$995 per acre. The mean price per acre among those acquiring parcels adjacent to government property was \$948 while those acquiring property with no adjacent government land paid approximately the same price (i.e., \$977 per acre).

Structures present

CRV records used to identify landowners in this study included only sales classed as undeveloped timberland and seasonal recreational lands. It was assumed no structures existed on these forest land properties at the time they were purchased. However, the length of time between the date the landowner acquired their forest land and the date they completed and returned the survey was greater than one year. As a result, landowners may have developed their forest land (e.g., with primary or seasonal homes) during this time period. In addition, 15 percent of the respondents (Table 12) owned property adjacent to the forest land they acquired and may have owned structures on the initial property.

The questionnaire asked respondents to indicate the structures present on their property at the time they completed the questionnaire. Fifty-eight percent of the respondents indicated no structures existed on their property at the time they were surveyed (Table 13). Approximately 11 percent had their permanent residence on or adjacent to their land at the time they were surveyed. Thirty-eight percent of respondents had a seasonal residence (i.e., summer home) on or adjacent to their forest land and roughly 14 percent had a hunting cabin next to their property.

Table 13. Structures present on or adjacent to property at time of survey

Structures present on property	Number (N)	Percent of Structures (N/127)	Percent of Respondents (N/288)*
No structures present	166	---	58
Structures present:			
<i>Hunting cabin</i>	39	31	14
<i>Permanent residence</i>	32	25	11
<i>Secondary residence</i>	11	9	38
<i>Other</i>	45	35	16
Total	127	100	
Total	294	100	

*288 is the total number of useable responses received.

Among those forest landowners with structures present on or adjacent to their property, 31 percent of the structures were hunting cabins while 34 percent were primary or

secondary residences. Other structures included: shops, barns, tool sheds, screen houses, guest cabins, deer stands, and utility sheds.

Forest Landowner Intentions for Their Land

Annual use of forest land

To better understand the amount of use forest landowners get from their property, survey recipients were asked to indicate the number of days they visited their property during the previous year. Figure 6 illustrates that 37 percent of respondents indicated they used or visited their property between 13 and 48 days over the previous twelve months (i.e., up to four days per month). Another 30 percent indicated they visited their property between 1 and 12 days during the previous year (i.e., up to one day per month). Nineteen percent of respondents used or visited their forest land greater than 48 days during the year (i.e. greater than 4 days per month). Eight percent indicated their permanent residence is located on the property. The remaining 5 percent stated they did not spend any time at their property during the prior year.

Intent to own

Land tenure intentions vary among forest landowners. Survey participants were asked to indicate the length of time they plan to own the forest land they acquired. Figure 7 illustrates the distribution of respondents' length of intended ownership. Over two-thirds indicated they plan to own their forest land for more than 20 years. Approximately 9 percent indicated they plan on holding their forest land between five and 10 years. Eight percent of the respondents planned to own their forest land for less than five years while another 8 percent indicated they plan to own for between 16 and 20 years. The remaining 8 percent were split evenly between landowners who plan to own their forest land between 11 and 15 years and those who had already sold the parcel they had acquired.

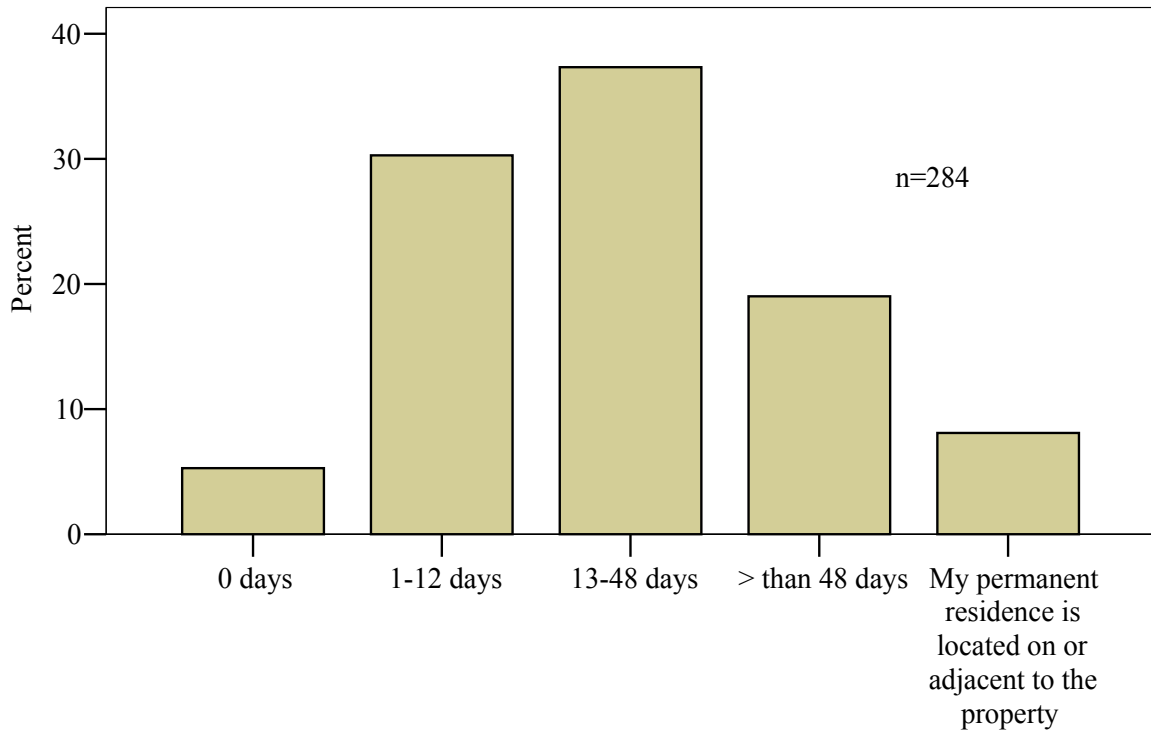


Figure 6. Number of days landowners visited forest land

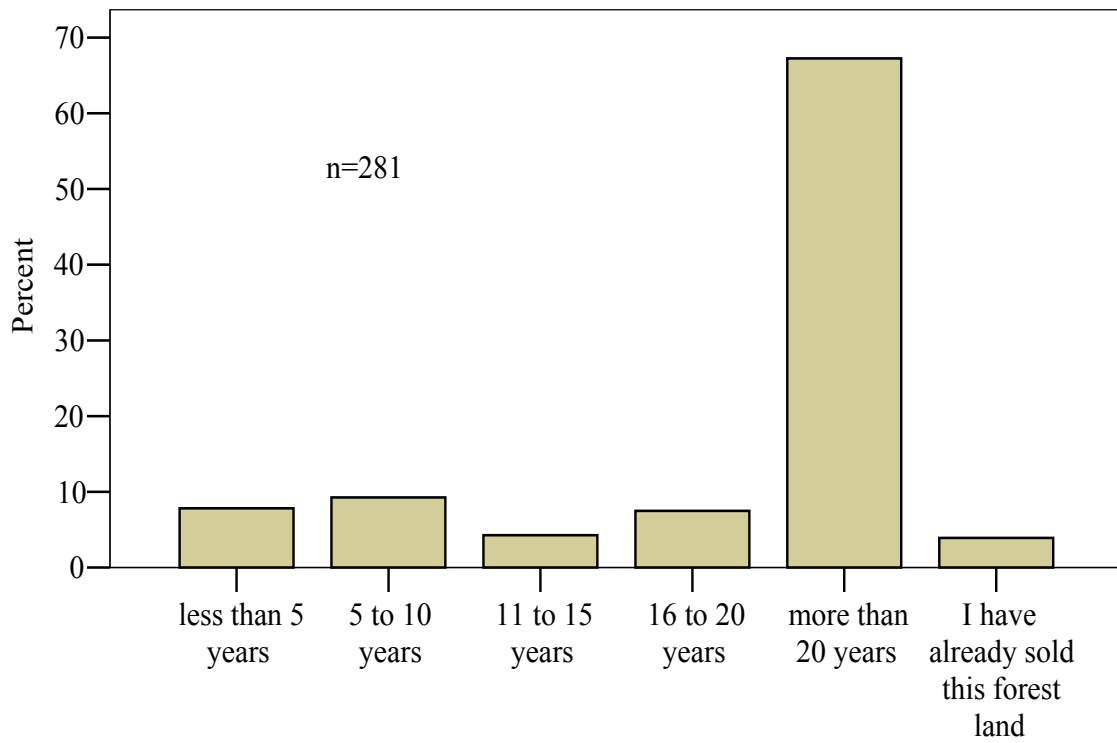


Figure 7. Length of intended ownership

Intent to sell or subdivide

To better understand landowners' plans to potentially sell or subdivide their property, survey participants were asked to indicate their future intentions for their forest land. A majority (71 percent) of respondents indicated they have no intention of selling their forest land (Table 14). Fourteen percent indicated they had plans to sell the entire parcel intact. Eight percent of respondents had plans to subdivide, but retain a portion of their property while 3 percent intended to subdivide and sell the entire property. Respondents also indicated other plans including: placing a conservation easement on land, trading parcel for another parcel, and leaving for family heritage. Among the landowners planning to sell their forest land, 42 percent had intentions to sell in a subdivided state. This suggests a large portion of the forest land being sold may be the result of parcelization.

Table 14. Landowner intention to sell or subdivide their forest land

Intention to sell	Number (N)	Percent (N/281)
No intention of selling forest land	200	71
Intend to sell forest land:		
<i>sell entire parcel intact</i>	39	14
<i>subdivide, but retain a portion of your property</i>	21	8
<i>subdivide and sell your entire property</i>	7	3
Other	14	5
Total	281	101*

*Totals do not add to 100 due to rounding errors

Intent to build

Recipients were asked to specify all the structures they plan to build on their property during the next 5 years. Forty-five percent of respondents indicated they had no plans to build any structures (Table 15). Approximately 22 percent indicated they planned to build a hunting cabin. Roughly 12 percent indicated plans to build their permanent residences and 10 percent had plans to build a seasonal residence (i.e. summer home). The

remaining 12 percent were undecided or had “other” plans including: garages, sheds or storage buildings and shops. Among respondents who intended to build structures on their forest land, 38 percent of the structures were hunting cabins. Permanent or secondary residences collectively constituted 38 percent of the structures to be built.

Table 15. Structures landowners intend to build on their acquired property within 5 years

Structures on property within 5 years	Number (N)	Percent of Structures (N/143)	Percent of Respondents (N/251)
No structures planned	112	---	45
Intended structure:			
<i>Hunting cabin</i>	55	38	22
<i>Permanent residence</i>	29	20	12
<i>Secondary residence</i>	26	18	10
<i>Other</i>	29	20	12
Total	143	96	56
Total	251	96	101*

*Totals do not add to 100 due to rounding errors

Changes in Northern Minnesota’s NIPF Ownership Preferences

Northern Minnesota private forest landowners have been the focus of a number of surveys during the past 30 years with regards to their role in providing timber supplies in the face of shortfalls from federal and state timber sources. Many of these studies have focused on landowner attitudes and objectives, reasons for ownership, ownership forms, and many other characteristics. For instance, Krmpotich (1980) surveyed 700 NIPF landowners chosen from field plot survey work collected by the North Central Forest Experiment Station from 1974 to 1978. His study incorporated five northern Minnesota counties, including St. Louis County, to determine the attributes describing forest landowners as well as their reasons for owning forest land.

Baughman (1986) surveyed 961 woodland buyers in 13 northern Minnesota counties, also including St. Louis. Eligible participants in his study included land buyers who purchased at least 10 acres (i.e., through open market transactions only) of woodland during 1983 or 1984. Baughman’s study identified the variables (e.g., topography, tree

size, mix of trees) important to individuals when acquiring forest land and the influence these variables have on forest land sale prices.

In this section, these two previous northern Minnesota studies are compared to the results obtained from the 2001 and 2002 landowners included in the current study. For various reasons (e.g., study area, survey participant selection), these studies are not directly comparable. However, generalized comparisons were made to identify important trends and locate major differences in landowner characteristics between the three survey periods.

Per Acre Sale Price

Sale prices of unimproved forest land between Baughman's early 1980 study and the 2004 survey were compared. To accomplish this, the Consumer Pricing Index (CPI) was used to estimate the level of inflation between the two study periods. The CPI "*is a measure of the average change in prices over time in a market basket of goods and services*" and is used to estimate the purchasing power of a dollar during 2001-02 in 1984 dollars (Federal Reserve Bank 2004). Table 16 illustrates the percentage of forest landowners purchasing forest land for greater than \$400 per acre has increased nearly 10 percent over the past two decades suggesting these landowners are willing to pay more for forest land than in the past.

Table 16. Inflation-adjusted per acre forest land sale prices: 1983 and 2001.

Price per acre	Percent of 1983-84 Respondents* (n=615)	Percent of 2001-02 Respondents** (n=388)
<i>Less than \$100</i>	6	10
<i>\$100-\$199</i>	21	16
<i>\$200-\$299</i>	24	19
<i>\$300-\$399</i>	15	11
<i>\$400-\$499</i>	8	11
<i>\$500 or more</i>	27	34
Total	101***	101***

* Baughman (1986) **Inflation adjusted to January 1984 ***Totals do not add to 100 due to rounding errors

Main Reason for Acquiring Forest Land

Krmpotich (1980) found that 37 percent of landowners' most frequently cited reason for owning forest land was that it was part of the landowner's primary residence while 10 percent said it was part of their second home (Table 17). Further, he found the second most frequently cited reason (i.e., 15 percent of the owners) for owning forest land was for recreation (e.g., hunting, fishing, and camping). Aesthetic enjoyment was the third most common reason followed by timber production and land investment, respectively. Baughman (1986) also asked respondents to identify their primary reasons for their woodland purchase. Table 17 shows his study found the most important reason was to establish a permanent residence followed by a place to recreate and as a land investment.

The main reasons for purchasing forest land among the 2001-02 forest land buyers was first for a place to recreate (including hunting and other forms of recreation), second as a real estate investment, third to establish a permanent or a secondary (i.e., seasonal) residence. The least common reason for acquiring forest land among the 2001-02 respondents was producing timber for income. This is consistent with Krmpotich's and Baughman's findings where only 1 and 5 percent indicated that growing timber was the main reason for acquiring woodland, respectively.

Table 17. Reasons for owning northern Minnesota forest land: mid 1970s to 2001-02

Reason	Krmpotich	Baughman	Donnay
	(1980)	(1986)	(2005)
	n=380	n=625	n=268
	-----Percent-----		
<i>Place to recreate</i>	15	29	36
<i>Real estate (land) investment</i>	7	12	15
<i>Establish permanent (primary) residence</i>	37	33	12
<i>Establish second residence</i>	10	5	12
<i>Acquiring adjacent property**</i>	--	--	8
<i>Family heritage **</i>	--	--	4
<i>Proximity to areas of interest **</i>	--	--	3
<i>Preventing subdivision and development **</i>	--	--	2
<i>Subdividing and developing property**</i>	--	--	2
<i>Produce timber (or other wood products) for income</i>	1	5	1
<i>Other</i>	3	3	6
Total	73	88	101*

* Totals do not add to 100 due to rounding errors

**Krmpotich (1980) and Baughman (1986) did not include this response category

Table 17 compares numerous reasons for acquiring northern Minnesota forest land during the previous two decades. For instance, those individuals interested in acquiring land with the main reason for recreation has increased from 15 percent to 36 percent during the past 25 years. Acquiring land as a real estate investment has also increased from approximately 7 percent in the mid-1970s to over 15 percent during 2001-02. Between Baughman's 1983-84 and the 2001-02 landowners, the percent interested in establishing a permanent residence decreased substantially while the percentage of those interested in establishing a second residence more than doubled.

Total Acres Owned

Krmpotich’s (1980) survey of mid-1970 forest land purchasers found approximately 63 percent owned between 10 and 49 total acres (Table 18). Similarly, Baughman’s survey of 1983-84 woodland purchasers suggested that the percentage of landowners in this size class was similar to Krmpotich’s findings. The survey of 2001-02 forest landowners found the percentage purchasing 10 to 49 acres declined nearly 20 percent. The percentage of forest landowners owning a total of 50 to 99 acres was similar between Krmpotich’s and Baughman’s surveys, but slightly increased when compared to the results of this study. The percentage of landowners owning more than 100 acres has increased as well during the time between Baughman’s survey and this study. It is important to note that differences in the sampling design among the three northern Minnesota studies limit the ability to make definitive statements regarding trends in northern Minnesota NIPF landholdings. However, each study did report the largest percentage of landowners purchasing small parcels.

Table 18. Total northern Minnesota forest land owned by percent of owners: mid 1970 to 2001-02

	Krmpotich (1980) n=380	Baughman (1986) n=618	Donnay (2005) n=282
Total Forest Land Acres Owned	-----Percent-----		
<i>10 – 49</i>	63	62	44
<i>50 – 99</i>	22	17	25
<i>>100</i>	15	22	32
Total	100**	101*	101*

* Totals do not add to 100 due to rounding errors

** The reported percentages exclude landowners included in Krmpotich’s study who owned less than 10 acres.

Road Access

Baughman found the most common type of road access to landowners' woodlands were gravel or dirt roads followed in frequency by paved roads (Table 19). Forest land with no road access was least common. This parallels the forest land purchased in 2001-02 where the most common type of road access was a gravel or dirt road (i.e., both year round or seasonal) followed by a year round paved road. Having no road access to their property was also the least common among those acquiring forest land in 2001 and 2002. The percent of respondents acquiring forest land with paved parcels has been somewhat stable while those with no road access have nearly doubled.

Table 19. Type of road access to northern Minnesota forest land: 1983-84 and 2001-02

Road Type	Baughman (1986)	Donnay (2005)
	n=625	n=282
	-----Percent-----	
<i>Paved surface</i>	24	26
<i>Gravel or dirt surface</i>	68	59
<i>No road access</i>	8	16
<i>Don't know</i>	1	---*
Total	101**	101**

* Donnay (2005) did not include this response category

** Totals do not add to 100 due to rounding errors

Moulton (1983) also investigated northern Minnesota forest land and found that price per acre tends to increase as the quality of road access improves. To test whether road access affects per acre prices among the 2001-02 forest land data, the following groups of forest properties were compared using a one-way ANOVA: (1) those with year round, paved access, (2) those with year round gravel or dirt road access, (3) those with seasonal gravel or dirt road access, and (4) those with no road access. The F ratio among the four groups was determined to be 4.40 (df = 3, 252, p=0.005). Tukey's studentized range test (p=0.05) showed the mean real price paid per acre among those parcels with a seasonal

gravel or dirt road was significantly different than that paid by those with no road access. Tukey's studentized range test did not find any other significant differences in mean real price paid per acre among the four groups.

Tree Size

Baughman (1986) found approximately three-fifths of responding woodland owners purchased forest land with tree diameters of nine inches or less (Table 20). Among the 2001-02 respondents, the most common tree size classes found among these individuals were trees less than nine inches diameter followed by trees larger than nine inches. The percentage of forest land purchasers acquiring forest land with trees larger or smaller than nine inches has remained consistent over the past two decades.

Table 20. Tree diameters of acquired forest land: 1983-84 and 2001-02

Tree Diameter	Baughman (1986)	Donnay (2005)
	(n=351)*	(n=270)
	-----Percent-----	
<i>9 inches or less</i>	62	58
<i>Larger than 9 inches</i>	38	42
Total	100	100

* The reported percentages exclude landowners included in Baughman's study who indicated they acquired land with a mix of tree sizes, bare land with few trees, or did not know.

Forest Land Acquisition in Northern Minnesota

As the number of NIPF landowners increases in Minnesota, so too does the number of forest land transactions occurring between individuals interested in buying and selling forest land. Very few studies have investigated the process experienced by NIPF landowners when acquiring their forest land. As a result, very little information is available to state land management agencies, county officials, researchers, extension educators, landowner associations and others in their efforts to better understand the forest land transaction process. In this section, a closer look is taken at the method by which forest land was acquired, sources consulted by the buyer, and other characteristics associated with the forest land acquisition process.

Buyer Awareness of Forest Land Purchased

One-quarter of the respondents first became aware that the forest land they acquired was for sale through their local realtor (Figure 8). Another 23 percent indicated they first became aware through the seller. The internet, friends or relatives, and newspaper and magazine ads were other sources indicated by respondents.

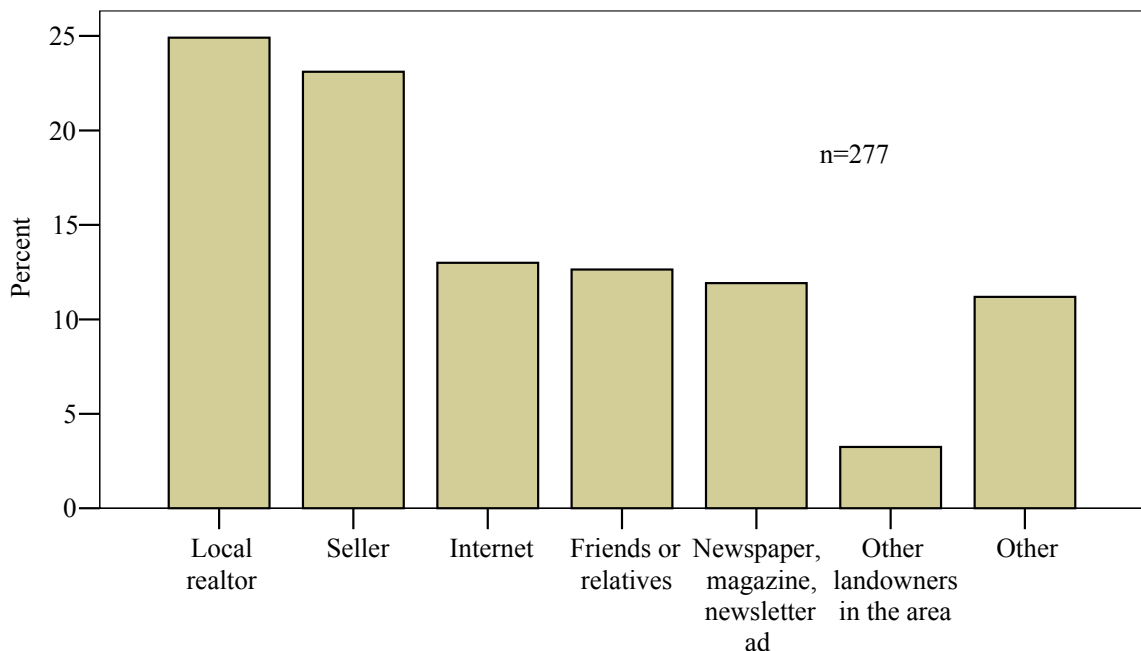


Figure 8. Sources from which landowners first became aware that the forest land they acquired was for sale.

Length of Time to Acquire

Seventy-two percent of the respondents acquired their forest land in less than six months from the time they first became aware of the property to the time acquired (Figure 9). Nine percent of forest land purchasers took between seven and twelve months to acquire their forest land while another 9 percent took between one and two years. The remaining 9 percent took greater than two years between the time they first became aware of their property to the time acquired.

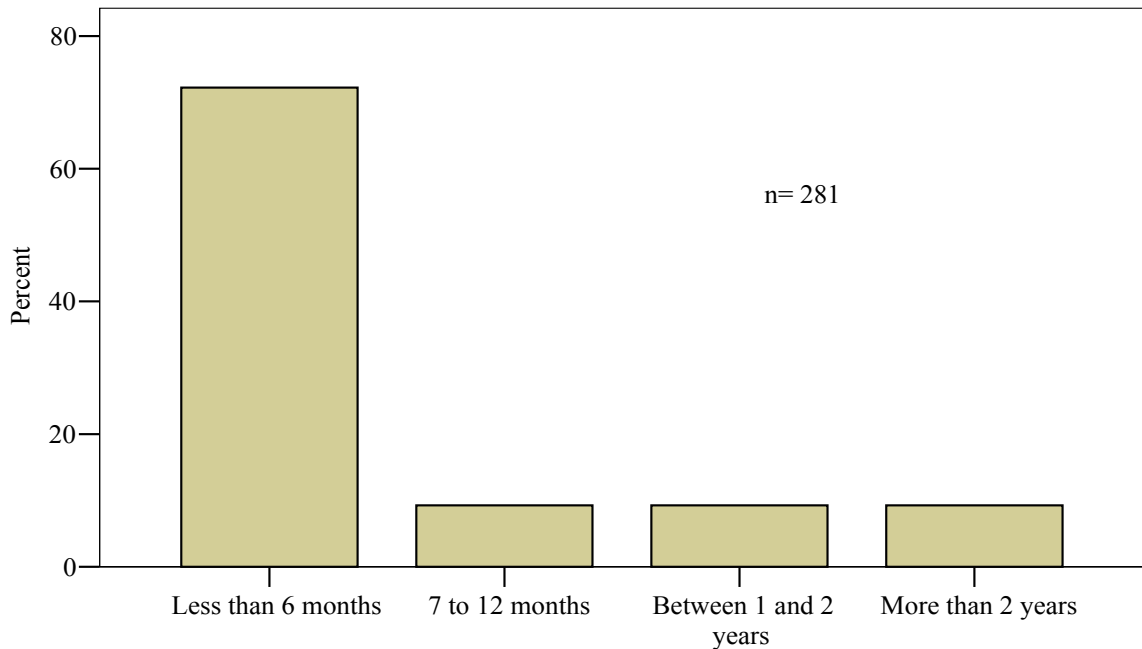


Figure 9. Length of time from which landowner first became aware of the property to the time acquired.

Buyer's Prior Knowledge of Seller

Nearly 70 percent of the respondents who acquired forest land did not know the previous owner until they first evaluated the property (Figure 10). Twenty percent of the respondents knew the previous owner for more than five years and 10 percent had been acquainted with the previous owner for up to five years. Only 4 percent of the buyers indicated the previous owner of the forest land was a relative.

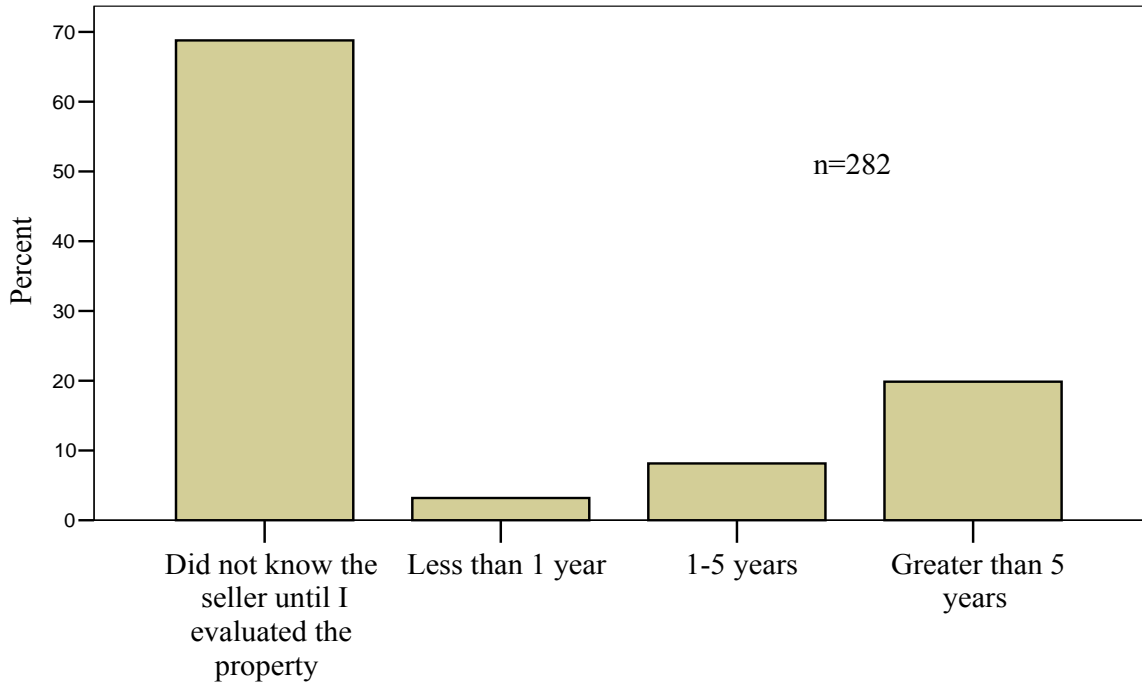


Figure 10. Length of time purchaser knew seller prior to acquisition

Buyer's Initial Contact with Seller

Eighty-three respondents (29 percent) indicated they approached the owner about buying the property prior to it being listed for sale. The average price paid per acre among these landowners (\$673) was less than the average per acre price paid among all survey respondents (\$965). Of the individuals who did approach the seller before the forest land was listed, 69 percent acquired their property before a public listing was made (Figure 11). Seventeen percent stated they first contacted the previous owner more than two years before the property was listed for sale. Seven percent indicated they first contacted the previous owner less than six months before it was listed for sale while 6 percent first contacted the previous owner between one and two years. Among the respondents who already owned property adjacent to the forest land they acquired (n=42), 52 percent indicated they approached the previous owner prior to it being listed for sale.

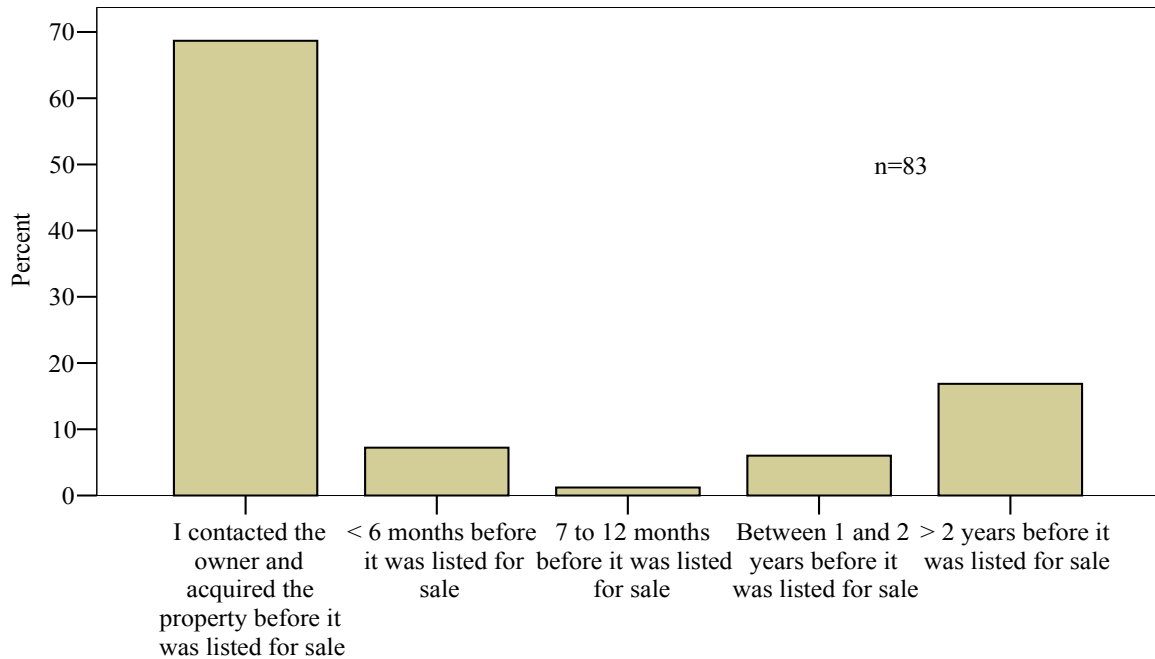


Figure 11. Length of time between purchaser's initial contact with seller and property being listed for sale

Sources Consulted When Seeking Forest Land for Purchase

Using a three point Likert Scale from 1 to 3, respondents were asked to indicate the usefulness of various information sources when they were searching for forest land to acquire. Fifty-two percent of the respondents indicated they consulted a local realtor when looking for forest land to acquire (Table 21). Among the respondents who did use a local realtor as an information source, 24 percent found them to be minimally valuable, 28 percent found them moderately valuable and 48 percent found them very valuable. Table 21 indicates the mean rating of usefulness using the three point Likert scale. Among those buyers who used the services of a local realtor, the mean usefulness was 2.24 suggesting real estate brokers were moderately to very valuable as an information source for landowners searching for forest land.

Thirty-nine percent of the forest land purchasers indicated they consulted friends or relatives as an information source when looking for forest land to acquire (Table 21). Among these individuals, 24 percent found them to be minimally valuable, 32 percent found such consultations to be moderately valuable and 44 percent found them to be very

valuable. The mean level of usefulness among those using friends or relatives was 2.20 suggesting friends and relatives were a moderate to very valuable information source.

Table 21. Sources consulted when searching for forest land (n=284).

Source	Percent who consulted source	Percent of Respondents -----Usefulness-----			Mean Rating*
		Minimally Valuable	Moderately Valuable	Very Valuable	
<i>Local Realtor</i>	52	24	28	48	2.24
<i>Newspaper/ Real Estate Ads</i>	48	23	39	38	2.15
<i>Friends/ Relatives</i>	39	24	32	44	2.20
<i>Internet</i>	31	18	27	55	2.37
<i>Magazines/ Newsletters</i>	24	41	39	20	1.80
<i>County Assessor's Office</i>	17	33	46	21	1.88

* mean rating where 3=Very valuable, 2 = Moderately valuable, 1= Minimally valuable

Forty-eight percent of respondents indicated they consulted newspaper or real estate flyers or advertisements when looking for forest land to acquire (Table 21). Among these individuals, 23 percent found advertisements to be minimally valuable, 39 percent found them to be moderately valuable and 38 percent found them to be very valuable. The mean usefulness score was 2.15 indicating that real estate advertisements and newspapers were moderately to very valuable as an information source when searching for forest land.

The county assessor's office was seldom used by those searching for forest land – only 17 percent indicated doing so (Table 21). For those that did, one-third found the consultation to be minimally valuable, 46 percent found it moderately valuable and 21

percent found it very valuable. Respondents' mean usefulness score was 1.88 suggesting the overall usefulness of the county assessor's office when searching for forest land was minimal to moderate.

Thirty-one percent of respondents used the internet as an information source when searching for forest land to acquire (Table 21). From this group, over half (55 percent) found it to be very useful while 18 percent found it to be minimally useful and 27 percent found it to be moderately useful. The mean rating for this information source was 2.37 indicating the internet was moderately to very valuable.

Sources Consulted When Researching Physical Characteristics of Forest Land

Using the same three point Likert Scale, respondents were asked to indicate the usefulness of various information sources when they were researching the physical characteristics of the forest property they acquired (Table 22). The most important source of information consulted was respondent's own personal inspection of the property. Ninety-three percent of respondents indicated they personally inspected their property to obtain additional information about the forest land they eventually acquired (Table 22). Of these, 91 percent indicated the personal inspection was very valuable while 7 percent found it moderately valuable. Less than 2 percent found it to be minimally valuable. The mean score was 2.89 suggesting that, on average, personal inspections were very valuable.

Forty-eight percent of respondents indicated they referred to aerial photos when researching the physical characteristics of the forest property they acquired. Among these respondents, 20 percent found aerial photos to be minimally valuable, 34 percent found them moderately valuable and 46 percent found them to be very valuable. The mean score regarding the usefulness of the aerial photos was 2.26 indicating they were moderately to very valuable as an information source when researching the physical characteristics of the forest land they acquired.

Approximately 56 percent of the respondents indicated they consulted topographic maps when researching the physical characteristics of their forest land (Table 22). Among those using topographic maps in their research, half indicated the maps were very valuable, 36 percent stated they were moderately useful, and 14 percent found them to be minimally useful. The mean score was 2.35 suggesting topographic maps are moderately to very valuable as an information source when researching the physical characteristics of the forested property.

Table 22. Sources consulted when researching physical characteristics of forest land purchased (n=284).

Source	Percent who consulted source	Percent of Respondents -----Usefulness-----			Mean Rating*
		Minimally Valuable	Moderately Valuable	Very Valuable	
<i>Personal Inspection of Property</i>	93	2	7	91	2.89
<i>Topographic Maps</i>	56	14	36	50	2.35
<i>Aerial Photos</i>	48	20	34	46	2.26
<i>Soil Type Maps</i>	15	50	27	23	1.73
<i>Forest Management Plans</i>	14	44	19	37	1.93

* mean rating where 3=Very valuable, 2 = Moderately valuable, 1= Minimally valuable

Most (85 percent) respondents did not use soil maps when researching the property they were considering to purchase (Table 22). Of the 15 percent who did consult soil maps, half indicated they were only minimally useful as an information source while 27 and 23 percent found soil type maps to be moderately and very valuable, respectively. The mean score was 1.73 indicating that, overall, soil type maps were minimally to moderately valuable as an information source when researching the physical characteristics of their forested property.

Forest management plans were seldom consulted by respondents when researching the physical characteristics of their forest land. Only 14 percent of respondents used this information source. For those that did, 44 percent reported them to be minimally useful, 37 percent found them very valuable and 19 percent indicated they were moderately valuable (Table 22). The mean score was 1.92 indicating it was less than moderately valuable as an information source.

Sources Consulted When Determining Forest Land Value

The three point Likert Scale was used to assess the usefulness of different sources consulted when forest land buyers were determining the value of their acquired forest property. Thirty-eight percent of respondents indicated they consulted the previous owner when determining the value of their forest land (Table 23). Of these, 33 percent found the previous owners' information minimally valuable, 31 percent moderately valuable and 36 percent very valuable. Among those who did consult the previous owner, the mean score on the three point Likert scale was 2.03 indicating that previous owners were moderately valuable as an information source when determining the forest land value.

Greater than 80 percent of respondents indicated they did not consult a land appraiser when determining the value of their acquired property (Table 23). Of the respondents that did consult an appraiser, only one-quarter found the consultation to be very valuable. Thirty-five percent of respondents found land appraisers to be minimally valuable and 40 percent found them to be moderately valuable. The calculated mean on the three point Likert scale was 1.90 suggesting land appraisers were moderately valuable as an information source when determining the value of their forest land.

Twenty-three percent of respondents indicated they consulted the land department in the county where the forest land was located (Table 23). Of these forest land buyers, 43 percent found the land department to be minimally valuable, 35 percent found them to be moderately valuable and 22 percent found them to be very valuable. The mean score was

1.78 implying that, on average, the county land department is minimally to moderately valuable as an information source when determining the value of forested properties.

Table 23. Sources consulted when determining northern Minnesota forest land values (n=284)

Source	Percent who consulted source	Percent of Respondents -----Usefulness-----			Mean Rating*
		Minimally Valuable	Moderately Valuable	Very Valuable	
<i>Previous Owners</i>	38	33	31	36	2.03
<i>County Land Department</i>	23	43	35	22	1.78
<i>Land Appraiser</i>	18	35	40	25	1.90
<i>MN DNR</i>	18	52	29	19	1.67
<i>Real Estate Attorneys</i>	14	49	39	13	1.64
<i>Forestry Consultants</i>	10	62	24	14	1.52
<i>Timber Companies</i>	10	36	48	16	1.81
<i>Other Sources</i>	21	2	21	77	2.75

* mean rating where 3=Very valuable, 2 = Moderately valuable, 1= Minimally valuable

Few respondents (10 percent) indicated they used forestry consultants when determining the value of their property (Table 23). Among those who did contact a forestry consultant, very few (14 percent) found their information to be very valuable while 62 percent and 24 percent found forestry consultants to be minimally and moderately valuable as an information source, respectively. The mean score was 1.52 suggesting forestry consultants were minimally valuable as an information source when determining the value of forested properties.

Approximately nine of 10 forest land buyers did not consult with timber companies when determining the value of the land they wished to acquire (Table 23). Among those consulting these companies, almost half found the information moderately useful while 36 percent found them to be minimally valuable. On average, timber companies were minimally to moderately valuable as an information source when determining forest land values.

Only 15 percent of respondents consulted a real estate attorney when determining the value of the property they acquired (Table 23). Among these, almost half found their information minimally valuable while 39 percent found real estate attorneys to be moderately valuable. On average, this information source was found to be minimally to moderately useful.

Few respondents (18 percent) indicated they consulted the Minnesota Department of Natural Resources (MN DNR) when attempting to identify the value of their forest land (Table 23). Fifty-two percent of these respondents found the agency to be minimally valuable as an information source while 29 and 19 percent found the agency to be moderately and very valuable, respectively. The calculated mean on the three point Likert scale was 1.67 indicating that the MN DNR was minimally to moderately valuable as an information source when determining the value of forest land.

Approximately 8 percent of the survey respondents indicated they determined the value of their property through the use of comparable sales of forest land, while another 5 percent indicated they relied on their own personal knowledge and experience with forest land real estate (Table 23).

DISCUSSION

Ownership Characteristics

Landowners' reasons for ownership

Among the 2001-02 landowners surveyed in this study, the main reason cited for owning forest land included (in descending order of frequency cited): recreation (i.e., both hunting and other forms), real estate investment, establishing a permanent residence and establishing a secondary (i.e., seasonal) residence. These reasons confirm many prior national, regional and state study findings regarding NIPF landowners' reasons for ownership (Birch 1996c, Butler and Leatherberry 2004, Birch and Stelter 1993, Baughman and Updegraff 2002, Kluender and Walkingstick 2000, Hodge 1996, Carpenter et al. 1986, and Baughman 1996). Recreation, and more specifically, hunting, was found to be the most common reason why forest landowners choose to acquire land. Further research may investigate how hunting pressures on Minnesota's public forest lands may have influenced those acquiring forest land for this reason.

Physical characteristics of acquired forest lands

Findings of this research indicate that forest landowners, on average, acquired 48 acres with very little agricultural use associated with their property. The property's forest characteristics could be characterized as having at least 70 percent of the property in trees greater than 10 years old, stands containing trees three to nine inches in diameter, and dominated by hardwood forests. The average size of the parcels purchased suggests forest management and timber harvesting activities are economically viable given current harvesting and silvicultural practices in Minnesota. In addition, these parcels contain trees species and diameter classes that will continue to be in demand by the forest products industry as NIPF owners remain a significant source supplying Minnesota's timber market. The degree to which Minnesota's private forest lands will remain economically viable for forest management, however, will depend on both economic and social factors that shape their demand (Kilgore and Mackay 2005).

Forest landowner characteristics

Carpenter et al. (1986) found that 70 percent of Minnesota's private forest landowners live within 25 miles of their property. Baughman (1996) studied Minnesota NIPF landowners and determined 53 percent of Minnesota forest landowners reside on their forest land, while those that do not, on average, live 62 miles away. Among those NIPF landowners who responded to this study, the greatest percent (i.e., 44 percent) were absentee owners living greater than 100 miles from their forest land. In fact, 86 percent do not reside on their property, living an average of 129 miles from their property. These absentee landowners typically spend only a few days per month on their forest land.

These data suggest the number of absentee NIPF landowners may be increasing along with the average distance between their forest land and primary residence. This is accompanied by a smaller number of days spent per month by absentee owners at their forest land as compared to resident or local owners. These absentee landowners are often considered unlikely to participate in forest management activities largely due to the challenges of managing their property from great distances and their interest in owning land solely as a retreat from urban life. Policies and programs targeted at placing NIPF lands under management will need to consider the absentee nature of these owners and provide innovative ways for them to accomplish their land ownership goals.

Intended uses of their forest land

Most of northern Minnesota NIPF landowners do not plan to sell their forest land. In fact, this study found over 70 percent of respondents had no intention of selling their forest land while greater than two-thirds plan to own their forest land for more than 20 years. This is consistent with other NIPF landowner studies such as Force and Lee (1991) who identified that only 15 percent of Idaho's NIPF owners have intentions to sell portions of their parcels within five years.

Smaller landowners (i.e., those owning between 10 and 25 acres) are often considered high risk to undergo ownership fragmentation. For instance, Force and Lee (1991) reported that one-fourth of Idaho's small landowners indicated they plan to sell at least

part of their property within five years. Among the 2001-02 northern Minnesota forest landowners with the same size landholdings, only 5 percent indicated they plan to maintain ownership for less than five years. McCurdy (1993) discovered that greater than 90 percent of large NIPF landowners (i.e., those owning greater than 100 acres) in southeastern Illinois intend to maintain ownership of their land for greater than 10 years. Similarly, 95 percent of the large NIPF landowners in northern Minnesota included in this study plan to own their land for more than 10 years. Although most purchasers do not intend to sell, this study found a large percentage of the 2001-02 forest land purchasers that do plan to sell, plan to subdivide their forested property.

Parcelization creates numerous challenges for sustainable forest management. These include impacts such as decreased viability of managing forests for wood products; increased potential for conflicts over forest practices; reduced recreational access to forest land as well as increased pressures where access is permitted; potential for more traffic on roads previously shared by fewer vehicles; and increased pressure on water quality and wildlife habitat (Fleury and Blinn 1996, Luloff et al. 2000). In light of these challenges, it is encouraging to know that northern Minnesota NIPF landowners stated intentions do not include selling or subdividing their forest land. This provides evidence that the forested tracts can remain in sizes where forest management is economically feasible.

Ownership Trends

Trends in reasons for ownership

It is well documented in the NIPF literature that landowners in the Midwest do not acquire land primarily for economic reasons such as timber production. In fact, numerous other NIPF landowner studies confirm that acquiring land for recreational purposes is a commonly-cited reason and has increased in popularity over the past quarter century (Birch and Stelter 1993, McCurdy 1993, Birch and Butler 2001). Between Krmpotich (1980), Baughman (1986) and this study, northern Minnesota has experienced a 20 percent increase in the percentage of landowners acquiring forest land for recreational

