

# Does New Large Private Landownership and Their Management Priorities Influence Public Access in the Northern Forest?

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## ABSTRACT

The Northern Forest spans New York and three New England states and contains over 26 million ac, making it the largest contiguous forest east of the Mississippi. Most of the forestland is privately owned and public access to private land is a time-honored tradition in the region. Residents fear this tradition of open access may be threatened by recent acceleration in land tenure change across the region. We surveyed those who own 1,000 ac or more in the four-state region and found that newer owners were not more likely to post their land. There was, however, a correlation between the owner's land-management priorities and recreational activities permitted on the parcel. Results indicated that timber/forest product companies and Real Estate Investment Trusts allowed more public access for traditional wildlife activities such as hunting and fishing, as well as trail-riding activities such as snowmobiling and all-terrain vehicle riding, than landowners managing for recreation or for nature conservation. Results also indicated that new landowners in the Northern Forest currently maintain the tradition of free public access to their lands.

**Keywords:** industrial private forests, private forest landowners, land tenure, landowner motivation, outdoor recreation, recreational access

The Northern Forest is one of the largest contiguous forests in the nation, at 26 million ac, and includes portions of Maine, New Hampshire, Vermont, and New York (Northern Forest Center 2009). Twenty-two million acres of the Northern Forest is privately owned when compared with roughly 4 million ac in public ownership, which is a high proportion of private land compared with other

parts of the United States (Davis et al. 2005). Much of this land is held in large parcels of 1,000 ac or more, a defining characteristic of the Northern Forest region since the 1800s (Figure 1). Historically, these landowners are involved in the timber or pulp and paper industries, which have served as the "backbone" of the Northern Forest's economy (Northern Forest Lands Council 1994). More recently, other types of

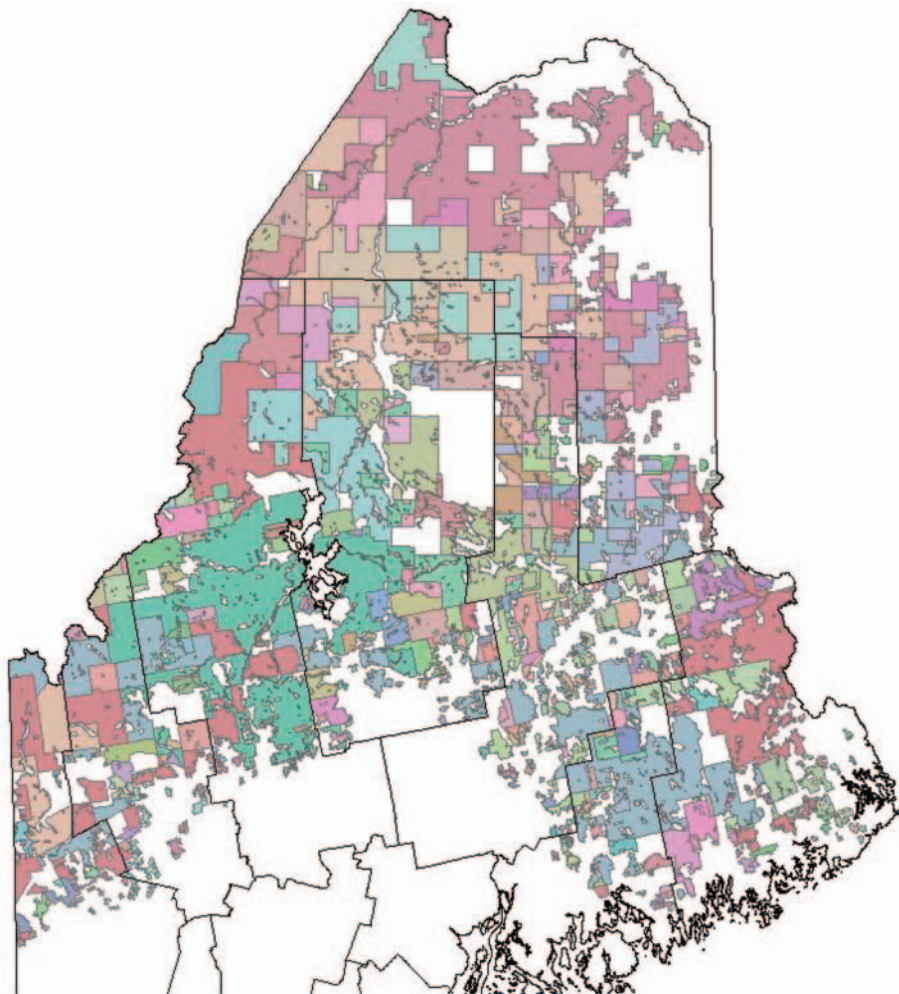
large landowners such as Timber Investment Management Organizations (TIMOs), Real Estate Investment Trusts (REITs), and conservation groups such as The Nature Conservancy have invested in Northern Forest lands. This trend is likely to play an important role in the Northern Forest's economy, conservation initiatives, and outdoor recreation opportunities.

Large intact private forests across the nation provide not only environmental benefits and economic value related to forest products but also opportunities for recreation activities including hunting, hiking, camping, all-terrain vehicles/off-highway vehicles (OHV) riding, cross-country skiing, and more (Brown and Daigle 2009). Recreation on private lands has long been an "accepted tradition" in northern New England, in part because private land is more plentiful than public land (Davis et al. 2005, Lyman 2007). Public access to private lands in the Northeast has traditionally been free of charge (Gentle et al. 1999). By comparison, landowners in the southeastern United States have not traditionally al-

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Source: James W. Sewall Company, Old Town, ME

**Figure 1. Maine, one of the four states comprising the Northern Forest, represents the highest percentage of land area and includes a diversity of private landowners. Shades of color are different large landowners (owning more than 1,000 ac) in 2007.**

lowed access to private land free of charge. Access is more likely to be granted on a fee basis (e.g., hunting leases). In the West, private landowners are more open to allowing public access and in some cases free of charge. Decisions about open access versus fee-based access are made relative to the abundance of public recreational land in the West (Gentle et al. 1999).

In the Northern Forest region, however, there is a heavy dependence on private land to fulfill recreation demand. Moreover, the forest is within a day's drive for 70 million people (Harper et al. 1990). Because of changing economic demand and the growth of global timber markets, recent land sales in the Northern Forest have been unprecedented. As an influx of new landowners enter the region, many people in the region such as outdoor recreationists, second homeowners, foresters, and local community and many businesses that rely on outdoor recre-

ation and nature-based tourism question whether open access to private lands will continue. Many believe that access among other issues such as transportation infrastructure and coordination of private and public entities to develop economic growth will be one of the most difficult issues facing the region in the coming years (Irland 1999, Lyman 2007, Short and Hayes 2008).

During the past 30 years timberland ownership across the nation has experienced dramatic change. This change may be more evident in the Northern Forest than anywhere else because of the higher percentage of private forestland than in other states (Hagan et al. 2005). Between 1980 and 2005, over 23 million ac in the Northern Forest were involved in land sales, a figure just shy of the total area the forest itself encompasses. It is likely some portion of the aforementioned acres changed hands more than once during the previously mentioned

period. The poor economy and declines in newspaper and magazine advertising with concurrent equipment and high operation costs of mills to produce the products influenced converting land to cash while securing future wood needs through long-term supply contracts with new forest owners (Irland 1999, Block and Sample 2001). The Tax Reform Act of 1986 has been identified as another reason for forest product companies to sell their timberland to groups with lower tax rates such as TIMOs and REITs (Hagen et al. 2005, Lilieholm et al. 2010). Another facet of change in landownership has been increased housing and in the Northern Forest with second-home "recreational" development, driven by growing populations, rising incomes, and favorable tax policies (Stein et al. 2005, Lilieholm et al. 2010).

This volume of land sales has raised fears regionwide of land parcelization and conversion. Traditional outdoor recreation activities in the region often require large contiguous areas of forestland, and many fear that some forms of land conversion may be less compatible with open access traditions. Although there has been an acceleration of land sales since the 1980s, those who bought large parcels generally have not subdivided the land and tend to keep the parcels intact. DeCoster (1998) found that ownerships in smaller acreage—100–499 ac—range are affected most by parcelization and conversion, whereas lands over 500 ac are maintained as large properties. Some studies have found, however, that large parcels are more likely to be posted (Gramann et al. 1985, Jagnow et al. 2006, Snyder et al. 2008), whereas others (Ruff and Isaac 1987, Dennis 1993) found the opposite to be true.

Large parcels may also be retained during the initial sale, but may be at risk of parcelization because of economic and sociodemographic changes. For economic reasons, there is some concern of large TIMO turnover due to the maturation of closed-ended funds. For sociodemographic reasons, as land becomes available for purchase, "exurbanites" (Egan and Luloff 2005) may move to rural forested areas because of scenic and contemplative amenities (Kittredge 2009) and/or recreation opportunities (McGrath 1999). Some studies project dramatic increases in housing development over the next 30 years, particularly in the East (Stein et al. 2005). Stein et al. (2005) identified a significant portion (and especially southern sections) of Northern Forest acreage as potentially experiencing increased house den-

sity by 2030. Other studies have indicated that rates of exurban housing growth have been substantially higher in the southern and western regions of the United States than in the Northeast (Hammer et al. 2009). Consequently, Northern Forest communities may have the luxury of planning for a slower rate of growth than other parts of the country. Even so, housing density is quite high along the East coast (Stewart et al. 2006), and certain landowner types, such as REITs, may be positioning themselves to take advantage of this housing demand. The potential for increased housing density and landscape fragmentation could have negative consequences for public access to these smaller parcels of private land, as well as for ecosystem health and wood production.

Given the economic, social, and political changes at work in the Northern Forest, is recreation access at risk? Does parcelization and land conversion threaten traditional recreational uses of the Northern Forest? Are new landowners maintaining the tradition of allowing recreationists to use their lands, or will posting increase exponentially with each new landowner? To better understand how changes in large landownership affects public access in the Northern Forest, we conducted a survey to profile these large landowners (those with 1,000 ac or more), and to examine what access limitations, if any, are currently found on these private lands. We were interested in how new landowners and their management priorities in the Northern Forest view public access because traditionally, private land is treated as a commons for recreation (Acheson 2006). New landowners may not be savvy to this tradition (Jagnow 2006) or understand why private lands play such an important role to recreationists and communities in northern regions of New England and New York.

## Methods and Data

A sample of large landowners was obtained from input by extension foresters in the Northern Forest and a geographic information system-based landowner data set for Maine maintained by James W. Sewall Company (Old Town, Maine). The Maine data contained only names of landowners with 1,000 ac or more. Therefore, contact information was retrieved via online searches and phone directories by students at the University of Maine. For the other Northern Forest states, extension foresters and property information available from

towns (Vermont and New Hampshire) and counties (New York) were used to help identify large landowners owning 1,000 ac or more. We had 17 landowners we were not able to reach after multiple attempts and 5 individuals who we contacted that declined to participate after describing the purpose of this study. The total respondents sampled in each state who we were able to contact via telephone and agreed to participate in this study was 27 in Vermont, 8 in New Hampshire, 22 in New York, and 57 in Maine, representing a total of 114 landowners and 8,619,564 ac.

Landowners were initially contacted by phone (if available) to introduce the study and secure their willingness to participate. If they agreed to participate, an address was obtained (or verified) and the name of the person most familiar with the property was identified. Some private landowners preferred that their property manager complete the survey. In this study, we assumed that the property manager is most familiar with the management goals for the parcel and is responsible for implementing the decisions or wishes of the landowner. We acknowledge that different attitudes and perceptions may exist between managers and the private forest landowners, many of whom we suspect are likely absentee owners, but we assume that if a difference mattered strongly to the private landowner in terms of public access or decisions on types of recreational activities that it would be incorporated by the manager. Studies suggest forest management decisions are not only influenced by landowner attitudes and circumstances, but by the context in which their land is located (Kittredge 2004 and Rickenbach 2009) and therefore a manager may be the most appropriate source to learn about activities and public access policies. Therefore, in some instances questionnaires were directed toward the land manager rather than the private landowner.

We used a modified version of the Dillman's Total Design Method, a set of standardized procedures for questionnaire construction and survey implementation (Dillman 2007). The questionnaire was pre-tested among landowners and entities familiar with public access issues facing large landowners. We then revised the questionnaire to improve clarity and relevance to landowners. In May 2008, we sent the questionnaire, cover letter, and postage-paid reply envelope to respondents. One week after

the initial mailing we sent a combination reminder/thank you postcard to recipients of the questionnaire. During the next intervals of 4 and 7 weeks, additional questionnaires were sent to those who had not responded.

The questionnaire for the large landowners assessed public access policies of landowners, attitudes about public access for recreation on private land, and background information about the landowner including years they had owned land in the Northern Forest and management priorities. We conducted analyses designed to investigate the relations between outdoor activities and attitudes toward public access among large landowners and their length of land tenure and management priority.

Previous research has shown landowners are motivated to post or restrict access for different reasons. Expectancy Theory (Atkinson and Birch 1972, Fishbein and Ajzen 1975) postulates that individuals are motivated to behave in certain ways to the extent that they expect positive or negative outcomes due to those behaviors. For instance, a landowner may decide to allow public access despite concerns because of certain beliefs such as it is important to local residents or helps benefit state and local economies. A number of beliefs were measured based on previous research including that public access "is a tradition," "is part of being a good neighbor," and, conversely, "creates challenges for how I manage my land." Responses to these beliefs toward public access recreation as well as activities permitted on their lands were factor analyzed using principal components extraction with varimax rotation. The resulting Eigen values, scree plots, and factor loadings were evaluated to determine four factors, and Cronbach's alpha-coefficients to determine internal consistency (Nunnally 1978) were computed for the items comprising each resultant factor (Tables 1 and 2).

Data were analyzed using two different grouping methods for large landowners in the Northern Forest region. Landowners were divided into four groups based on land tenure and were also divided into four groups based on land-use/management priorities. Tenure groups were 0–10 years, 11–25 years, 26–50 years, and 51 years or more. To group landowners based on land-use/management priority, we asked landowners to list and rank first, second, and third priority of nine land-use/management options that included timber or forest prod-



**Table 1. Principal components factor analysis and reduction of many outdoor activities into broadly defined classifications of outdoor recreation activities.**

Dimension	Factor loading	Landowners allowing activity (%)	Cronbach's alpha
Nonmotorized			0.95
Hiking	0.86	92	
Snowshoeing	0.81	95	
Wildlife viewing	0.85	93	
Bird watching	0.87	89	
Cross country skiing	0.80	92	
Traditional wildlife			0.89
Hunting	0.84	89	
Fishing	0.84	88	
Trapping	0.83	72	
Motorized and other trail riding			0.76
Snowmobiling	0.72	80	
ATV/OHV riding	0.47	42	
Mountain biking	0.59	57	
Horseback riding	0.58	53	
Boat and camping			0.77
Motor boating	0.63	41	
Canoe/kayak	0.72	66	
Camping	0.54	47	

Total number of respondents in the survey was 87 and 74 landowners indicated they permitted public access.  
ATV, all-terrain vehicle.

**Table 2. Principal components factor analysis and reduction of many outcomes associated with allowing public access into broadly defined outcome dimensions.**

Dimension allowing public access	Factor loading	Item mean	Standard deviation	Cronbach's alpha
Tradition (grand mean = 3.81)				0.93
Is a tradition	0.89	3.73	1.05	
Is important for local residents	0.86	3.96	1.01	
Fits with image of myself, company, or institution	0.82	3.76	1.03	
Is part of being a good neighbor	0.80	3.85	1.08	
Fits with multiple-use ethic	0.79	3.73	0.98	
Is a tradition worth maintaining	0.77	3.58	0.95	
Benefits state/local economies	0.75	3.91	1.01	
Management aid (grand mean = 2.96)				0.76
Way to have eyes on land	0.80	3.22	0.99	
Avoid problems with trespass	0.80	2.89	1.03	
Cost of doing business	0.58	2.94	1.10	
Minimizes pressure on public land	0.53	3.17	0.97	
Is an obligation	0.60	2.63	1.13	
Management hindrance (grand mean = 3.70)				0.41
Creates expectations and difficulty in changing land use	0.82	3.74	0.95	
Creates challenges for how to manage land	0.71	3.64	0.99	

Note: Items measured on a Likert-type scale, where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree.

ucts, agriculture, residence, recreation, nature protection, privacy, real estate investment, tax shelter, and others. Some landowners ( $n = 10$ ) gave equal priority to different land uses (e.g., timber/forest products and real estate investment both listed as "1"). Because our goal was to compare landowners with different land-use priorities, those 10 landowners who indicated equal priority to land-management priorities were excluded from the analyses. Figure 2 illustrates the 57 survey participants who listed a distinct first priority. One-way analyses of

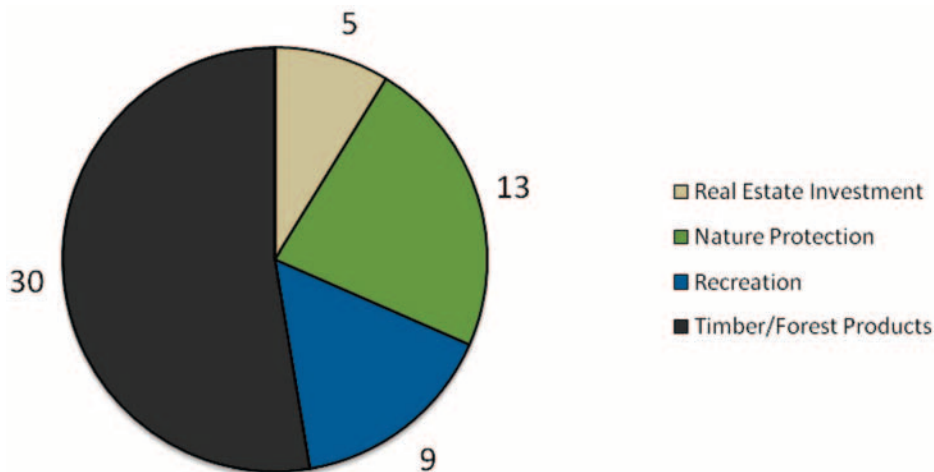
variance (ANOVA) with Tukey's honestly significant differences test for multiple comparisons was used to examine relationships between the three attitudes toward public access dimensions among landowner tenure groups and land-management priorities. Effect size ( $\eta^2$ ) was calculated to better understand the association between variables (Kyle et al. 2004). Chi-square analysis was used to examine relationships of outdoor activities permitted among landowner tenure groups as well as landowner management priority groups.

## Survey Results and Analysis

Of 114 large landowner surveys, 87 were returned, yielding a 76% return rate of those whom we were able to contact and they agreed to participate in the study. Private landowners who returned their questionnaires were compared with those who did not return their mail questionnaires on acres owned and location of property in the Northern Forest region. The number of acres owned was not significantly different between respondents and nonrespondents. About one-half of the respondents (48%) and the nonrespondents (50%) owned between 1,000 and 5,000 ac, and the mean number of acres owned did not differ between the two groups (ANOVA,  $P = 0.129$ ). There were also no significant differences between respondents and nonrespondents within each state ( $X^2 = 1.470$ ; 3 df;  $P = 0.689$ ).

Most respondents from our study described their property as a large contiguous forest (76%); additional descriptions of their properties included agricultural area (11%) and other (13%). The total number of acres reportedly owned by the sample was 8,633,066. Parcel sizes among the sample ranged from 1,020 to 1,263,604 ac. Nearly one-half of them (49%) owned between 1,001 and 5,000 ac, although the mean property size was 99,230 ac. The 43 large landowners in the sample from Maine accounted for 8,216,650 ac, or 95%, of the total acreage in our survey. Additional acreage by state is as follows: 6 New Hampshire landowners accounted for 35,064 ac, New York's 18 landowners totaled 206,496 ac, and 20 large landowners in Vermont accounted for 174,856 ac. This is not necessarily reflective of the amount of land each state contributes to the Northern Forest. Rather, this reflects the heavier reliance on industrial forestry in Maine compared with the other three Northern Forest states.

The majority of large landowners (87%) allow public access and most of those who denied public access (13% and accounting for 159,517 ac) allow recreation but only for exclusive use by clubs, e.g., charging a fee for hunting. All the large landowners in Maine and Vermont reported that they permit public access and 5 of 6 large landowners in New Hampshire do as well. New York was the anomaly of the Northern Forest states with 11 of 18 landowners denying public access. Most large landowners in the Northern Forest (76%) did not charge



**Figure 2. Number of survey respondents and distinct first priority land management.**

a fee for the public to access their property and most landowners who charged a fee (19%) only asked for a nominal fee to maintain roads and infrastructure such as campsites.

### Tenure and Influence on Public Access

Based on their self-report of years owning land in the Northern Forest region participants were divided into four groups (Table 3). The first group consisted of landowners who reported owning land less than 10 years (group 1,  $n = 24$ ). The second group consisted of landowners who reported owning land between 11 and 25 years (group 2,  $n = 23$ ). The third group consisted of landowners owning land between 26 and 50 years (group 3,  $n = 21$ ) and the final group were landowners owning land more than 50 years (group 4,  $n = 12$ ). Nearly three of five landowners (58.8%) were relatively new landowners in the region, having owned their land for 25 years or less. The self-reported years of landownership in group 1 reflects the land sale trend over the past few decades in the Northern Forest (Table 3). More than one-half of the total land area (4,669,357 ac) was owned by respondents who purchased the land within the past 10 years. Conversely, 40% of the landowners who owned 35% of the acreage in this study were long-term owners, having held their lands for 25 years or more.

Most landowners rated timber and forest products as their top management priority (Figure 2). Several other large landowners, slightly one-half of the respondents, indicated recreation, nature protection, or real estate investment as their top management priority. However, as previous research has illustrated (Davis et al. 2005, de

Gooyer and Capen 2005, Hagan et al. 2005), large landowners typically identified multiple management priorities and this was true for not only timber and forest products landowners but also those who indicated nature protection and real estate investment as their top management priority. This shows that landowners are not only interested in economic returns on their land, but also in nature protection and recreation, regardless of land tenure. Shelly Tschinda, Chief Executive Officer of Quality Services, Inc. (a company that specializes in helping timberland owners manage access in the western United States) suggests that as more companies convert to TIMO and/or REIT types of organizations, landowners recognize that recreation can be a profitable asset (Forestry Source 2010). To diversify their portfolios, TIMOs and REITs may be accepting of recreation for the financial opportunity it affords to their investors.

Overall, landowners in the sample held similar attitudes about public access regardless of their length of ownership (Table 4). All landowners, regardless of length of tenure, recognize public access as a tradition. Landowner attitude scores were neutral on the attitude dimension labeled “management aid,” which was composed of variables such as “way to have eyes on my land” and “avoid problems with trespass.” However, these neutral responses were consistent across all four lengths of ownership categories. The area where landowner tenure groups differed most was on the factor we labeled “management hindrance,” which was composed of variables “creates expectations and difficulty in changing land-use” and “creates challenges for how to manage

land” (Table 2). Specifically, the landowners owning land longer than 50 years agreed more strongly (mean = 4.0) with these variables than the landowners owning land between 11 and 25 years (mean = 3.4). Landowner tenure groups generally agreed that public access can be a management hindrance, but landowners with the longest tenure more strongly agreed. However, even the newest landowners recognize that there are some management challenges associated with providing public access to their lands.

When examining whether new landowners restrict access more than landowners with longer tenure, the results indicate that there was not a significant difference between tenure groups. Over 75% of the large landowner sample permits public access on their lands. The results showed that new landowners in the region are no more likely to restrict recreational access than longer-term landowners. More than 9 of 10 new landowners (91.7%) allowed recreational access, while 78.3% with 11–25 years ( $n = 18$ ), 85.0% with 26–50 years ( $n = 17$ ), and 91.7% with landowners owning land for more than 50 years ( $n = 11$ ) allowed recreational access.

Furthermore, new landowners were just as likely as longer-term landowners to permit nonmotorized activities, traditional wildlife activities, OHV trail riding, and boat and camping activities on their land. Almost all landowners permitted no motorized activities, roughly 9 of 10 permitted traditional wildlife-related activities such as hunting, about 4 of 5 permitted trail-riding activities, and about 7 of 10 landowners permitted boating or camping-related activities.

### Landowner Management Priorities and Influence on Public Access

Table 3 and Figure 2 show that the respondents in this study reported diverse management priorities, but timber and forest products were by far listed most often as the number one management priority or colisted as the first priority by large landowners in the Northern Forest. A study by deGooyer and Capen (2005) found that 67% of Northern Forest property owners indicated recreation as one of several management priorities. Our findings confirm this trend because recreation was listed by several private landowners in our study as their first priority but more often rated as a lower priority management area among landowners who rated timber or nature protection as their first priority.

**Table 3. Tenure groups and landowner types contained within each tenure group for large landowners in the Northern Forest.**

	Group 1 0–10 yr	Group 2 11–25 yr	Group 3 26–50 yr	Group 4 51+ yr	Total
Total landowners	24	23	21	12	80
Percent of acres	56.6	8.1	5.3	30.0	100
Acres	4,669,358	664,412	432,774	2,472,719	8,239,263
Landowner type (listed by first priority)					
Timber products	<i>n</i> = 15	<i>n</i> = 10	<i>n</i> = 8	<i>n</i> = 7	
Real estate investment	<i>n</i> = 3	<i>n</i> = 2	<i>n</i> = 4	<i>n</i> = 1	
Nature protection	<i>n</i> = 5	<i>n</i> = 4	<i>n</i> = 5	<i>n</i> = 1	
Recreation	<i>n</i> = 4	<i>n</i> = 3	<i>n</i> = 5	<i>n</i> = 3	

Note: Some landowners listed equal prioritization among land uses. Therefore, as seen for group 1, when landowner type is totaled there are more than 24 landowners. Some landowners did not list these four reasons to own land as a first priority. Therefore, as seen for groups 2 and 3, total landowner type does not equal the total amount of landowners accounted for the group.

**Table 4. Mean and standard deviations of public access attitude dimensions among the four landowner tenure groups.**

Tenure	Tradition	Management aid	Management hindrance
0–10 yr	<i>n</i> = 23 3.95 (0.58)	<i>n</i> = 23 3.17 (0.73)	<i>n</i> = 22 4.00 (0.62)
11–25 yr	<i>n</i> = 23 3.80 (0.99)	<i>n</i> = 21 2.83 (0.82)	<i>n</i> = 22 3.39 <sup>b</sup> (0.77)
26–50 yr	<i>n</i> = 20 3.77 (0.87)	<i>n</i> = 21 2.93 (0.50)	<i>n</i> = 21 3.50 (0.69)
51+ yr	<i>n</i> = 12 3.67 (1.17)	<i>n</i> = 11 2.95 (1.03)	<i>n</i> = 12 4.04 <sup>a</sup> (0.86)

Note: Items measured on a Likert-type scale, where 1 = strongly disagree and 5 = strongly agree. Standard deviations are shown in parentheses. Means with different superscripts in the column indicate between group differences significant at  $P < 0.01$ .

**Table 5. Mean and standard deviations of public access attitude dimensions among the four landowner priority groups.**

Landowner priority	Tradition	Management aid	Management hindrance
Timber/forest products	<i>n</i> = 30 3.93 (0.73)	<i>n</i> = 30 2.94 (0.56)	<i>n</i> = 31 3.81 (0.70)
Recreation	<i>n</i> = 9 3.32 (1.67)	<i>n</i> = 9 3.04 (1.38)	<i>n</i> = 9 3.22 (0.67)
Nature protection	<i>n</i> = 16 3.98 (0.71)	<i>n</i> = 15 3.03 (0.45)	<i>n</i> = 14 3.61 (0.66)
Real estate investment	<i>n</i> = 10 3.39 (0.46)	<i>n</i> = 10 2.94 (0.45)	<i>n</i> = 10 4.05 (0.83)

Note: Items measured on a Likert-type scale, where 1 = strongly disagree and 5 = strongly agree. Standard deviations are shown in parentheses. No significant differences detected among landowner priority groups at  $P < 0.05$ .

Despite landowner variation in management priorities, respondents reported similar public access attitudes across the four landowner management priority groups (Table 5). All management priority types agreed with attitude statements about public access as a tradition. Each of the groups reported neutral beliefs about public access as a management aid. Similarly, each management priority group generally agreed about public access as “management hindrance.”

The results showed that landowners

who managed their property for either timber or real estate were the most likely to allow public recreational access to their land. All the landowners who own land as a real estate investment (100%) allowed public access, and 93% of the landowners who manage their land for timber allowed public recreational access. Most who primarily manage their land for nature preservation allowed access (86%). However, those who manage their lands primarily for recreation were more restrictive, with only two-thirds

(67%) allowing public recreational access. Each of these management priority groups agreed that public access was a management hindrance. Nevertheless, few landowners, regardless of their management priorities, disallowed public access on their land.

All the landowners who allowed public access to their land permitted nonmotorized recreational activities, regardless of their management priorities (Table 6). Similarly, about four of five landowners who allowed public access permitted boating or camping-related recreational activities on their land, which was likely dependent on the presence of a water-based resource on their property. The management priority groups differed, however, in the hunting and trail-riding activities that they allowed on their land. Those who managed their land primarily for timber and real estate permitted the most diverse types of outdoor recreation, with few restrictions on any type of recreational use (Table 6). However, four of five landowners who managed their lands primarily for recreation allowed hunting or trail-riding use. Those managing their lands primarily for nature preservation were even more restrictive. Fewer than two-thirds (63.6%) allowed hunting, and fewer than one-half (45.5%) allowed trail riding.

## Conclusions and Implications

The present study offers insight regarding attitudes about public access, types of activities allowed, and willingness to allow public access among different types of large landowners in the Northern Forest. Dennis (1993) and Brown et al. (1984) did not find any correlation between ownership tenure and the probability that property was posted for small and nonindustrial private landowners in the Northeast; this result is echoed in our study of large private landowners. Results indicate that new large landowners in the Northern Forest are just as likely to allow public access on their land as large landowners with longer tenure. All tenure groups had similar views that public access on private land is a tradition in the Northern Forest and that public access can be a management aid. These findings indicate that landowners, old and new alike, value public access for the benefits it brings to the region and to themselves. Closer examination of Table 2 also shows that the survey items “Allowing public access is important for local residents” and “Allowing public access benefits state/local economies” were the items with highest means in the tradition dimension,

**Table 6. Percent of landowner management priority groups permitting one or more activities in each activity dimension.**

Landowner priority	Nonmotorized (%)	Traditional wildlife <sup>a</sup> (%)	Trail riding <sup>b</sup> (%)	Boat and camping (%)
Timber/forest products	100.0	100.0	100.0	85.7
Recreation	100.0	80.0	80.0	80.0
Nature protection	100.0	63.6	45.5	72.7
Real estate investment	100.0	100.0	100.0	60.0

Note: Only one activity needed to be checked for each activity dimension. For example, hunting may have been checked for traditional wildlife but not trapping. Superscripts indicate between group differences significant (chi-square,  $P < 0.01$ ).

signifying agreement with these statements. This illustrates that large landowners are aware of the importance that public access on private land holds with communities, despite a growing diversification of new landowners.

How does a new large landowner become aware of land-use traditions? Research has shown that social networks are important for landowners when faced with decisions about how to manage their land (Rickenbach et al. 2005, Rickenbach and Kittredge 2009) and we believe that some of our findings may be explained by neighborly relations. If a landowner is unsure whether or not to permit public access on their newly acquired land, they may seek guidance from a neighbor that has been in the area for a longer period time or they may consult their land manager, who is familiar with policies in the region. This reliance on a few select individuals for land-use decisions will have far-reaching impacts in the Northern Forest because as more diverse landowners move in, more land-use decisions will have to be made and landowners may seek out those that are familiar with the status quo. We base this conclusion partly on the fact that those landowners owning land less than 10 years had similar responses to the tradition dimension of permitting public access as those landowners owning land for 50 years or more.

Although private landowners recognize the tradition of public access, they also believe that allowing access for recreation does incur some negative costs that may conflict with management priorities. Landowners that have owned land longest in the region perceive this more so than other landowner tenure groups. However, new landowners also view recreation as a potential hindrance to management priorities. Minimizing road damage caused by recreationists driving on dirt roads during the springtime or creating safety issues between recreation vehicles and logging trucks incur costs to the landowner and require a management response. Recreation ethics programs such as Leave No

Trace and Tread Lightly help to educate users. In addition, Landowner Relations Programs will continue to be important communication links available between recreation users and private landowners. Often, organized recreation groups are a contact link for landowners if problems arise. These relationships are important to nurture, because they may help resolve conflict situations. Finally, Douglas (2000) suggests that commercial forestlands permit or encourage recreational use of their land as much for public relations as for profit. Our data are consistent with this idea, but public relations benefits should not offset efforts to manage the costs and other challenges associated with public access.

Most landowners rated timber and forest products as their top priority. This probably contributes to the high percentage of landowners who allow public access and a diverse set of outdoor recreation activities on their land. Recreation can often be part of multiuse plans for a forest tract, even though forestry might be the priority for the landowner. For example, inactive logging roads provide opportunities for long-distance trails for motorized recreation, other trail activities such as horseback riding, and traditional wildlife activities. Based on findings in this study we found landowners with different management priorities may restrict certain types of recreation opportunities. This is not necessarily a negative consequence, because more focused recreation management for select types of activities (e.g., hunting) may improve the quality of the experience for users. In the future, as private landownership continues to evolve, landowners may want to ensure that a diverse array of outdoor activities is maintained and that partnerships with multiple landowners and public land agencies should be developed. Long-distance trail networks have always required coordination and cooperation among multiple landowners and recreation organizations. This model could be applied to a matrix of outdoor activities permitted

on private lands that are amenable to private landowners' management goals.

Landowners who listed recreation management as their top priority were most likely to prohibit free public access and to restrict certain types of activities such as traditional wildlife and trail-riding activities. More research is needed among these types of landowners, but one possible explanation for this finding is that landowners who manage for recreation may be leasing their land to others for exclusive use and/or providing a high-quality experience for recreation users and may view these recreation activities as incompatible with other types of recreation activities such as hiking or canoeing. Free public access would upset these paid contractual agreements, because allowing all types of recreation would work against goals and objectives for intended quality of experience. Another alternate explanation is that landowners may want for their own personal use.

Overall, the results show that landowners with large parcels in the Northern Forest, both long term and new owners, continue to honor the traditions of open public access to their lands for recreation. There is some evidence that those who manage their lands for nature preservation are more likely to restrict traditional consumptive and motorized recreational activities. There is also evidence that those who lease their land for recreation are more restrictive about the types of activities they will allow. Finally, those whose property is in closer proximity to public lands (the New York portion of the sample) are more likely to post their land. Our findings suggest that recreational access to private lands will remain contentious in regions such as the western United States with large amounts of public land, and in regions of the southern United States with a more developed recreational land leasing system. In places where public land is limited, however, a social norm of neighborliness appears to prevail. The only threat to this norm may be parcelization.

The Northern Forest is a dynamic land-



scape with prime opportunities for recreation, forestry, real estate, wildlife, and residence. These diverse demands could potentially create challenges for allowing public access to continue as new landowners enter the region. Nevertheless, we find that large landowners still allow recreation to occur on their lands. Future research opportunities could include studies that use the Theory of Planned Behavior (Ajzen 1991), which extends Expectancy Theory used in this study and would permit closer examination of social norms and traditions within the Northern Forest, and how these constructs influence new large landowners to continue to permit public access on private lands. For instance, new landowners in the Northern Forest may recognize that public access has been a tradition in the region for years and follow suit so as not to stray outside the social norm. Research suggests that landowners who are unfamiliar with the local area seek information from neighbors and surrounding landowners. Additional studies examining the decisionmaking dynamic and roles of the manager and landowner may lead to a better understanding of public access decisions (Kittredge 2004 and Rickenbach 2009). Continued monitoring of land sales and recreation activities that new landowners permit on their land will, in turn, help develop policies and outreach tactics that encourage continued access to private land.

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