

GIFTS TO A FUTURE WORLD: CONVERSATIONS  
WITH WOODLAND OWNERS IN NOVA SCOTIA

by

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## ABSTRACT

Private, non-industrial woodland owners provide more than half of the timber used by Nova Scotia's forest-products industry. Research, however, suggests that many of these owners do not consider the income from timber sales to be their primary reason for owning woodland. This study aimed to reach a holistic understanding of their attitudes and motivations using walking interviews on the owners' woodlands and a grounded theory approach to analysis. Forest landowners interviewed for this research were most concerned with the conservation – and ultimately the conveyance – of values that provide them with no immediate economic returns. The high value placed on these “gifts to a future world” offers a new way to think about the design of programs meant to encourage active management of private forestland.



## **LIST OF ABBREVIATIONS**

FRH	Landowners who had undertaken Frequent or Recent Harvests
FSC	Forest Stewardship Council
NS	Nova Scotia
PEI	Prince Edward Island

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## CHAPTER 1 INTRODUCTION

### 1.1 PROBLEM STATEMENT

Covering about 348 million hectares (Natural Resources Canada, 2015a), forests shape the Canadian economy, environment and self-identity (Natural Resources Canada, 2015b). Managing, harvesting and processing trees contributed more than 216,000 direct jobs to the economy in 2013 and gave Canada a \$19.3 billion trade surplus in forest products, the largest of any country on Earth (Natural Resources Canada, 2015c).

Canada has 25 million ha of privately owned forest (Canadian Association of Forest Owners, 2012). Eight-tenths of the private land is held by about 450,000 individual owners in parcels that average 40 ha (Canadian Association of Forest Owners, 2012). There is no universally accepted definition of a *small-woodland* owner. The research cited here typically excluded land held by a person or entity that also owned a facility that made wood products. Most commonly, the studies also set an upper limit for parcel size or total landholdings, commonly 1,000-2,000 ha. The province of Nova Scotia also has no consistent definition of *small woodlands*. In the draft Provincial Timber Objective, for example, privately owned lands are simply divided into industrial (owned by an individual or entity that also owns a wood-products firm) and non-industrial ((Nova Scotia Department of Natural Resources, 2016b) classes.

Nationwide, about 15.7% of the timber harvested in 2014 came from private woodlands (National Forestry Database, 2014). In the Maritimes, however, a much higher percentage of the timber supply comes from privately owned land. About 75% of the timber harvested in Nova Scotia, 43% in New Brunswick, and almost 98% in Prince Edward Island came from privately

owned woodlands (National Forestry Database, 2014). Archibald (1972) attributed the widespread private ownership of forest in the Maritime Provinces to the region's early settlement by France and England (commencing more than four centuries ago), which was encouraged by the granting of millions of hectares of Crown lands to wealthy proprietors, corporations, and tens of thousands of settlers from Europe and Loyalists from the United States. Archibald (1972) wrote:

The period 1759-1800 seems to have been the peak years for land grants, when as much as 1,200,000 to 1,500,000 acres were granted in one year. These grants of course included the area now covered by New Brunswick as well as the Peninsula of Nova Scotia. (p. 2)

The private forests of Nova Scotia support a large and diversified forest-products industry. In 2013, the industry employed 5,700 people (Natural Resources Canada, 2014). Wages paid by the pulp and paper sector are not available, but forestry and logging firms paid \$28.4 million in wages during 2013 (Natural Resources Canada, 2014), while fabricated wood materials firms paid workers another \$97.5 million. Altogether, the industry produced \$642.4 million in wood products for export (Natural Resources Canada, 2014).

Industrial demand for timber fluctuates over time based on economic conditions, but the percentage of small-woodland owners who are willing to supply timber to the market has been declining and now constitutes a serious problem for the industry in Nova Scotia (Woodbridge Associates, 2011). The Nova Scotia Department of Natural Resources states that small, private landowners control 60 percent of the working forest in the province (Nova Scotia Department of Natural Resources, 2016b). The timber supply model being developed for the not-yet-released Provincial Timber Objective assumes that 85 percent of the non-industrial privately owned forest

in Nova Scotia will be available for harvest over the next century (Nova Scotia Department of Natural Resources, 2016b). If that percentage is not achieved, the department predicts significant reductions in the availability of timber. For example, if only 60 percent of non-industrial private woodland is available for harvest, the estimated timber supply falls by 16 percent. This reduction in available volume due to declining participation dwarfs the impacts from changes in management practices, silviculture funding, harvesting restrictions to achieve ecosystem targets (e.g. buffers along streams to protect water quality and fish habitat), and all other variables considered in the model. If only 40 percent of non-industrial private land is available for harvest, the timber supply drops 28 percent from the base case (Nova Scotia Department of Natural Resources, 2016b).

The financial viability of Nova Scotia's forest-products industry depends on continued access to the wood grown on small, private lots (Woodbridge Associates, 2011). However, research conducted in Nova Scotia suggests that most private forest owners do not consider timber income to be their primary reason for owning woodland (Colborne & Beesley, 2000; MacQuarrie, 1981; Sanderson, Colborne, & Beesley, 2000; Sanderson, Duinker, & Beyeler, 2013; Wellstead & Brown, 1995). A better understanding of the attitudes and motivations of these owners would help policy-makers to develop more-effective programs to encourage the active management of private forest. The information would also be of substantial value to: provincial and federal natural resource, economic development and planning departments; the forest-products industry; environmental organizations and other non-governmental entities; and the community of small-forest landowners.

## **1.2 RESEARCH GOAL AND OBJECTIVE**

The goal of this research study was to learn more about what matters to non-industrial private woodland owners in Nova Scotia. The objective was to use qualitative methods to more clearly understand landowner attitudes and motivations.

## **1.3 FUNDING**

In 2010, Northern Pulp Nova Scotia Corporation retained Dr. Peter Duinker to help develop a five-year program of research for the company. Among other things, Northern Pulp's senior managers identified a lack of knowledge about the attitudes and motivations of woodland owners as a key uncertainty in their business planning. Although Northern Pulp committed \$25,000 to fund this study, it had little input into the design and no control over the execution of the project. It had no access to audio recordings, interview transcripts, consent forms, or any other raw data from the project. It was not able to identify any participants.

Northern Pulp received occasional written updates from me that detailed progress toward completion of the study, and a final written report to the funder was prepared in October 2012. These limitations ensured that the company had no influence on the conclusions of this study.

## **1.4 APPROACH**

This thesis explores the attitudes and motivations of small-forest landowners in central Nova Scotia. Unlike the quantitative studies that have been conducted in Nova Scotia to date (MacQuarrie, 1981; Sanderson et al., 2000; Sanderson et al., 2013; Wellstead & Brown, 1995), this research aims to elicit information from the landowners' personal stories rather than from a survey instrument.

Participants were invited to take a walk through their woodlands while discussing the reasons that they own the property, the things they value about it, and their plans for the future. They were encouraged to talk about whatever issues or topics were important to them, in whatever detail they deemed to be appropriate. Questions were open-ended and meant only to clarify issues that were initially raised by participants. I also wanted to learn whether conducting interviews while walking in the participants' woodland would facilitate a deeper discussion of personal values and goals, so the interviews were conducted in the field unless other factors prevented it (e.g. physical limitations of the participant, inclement weather, child-care responsibilities).

Interviews were transcribed verbatim by a professional transcriptionist. I coded the text with qualitative data analysis software using a grounded theory approach: working to identify discrete bits of meaning in the data, discovering how the data were related, and considering their significance to the woodland owners who participated in the study.

## **1.5 LAYOUT OF THE THESIS**

There are six chapters in this thesis. Chapter One offers background on small-woodland ownership in Canada and Nova Scotia, and it introduces the problem that catalyzed this research. Chapter Two explores the scientific and popular literature already published on this topic, starting with quantitative studies in Nova Scotia that explore the attitudes and motivations of small, private landowners. The chapter then looks at similar research elsewhere in Canada and in other industrialized nations. It also provides the policy and economic contexts for this thesis.

Specific methods used in this research are presented in Chapter Three, which also offers the rationale for the design of the study. Chapter Four presents the research results, which are

discussed further in Chapter Five. The policy and program implications of these findings are presented in Chapter Six, along with final thoughts and suggestions for future areas of inquiry.



## CHAPTER 2 LITERATURE REVIEW

During the last 35 years, there have been numerous studies of the attitudes and motivations of people who own small forested parcels. Most commonly, researchers have used quantitative methods (primarily questionnaires mailed to forest landowners), although a smaller number of studies have taken non-survey approaches and used qualitative methods to elicit and evaluate data from owners.

Much of what is known about Nova Scotia's private forest landowners is based on four comprehensive surveys of provincial landowners (MacQuarrie, 1981; Sanderson et al., 2000; Sanderson et al., 2013; Wellstead & Brown, 1995). These studies all involved large mailings (n=1,174 to 4,500) where recipients were chosen at random from provincial property ownership databases, and they achieved relatively high response rates of 26% to 58%. This maximizes the likelihood that data derived from the surveys are representative of the target population as a whole (De Vaus, 2002).

With few exceptions, other surveys cited in this literature review were mailed to large samples (n=1,000 to more than 17,000) of woodland owners and reported response rates of more than 40%. The consistency of the findings reported over time by different researchers studying forest landowners in widely separated jurisdictions is striking.

A smaller number of researchers have used qualitative methods in an effort to develop a more nuanced understanding of landowner values and goals. Bliss and Martin's (1989) study of motivations among non-industrial private forest owners in Wisconsin sought to overcome what they saw as serious limitations to the effectiveness of surveys in uncovering owner motivations and values. They identified those limitations as:

- An inability to know beforehand what questions are important to ask forest landowners – and what possible responses will be relevant – on topics related to intangibles such as attitudes and beliefs, rather than on demographic or socioeconomic variables;
- the treatment of individuals as a collection of traits, rather than as intact wholes;
- the static nature of surveys in describing landowner characteristics at a single point in time, rather than capturing the dynamic nature of attitudes and beliefs; and
- difficulty in evaluating data quality due to limited interaction with participants. (pp. 602-604)

Some of the key findings that have emerged from the large body of research into forest landowner attitudes and motivations are presented below, followed by a short review of the industrial and policy contexts for forest issues in Nova Scotia.

## **2.1 FINANCIAL MOTIVATIONS AND ATTITUDES**

**2.1.1 Declining Importance of Timber Income.** All of the comprehensive surveys of Nova Scotia's forest landowners (MacQuarrie, 1981; Sanderson et al., 2000; Sanderson et al., 2013; Wellstead & Brown, 1995) found that most private, non-industrial owners do not view timber sales as a primary source of income and do not identify economic gain as their most important reason for owning woodland. "It is apparent that the enduring allure of small woodlot ownership in Nova Scotia has been and continues to be more psychic or aesthetic gratification than potential pecuniary reward" (Wellstead & Brown, 1995, p. 85).

Looking at the most recent studies in Nova Scotia, Sanderson et al. (2000) reported that most landowners surveyed (62%) did not rely at all on income from the sale of forest products on their woodlands. About 24% identified such sales as a small portion of their total income

(Sanderson et al., 2000), while 12% said it was a significant source of income, and 2% said they were completely reliant on such sales. Similarly, Sanderson et al. (2013) found that, among the owners who reported selling products from their woodlands, 62% said they were not at all reliant on the income; 30% were somewhat reliant; and 8% were very reliant. Sanderson et al. (2000) studied landowners in the central part of Nova Scotia only, while Sanderson et al. (2013) looked at landowners throughout the province. The relatively low importance that non-industrial private owners in Nova Scotia assign to achieving financial returns from the sale of wood is important because the timber grown on these lands accounts for more than half of the provincial wood supply (Nova Scotia Department of Natural Resources, 2016b).

Studies across Canada and throughout the industrialized world (Belin et al., 2005; Côté, Gilbert & Nadeau, 2015; Erickson, Ryan, De Young, 2002; Kendra & Hull, 2005; Koontz, 2001; Ma & Kittredge, 2011; MacGregor, 2011; Nadeau, 2011; Nadeau, Beckley, McKendy, & Keess, 2012; Ziegenspeck, Hardter, & Schraml, 2004) have reached similar conclusions: most owners do not rely on timber income from their forests, and economic gains are not the primary reason that most people own woodland. “Financial objectives, such as land investment and timber production, while rated as important or very important by some ownerships, are rated much lower overall compared with amenity-oriented objectives” (Butler et al., 2016, p. 4).

**2.1.2 Family Legacy and Investment Income.** In addition to current income and other immediate economic benefits from forest ownership, landowners also may have long-term financial motivations such as building a legacy for heirs or other beneficiaries, or receiving capital gains from rising land values. The concept of legacy is complicated because it incorporates both economic and non-economic values. In relationship to a forest, legacy can be

viewed in at least two ways: as a direct transfer of property with its associated economic, ecological, social and familial values to heirs, or as the conservation of standing timber, forest ecosystems, recreational opportunities, scenic beauty and other values for society as a whole.

Two Nova Scotia surveys (Sanderson et al., 2000; Sanderson et al., 2013) found that both ways of conceiving legacy were among landowners' foremost reasons for owning woodland. Some 88% of the respondents in Sanderson et al. (2013) and 82% in Sanderson et al. (2000) said owning woodland *for the sake of future generations* was important to very important. This was the highest-ranked reason for forest ownership identified in both surveys. The next three most important reasons can also be viewed as motivated by concerns about legacy: *for wildlife enjoyment* at 87% in 2013 and 79% in 2000; *to preserve forest ecosystems* at 84% and 71%; and *to give to my children* at 76% and 75%.

Creation of a family legacy is a goal of forest landowners throughout the world. Côté et al. (2015) reported that only a third of Quebec residents surveyed said they owned woodlands to provide a second income. Almost three-quarters viewed the property as a legacy for their children, and 57 percent said it was an investment or retirement fund (Côté et al., 2015). Butler (2008) found that almost half of U.S. forest owners reported that passing land on to heirs was an important or very important reason for land ownership. Slightly under 40% said *land investment* was an important or very important reason (Butler, 2008). In the same survey, only 10% of owners said *timber production* was an important or very important reason.

In addition to providing a legacy for landowners' heirs or society as a whole, woodlands may offer an opportunity for capital gains through increases in property values or through subdivision and sale of the land. Owning woodland *as an investment* was an important to very important ownership reason for 54% of landowners surveyed in Sanderson et al. (2013) and 61%

in Sanderson et al. (2000), in both cases ranking just ahead of owning woodland *for timber harvesting*. Investment value was also identified as a very important reason for forest ownership by almost 51% of landowners in South Carolina, Georgia and Alabama (Majumdar, Laband, Teeter, & Butler, 2008). Owners who identify land speculation as a primary objective, however, may be less likely to harvest wood than those who have timber income or non-economic objectives (e.g. recreation, aesthetics, non-timber forest products) as their primary goal (Joshi & Arano, 2009).

Land speculation and building a financial legacy for heirs are important economic motivations for forest ownership. Even so, these motivations may have a negative impact on near-term timber supplies as owners concentrate on achieving long-term, non-timber financial gains.

**2.1.3 Firewood and Other Products for Personal Use.** Many studies have found that harvesting firewood for personal use is a significant motivation for forest ownership. Researchers, however, do not agree on how to characterize firewood production for home use. Some treat it as a non-commercial management activity similar to thinning young forest stands or marking boundaries. Others consider it an income-producing activity because it reduces landowners' fuel costs. In this thesis, I favour the latter characterization.

MacQuarrie (1981) reported that home firewood production was the primary ownership reason for 14.3 percent of small-woodland owners in this province, the third-most-important motivation after association with a permanent residence (27.4 percent) and farming (14.9 percent). It was the second-most-commonly cited reason in Wellstead and Brown (1995) at 33.6 percent of respondents, after personal satisfaction at 38.5 percent.

Both Sanderson et al. (2000) and Sanderson et al. (2013) found that a majority of small-forest landowners in Nova Scotia considered their ability to harvest firewood for personal use to be a very important reason for owning woodland (57 percent and 65 percent, respectively). Sanderson et al. (2000) reported that other forest products taken for personal use included Christmas trees (which were cut by 29% of the respondents who had harvested in the preceding three years), boughs/brush (28%), saw logs (24%), berries (23%), and various game animals. Sanderson et al. (2013) found that private forest owners had harvested a wide variety of products for personal use or sale in the preceding five years, including firewood (65%), saw logs, stud wood or pulpwood (48%); berries (25%); Christmas trees (24%); boughs and brush (22%); game animals, e.g. deer (21%); game birds (13%); fish (11%); and maple or other sap (10%).

Research conducted outside Nova Scotia is consistent with these findings. Firewood for personal use is often the most common forest product harvested from private forests (Butler et al., 2016; Connelly, Brown & Smallidge, 2007; Côté et al., 2015; Nadeau et al., 2012). Although production of firewood for the home is not usually identified among the foremost reasons for owning woodland, cutting firewood is the most common way that owners in Nova Scotia and elsewhere obtain financial value from their woodlands.

**2.1.4 Future Harvesting Plans.** For more than three decades, researchers have reported that the desire for income from the sale of wood is not a primary reason for forest ownership in Nova Scotia. This has significant implications for the availability of timber in the province.

MacQuarrie (1981) reported that the percentage of mainland Nova Scotia woodland owners whose timber was harvested for market or personal use in the preceding five years had declined from 69% in 1970 to 58% in 1979. Considering only commercial sales, some 71.9% of

respondents indicated they had not sold forest products (pulpwood, saw logs, firewood, Christmas trees, etc.) in the preceding two years (MacQuarrie, 1981). Asked to identify the primary reason for not selling forest products in the past, 30% of landowners said they cut timber only for personal use. Other reasons included *don't want my woods cut* [13%], *not enough wood to be worthwhile* [12%], and *too busy with other activities* [11%] (MacQuarrie, 1981).

Landowners were also asked whether they expected to sell products in the near future (Table 2-1), though the time period was not specified. The most important consideration was a desire to defer timber sales in case of a future financial emergency (21% of owners). It should be noted that the tabulations of questionnaire responses in Appendix III of the MacQuarrie report vary somewhat from the percentages reported in the body of his study. No explanation was given.

**Table 2-1. Factors affecting Nova Scotia landowners' decisions to sell forest products in the near future, in rank order**

<b>Consideration</b>	<b>Owners (%)</b>
Want to save for emergency	21
Don't want trees cut	18
Nothing to cut in near future	18
If prices improve	11
Don't know what or how to sell	10
If I find workers	8
Other	13

(Adapted from Table 4 and Question 12 in MacQuarrie, 1981)

Some 64% of the respondents in Sanderson et al. (2000) had harvested wood in the preceding three years. When asked to consider 23 possible reasons for owning woodland, timber

harvesting ranked 12th, with 55% of owners identifying timber harvesting as important or very important. Products harvested for commercial sale included saw logs (63% of the respondents who had harvested in the preceding three years), pulpwood (40%), and firewood (22%). Only 9% of respondents reported income from the sale of non-timber forest products (Sanderson et al., 2000).

Sanderson et al. (2000) also asked respondents who had not harvested wood in the last three years to identify reasons that they might do so in the future. A family emergency (presumably, but not explicitly, one that created a need for cash) was cited most frequently (40%), followed by the availability of marketable timber (37%), ability to hire a reliable contractor (24%), if the respondent had more time (21%), other (19%), higher wood prices (6%), and to pay for children's education (7%) (Sanderson et al., 2000). The researchers also asked a similar, but open-ended, question: *What are the top three factors affecting the likelihood that you will sell wood from your woodland in the future?* Need for income was first at 17.8%, followed by maturity of the stand (15.7%) and price for the wood (12.6%).

Sanderson et al. (2013) reported that 60% of landowners who participated in the survey said they had sold products from their woodlands in the preceding five years. Reasons for having harvested included: Trees were mature (64%); needed wood for own use (59%); to improve quality of remaining trees (57%); remove trees damaged by natural catastrophe (52%); needed the money (24%); to achieve objective in management plan (20%); to clear land for conversion to another use (11%); price was right (11%); to improve scenic and recreational opportunities (7%), and to improve hunting opportunities (5%) (Sanderson et al., 2013).

In Prince Edward Island, Nadeau (2011) found that 52% of respondents had harvested in the preceding 10 years. Some 36% did not harvest in the prior decade but might in the future



(Nadeau, 2011), while the remaining 12% had not harvested and had no intention to do so in the future. More than half of all respondents (53%) in the PEI survey said that finding a trustworthy harvesting crew was a required or important determinant of whether to conduct a harvest.

Important motivations for harvesting included maturity of the trees (64%); improving the quality of remaining trees (56%); removing trees damaged by natural catastrophe (54%); and needing wood for personal use (47%). Some 14% of owners said they harvested because the price was right.

Nadeau et al. (2012) reported that 62 percent of New Brunswick landowners surveyed had cut or removed trees from their lands during the preceding decade. These respondents – which the researchers called Frequent or Recent Harvest (FRH) owners – identified their reasons for harvesting as: Trees were mature (68%); needed wood for own use (64%); remove trees damaged by natural catastrophe (55%); achieve objectives in management plan (34%); the price was right (27%); they had time to do it (25%); found a trustworthy harvesting crew (24%); needed the money (22%); and to improve scenic or recreational opportunities on the land (20%). Some 37% of FRH owners reported commercial sales of sawlogs or studwood in the preceding 10 years (Nadeau et al., 2012). Other products sold included pulpwood (35%); firewood (11%); veneer (10%); posts, poles or pilings (5%); biomass (4%); Christmas trees (3%); and other products (2%).

Slightly more than a third of FRH owners had hired logging contractors. Experiences were mixed: 34% of such owners said they were entirely satisfied; 39% were not entirely satisfied but might hire them again or recommend them to a friend; and 27% said they were unsatisfied and would not hire the contractor again nor refer them to a friend (Nadeau et al., 2012).

A landowner's current attitudes about cutting timber will not necessarily determine whether a future harvest occurs (Silver, Leahy, Weiskittel, Noblet, & Kittredge, 2015). The authors explored this issue through a meta-analysis of 128 peer-reviewed articles on the timber harvesting behaviour of private woodland owners. They included both quantitative and qualitative studies of private, non-industrial woodland owners of all sizes on the subject of attitudes, intentions or behaviours related to timber harvesting. Of these, 87 articles were primarily focused on timber harvesting behaviour (Silver et al., 2015). However, only nine of the studies included site visits, collection of harvest data or follow-up interviews to determine whether landowners' stated intentions about harvesting actually were carried out. Their conclusion is noteworthy: "Therefore, the significant predictors of timber harvesting [identified in most studies] ... are actually significant predictors of the intention or attitudes toward timber harvesting" (Silver et al., 2015, p. 495).

For the nine studies that verified whether intended harvesting had occurred, the best predictors of harvesting behaviour were "age, parcel size, extension activity participation, a timber production ownership objective, a management plan, white collar occupation, years of formal education, debt-to-income ratio, and site value tax" (Silver et al., 2015, p. 496). Regardless of landowners' current attitudes about timber harvesting, Silver et al. (2015) wrote that external factors might play a large role in determining whether harvests occur. Because it is often many years before the next harvest on a parcel of woodland, the ultimate decision to cut wood may be influenced by changing market conditions, forest health, the owner's financial situation, or life events such as illness or divorce (Silver et al., 2015).

Studies of private, non-industrial forest landowners have identified numerous reasons for their lack of interest in harvesting timber, including a desire to build a reserve against future

financial need, low prices, an immature forest and a lack of trustworthy service providers. While current intention does not determine future behaviour, these are significant deterrents for landowners who have already decided that current income is not the primary reason they own woodland.

## **2.2 NON-ECONOMIC MOTIVATIONS AND ATTITUDES**

**2.2.1 Reasons for Owning Woodland.** If financial gain is not the primary reason for woodland ownership, why do people own forests? Numerous studies have found that an environmental or stewardship ethic, solitude, self-sufficiency, personal satisfaction and many other desires play a significant role.

MacQuarrie (1981) asked respondents to choose one of 12 possible reasons for owning forested land. More than a quarter said they owned woodland simply because it was associated with their permanent residence, while another 15 percent said it was part of their farms (Table 2-2). An additional 11.2 percent cited personal recreation or the satisfaction of ownership, while 4.9% said the woodland was associated with a seasonal residence.

**Table 2-2. Respondents' main reason for owning Nova Scotia woodlands, and incidence of engaging in forestry activity in the preceding five years**

<b>Main reason for owning forestland</b>	<b>Owners (%)</b>	<b>Percentage of these owners with no forestry activity in preceding five years</b>
Associated with permanent residence	27.4	33.0
Farming	14.9	15.8
Source of firewood	14.3	19.6
Commercial timber production	8.7	17.4
Financial investment	8.6	50.0
Satisfaction of owning land	7.5	61.4
Other (66% of these respondents had inherited their land)	5.8	75.9
Associated with seasonal home	4.9	49.6
Personal recreation	3.7	35.6
Christmas tree production	3.3	2.5
Maple syrup production	0.6	7.1
Commercial recreation	0.4	33.0
No response	0.8	n/a

(Adapted from Table 5 and Appendix III, Question 6, in MacQuarrie, 1981)

MacQuarrie (1981) found that ownership for these primarily non-economic reasons was an important negative factor in predicting whether an owner participated in active forest management: “Recent forestry activity was much more likely when a productive land use such as farming or timber production was cited as the main reason for ownership” (p. 14).

Unlike MacQuarrie, Wellstead, and Brown (1995) allowed respondents to identify up to three main reasons for woodland ownership. Personal satisfaction and firewood production were each chosen by more than a third of owners. Some 28.4 percent said the forest was part of a permanent residence, while 10% said it was associated with a seasonal residence (Table 2-3).

**Table 2-3. Respondents' main reason for owning woodland property  
(up to three reasons could be selected)**

<b>Current reason for owning woodland</b>	<b>Owners (%)</b>
Personal satisfaction	38.5
Firewood production	33.6
Permanent residence	28.4
Part of farm	27.9
Personal recreation	26.9
Commercial timber production	24.5
An inheritance	19.7
Real estate investment	18.7
Christmas tree production	11.5
Seasonal residence	10.0
Maple syrup production	4.5
Commercial recreation	3.6

(Adapted from Table 3.5 in Wellstead & Brown, 1995)

Consistent with MacQuarrie (1981), Wellstead and Brown (1995) found that respondents who reported owning woodland for personal recreation or personal satisfaction were the least likely to have sold wood in the preceding five years. Sanderson et al. (2000) and Sanderson et al.

(2013) reported that woodland owners identified legacy and environmental issues far more frequently than current income as important or very important reasons for owning woodland (Table 2-4).

**Table 2-4. Reasons for owning woodland**

<b>I own woodland ...</b>	<b>Important to very important, Sanderson et al., 2000 (%)</b>	<b>Important to very important, Sanderson et al. 2013 (%)</b>
for the sake of future generations	82	88
for wildlife enjoyment	79	87
to preserve forest ecosystems	71	84
to give to my children	75	76
for personal recreation	64	74
to protect water quality	71	73
because I inherited it	72	67
to harvest firewood for personal use	57	65
for my retirement	61	58
because the forest land is part of a farm	67	56
as an investment	61	54
for timber harvesting	55	47
as a location for my permanent residence	55	44
as a location for my cottage or camp	35	44
for hunting	40	43
for extra income	36	30

<b>I own woodland ...</b>	<b>Important to very important, Sanderson et al., 2000 (%)</b>	<b>Important to very important, Sanderson et al., 2013 (%)</b>
to make a living	34	25
for public education	23	20
for Christmas trees	20	20
to harvest non-timber forest products	20	20
for commercial recreation	21	19
to harvest firewood for sale	13	18
for maple syrup production	12	12

(Adapted from Table 22 in Sanderson et al., 2000, and Table 12 in Sanderson et al., 2013)

When Sanderson et al. (2013) asked Nova Scotia forest landowners about the importance of various forest values, environmental benefits were rated as very important by 74% of respondents; economic benefits were seen as very important by 48%; and social benefits (e.g. recreation, aesthetics, spiritual values) were rated as very important by 43%.

Nadeau (2011) asked woodland owners in Prince Edward Island to rate the importance of various reasons for owning woodland. Some 68% of landowners said owning woodland for the sake of future generations was an important motivation, followed by the enjoyment of owning green space (62%); to preserve forest ecosystems (61%); wildlife enjoyment (56%); and to pass on as a heritage (54%). Eighty percent of landowners said supplementing their income was not an important reason for owning forest (Nadeau, 2011). Neither was making a living from the land (79%); harvesting non-timber forest products (79%); nor harvesting timber (69%).

Nadeau et al. (2012) wrote that New Brunswick residents reported their reasons for owning forested parcels as largely non-economic: enjoyment from simply owning the land (66%); for the benefit of future generations (63%); to pass on as a legacy (63%); enjoyment of wildlife (58%); protection of forest ecosystems (55%); and timber harvesting (30%).

Environmental reasons generally were more important to the owners of smaller parcels (Nadeau et al., 2012), while economic reasons were relatively more important to owners of larger parcels. The researchers also asked New Brunswick landowners to identify the entity toward which they felt the greatest moral obligation. Landowners identified their families (73%), their land (67%), and the watershed in which their land is located (52%) substantially higher than their obligation to their community (28%) or a higher power (25%) (Nadeau et al., 2012).

Findings from these landowner surveys in the Maritime Provinces are broadly consistent with research elsewhere in Canada and internationally. Brunette, Nadeau, and Rotherham (2004), who conducted a meta-analysis of 14 Canadian woodland owner surveys (including some referenced above), found that recreation, conservation, firewood for home use, and legacy/inheritance issues were relatively stronger motivations for small-woodland owners than other possible reasons for owning land. Timber production and sales were less important overall, but financial motivations ranked higher for the owners of larger woodlands. Owners had a strong environmental ethic (Brunette et al., 2004).

These findings are repeated across the industrialized world, where beauty, privacy, joy of ownership, conservation or environmental protection, and recreation are the dominant reasons for forest ownership (Belin et al., 2005; Birch, 1996; Butler, 2008; Butler & Leatherberry, 2004; Butler & Ma, 2011; Connelly et al., 2007; Egan & Jones, 1993; Erickson et al., 2002; Ma & Kittredge, 2011; Rickenbach & Kittredge, 2009; Stone & Tyrell, 2012). Bengston, Asah, and



Butler (2011) analysed responses to the sole open-ended question in the National Woodland Owner Survey in the United States: *What is the main reason that you own woodland?* The researchers identified 37 values or motivations expressed by private forest owners in response, which they sorted into eight categories:

- Environmental values, which were mentioned by about 7% of respondents.
- Forest-based recreation, which included hunting, bird watching, motorized and other kinds of recreation, identified by about 21% of private forest owners.
- Investment or income, which captured expressions of interest in obtaining monetary gain now or in the future, expressed by about 21% of respondents.
- Home, cited by about 20 percent of forest landowners, which included responses that indicated the property was a current or future site of a primary or vacation home; gave privacy to the residence; contributed to a rural lifestyle for the owner or improved their quality of life; provided firewood; or was part of a farm or ranch.
- Non-instrumental values, where the researchers captured psychological or intangible values such as aesthetics, spiritual/religious, solitude and family heritage/legacy, mentioned by about 5% of participants.
- Family motivations, expressed by 11 percent of respondents, which included multi-generational family ownership of the parcel, desire to raise a family on the land, and intentions to provide a legacy for offspring.
- Farm and ranch, identified by about 12 percent of owners, in which the forest was part of an agricultural enterprise.
- Incidental ownership, which encompassed responses that suggested the forest was an unimportant part of the property or owned for no clear reason, about 3 percent of owners.

Hugosson and Ingemarson (2004) identified four categories of motivations for small-forest landowners in Sweden: utilities, which encompassed non-timber forest production objectives such as berries and game; amenities, which brought together such objectives as aesthetics, a tradition of forestry, emotional ties and the personal challenge of silviculture; conservation, including protection of nature, water, soil and culture; and economic efficiency, which encompassed yield of capital, annual income, liquidity reserve and tax planning. Hugosson and Ingemarson (2004) wrote that motivations related to conservation were becoming more significant, as was the objective of tax planning.

Complex, non-economic motivations for woodland ownership are widely held by private forest owners. Environmental stewardship, outdoor recreation, lifestyle preferences and a desire to create legacy are among the factors that influence the decision to own forestland.

**2.2.2 Environmental Concerns.** Forest landowners in Nova Scotia have significant concerns about current forest practices (particularly clear cutting) and perceived overharvesting in the province, as well as the impact that heavy harvesting has on forest ecosystems, endangered species and ecological goods and services. At the same time, owners express support for partial harvesting techniques and do not believe that the province must choose between a healthy forest and a robust economy.

More than half of woodland owners surveyed in Sanderson et al. (2000) and Sanderson et al. (2013) were worried about the rate of harvesting in Nova Scotia. The vast majority said protecting the environment and protecting endangered species are more important than protecting jobs in the forest industry, but they rejected the idea that a healthy forest is incompatible with a healthy economy (Sanderson et al., 2000; Sanderson et al., 2013).

Two-thirds of the woodland owners who responded to the survey by Sanderson et al. (2000) said that clear cutting should be allowed only where appropriate for forest conditions, while 25% said the practice should not be allowed anywhere. Some 5% had no opinion, while 3% said no restriction should be placed on clear cutting. Another question, however, revealed that attitudes toward clear cutting were more nuanced. Sanderson et al. (2000) found that clear cutting was viewed more favourably when harvesting dying or damaged stands, for example, or if the area was immediately replanted.

Woodland owners also have concerns about the impact of current forest practices on other goods and services that come from the forest. Sanderson et al. (2013) reported that more than half of respondents said that forest practices moderately to seriously threatened wildlife and fish habitat (74%), waterways (71%), old growth (63%), the global environment (58%), ecosystems (58%), and rare plant species (54%).

MacGregor (2011) looked specifically at the attitudes of private woodland owners in Nova Scotia about forest biomass, but the research offers some insight into the strength of their feelings about timber harvesting and management options. Most landowners (62-67% by county) had harvested timber for personal use within the preceding 10 years, and a substantial percentage (44-70% by county) had also sold forest products from their land in the same period. MacGregor (2011) asked the owners to rate the acceptability of various activities on a scale of 1 through 5, where 1 was completely unacceptable and 5 was completely acceptable. Respondents were strongly opposed to clear cutting or harvesting old-growth stands to produce biomass, but they found selection harvesting to be completely acceptable.

Sanderson et al. (2013) asked landowners to assess possible threats to the future of Nova Scotia's forest. More than 70% of respondents said the following were moderate to serious

threats: overharvesting (89%); insects and diseases (84%); lack of long-range planning (82%); corporate concentration (79%); logging practices (76%); loss of forest land to development and sprawl (73%); biomass harvesting (73%); and insufficient planting (72%). Only 17% of respondents in Sanderson et al. (2013) said that the forest industry represented the opinions of the majority of Nova Scotians. Some 32% felt that environmental groups represented the opinions of most provincial residents, but 47% said that environmentalists go too far in trying to restrict clear cutting. About 44% of respondents felt that woodland which is not actively managed is wasted.

Sanderson et al. (2013) found that partial harvesting techniques were strongly supported by private woodland owners, while the acceptance of more intensive practices was at least partly related to the specific circumstances in which they were used (Table 2-5). The vast majority of respondents said protecting the environment (92%) and endangered species (85%) were more important than protecting jobs in the forest. However, 91% agreed that it was possible to protect both the forest industry and the environment.

**Table 2-5. Respondents' degree of acceptance of a variety of forest management practices**

<b>Practice</b>	<b>Unacceptable to very unacceptable (%)</b>	<b>Acceptable to very acceptable (%)</b>	<b>n=</b>	<b>Don't know (#)</b>
Cutting selectively to maintain wildlife habitat	3	98	682	15
Using selection and other partial harvest techniques	4	96	630	59
Using clear cuts to harvest dying or damaged stands	13	87	658	36
Using clear cuts to harvest if the area is planted immediately	40	60	630	60
Using clear cuts to harvest if the area is allowed to regenerate naturally	64	35	624	57
Using clear cuts to harvest timber on privately owned land	59	40	653	36
Using clear cuts to harvest on publicly owned (Crown) land	66	34	647	40
Using clear cuts to produce biomass	79	21	558	127
Converting sites from mixed-wood to softwood to increase timber production	65	35	603	89
Using large equipment to harvest timber	47	53	646	49
Using large harvesting equipment that is designed to reduce its impact on the environment	19	81	652	37

(Adapted from Table 32 in Sanderson et al., 2013)

As noted in Silver et al. (2015), attitudes and motivations do not always predict actions in relation to timber harvesting. Similarly, while many landowners express concern about environmental impacts from harvesting, positive landowner attitudes about forest stewardship correlate only modestly with actual reductions in impacts and with use of practices to mitigate such impacts (Egan & Jones, 1993).

These findings suggest that private woodland owners have deep concerns about what is happening in the forest. Most, however, do not think these problems are the inevitable result of managing land for timber production.

## **2.3 FACTORS THAT INFLUENCE LANDOWNERS' ATTITUDES**

Researchers have identified a number of socio-demographic variables that are significant in predicting the attitudes and behaviours of small woodland owners.

**2.3.1 Age.** Significant age-related differences in the beliefs and goals of private forest owners have been noted in many studies. Sanderson et al. (2000) found that stratification of their survey results by age revealed significant differences in the interests and goals of woodland owners in central Nova Scotia. Owners older than 54 were more interested in topics related to the actual management of the resource, such as harvesting methods, tree planting, and using pesticides. They were more reliant on income from their woodlands (Sanderson et al., 2000), but they also saw a greater threat from the possible imbalance between harvesting and growth.

Middle-aged owners (35-54 years old) were more interested in managing woodlands for rare plants, wildlife, and fish or bird habitat (Sanderson et al., 2000). They were more likely to want information about forest-based recreation and tax planning. They were less willing to accept the conversion of mixed-wood stands to softwood in order to boost timber yields. Sanderson et

al. (2000) reported that owners younger than 35 considered social benefits more important and were more likely to accept that Canadians have a responsibility to protect endangered species. They also were more likely to be worried that society's future needs could not be met if current forest practices continued. Conversely, they were also more likely to have harvested wood in the recent past.

Joshi and Arano (2009) also considered the relationship between age and landowner behaviours. The researchers found that older owners were less likely to harvest wood, manage wildlife habitat or improve the recreational potential of their woodlands.

**2.3.2 Gender.** Researchers have noted that, as a group, men and women have different attitudes and beliefs about the forest (Côté, Gilbert, & Nadeau, 2016; Lidestav & Lejon, 2013; Nordlund & Westin, 2011; Sanderson et al., 2000; Wellstead & Brown, 1995). Participation in forest management activities, and the kind of activities that are undertaken, also vary by gender.

Wellstead and Brown (1995) reported that female forest landowners were less likely to have sold forest products from their land or undertaken other management activities in the recent past, and less likely to anticipate such activity in the future. Sanderson et al. (2000) also reported differences in some interests and attitudes based on gender. Men were more interested in learning about pesticides, road building, growing Christmas trees, and managing forests for recreation or fish and bird habitat. Men considered economic benefits to be relatively more important than other goods and services that come from the forest (Sanderson et al., 2000). They were less convinced that an imbalance between harvesting and regrowth was a threat in Nova Scotia.

Sanderson et al. (2000) found that women expressed more interest in managing woodlands for wildlife, managing old growth forests, and income tax and estate planning. They

were more likely to consider clear cutting a threat to forests. Côté et al. (2016) reported that a greater proportion of female owners in Quebec had not harvested timber in the previous five years, or had hired a contractor to harvest, than owners who were men.

Nordlund and Westin (2011) reported that male Swedish forest owners rank increased timber production, and also hunting and fishing, as more important than women do. Female owners put greater value on environmental objectives such as protecting animals and plants, and preserving old forests. Lidestav and Lejon (2013) found that Swedish men who were sole owners of woodlands were more likely to engage in forestry activities than women who were sole owners in both the periods 1992-94 and 2003-06.

**2.3.3 Parcel Size.** In Nova Scotia and elsewhere, there is a strong, positive relationship between the total area of forest owned and the likelihood of engaging in active forest management.

MacQuarrie (1981) reported that the owners of 416-2083 ha were more than 10 times as likely to have sold forest products in the preceding five years as the owners of 4.2-10.4 ha. Wellstead and Brown (1995) reported that size of ownership was strongly related to management activity. They found that 84.6% of owners with more than 162 ha reported at least one management activity in the preceding five years, compared to 36.2 percent of those who owned 10 ha or less. Sanderson et al. (2000) found:

There seem to be differences between the views of landowners with large acreages and those with smaller acreages, particularly in relation to harvesting practices and environmental protection strategies. Those owning more than 250 acres were less



likely to favour environmental protection activities and more likely to find clearcutting acceptable. (p. 65)

Economic issues were relatively more important to the owners of larger areas of forest (104 ha or more) surveyed in Sanderson et al. (2000), and these owners were more reliant on income from their woodlands. They were more likely to have harvested in the preceding three years, and more likely to agree that protecting jobs in the forest industry is more important than protecting endangered species or protecting the environment. Owners of larger parcels were also: less likely to believe that ecosystems were threatened by forest use; less willing to agree that forest use threatens rare plants; and less accepting of the idea that there should be more wilderness in Nova Scotia. Conversely, the owners of less woodland were more interested in managing for wildlife and rare plants (Sanderson et al., 2000). They were more likely to support a clear cutting ban, and to acknowledge that society has an obligation to protect endangered species. At the same time, they were more likely to have harvested in the preceding three years.

Martínez-Espiñeira and Hallstrom (2009) considered the attitudes of private woodland owners on Cape Breton toward wildlife habitat preservation. They reported that most landowners who participated in the study rated concerns about wildlife as important or very important. Landowners with higher incomes or larger parcels were relatively less concerned, however:

Owners of larger wooded lands have the potential to earn more money from the sale of their timber, and are required to invest greater amounts into the management and preparation of their timber for sale. As a result of these greater costs and revenues, the value of wildlife may actually diminish as a result of both (a) greater acreage being available, thus requiring less attention to issues such as conservation or biodiversity; and (b) greater risks (perceived or real) of wildlife-

based concerns affecting the cost–profit ratio. (Martínez-Espiñeira & Hallstrom, 2009, p. 274)

In New Brunswick, Nadeau et al. (2012) looked at differences in attitudes and motivations across a stratified sample of non-industrial woodland owners. The researchers found that: “Many of the results show significant differences between past behavior, future intentions and attitudes according to the three sizes of ownership into which our sample was divided” (Nadeau et al., 2012, p. 39).

The study divided non-industrial private landowners into three ownership size classes: less than 30 ha (small); 30-99.9 ha (medium); and 100-100,000 ha (large). Differences in harvesting behaviour related to size of ownership were especially pronounced. Some 64% of owners with large parcels, but only 20% of owners with small holdings, reported commercial sales of sawlogs, studwood, pulpwood, veneer logs, posts, poles, pilings, or biomass (Nadeau et al., 2012). Future intentions regarding timber harvesting also varied significantly by the size of the ownership (Table 2-6).

**Table 2-6. Timber harvest intentions by ownership size**

<b>Intention</b>	<b>Small 5-29.9 ha (%)</b>	<b>Medium 30-99.9 ha (%)</b>	<b>Large 100+ ha (%)</b>	<b>Total (%)</b>
Never intend to harvest	11	5	2	9
Might harvest in next 10 years	49	61	68	54
Might harvest in more than 10 years	33	25	18	29
Not stated	7	9	12	8

(Adapted from Table 3.1 in Nadeau et al., 2012)

Economic factors and the ability to hire a trustworthy crew were more important for the owners of larger parcels. The researchers also noted differences related to parcel size in landowners' choices regarding harvesting methods. More than half of the owners in the small category said they had harvested only fallen or dying trees, while the owners of large parcels were much more likely to cut most or all of the trees in each harvest block. Smaller ownerships were more likely to report that harvesting was done by the owner or family members, while larger holdings were more likely to rely on hired crews or contractors. The researchers reported:

This low-intensity harvest activity practiced by the largest number of owners... does not likely produce as much wood for the industrial supply as the more intensive activities of a much smaller group of owners who own larger areas of forest land. (Nadeau et al., 2012, p. 23)

Reasons for not harvesting in the previous decade also varied by ownership size (Table 2-7). Looking at the 138 respondents who were likely to harvest in the future, but had not harvested in the preceding 10 years, the researchers found that larger ownerships were significantly more

sensitive to wood prices, while a lack of time to undertake a harvest was more often cited by the owners of small parcels.

**Table 2-7. Reasons for not choosing to harvest in the past 10 years, as reported by owners who were likely to harvest in the future, by size of ownership**

\*Significant differences between size of ownerships at  $p \leq 0.05$  (Chi-square test)

<b>Reason</b>	<b>Small (%)</b>	<b>Medium (%)</b>	<b>Large (%)</b>	<b>Total (%)</b>
Trees not large enough	49	43	50	47
No financial need *	45	26	38	40
Harvesting could damage forest land	39	33	44	38
Too busy *	41	26	33	37
Prices too low *	18	33	53	23
Recently acquired forest land	25	16	13	22
Heard about other people's bad experiences *	16	24	7	18
Didn't know what/how to harvest *	18	17	13	17
Couldn't find trustworthy crew *	16	21	13	17
Couldn't find a market *	18	16	13	17
Absent from area *	18	10	7	15
Fear of increased income tax *	10	24	13	14
Accessibility or road problems *	10	21	13	13
Didn't have access to market information	10	12	13	11
Physically unable *	6	21	7	10
Fear of losing old age pension supplement *	4	9	7	5

(Adapted from Table 3.3 in Nadeau, et al., 2012)

Regarding management practices, 57% of non-industrial landowners who were surveyed in New Brunswick reported at least one activity in the preceding decade, and 56% intended to do so in the next 10 years (Nadeau et al., 2012). Compared to the owners of small- to medium-sized parcels, those in the large size class were more likely to have planted trees, done site preparation before planting or applied pesticides. Such owners were also more likely to plan those activities in the future.

A larger proportion of owners in the “small” size class reported doing – and intending to do – road and trail maintenance, thinning of young stands and boundary line work. Looking forward, an increasing percentage of landowners planned to improve habitat for fish or wildlife, or make improvements related to recreation. Nadeau et al. (2012) stated: “Past and future activities correspond quite closely, suggesting that for forest landowners past behavior is a good indication of future behavior, or at least intentions” (p. 27).

Many studies outside the Maritimes also have found that timber harvesting is less likely on smaller ownerships (Butler, 2008; Butler & Leatherberry, 2004; Conway, Amacher, Sullivan, & Wear, 2003; Gobster & Rickenbach, 2004; Joshi & Arano, 2009; Lidestav & Lejon, 2013; Ma & Kittredge, 2011; Rickenbach & Kittredge, 2009). “In terms of area [of forestland that is owned], the financial values increase in relative importance, but these objectives and timber production in particular are still rated lower than most of the amenity values” (Butler et al., 2016, p. 4).

Given that active forest management is less likely on smaller properties, the impact of subdivision and sale of woodland has important implications for future timber supplies. In the United States, at least three studies have found that the number of forest landowners is increasing and parcel size is shrinking (Birch, 1996; Butler, 2008; Butler & Ma, 2011). Compared to those

who had not sold forestland, owners who had parcelized their land were older, less wealthy, and had fewer years of education (Stone & Tyrell, 2012). Former owners who had subdivided and sold parts of their woodlands assigned significantly less importance to environmental/conservation, privacy, legacy and timber sales as reasons for owning forests than current owners who had not (Stone & Tyrell, 2012). Property taxes, age/health, the need for income, an exceptional offer from a buyer, and giving lots to family members were most often cited as reasons for parcelization by all owners (Stone & Tyrell, 2012).

A final note on parcel size: while these studies typically divided private owners into categories based on the size of their landholdings – small, medium and large – there was no consistency in how those size classes were defined. Furthermore, none of the researchers offered theoretical justification for the area limits they chose. Even so, it is clear that parcel size matters when it comes to understanding woodland owners. Owners have different attitudes, engage in different behaviours and need different services based partly on the amount of land that they own.

**2.3.4 Length of Ownership Tenure.** Owners who have held forestland for longer periods are more likely to harvest wood in West Virginia and Quebec (Côté et al., 2016; Joshi & Arano, 2009). Furthermore, timber sales, non-timber forest products and legacy issues are significantly more important to owners who inherited their land than to other owners (Majumdar et al., 2009).

Landowners with shorter ownership tenure identify personal satisfaction (recreation, aesthetics, privacy) as a significantly stronger motivation than other factors for continued forest ownership (Rickenbach & Kittredge, 2009). Regardless of other attributes or attitudes, recent purchasers of woodland expressed little interest in growing specialty forest crops for profit;

obtaining management plans; planting trees for an eventual timber sale; and pruning or cutting trees to improve timber quality (Kendra & Hull, 2005).

Lonnstedt (1997) interviewed small-forest landowners in Sweden to learn more about their decision-making processes. He identified formal and informal economic goals, objectives related to the future condition of the forest, environmental goals, and intangible objectives (e.g. lifestyle or recreation). Lonnstedt noted that the priorities of landowners change depending on their tenure and life stage. Owners who are just beginning to set up their forest enterprises may have greater needs for income and therefore production, while those in the stewardship phase may be more focused on long-term management decisions. Owners in the final stage often have less need for income, so their harvest levels fall and their focus shifts to planning for the land to pass to a new generation (Lonnstedt, 1997).

**2.3.5 Location of Woodland in Relation to Primary Residence.** Many studies have observed that landowners whose primary residence is far from their forestland are likely to have different forest ownership goals than those who live nearby.

In Nova Scotia, MacQuarrie (1981) noted that 81% of owners who lived more than 320 km from their woodland had no forestry activity in the past five years, and 52% of them expected to do nothing in the near future. Of the owners who lived closer, 33% had done nothing in the past five years, and 22% expected to do nothing in the near future.

Elsewhere, studies have found that absentee owners are less likely to engage in timber harvesting (Côté et al., 2016; Joshi & Arano, 2009), and less likely to engage in habitat management (Joshi & Arano, 2009) or other non-timber uses of the land (Conway et al., 2003; Rickenbach & Kittredge, 2009). Moreover, owners who live farther from their woodland are less

likely to be motivated to continue owning their properties for any reason, whether production, environmental protection or personal satisfaction (Rickenbach & Kittredge, 2009).

Forest landowners who dwell in rural areas are significantly more likely than those who live in urban settings to have actively managed their land in the past, and more likely to anticipate future management activity (Connelly et al., 2007). Utilitarian reasons for forest ownership, such as production of firewood or timber, were more important to owners who lived in rural areas than to city dwellers (Connelly et al., 2007). Swedish landowners who live in the municipality where their woodlands are located place greater value on “the direct and tangible aspects of owning their forest; it is a place to live, it provides them with bio fuel in the form of burning wood, and they value the opportunities of outdoor life” (Nordlund & Westin, 2011, p. 39).

**2.3.6 Lack of Time or Knowledge.** Regardless of other owner attributes and ownership goals, small landowners frequently identify lack of time and lack of knowledge as reasons for not working on their land (Connelly et al., 2007; Kendra & Hull, 2005). Time spent in the forest competes with other non-work activities that enhance well-being (e.g. family and social events, leisure time) (Ziegenspeck et al., 2004).

Sanderson et al. (2000) found that 21% of Nova Scotia forest landowners who had not harvested in the past three years said they might do so in the future if they had more time. Nadeau (2011) reported that lack of time was an important limitation for 45% of the Prince Edward Island owners who did not harvest in the preceding 10 years, but might in the future. In Nadeau et al. (2012), New Brunswick landowners identified lack of time (53%) as their most important constraint on forest management activities, followed by lack of equipment (38%) and lack of money (34%).



Forest management is a complex undertaking. MacQuarrie (1981) found that a lack of knowledge about what trees to cut or how to sell them would affect the future sale of forest products by 10 percent of landowners in Nova Scotia. Sanderson et al. (2013) reported that 19% of the landowners surveyed reported they had little or no knowledge about forest management, and 21% had little or no experience working in the woods. Only 21% said they had a lot of knowledge about forest management, while 25% said they had a lot of experience with woods work.

Nadeau (2011) reported that lack of knowledge about what or how to sell was cited as an important limitation for 38% of the Prince Edward Island owners who did not harvest in the preceding 10 years, but might in the future. In New Brunswick, Nadeau et al. (2012) found that 17 percent of New Brunswick landowners said they did not harvest in the preceding 10 years because they didn't know what or how to harvest. The researchers also found that almost 40% of New Brunswick landowners did not feel informed about forest management, and 39% said they were only somewhat informed. Owners of smaller parcels were more likely to feel uninformed. Even so, 59% of respondents did not have a written management plan and were not interested in getting one (Nadeau et al., 2012).

**2.3.7 Lack of Trust.** Lack of time and knowledge exacerbates another problem for woodland owners: the inability to find trustworthy service providers. Rickenbach, Zeuli, and Sturgess-Cleek (2005) used semi-structured interviews to look at active new forest landowners in a newly formed woodland owner cooperative in Wisconsin. The researchers sought to learn more about why the owners chose to join the cooperative. Landowners said traditional timber harvests were too risky due to untrustworthy loggers and foresters, inadequate financial returns, and post-

harvest forest conditions that were not consistent with the owners' goals. Rickenbach et al. (2005) found that owners saw the cooperative as offering a safer and more lucrative alternative to the status quo.

**2.3.8 Personal and Familial Identity.** For many for landowners, forestland is an integral part of their personal identity or their family history. Bliss and Martin (1989) identified two groups of variables that affect the management activities of forest landowners: external incentives such as the chance to generate income, the availability of technical assistance, or forest taxation and management incentive programs; and internal motivations, including self-perceived identity and personal beliefs about forest utilization. The researchers concluded that ethnic, family and personal identity is a primary determinant of forest management behaviour by woodland owners.

According to Bliss and Martin (1989), such identity could relate to an appreciation for the ways that forestland contributes to the individual's needs, personal experiences related to the land (e.g. remembrances of a rural childhood, the undertaking of forest work as a form of recreation, an enjoyment of the challenges of forest management) or ethnicity and family history (e.g. the widespread involvement of Wisconsin landowners of Finnish extraction in both agriculture and forestry). External incentives affected the timing or extent of management activities, but did not change decisions about what activities were desirable or should be undertaken (Bliss & Martin, 1989).

**2.3.9 Ownership of Other Natural-Resource Businesses.** In Nova Scotia (as in many other jurisdictions), most farms include substantial areas of woodland (Greenland-Smith & Sherren, 2016). Farmers and others who operate natural-resource businesses (e.g. producers of agricultural products, maple syrup or Christmas trees) usually rank economic motivations

relatively higher than other owners do, and they are more likely to actively manage their forest (Erickson et al., 2002; MacQuarrie, 1981; Wellstead & Brown, 1995). Non-farmers and part-time farmers are significantly more likely to let fields naturally revert to forest or favour other hands-off approaches (Erickson et al., 2002).

Two studies conducted in Nova Scotia suggest that farmers, like other provincial woodland owners, want to be good stewards of the land and pass it along to their heirs. Goodale (2013) interviewed 12 Nova Scotia farmers to learn more about their perceptions of biodiversity. All of the interviews were conducted at the farm, and nine of the participants were “walkabouts” (p. ?) outdoors. Most of the farmers were hopeful that their heirs would continue to operate the farms, but they were also concerned about shackling their offspring to a hard and uncertain life (Goodale, 2013). The disposition of farm woodlots was another worry.

Working at a woodlot is a lifetime, and it's not just when I'm done, but to keep it in good shape; you know, somebody else has got to take it on and continue to maintain it, and keep it in good health. (Goodale, 2013, p. 118)

Clear cuts were a significant concern for many of the farmers interviewed by Goodale (2013). They were worried that habitat loss from heavy harvesting on adjoining lands would force wildlife onto their properties, with negative impacts to the natural balance on farm (Goodale, 2013). They also said that clear cutting often was done without consideration of the long-term consequences to the local community and the forest itself. On the other hand, Goodale (2013) also reported that some farmers said clear cutting was the only way to make much money from harvesting wood.

The concept of balance – on the farm and across the landscape – ran through most of the themes that emerged from Goodale’s (2013) interviews. Planning for the future was an essential

part of farm management, and this emphasis on long-term thinking extended to the farmers' woodlots (Goodale, 2013): "I like the woods; we want it to be healthier and to be in better shape than what it was when we started our first management plan in the '70s" (p. 124).

Greenland-Smith and Sherren (2016) mailed a survey to 1,005 Nova Scotia farmers to learn more about attitudes and values that might influence their management practices. Woodlots were one of three focus areas in the survey. Among other things, farmers were asked to provide information about the extent of their woodlands, the management practices they used and the perceived values that their woodlands contributed, both to the farmer and to other beneficiaries.

As with Goodale (2013), responses suggested that farmers are concerned about achieving and maintaining a balance in the woodlands. Some 59% of respondents said they managed their woodlands for a combination of income and other values (Greenland-Smith & Sherren, 2016), while only 11 percent focused on production and 7.3% for preservation. Some 22.3% of farmers said their forested lands were left unmanaged.

Four out of five farmers said they had harvested forest products from their lands (Greenland-Smith & Sherren, 2016). The most common product was firewood for personal use (45.6% of respondents), followed by sawlogs (29%). Despite the substantial personal experience that this level of harvesting suggests, slightly more than half of the farmers wanted more information on topics such as boundary marking, managing forest diseases and insects, and providing wildlife habitat. Farmers agreed that woodlands were important for the rural economy, but they were about evenly divided on whether it was important for their personal income or essential for the profitability of their farms (Greenland-Smith & Sherren, 2016).

Among a list of nine possible benefits associated with forests, farmers expressed strongest agreement with the statement, *Woodlands provide products like lumber, pulp and firewood.*

Strong support was also offered for the value of woodlands in providing wildlife habitat, storing carbon and helping to address climate change, and providing a place for outdoor recreation or simply to enjoy beauty and tranquility.

While the owners of natural resource businesses are more likely to actively manage their woodlands, they share concerns about finding and maintaining a balance between financial returns and the needs of the forest ecosystem. They are keenly aware of the benefits and challenges that timber harvesting provides to rural communities.

**2.3.10 Private Property and Moral Imperatives.** Some authors believe that the Western system of private property rights contributes to behaviours that seek current income at the expense of long-term increases in economic, environmental and social values in the management of land. Shortly before his death in 1948, noted American conservationist Aldo Leopold wrote in the foreword to *A Sand County Almanac*, his best-known work:

We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect... That land is a community is the basic concept of ecology, but that land is to be loved and respected is an extension of ethics. That land yields a cultural harvest is a fact long known, but latterly often forgotten (Leopold, 1948, p. viii-ix).

Freyfogle (1993) wrote that the law makes landowners pre-eminent and the land itself subject to their desires. Furthermore, the division of land into precisely surveyed and separately held parcels suggests that nature is simply a collection of individual owners' rights:

The point here is that limits on how property can be used are designed principally to divide entitlements among humans. Animals, plants, and other parts of nature all count for nothing. Ecosystems and natural communities, which are the settings for all life, have no independent value or existence. (Freyfogle, 1993, p. 1276)

Such a perspective legitimizes the pursuit of short-term gains without consideration of long-term costs to the land (Freyfogle, 1993). The future consequences of management decisions are irrelevant.

When a parcel of land suffers an injury – when the soil is eroded, the trees burn, or the birds are poisoned – our legal culture tells us that the injury is really suffered by the land's current owner, not by the land itself. (Freyfogle, 1993, p. 1276)

Freyfogle argues that we must abandon the traditional concept of property rights and its inevitable enslavement of nature to human desires. Only then, he writes, can we adequately protect land health and, in the process, the health of our species and our planet.

Once we see worth in non-human life, and sense the innumerable interconnections, it is easy to see the error in assuming that only humans should count. It is an error to suggest, as the law largely does, that how an owner treats a part of nature is his business alone. How a person deals with the land, given the linkages of nature, is public business, the concern of all Creation. (Freyfogle, 1993, p. 1281)

Worrell and Appleby (2000) argue that a new definition of stewardship also is needed.

They propose the following:

Stewardship is the responsible use (including conservation) of natural resources in a way that takes full and balanced account of the interests of society, future

generations, and other species, as well as of private needs, and accepts significant answerability to society. (Worrell & Appleby, 2000, p. 269)

Even this wide-ranging expression of responsibility and accountability, however, can lead to problems because it reinforces the belief that humans have a right to determine what is best for the land (Worrell & Appleby, 2000). Instead of endorsing anthropocentrism, stewards should acknowledge the inherent worth of other species and ensure that management activities serve more than human needs, they wrote.

To what degree do non-industrial private woodland owners hold this broad view of stewardship? The question is both complex and deeply personal, which makes it particularly suitable for qualitative approaches to data gathering and analysis. Relatively little research has addressed the issue, however.

Moral imperatives were the focus of a mixed-methods study of landowners in New Brunswick and Maine (Quartuch & Beckley, 2013). The researchers sought to uncover how a sense of responsibility to others might affect landowners' behaviour. They wrote that owners in both jurisdictions felt obligations to a variety of entities including future generations; the land itself; the planet or environment; and family, neighbours or community (Quartuch & Beckley, 2013). The researchers found that, in both jurisdictions, certain core concepts related to duty emerged, including:

- A responsibility to actively care for the land itself for the benefit of non-human communities that rely on it.
- A duty to avoid taking actions that could diminish the health, productivity or resilience of the forest. In New Brunswick, that concept was broadly defined, while in Maine it was more narrowly focused on avoiding harm to wildlife and water resources.

- A responsibility to work the land and use its resources for heat, food, shelter, enjoyment and other benefits for themselves and their families, without compromising its long-term productivity.
- A reciprocal responsibility by others not to damage their woodlands.

Quartuch and Beckley (2013) sent a 33-question interview guide to study participants before they were interviewed. The researchers also provided participants with a checklist that identified 12 possible things to which the landowners might feel responsible. A majority of owners checked all but two (in New Brunswick) or three (in Maine) of the categories on the list. It is unclear whether or how the interview guide and checklist might have influenced the landowners' responses during the interviews.

Moral imperatives were also important to woodland owners interviewed by Dominguez and Shannon (2011), who used a grounded theory approach to study landowners in Catalonia, Spain. They identified three archetypal statements by landowners:

- *I want my forest to be good*, which they characterized as both a moral imperative and a quest for achieving an archetype, a clean, well-tended, aesthetically pleasing condition.
- *Forests are not profitable (any more)*. Owners may view the forest in three basic ways: As a productive enterprise, a financial reserve or a continuing expense. In each of these conceptions, the forest was seen as not being able to provide the returns (in current income, asset growth or personal satisfaction) that landowners desired.



- *Who says it can't happen to you?* This statement was related to the incidence and unpredictability of forest fires in the region. (Dominguez and Shannon, 2011, p. 437)

Qualitative research methods provide a powerful tool for studying the complex array of attitudes and motivations of family forest owners. The strengths and weaknesses of qualitative research, and the specific techniques for analyzing data in ways that provide verifiable, and reproducible results are discussed in greater detail in Chapter 3.

## **2.4 INDUSTRY AND POLICY CONTEXT**

As Nova Scotia entered the 21<sup>st</sup> century, its private forestlands supported a large and diversified forest-products industry. In June 2004, there were 1,415 firms operating in the forest industry (Atlantic Provinces Economic Council, 2005). These included logging firms, sawmills and other wood products manufacturers, pulp and paper mills, and converter paper products manufacturers. International exports of forest products from Nova Scotia totalled more than \$1 billion in 2004, which was 17.6% of provincial exports (Atlantic Provinces Economic Council, 2005).

During the last 10 years, however, provincial timber harvests and lumber production have fallen rapidly from the peak period of 1997-2005 (Woodbridge Associates, 2011). Woodbridge Associates (2011) laid the blame not on the U.S. housing crisis of the late 2000s, but instead on excessive costs for manufacturing and/or a limited supply of timber (Woodbridge Associates, 2011). The consulting firm noted that many sawmills had closed or cut back on production. Citing Statistics Canada data, it estimated that sawmill production in 2009 was just 31% of the peak in 2000 (Woodbridge Associates, 2011).

The province's pulp and paper sector was rapidly changing, too. On March 30, 2011, Northern Pulp Nova Scotia Corporation was sold to Paper Excellence Canada Holdings Corp., a subsidiary of Indonesian-owned PT Sinar Mas Group (Northern Pulp, 2012). In June 2012, workers at the pulp mill voted to accept reductions in pay and benefits because of the difficult financial climate for the paper industry (Beswick, 2012).

In August 2011, officials at the NewPage Port Hawkesbury pulp and paper mill announced that it would close indefinitely (CBC News, 2011, August 22). One year later, a buyer had emerged for the mill, but the long-term prospects for the mill remained unclear (Bundale, 2012). In November 2011, the owner of Bowater Mersey Paper Co. said it would close the mill if employees and the province refused to help reduce its costs for wood fibre, wages and electricity (CBC News, 2011, November 11). Despite union approval of pay cuts and a \$50 million rescue package from the province, the mill was permanently idled in June 2012 (CBC News, 2012).

Because the preponderance of forest is held by non-industrial, private owners, their attitudes, and motivations have a substantial impact on the supply of timber to forest-products companies in Nova Scotia. Woodbridge Associates (2011) noted that Nova Scotia landowners have been showing a growing reluctance to sell wood. Woodbridge wrote that increasing the number of small-woodland owners who were willing to conduct commercial timber harvests would be one of the key factors in determining the future success of the provincial forest-products industry:

With higher participation rates among woodlot owners, and among industrial owners, enabling the provincial softwood harvest to approach its theoretical potential, the improved level of fibre flows ... could help position Nova Scotia

favourably within, we believe, the 2nd quartile of global regions with regard to softwood sawlog and pulpwood costs. (Woodbridge Associates, 2011, p. 44)

Although the decline in participation rates poses serious challenges to Nova Scotia's forest-products industry (Woodbridge Associates, 2011), provincial forest policy during the past three decades has largely ignored the attitudes and motivations of small-woodland owners. The evidence that landowners have complex – and largely non-economic – goals for forest ownership was considerably strengthened by Sanderson et al. (2000), which was commissioned by Nova Forest Alliance with funding from Canada's Model Forest Program. Even so, government has continued to treat small landholders as passive providers of timber to industry, rather than as independent owners of valuable financial assets whose decisions are shaped by deeply held, personal beliefs. Recent iterations of forest policy in Nova Scotia have made no reference the growing body of research suggesting that environmental, social and legacy goals are increasingly important to woodland owners (examples include Nova Scotia Department of Natural Resources, 1997; Nova Scotia Department of Natural Resources, 2008; Natural Resources Citizen Engagement Committee, 2009; and Nova Scotia Department of Natural Resources, 2011b).

While landowner goals are rarely mentioned in policy documents, the substantial contribution of family forests to the provincial timber supply is invariably highlighted, and often with significant concern about the sustainability of timber harvests on private lands. More than 30 years ago, for example, the Royal Commission on Forestry said conditions in Nova Scotia's forests had reached a crisis point. By approximately 2005, the commission said, there would not be enough inventory in the seven easternmost Nova Scotia counties to sustainably meet industry needs (Royal Commission on Forestry, 1984). The commission said forest policies that encourage long-term management were needed to address the situation. The Royal Commission

on Forestry (1984) recommended that government invest at least \$20 million annually in the development of a program to:

- Increase timber yields through planting, thinning and other silvicultural activities;
- Protect forests from insects, diseases, and other threats;
- Ensure that the right trees were cut at the proper time and directed to the best use; and
- Make certain that all participants have access to good information and an adequate return.

Such a program would increase the allowable annual cut from Nova Scotia's forests from 4.54 million cubic metres in the early 1980s to 7.77 million cubic metres by 2030-2040, according to the Royal Commission on Forestry (1984). The commission wrote that such an increase would "greatly increase employment and income opportunities, strengthen industrial development, enhance recreational facilities and provide the basis for healthier forests for centuries to come" (Royal Commission on Forestry, 1984, p. 19).

The Royal Commission on Forestry (1984) report was among the earliest Nova Scotia forest policy documents to recommend that non-timber forest values (e.g. wildlife, aesthetics, recreation) be included as part of the planning process. The commission devoted an entire chapter to such values, although the actual recommendations were modest. For example: "Rather than establish firm regulations, the Commission recommends that the preservation of wildlife and the improvement of wildlife habitat be taken into consideration in the preparation of all forest management plans" (Royal Commission of Forestry, 1984, p. 55).

In addition, the report called for an increase in stumpage prices for private landowners and the Crown, and the development of a forest extension service to provide woodland owners with technical information and management plans. The commission recommended that such

plans “include a commitment from the landowner, his [sic] heirs and assigns, to follow the plan to its completion” (Royal Commission on Forestry, 1984, p. 80).

Property taxes would be abated for landowners who made such a commitment. In return, the province would promise to provide: long-term technical help; financial assistance for silvicultural treatments; protection against insects, diseases and other threats; and a guaranteed market at harvest (Royal Commission, 1984). Landowner goals were not considered in the report. Instead, woodland owners who chose not to participate in the program would be taxed as land speculators (Royal Commission on Forestry, 1984).

The Royal Commission report became the basis for a new provincial forest policy in 1986. The policy called for a doubling of timber production by 2025, with private woodlands as the primary source of raw material (Province of Nova Scotia, 1986). The Royal Commission on Forestry (1984) call for higher stumpage prices was not included, but the policy suggested that landowners receive “a fair and reasonable return ... [while receiving] assistance in managing their lands for forestry purposes” (Province of Nova Scotia, 1986, p. 5). This was the last time that forest policy documents had anything to say about market prices in Nova Scotia.

The 1986 strategy was built around high levels of federal financial support for silvicultural treatments and other forest management activities that benefited small landowners. The federal/provincial funding agreements expired in 1996-97, however (Standing Senate Committee on Agriculture and Forestry, 2009).

In 1997, the Nova Scotia Department of Natural Resources produced a position paper titled “Toward Sustainable Forestry.” The report noted that the end of most federal financial support for forest management activities by private landowners meant that the 1986 policy was no longer workable (Nova Scotia Department of Natural Resources, 1997). It also cited a

continuing increase in timber harvesting on private lands, and growing concern about the impact of logging on the long-term health and future productivity of the forest. “It seems reasonable to conclude that overharvesting is a potentially serious problem demanding immediate action” (Nova Scotia Department of Natural Resources, 1997, p. 6).

The department recommended that the province create a registry for all buyers of forest products. Each buyer would be required to submit an annual wood acquisition plan that demonstrated how the buyer was meeting its obligation toward ensuring that harvests were sustainable over the long term, either by directly performing silvicultural treatments on private lands, providing financial assistance to landowners for such treatments, or paying into a pool that would administer funding to owners (Nova Scotia Department of Natural Resources, 1997).

The new system was funded by a levy of \$3 for every cubic metre of softwood acquired by all registered buyers, and 60 cents per cubic metre of hardwood (Nova Scotia Department of Natural Resources, 2016). The program effectively shifted much of the cost of the silviculture program in Nova Scotia from the federal government to the registered buyers. It has not been established whether the buyers were able to pass the cost of the levy along to landowners, contractors and others who sold wood.

In 2007, the provincial legislature approved the Environmental Goals and Sustainable Prosperity Act (Nova Scotia Department of the Environment, 2015). Among other things, the act required the Department of Natural Resources to draft a new natural resources strategy by 2010 (Natural Resources Citizen Engagement Committee, 2009). The strategy encompassed not only forestry, but also minerals, parklands, and biodiversity (Natural Resources Citizen Engagement Committee, 2009).

A public engagement process conducted during 2008 identified a number of areas of concern for Nova Scotia residents, including:

- The widespread use of clear cutting and herbicides in the province, and their perceived impact on the health and resilience of the forest ecosystem;
- Insufficient and overly restrictive funding for silviculture treatments on private land;
- A decline in interest among woodland owners to actively manage their lands; and
- Failure to adequately involve stakeholders in the decision-making process at the Department of Natural Resources, and a lack of transparency in how and why decisions are made (Natural Resources Citizen Engagement Committee, 2009).

The public engagement phase was followed by the creation of a three-member steering panel that supervised the work of four independent panels of experts in the areas of biodiversity, forests, minerals, and provincial parks (Nova Scotia Department of Natural Resources, 2011b). The forestry panel could not reach agreement on a direction for provincial forest policy (Nova Scotia Department of Natural Resources, 2010). Two reports on forestry were sent to the steering panel. When the final natural resources strategy was made public in August 2011, the Department of Natural Resources committed to:

- Adopt an ecosystem approach to forest management;
- Provide more support to small forest landowners – including education and outreach services – especially through woodland owner organizations;
- Reduce clear cutting to no more than half of all harvests over five years;
- End public funding of herbicide use; and
- Create rules for whole-tree harvesting (Nova Scotia Department of Natural Resources, 2011b).

The document was meant to set natural resources strategy in Nova Scotia through 2020. It called for the public to have a greater role in developing policy, and recommended that the province investigate the establishment of and pilot some community forests on Crown land (Nova Scotia Department of Natural Resources, 2011b).

At the same time as the natural resources strategy was being developed, Nova Scotia was considering the role that wood should play in the provincial energy mix. In 2009, the province developed an energy strategy that called for at least 25% of its electricity to be generated by renewable energy sources – including forest biomass – by 2020 (Nova Scotia Department of Energy, 2009). The report noted, however, that “biomass resources need evaluation for sustainability and cost” (p. 13).

In 2010, the province released a renewable electricity plan that included a legally binding commitment to achieve 25% of electricity from renewable sources by 2015, and set a goal of 40% by 2020 (Nova Scotia Department of Energy, 2010). The plan, however, urged caution in the use of forest biomass. Until the new provincial natural resources strategy was finalized, new electrical generation from forest biomass was capped at 500,000 dry tonnes per year, while co-firing in existing plants was limited to 150,000 dry tonnes per year (Nova Scotia Department of Energy, 2010).

In August 2016, the Department of Natural Resources released a five-year progress report on the implementation of the 2011 Natural Resources Strategy (Nova Scotia Department of Natural Resources, 2016c). It noted that the Nova Scotia Auditor General had said the department needed to do a better job of monitoring and reporting on its achievement of forestry commitments in the strategy, as well as ensuring that silviculture treatments on Crown land were properly completed and meeting its legal obligations related to endangered species. The self-assessment



gave the department high marks for moving toward ecosystem-based management, experimenting with new ways to provide services to forest landowners, and developing new approaches to keep the public informed about important issues in the forest (Nova Scotia Department of Natural Resources, 2016c). It also signalled that the department would seek to revisit some elements of the policy document:

In the strategy, for example, we committed to reducing clearcutting to no more than 50 per cent and to revisit the annual allowable cut (AAC). We understand now that the decision to clearcut (or not) has to be made in a larger context. In some areas, clearcutting will not have an impact on the total health of the forest – it may even improve it. In others, clearcutting could have a negative impact.

(Nova Scotia Department of Natural Resources, 2016c, p. 20)

During the past 30 years, Nova Scotia's policies related to forest management have increasingly considered such issues as the sustainability of timber harvest levels, the impact of clear cutting, and the maintenance of diversity in forested ecosystems. The importance of small woodlands to the overall provincial timber supply has often been stressed, and significant financial resources have been directed toward programs meant to ensure the sustainability of harvesting on private lands. Even so, there has been no consideration of how to integrate the changing personal goals of family forest owners with the wood procurement system in Nova Scotia.

## CHAPTER 3 METHODS

Most previous studies of forest landowner attitudes and motivations in the Maritime Provinces – and throughout the industrialized world – have been based on questionnaires that were mailed to woodland owners. A significant limitation of this approach was noted in Nadeau et al. (2012):

One disadvantage of surveys of this nature is that it is difficult to gain a nuanced picture of what drives woodlot owner behavior and what ‘makes them tick.’ This is due to the fact that we are limited to ‘check the box’ sorts of answers, rather than having a conversation with them. (p. 28)

To explore whether previous studies had fully captured landowners’ beliefs and goals, this research eschewed quantitative methods, instead taking a qualitative approach that used walking interviews and the techniques of grounded theory to elicit, analyze and construct an explanation of the data.

### 3.1 ADVANTAGES AND LIMITATIONS OF QUALITATIVE ANALYSIS

All research methods have both strengths and weaknesses. The survey-based approach used in most studies of landowner attitudes and motivations is well suited to estimating the characteristics of a population from a small sample (Creswell, 2003). Typically, quantitative researchers have little or no direct contact with study participants, which minimize bias and may help to ensure objectivity (Carr, 1994). Researchers can draw reliable and replicable conclusions about the population being studied using well-accepted analytical tools and methods (Bliss & Martin, 1989). “If the problem is identifying factors that influence an outcome, the utility of an

intervention, or understanding the best predictors of outcomes, then a quantitative approach is best” (Creswell, 2003, pp. 21-22).

Survey-based approaches, however, also have limitations. Quantitative researchers must use the findings of earlier research and their own guesses to decide how to frame the questions they ask (Bliss & Martin, 1989). Researchers cannot be certain their chosen questions have fully captured the real-life issues, experiences and concerns that are important to individual respondents (Carr, 1994). Limited contact with participants means that investigators also have less opportunity to evaluate the quality of the data they are collecting (Bliss & Martin, 1989).

Bengston et al. (2011) compared landowner’s responses to a single open-ended question in the National Woodland Owner Survey in the United States – *What is the main reason that you own woodland?* – with responses given to a similar, closed question in the same survey. The closed question asked owners to consider 12 alternative reasons for woodland ownership, each rated on a 7-point scale. The researchers concluded that the open-ended question added an important dimension to the understanding of landowner motivations and values:

The fixed categories of the closed-ended question failed to capture many dimensions of forest owner motivations. A more detailed, qualitative understanding of forest owner motivations and values is needed to provide extension foresters and others who work with family forest owners important insights and help guide public policy related to private forestland. Open-ended survey questions can help provide such understanding. (Bengston et al., 2011, pp. 339-340)

In the context of identifying woodland owner values and motivations, the most significant limitation is that surveys are focused on identifying tightly defined and relevant traits, rather than

producing a “comprehensive understanding of individual behavior and motivation” (Bliss & Martin, 1989, p. 603).

To address these perceived limitations with quantitative methods, this research took an interview-based approach rooted in grounded theory, in which explanations of the phenomena being studied are induced from the data (Denzin & Lincoln, 1994; Strauss & Corbin, 1998), rather than being based on responses to pre-determined questions or derived from hypotheses created *a priori* by the researcher. Consistent with Kvale and Brinkmann (2009), this research had “an interest in understanding social phenomenon [sic] from the actors’ own perspectives and describing the world as experienced by the subjects, with the assumption that the important reality is what people perceive it to be” (p. 26).

Strauss and Corbin (1998) defined qualitative research as any investigation that results in conclusions that are not based on statistics or other methods of quantification, but rather on non-mathematical processes intended to reveal and offer explanations for meaning discovered in data. Denzin and Lincoln (1994) noted that qualitative researchers study problems *in situ*, attempting to explain phenomena as people perceive them: “Qualitative researchers stress the socially constructed nature of reality, the intimate relationship between the researcher and what is studied, and the situational constraints that shape inquiry” (p. 4).

*In situ* methods of data collection have a long history in research, particularly in the fields of anthropology and sociology (Snape & Spencer, 2003). Perhaps the oldest and best known of these techniques, ethnography, is “the art of describing ‘other’ cultures and societies on the basis of some kind of eye-witness observation” (Harbsmeier, 2003, p. 20). The systematizing of ethnographic research methods began in the late 1700s and early 1800s in Europe and the United States (Vermeulen, 2003). Since then, many other methods and traditions have been developed

that rely completely or in large measure on observations, interactions, artifacts, texts, photographs, audio/visual recordings, and other data gathered *in situ* (Snape & Spencer, 2003). This emphasis on field work reflects a belief that reality is woven from the warp and woof of human experience, rather than existing as a collection of quantifiable facts that are waiting to be discovered by researchers (Berg, 2004; Charmaz, 2006; Creswell, 2003).

Rather than attempting to define the parameters of the inquiry before research begins, qualitative researchers “approach [their topic] with as few preconceived notions about what will be found as possible” (Bliss & Martin, 1989, p. 604). Longer and more personal contact with informants allows the qualitative researcher to better assess the quality of data collected, but also creates a risk of losing objectivity or drowning in too much data (Bliss & Martin, 1989).

The rich relationships between investigators and participants, coupled with the inductive nature of theory development, are simultaneously the main strengths and the most serious challenges in non-quantitative research. As Denzin and Lincoln (1994) wrote:

Qualitative researchers are called journalists, or soft scientists. Their work is termed unscientific, or only exploratory, or entirely personal and full of bias. It is called criticism and not theory, or it is interpreted politically, as a disguised version of Marxism or humanism. (p. 4)

Participants may be swayed by the give-and-take with the researcher, while investigators must take steps to limit the influence that such personal relationships could have on analysis of the data (Carr, 1994). In the absence of well-defined, statistical tests of the validity of hypotheses, qualitative researchers must employ other means to ensure that their conclusions are based on objective and reproducible investigation, rather than personal bias or whimsy (Baxter & Eyles,

1997; Whitemore, Chase, & Mandle, 2001). Specific approaches to ensure validity are discussed in the sections below.

### **3.2 RESEARCH DESIGN, DATA COLLECTION AND ANALYSIS**

**3.2.1 Rationale for Walkabout Interviews and a Grounded Theory Approach.** My approach to this research was rooted in the phenomenological tradition, which focuses on revealing the essence of the topic at hand by exploring the experiences and understanding of those who are intimately involved (Kvale & Brinkmann, 2009). I hypothesized that the process of revealing these perceptions would be made easier while walking with participants in their own woodlands. As Hall, Lashua, and Coffey (2006) noted in their study of personal, community and economic transformation as experienced by young people in Wales:

Talk comes easier when walking, and is much less troubled by pauses and the sometime awkwardness of question and answer. Crossing the road, walking uphill, turning a corner – these movements punctuate in ways which return the interview to[wards] ordinary conversation. (p. 3)

Or, as Moles (2007) put it: “Places are not only a medium but also an outcome of action, producing and being produced through human practice. Walking within a place produces meaning and constructs understanding” (4.1). The possibility of stimulating participants to reflect more deeply on their unique and intensely personal connections to the land was the primary reason for undertaking walking interviews, though (conversely) the technique could also reduce or eliminate the participation of owners who were unwilling or unable to walk (Evans & Jones, 2011).

This study combines walkabout interviews with a grounded theory approach to data collection and analysis. Like all research, a grounded theory study is a process for creating order out of chaos. The researcher amasses large quantities of raw data, which then must be sifted for meaning. Pidgeon (1996) asserted that grounded theory is especially appropriate for the study of “local interactions and meanings as related to the social context in which they actually occur” (p. 75).

In a grounded theory study, the analytical process begins with coding – a methodical approach to identifying significant bits of data, grouping similar data into categories, and exploring the meaning of those categories and their relationships to one another to develop broader theories about the topic at hand (Charmaz, 2006). This process of categorizing data and exploring relationships among the categories is meant to uncover previously hidden connections that link the perspectives of many participants (Glaser, 2002). When coding, Charmaz (2006) recommended that researchers:

- “Remain open
- Stay close to the data
- Keep codes simple and precise
- Construct short codes
- Preserve actions
- Compare data with data
- Move quickly through the data” (p. 49).

Even while dissecting the data into many small, tightly defined bits, qualitative researchers begin the process of comparing, grouping and reassembling them into larger and more universal concepts. This phase, sometimes called focused coding, identifies the most

repetitive, explanatory or powerful categories that arise from the data (Charmaz, 2006; Glaser & Strauss 1967; Strauss & Corbin, 1998). The researcher also seeks to understand how the codes (and therefore the data) relate to each other within the categories that are emerging, a process often called axial coding (Charmaz, 2006; Glaser & Strauss, 1967; Strauss & Corbin, 1998). In the final phase, the analyst identifies relationships among categories, with the ultimate goal of inducing a theory from the data that explains participants' beliefs and (re-)actions to the phenomena being studied (Charmaz, 2006). Throughout, the researcher is encouraged to write memos that highlight the reasoning behind the decisions being made about the data, help to explain the larger conclusions being drawn from them and begin the process of writing the research paper (Charmaz, 2006; Glaser & Strauss, 1967; Strauss & Corbin, 1998).

Grounded theory requires investigators to start work without theories developed from the outset – in fact, with few or no preconceptions about what the data might show or mean – and instead draw their findings solely from analysis of the data (Strauss & Corbin, 1998). In this study, faithful adherence to accepted methods for data collection and analysis (as described above) was one way to ensure objectivity. “If the researcher is carefully listening to or observing the speech and actions of respondents, then analysis should lead him or her to discover the issues that are important or problematic in the respondents' lives” (Strauss & Corbin, 1998, p. 38).

Furthermore, I engaged in frequent self-reflection about possible bias because of my personal experiences as a forest landowner and, later, as executive director of a non-profit association that serves woodland owners. Whittemore et al. (2001) state that “a self-critical attitude [is] imperative” (p. 534) in identifying and addressing potential bias and other threats to validity. While the issue of ensuring objectivity is perhaps more daunting for the qualitative researcher, it should not prevent the work from going forward. “The challenge remains to think



about the work and how we do it, but, above all, still to do the work of understanding and presenting various life worlds and their important participants” (Altheide & Johnson, 1994, p. 498).

**3.2.2 Funding, Recruitment and Consent.** Prior to commencing this study, the research design was submitted to the Dalhousie University Social Sciences and Humanities Research Ethics Board for review. The application and related documents are attached as Appendices A-F. The ethics package included the proposed news release (Appendix C) that served as the primary participant recruitment tool for the study; and a participant consent form (Appendix F) that described the study, the potential benefits and risks to participants, confidentiality issues, and contact information for the university’s ethics office in the event that participants had any problems or concerns with the study. The ethics board responded with a request for additional information in July 2011 before granting final approval for the research to proceed.

In this study, most participants were solicited through a news release about the project that was sent in late July and early August 2011 to about 20 daily and weekly newspapers in central Nova Scotia, as well as two websites and a monthly magazine that follow forest issues in the Maritime Provinces. The news release (Appendix C) gave the working title of the study, “What attitudes and motivations do small-woodland owners in Nova Scotia have regarding timber harvests?” and told potential participants how it would be conducted:

Landowners who agree to participate in the study will be invited to accompany [the researchers] on a one- to two-hour walk in their woodlands. During that time, they will be asked to discuss how and when they acquired the property, what they value about it, and what they hope will become of it. They will be encouraged to

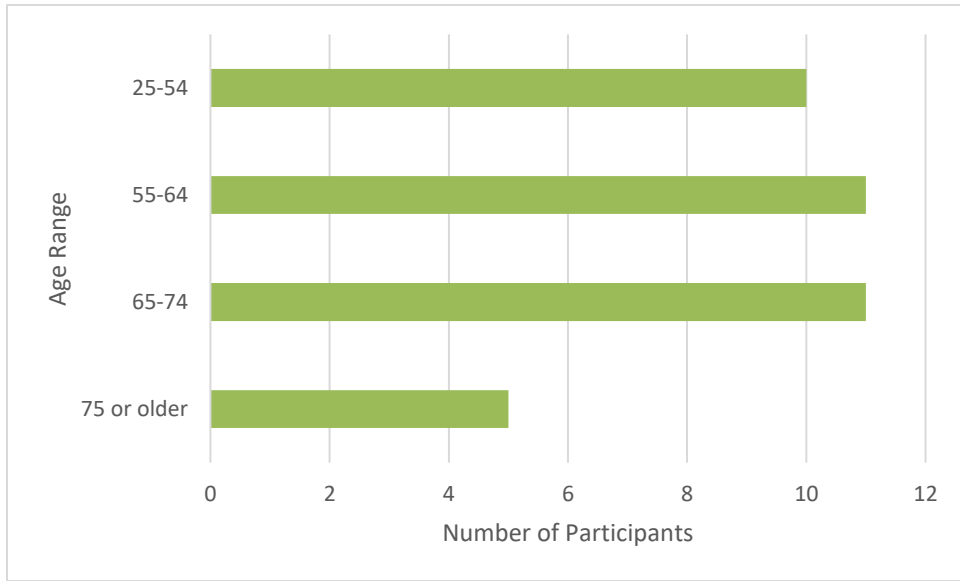
talk about whatever issues they believe are important to their forestland, in whatever detail they feel is needed. No compensation will be offered to participants. The study will help natural resource managers to better understand the thinking of people who own small forested parcels. (p. 1)

Unless they owned land outside the study area of central Nova Scotia, all landowners who enquired about the research project were interviewed. This recruitment tool was effective in generating inquiries from landowners, but it meant that forest landowners who did not read those media were not initially aware of the study, though some learned of it later through word of mouth.

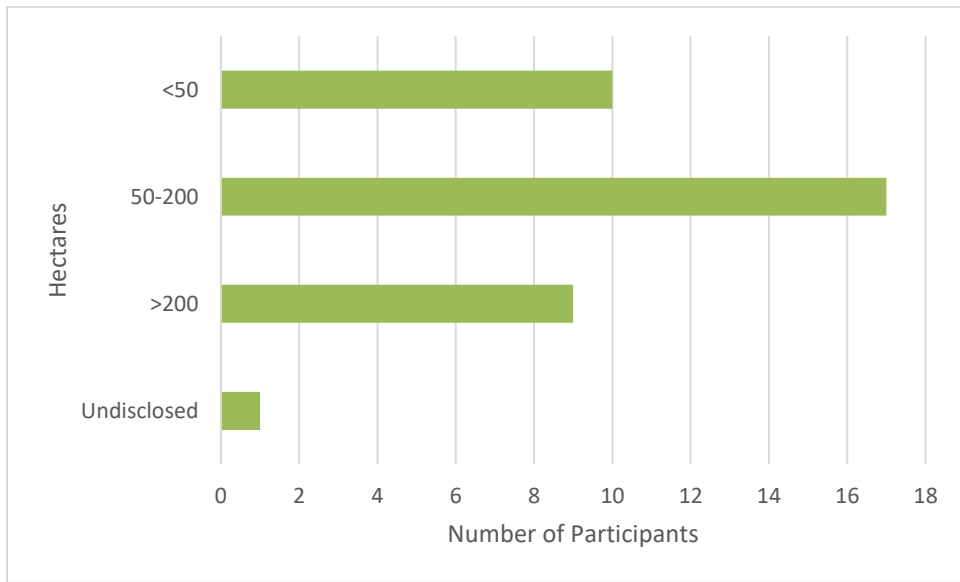
The goal of qualitative research is not to identify variables that predict the beliefs or behaviours of a larger population. Even so, it may be appropriate to provide some background about the landowners who were interviewed for this research. The participants in this study were a diverse group. Thirty-one men and six women were interviewed. There were 24 multi-generation owners and 13 first-generation owners among them.

Recent surveys of forest owners in Nova Scotia found that approximately one-thirds of them are younger than 55 (Sanderson et al., 2000; Sanderson et al., 2013). About 27 percent of the participants (n=10) in this study were 25 to 54 years old (Figure 3-1). Almost 46 percent of participants owned from 50 to 200 hectares of woodland, while the rest were equally divided between those who own more, and less, forestland (Figure 3-2). These demographic characteristics suggest that the sample was likely to include landowners with a variety of values and goals.

**Figure 3-1. Age of participants**



**Figure 3-2. Total area of forest owned by participants**



While the news release served as the primary recruitment tool, it became clear during the interviews that a few landowners had learned of the project from acquaintances who had already participated, particularly in Lunenburg County. Review of the transcripts suggested that these

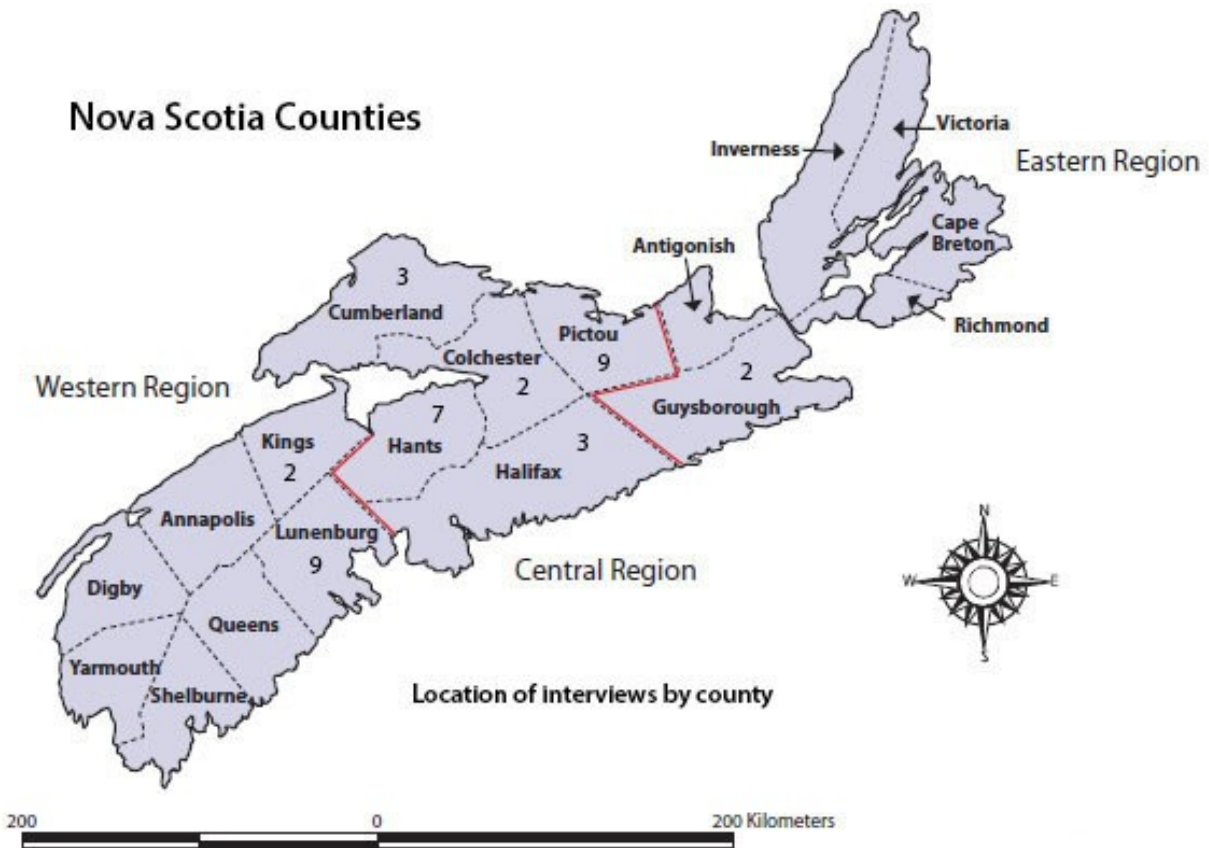
landowners had greater concerns than other participants about the impact of government regulation in the forest sector, and might have colluded in an attempt to influence the research. I decided that these attitudes were important in providing alternative viewpoints and achieving saturation.

The invitation to participate in a “one- to two-hour walk” with me was likely to have eliminated some potential participants who were unable or unwilling to venture into the woods. While the study was targeted at individuals who owned 10 to 1,000 ha of woodland, one participant owned substantially more property but did not disclose the actual acreage. The data collected during that interview are included in the results of this study.

**3.2.3 Conduct of Interviews.** To help elicit detailed, personal stories from landowners, I sought to engage them in conversation while walking in their woodlands. The length of the conversations and the routes of the walks were determined by the participants. These interviews were conducted without scripts. As much as possible, my questions were meant only to clarify points initially raised by the landowners. Conversations were captured with a small digital recorder worn by the participants.

Interviews took place between August and October 2011. New participants were interviewed until no significant new information was seen to emerge from the data being collected. Altogether, 37 interviews ranging from 45 minutes to more than 3 hours were recorded with forest landowners in central Nova Scotia. Participants were solicited in the central region of the province (Figure 3-3), partly for ease of access from Halifax and partly because the research funder expressed a preference for insight into landowner opinions and views in the centre of the province.

**Figure 3-3. The number and location of participants, by county**



I took a deliberately naïve approach in the interviews, postponing most of the literature review until after the interviews were finished, asking open-ended questions and striving for “openness to new and unexpected phenomena, rather than having readymade categories and schemes of interpretation” (Kvale & Brinkmann, 2009, p. 30). I moved beyond the traditional, semi-structured phenomenological interview they described, however, by giving wide latitude to participants to discuss whatever topics they deemed to be important, at whatever length they chose.

I hoped that this approach would encourage a robust conversation with landowners about their attitudes and motivations. Bengtson et al. (2011) wrote:

[Open-ended questions] allow respondents to express their full range of motivations in an unconstrained manner ... An even more nuanced understanding of forest landowner motivations can be gained from interactive qualitative research methods ... [which] allow researchers to ask probing questions to examine motivations in greater depth and detail, but they are more expensive to implement than open-ended survey questions. (p. 353)

Although most of the conversations occurred while walking in the woods, three were conducted inside or standing under cover of a building because of bad weather, the participant's health limitations or child-care responsibilities. The transcripts from these interviews are not notably different from the other 34. Individual participants varied widely in the breadth of their interests and concerns, and also in their ability to communicate them. The question of whether interviews conducted while walking in the forest stimulated deeper reflections from landowners cannot be answered from this study. Any reduction in richness of the data collected during interviews "at the kitchen table" rather than in the woods may have been masked by the innate differences among participants.

Although walking with landowners on routes of their own choosing seemed to help most participants feel more in control of the conversation, there are obvious limits to the ability of any researcher to conduct interviews that are completely open and egalitarian. On one hand, the participants chose to become involved in the study, which could suggest a self-interested desire to influence or obtain knowledge from the researcher. On the other hand, they knew the general topic of the interview beforehand, which might have affected the topics they chose to address.

While I sought to encourage participants to take control of the conversation, there is an inherent inequality in power that could also have influenced the course of the interviews. Indeed,

a few participants expressed discomfort with the absence of direct questions from me. Even so, the combination of walkabout interviews and open-ended conversations was well accepted by most participants, many of whom expressed pleasure with the seemingly relaxed and unstructured time in the woods.

**3.2.4 Achieving Saturation.** How many data are enough? This is a critical question for qualitative researchers, who usually do not use statistical tools to answer that question with confidence. Seidman (2006) stated that there should be enough participants to capture the full range of experiences likely to be shared with the population being studied. Further, he suggested that data collection continue until researchers achieve saturation – the situation in which they find no fundamentally new information is arising. Strauss and Corbin (1998) offer similar advice: “Saturation is ... a matter of reaching the point in the research where collecting additional data seems counterproductive; the ‘new’ that is uncovered does not add that much more to the explanation at this time” (p. 136).

Since it is inconceivable that a researcher would learn nothing new from an interview, Strauss and Corbin (1998) offer a reasonable way to judge whether the additional data are sufficiently valuable to continue seeking new participants: does new information continue to add meaningfully to the investigator’s understanding of the problem at hand, or is the time better spent on other stages of the research process? After speaking with 25 or 30 participants, no entirely new issues or experiences were emerging from the interviews. Even so, researcher inexperience led me to continue collecting data until I had interviewed all of the landowners in the study area who had volunteered to participate. The result was a rich – but unwieldy – data set of more than 750,000 words, which complicated the task of coding and analyzing the transcripts.

**3.2.5 Data Entry and Analysis.** After each interview was completed, it was transcribed verbatim by a professional transcriptionist. I listened to the audio recording of each interview while reviewing the transcript for accuracy, and also to ensure that names and other data, which could reveal the identity of the participants were redacted.

The text was coded using Version 7.5.14 of Atlas.ti qualitative data analysis software (Atlas.ti GmbH, 2017). In addition to simplifying the clerical tasks of the researcher, software such as Atlas.ti helps to track how the analysis moves from raw data to formal conclusions. I developed a preliminary list of codes while reviewing the first three transcripts for accuracy. The list was constantly revised while analyzing subsequent interviews to accommodate new discoveries.

Proponents of grounded theory often describe the analytic method as a series of discrete phases, but they also acknowledge that coding at all levels proceeds almost simultaneously (Charmaz, 2006; Glaser & Strauss, 1967). Such was the case in this research. The process of establishing links among the codes, assembling them into concepts, and developing higher-order themes – all through repeated coding of the data – proceeded nearly concurrently. At critical junctures, I prepared memos to keep track of coding decisions and conclusions.

Proponents of grounded theory often use different terms to describe the same elements of the analytic process. In this research, codes (the smallest unit of meaning to be extracted from data) were later grouped in categories; categories (which collect and begin to explain related codes) became elements of themes; and themes informed the development of the overarching theory. For example:

- What Values do Landowners Feel a Responsibility to Protect? – Theme
  - Beauty / Spiritual – Category



- Beauty and Aesthetics – Code
- Solitude or retreat – Code
- Spiritual – Code

A list of the codes, along with a frequency count for each, is presented in Appendix G. Categories and themes that were created from the codes are shown in Appendix H.

The process of moving from raw data to theory is described by Strauss and Corbin (1998) as both a science and an art. Although they offer a variety of techniques to provide structure to an analysis and ensure rigour, they also write that creativity is an important element of the approach. “These procedures were designed not to be followed dogmatically but rather to be used creatively and flexibly by researchers as they deem appropriate” (Strauss & Corbin, 1998, p. 13).

In a review of data analysis techniques used by qualitative researchers, Ryan and Bernard (2003) reported that clues to identify themes could be found in:

- Repetition: Ideas that come up frequently within and across interviews;
- Jargon words that describe phenomena in uniquely local ways;
- Similes and metaphors;
- A change in topics, which they called a transition;
- Comparisons: How is this expression of a concept like, or unlike, another occurrence elsewhere in the data;
- Words that indicate relationships, such as *because, so, therefore, since*, and similar *if-then* statements;
- Unexpected holes in the data – what is not present, what has not been expressed; and

- Word co-occurrence: Unique words or phrases that commonly appear near each other within the data.

While these clues are important in identifying deeper concepts embedded in data, and analytical software can help to track the links among ideas, Charmaz (2006) said that the development of theory is not the linear outgrowth of a mechanistic process: “Theoretical playfulness enters in. Whimsy and wonder can lead you to see the novel in the mundane. Openness to the unexpected expands your view of studied life and subsequently of studied possibilities” (pp. 135-136).

The most persistent criticism of qualitative research relates to the lack of widely accepted analytical models to test whether the investigator’s conclusions are valid (Bliss & Martin, 1989; Carr, 1994). Lacking mathematical tools to evaluate relationships among the concepts under study, qualitative researchers employ a variety of non-numerical techniques to ensure that their conclusions remain faithful to their data. Some of those techniques – purposeful sampling to find “information-rich cases, ... [participant recruitment/data collection] until no new themes or constructs occur, ... [and] prolonged engagement” (Baxter & Eyles, 1997, pp. 513-514) are with research subjects integral to the conduct of a grounded theory study.

The subjective nature of qualitative analysis means that validity cannot be proven, but claims of validity can be made more widely accepted if the analytical process is well described in the study (Baxter & Eyles, 1997; Corbin & Strauss, 1990; Ryan & Bernard, 2003). Memos written by the researcher as part of the analytical process, which track the decisions made and conclusions reached, allow readers to better evaluate the findings (Charmaz, 2006; Ryan & Bernard, 2003). I was the only person to code the transcripts for this study. Some qualitative researchers favour the involvement of more than one researcher in coding and analysis, which

may contribute to enhanced credibility but is not without its own challenges (Baxter & Eyles, 1997): “Problems may arise, however, when the subtle nuances of the interview (e.g. body gestures) are known only to the researcher who conducted the interview and helped to construct the interview text” (p. 514).

While these techniques can improve the accuracy and acceptability of the research, none of them – alone or in combination – can ensure that an analysis was rigorous (Barbour, 2001). “They can strengthen the rigour of qualitative research only if they are embedded in a broad understanding of qualitative research design and analysis” (p. 1117). Achieving that familiarity with the method is, perhaps, the greatest challenge for new practitioners of grounded theory.

Are the conclusions of this study firmly grounded in the data collected from participants? I strongly assert that they are. I read and coded the transcripts repeatedly to understand what the participants said, to discover how their statements were related, and to develop a theory about what the data mean. This process was tracked by the software I used to facilitate the analysis. I also wrote or (more commonly) dictated memos about key points. I reflected at great length throughout the process about the need to keep my personal understanding of forest ownership separate from my emerging explanation of the data. I presented many richly detailed personal quotations from the forest landowners who participated in this study to illustrate the points they raised and to support my conclusions about the data.

Leading proponents of grounded theory assert that a faithful application of the key concepts is essential to rigour and reliability. I closely followed the methods they described.

## CHAPTER 4 RESULTS

It is late October in central Nova Scotia, and a man in late middle age is talking about his relatively large wooded parcel, part of which was originally farmed by his father.

I: So what drew you back?

P33: A piece of vacant land. I wanted a farm ... and like I said, I was just lucky enough that there was a [wood]lot that no one had done anything on ... The fact that, if it was managed [well] ... we'd be sitting on some [higher-value] spruce ... Is there much pulp wood on our property? No. We would like to think most of the pulp products are gone off here. So what's left, we're nurturing along some veneers, nurturing along saw logs ... We don't go in to clean an area up so that we can replant it ... We try to do as much natural regeneration as possible.

P33 [continuing after an interruption]: ... So the other benefits? Well, family, I guess would be number one. Your own family gets to enjoy it ... This is my savings for my future grandchildren, my great-grandchildren.

P33 (Spouse): It's your legacy.

P33: Yes, my legacy. Could I have cut it completely off, taken the million and a half dollars, shoved it in the bank account and gone to Bermuda for a year? Absolutely. Would it have been nice? For a year, it would have been great. But what do you do when you get back? You've got a woodlot that you really can't do anything with in your lifetime. So we opted to go this route. We generate some income off it. But the income that comes off of this can nowhere near match the enjoyment ... I mean the whole stockpile of things that you do here. Right to storytelling, right to bonding with your kids. Some parents have to go to town ... I grab my kids and come back here. We can go for a walk. We can see all kinds of things. I can walk through the woodlot and find things that my dad would have done. Back here ... there are three or four saplings together, someone braided them together ... And there's all kinds of other, different things that you see. So you share them with your family. They share them with their family. And that's how things kind of evolve.

Concerns about legacy dominate the thinking of small woodland owners who participated in this research. Rather than seeing a forest solely as a short-term source of income or other benefits, they viewed it as a multi-generational asset of financial, ecological, social or familial significance. Largely using the participants' own words, this chapter will consider the palette of

attitudes and motivations that underlie this conviction, and explore the nature of the legacy that these landowners hope to bequeath.

The chapter includes direct quotes from 30 of the 37 woodland owners who participated in this study. There was no conscious attempt to use quotes from most of the participants, only to choose statements that best illustrated the range and richness of topics discussed by the landowners.

#### **4.1 EXPLORING THE CONCEPT OF LEGACY**

Participants in this study share a deeply held belief that woodland ownership carries responsibilities that extend beyond the immediate needs of the current landowners. They identified three broad duties of woodland owners: minimize “waste” of the forest’s productivity; protect the aesthetic and spiritual qualities of woodlands, and conserve or enhance diversity in the forest.

These responsibilities were not necessarily seen as discrete. Boundaries between them were permeable; definitions and relative importance varied substantially among participants. In every interview, however, owners discussed the duty to manage woodland values in ways that provided benefits beyond their own lifetimes. Here, a participant conflated all of the elements that comprise his stewardship ethic in an explanation of his opposition to clear cutting:

P14: If you, for example, clear cut a couple of hundred acres here, that takes away your options totally. You have no options after that. And your children don’t have any options. You’ve all of a sudden taken away any value for your children and your grandchildren and given them no options or any choice whatsoever ... So there’s two things, basically. It’s the [loss of the] ability to walk through a nice stand of forest – and it is nice – and the chipmunks and the squirrels and birds and whatnot. You know, you get some pleasure from that. So they’d never be able to do that. And at the same time, if they need some money, there’s nothing to sell, other than they can sell the whole thing and get a few dollars out of it.

**4.1.1 Minimizing Loss of Forest Production.** Many landowners who participated in this study expressed strong opinions about “waste.” The concept included a wide range of conditions, from failure to regenerate a recently cut stand of trees to neglect and decline in an overmature forest. The underlying belief was that landowners had a duty to keep woodlands thrifty and productive:

P3: You see that opening over there? There was a fair bit of bark beetle. And I’ve coped with the bark beetle. This isn’t the longhorn bark beetle, this is our native spruce bark beetle. And it’s everywhere ... But when we have blow downs, old trees, places that aren’t tended to, it will get away. And I’ve managed to control it. You can’t beat it, you can only try to control it.

Participants in this study had different conceptions of what constitutes waste. Wind-thrown, dead, and dying trees were frequent topics of conversation.

I: Tell me how this would look if you had it cut the way you wanted. What would it look like?

P4: Well, all the dead stuff would be out of here and all the stuff that was laying down would be gone.

I: How has this changed in the past several decades of you owning it?

P4: Well, I guess it’s just sort of went down since I owned it. Like you know, trees rotting and breaking off. Like when my father cut it, he used to cut everything ... he used to clean it up. He’d work on it every winter and clean up everything that was down or was dying.

Storm damage such as uprooting and stem breakage is common in Nova Scotia (Neily, Quigley, & Stewart, 2008). That makes the threat of blowdowns a significant concern for many landowners.

P27: Now, we’ve had two pretty good winds here in the last month and I haven’t had any wind throw. So that’s a good sign. But the winds, of course, are unpredictable. And you never know with conditions, particularly if you have heavy rains for a while and then you follow that immediately by a big wind, that increases your risk for sure. So yes, I’m concerned.

The impact of windthrow was never more evident than in September 2003, when Hurricane Juan passed through Nova Scotia. The Nova Scotia Department of Natural Resources estimated that as much as 10 million cubic metres of merchantable wood were affected by the storm (Cameron, 2004). Years later, the loss still was keenly felt by these three landowners:

P7: I compare it to a death, you know ... just a complete devastation.

P10: The next day I went back and looked at all that mess down there. That first road we went in, it just sickened me.

P32: Hurricane Juan changed my attitude to the woodlot because it wiped me out ... When we bought this place in 1967, there wasn't even an alder bush that grew on that. And then it grew up in juniper. Anyway, the hurricane took it out.

The perceived responsibility to minimize waste was a significant burden for some landowners. Here, the owner of a relatively large piece of woodland worries about the demands of forest ownership:

P3: And my line goes out there, and corners, and goes back another kilometre and a half.

I: Wow! It must be nice.

P3: Sometimes it's overwhelming.

I: Do you have many worries as you drive around and think about what you're going to be doing over the next 10, 15 years?

P3: Well, I'm paranoid about bark beetle. I guess I've mentioned it about 20 times. I'm paranoid about that. I think landowners should be doing what they call sanitation harvesting. If you have a patch of bark beetle and you're right next to somebody else with a timber lot, you should be cleaning it up. That's a responsibility or, what do you call it, good stewardship, I guess it would be ... You know, there's a hurricane coming this week so how much of her will be laying on the ground. But if it does, I'll go and harvest it. You know, that's the way it is.

For other owners, the duty to minimize waste is simply about directing wood to its highest-value use:

P14: You could cut the whole thing [the forest] and just send it to Northern and grind it all up for pulp. But I don't want to do that. You want to gain greater value. And people like [a Nova Scotia lumber company], they're gaining greater value out of a cubic metre than the pulp companies are. There's a place for the pulp companies, don't get me wrong. I really believe there is ... But our interest would be more in mature and good timber.

It is sometimes unclear whether a lack of knowledge on the part of the landowner, market conditions, or the unavailability of reliable contractors is responsible for what seem to be less-than-optimal uses of timber. One landowner described visiting a neighbour's woodland for the first time in about 15 years. When the visitor was last there, it had been a nearly mature forest of high-value red spruce. He was appalled when he learned that the woodland recently was harvested for low-value chips.

P33: I said, 'Man, they must have got some beautiful logs off it. He [the neighbour] said they chipped it ... There was red spruce there that you could not put your arms around. Just absolutely beautiful stuff. And there was nothing that went off of that farm that didn't go off in a [chip] van.

While the issue of maintaining forest productivity by minimizing waste is a significant concern for landowners, attitudes may be changing. Some owners have begun to question whether a dead or dying tree is waste or an essential part of the forest ecosystem.

P37: I guess if I have any regret, it's in the management that we've been doing since 1988. It is that we haven't been more patient to just allow some of those natural things to happen. You know, we have been subject to the style of the industrial forest. As a result, with the sort of orientation and recommendations of the foresters that have been advising us and the contractors working with us, that a lot of that material was cleaned up ostensibly for some merchantable purpose. But I am more and more disposed to allowing some of those natural occurrences to occur.



**4.1.2 Beauty and Spirituality.** Many – but not all – participants identified the need to protect aesthetic and (for a smaller number) spiritual qualities of woodlands as another responsibility of forest ownership. A few offered poetic descriptions of the beauty in their forests.

I: If you were to talk about the things that you value on this place, what are they?

P15: Oh, just listen to the wind in the trees, the sun dappling the leaves. A place that regenerates the spirit as well as the land itself.

For these owners, beauty is an essential element of forest value. It enhances their appreciation for woodland ownership and influences their management decisions.

P6: I just don't want to clear cut, pure and simple, after what I've seen all around me. We've had the big contractors all around us here ... They've taken every stick they can get – hardwood, softwood, whatever it is – all around this mountain ... But if we're going to cut all our forests down, what kind of a place is this going to be? You know, the road we've been taking, it's going to be pretty brutal. It is brutal now, what's happened. I've been all over the county here looking at clear cuts and stuff. It's pretty ugly.

Another landowner put it this way:

P16: My dad and mom both grew up in the Depression, and it seared into them like a knife. They were very, very poor, especially my dad's family. And so, you know, they made do with what they had. And some of that sort of gets implicated into the next generation ... For example in our camp, you know, I suppose, [my dad] could have made a lot of money selling the wood off it but he didn't do it. And not that he was a wealthy person, but he didn't do it because he valued what it meant to his family and what it meant to take the kids back there and take them hunting and fishing, and what it meant to the ecosystem. He sort of wanted to ... I mean you hear a loon at 5:00 in the morning when you're lying in the camp. And that's something that sort of resonates in a whole lot of ways.

A participant whose lot included forest, field and streamside habitat – with a diverse mix of flora and fauna – said he wanted careful forestry that would preserve a multitude of values:

P13: I mean that's the heart, how do we make sure that we keep it healthy, and maintain its biodiversity and its value? And maybe the value not in the monetary sense but in the ... Well, to be able to come in here and have this be what it is. This is magical.

For a few participants, the inhuman beauty of some woodlands rose to the level of the spiritual:

P21: So I get my firewood here. But I guess there's a lot of intangibles, because you look back at five generations of your family and, you know, there's some attachment that way. Plus, I mean it's kind of an over-used phrase but... there's a certain spiritual component to it as well. It's funny, one of the ladies that walks up here, she's a Buddhist ... and I think it's part of her ... almost her worship process.

The impact of clear cutting on forest aesthetics was mentioned frequently. For one owner, the practice simply left "a mess."

I: And define for me what's a mess to you.

P12: A mess is the clear cutting and the stuff that was just sort of left, not cleared up, not raked up or piled or anything ... It looks like a bomb hit it, you know. And I don't think that should be.

For another, the prevalence of clear cutting on the landscape was leading to a change in his values. One participant, who was quite interested in continuing to receive timber income from his property, said aesthetics were also becoming important.

I: Why do you suppose that's changed for you? What is it?

P6: I'm getting smarter maybe. But there are other people around who are [also] ... more concerned. I just don't think it's right what we've done to this province. I really don't.

**4.1.3 Forest Diversity and Balance.** Most of the landowners who participated in this research offered comments – almost all favourable – on the topics of species diversity and protection or restoration of the native Acadian Forest type, which covers much of Nova Scotia. Concerns about the simplification of forest structure were widespread.

P14: I believe that every community would be wise to have in their possession a 100-acre lot and put it into a heritage trust where it was never, ever cut, to give examples throughout the province [that] this is what woodland should look like. Because we are very diversified. You know, our timber resources, they are very, very changeable between one soil condition and another.

For many, diversity was related to the perceived obligation to be a good steward of forestland so that future generations are not impoverished – monetarily or in other ways – by their actions. One multi-generation owner spoke about personal goals of obtaining firewood and some income from the lot while protecting Atlantic white cedar that had been planted along a fence line by an unknown forebear. Others spoke of the desirability of maintaining a forest with high-value trees of various species. They favoured practices that helped to create or maintain that structure.

P11: We went through all this and done a cleaning on it, so it's starting to grow. There's stuff coming up through. But we might be ahead of it. In other words, we might be ahead of the rubbish if they get up a little higher. At least it's natural. Those are natural trees. And we've got a mix of species, too. We've got fir, spruce, hemlock and pine in there, and white birch.

Some landowners found great joy in personally encouraging a mix of species in the forest. One owner had planted cattails in a wet area and moved hemlock, maple and oak seedlings to small patches of light throughout the woods. That owner's enthusiasm for forest diversity extended beyond plants.

P9: I like the idea that we have deer. I don't mind the bears. And I hear the coyotes every night. I have no problems with any of that. They deserve to live here as much as I do.

Diversity was not a universal goal, however.

P31: Although people praise the Acadian forest, my understanding is that really it should be called the Acadian thicket. I mean you have to be an ideologue of outstanding proportion to think that it's particularly pleasant to see nothing else but a mess of different trees competing for the same sunlight and soil and nutrient. Now that sorts itself out after hundreds of years. But with our climate issues and with our pollution issues, trees are no longer growing to that age.

Landowners who felt an obligation to encourage species diversity frequently expressed support for selection cutting, also known as uneven-aged management. Loggers using a selection cutting system remove trees in very small groups or one at a time, maintaining a standing forest with trees of varying ages and sizes (Canadian Council of Forest Ministers, 2017).

P29: Well, we're looking at first we'll eliminate whatever fir generally is in there because that's ... a low quality species and it's a short-lived species. And we'll concentrate on the longer-lived species like the red spruce. And if there's other trees that are showing signs of deformity like twin tops, we'll cut them out if they're in a crowded situation. And if there's good straight hardwood [nearby] ... It's nice to keep them where they've located because spruce and hardwood grow together very well, and they anchor each other in windstorms. So that's what we're trying to do, to keep that diversity and to keep our higher-quality trees coming, and prune out the less valuable and cut the thickets back enough to give the remaining trees a chance to get growing.

Another participant, who owned a relatively large parcel of forest with a mixture of both hardwood and softwood trees, was using uneven-aged management techniques to protect and enhance the diversity that is already present.

P21: As part of the plan that was done for me ... their thought is they want to restore it back to the Acadian Forest. So most of his recommendation was to single-tree harvesting where you go in and, you know, you pick out the less desirable trees for firewood. Or if you are going to take logs out of it, you know, you just do a selective cut as opposed to [a clear cut] ... Well, in this particular mix of wood, clear cutting would just, I think [it] would be a crime because there's some trees on this property that are over 200 years old. So my intent is to do it that way, is just ... to upgrade the stands and take out the bad stuff and leave the good. And hopefully, if things work out, it will be left for the next generation.

One landowner argued that uneven-aged management was also a far better place to invest provincial silviculture money than clear cuts. Beyond a belief that clear cutting was “the cheapest way of removing fibre,” the owner said the long-term equation was more complicated:

P19: [Because] then they've got to go back and they plant. And then they maybe herbicide the hardwood. And then they go back in and thin it, in a lot of cases with government subsidies, until that crop is away [and growing] on its own. But take that same amount of money and improve the average land as it comes along, and

do a thinning and do a spacing and do a silviculture and get it coming back to a healthy forest.

The concept of balance, which is at the root of many landowners' preferences for a diverse forest, also helps to address conflicts between competing goals for their woodlands. Most seem to accept the impossibility of getting everything they want, all of the time, across their entire ownership. They accept that conditions in some parts of the forest may be less than ideal, because woodland ownership is itself a balancing act.

P2: This is probably my most valuable piece of woods, said one landowner. And I don't know, what is it, 25 feet tall, 20 feet tall, and quite dense, and showing real good growth, and all those things that you look at from an economic point of view anyway. But it has a whole lot less diversity. I can't enjoy walking through it because it's too thick. Now, maybe 20 years from now, it will be easier to walk through it. But I don't think it will ever have the aesthetic value that some of my other pieces have. There's always a balance.

The pursuit of diversity was also a way for some small woodland owners to stand apart from industrial forest management, which they often equated with single-species softwood plantations. Many participants believed that monocultures not only harmed the forest ecosystem, but also increased risk for small landowners.

P2: Well, okay, I'll use white ash trees for example because they're under threat [by the emerald ash borer]. If they all die out, well, that would bother me, but I still have other species there that will eventually fill those holes in. It's really, really difficult to know what's going to be down the road in 50 or 100 years. And you can't make a living that way. You have to make a living by saying what can I do 5 years and 10 years from now, and what can I do this year? And that's one of the disadvantages of going in [with industrial forestry] on a large scale.

At the same time, participants often noted that markets for products other than stud wood or pulp were shrinking, making it difficult for them to manage their forests in the way that they desired.

I: What do you see as the major things that would prevent you from achieving what it is you want to achieve here? Or what do you need help with?

P28: Well, as I said, if we had a good solid market that you can clean up a piece of mature wood, be it balsam fir or spruce or whatever, at a time when it needs to be done. Some means of having a stable price, because our costs seem to keep going up and our rate of return either stays the same or even drops a bit. And that's one of the concerns as a small woodlot owner that I have, is that when the time comes that you need to market something off your property, that there is a viable market there for it. And a market such that you're not pressured to have to [cut] more wood than you really want to take. Because sometimes you'll have a company say, well, we'll take your pulp wood but you have to give us so many loads of saw logs in order to get rid of that. And this has been a lever that [a Nova Scotia paper mill] has used in the past. If they really needed saw logs, they'd pressure you to cut saw logs in order to get rid of your pulp wood. Which is good on their end, but it sort of puts the woodlot owner in a bad spot ... So I guess there's got to be some way to standardize a market and have something there for the future.

While most participants said other forest values were more important to them than income from timber sales, the topic of money came up in every interview. Even an owner who expressed profound concerns about the impact of current forest practices on biodiversity and future wood supplies also had a desire to make at least enough money from timber sales to cover the property taxes on the woodland.

Balance has personal, as well as silvicultural, connotations for some landowners. A place for recreation, a chance to exercise, even the opportunity for useful physical labour that helps to bring balance to life.

P2: Certainly that's one of the values that I get out of my woodland, is I guess recreation in the sense of going for a walk and enjoying the wildlife and enjoying the trees. And sometimes I go for a walk with my pruning saw too. That's one of my main methods of recreation.

Another landowner put it this way:

P16: I just love being in the woods ... I remember when I was cutting the logs for the house and we had some really cold weather, which was good for getting the tractor back in there, not a whole lot of snow so your mobility wasn't really limited. And you know, it's 20 below but you're working with your saw and your hands are cold but there's sweat trickling down your back. It's just, you know,

healthy and it's exercise. And you're in good shape and you sure sleep that night. So I mean in general, to me that's, you know, a lovely feeling about the woods.

**4.1.4 Clear Cutting and the Forest-products Industry.** Most of the landowners interviewed for this study did not see the forest industry, and in particular the pulp and paper companies, as being supportive of their quest for diversity and the creation of long-term value in the forest.

P14: I don't see [a Nova Scotia pulp mill] as being a partner in it. And you should see [that]. If you were working in the forestry side of [the pulp mill], then your small woodlot owners, they should be seen as customers or partners. And I don't know if that truly exists. It doesn't exist for us. Now, maybe for some people it does. But ... I don't see them as a partner in sustainable forestry. I see them as someone [who] comes in and [if] I have 50 acres, they're going to cut it all, done. With nothing left for your grandchildren and children. The sustainable part [of forest stewardship], it's a super big question. And you know, this is a short world we're in. For goodness sakes, the forest lasts longer than we do, you know.

There was widespread belief that clear cutting largely benefitted paper companies by increasing harvest efficiency and reducing the cost of wood fibre. Contractors were often seen as being forced to use the practice to pay for expensive machinery.

P16: You know, I don't categorically condemn that [clear cutting], but I have problems with it. And I certainly wouldn't permit it on any land that I own. But that's obviously the most efficient way for these big machines. And they're huge, and I guess they cost a lot of money, and they employ people, and they have to harvest.

Other owners said that clear cutting – followed by replanting and thinning – was the only way to address what they saw as a substantial decline in forest quality, volume and value over the past several decades.

P11: [T]he first thing that I would do would be to clear the damn biomass ... [do] whatever the hell you want to do with it, said one participant. Flatten it, burn it, shovel it or whatever. But put something in the place of it ... We came at least 10 miles [through the forest in a pickup truck], and we saw nothing that you'd put a harvester in. Nothing.

In many instances, woodland owners offered both positive and negative comments about even-aged forest management. For example, they said that clear cutting offered the greatest immediate financial returns to landowners, but then indicated they would limit or reject it as a practice on their own lands because they wanted to protect other values. Many owners suggested that clear cutting is only appropriate for certain stand conditions, for remote parcels where regular access to do selection management is impractical, or after disease outbreaks or weather-related events.

This comment was typical: “Now, if I owned woods, you know, 10 miles down the road in a back place that’s hard to get at, that’s where I might put a contractor in [to clear cut]” (P11). The landowner went on to reveal a complete removal of a stand of hemlock on the property that blew down after an adjacent lot was harvested. “It worked out okay. But that was the only clear cutting we have done” (P11).

Fewer than half of the participants had the skills, knowledge, physical ability, equipment and desire needed to personally work in the woods. For them, a perceived lack of reliable contractors, or ones that operated machines that were appropriate for small-scale harvests on their woodlands, was a significant barrier to reaching their goal of greater diversity. One put it this way:

P22: If the right contractor came along and said, ‘Yes, we can do it now, we can do it with a very low impact, at the end of the day you’ll see nothing except a few tops and a few stumps that we left,’ I would probably do that [have his woodlot cut] right away. I don’t think those contractors are out there.

Small-woodland owners who are not able to harvest trees themselves said they have a hard time finding contractors who are willing to do selection harvesting.

P37: We have a portion, a fairly major portion of our property here ... which is really ripe for selection harvesting. And in an area of that, we can potentially



expand our maple syrup operation. But we can't find anyone that would find it economic for them to come on to do the kinds of harvesting and treatment that we would prefer to happen in that particular area. Hopefully we [the province] will evolve our harvesting practices and ... there will be contractors around with smaller-scale equipment and [who can] make a livelihood out of harvesting selectively and carefully in sensitive areas.

Although many participants expressed discomfort with the size of modern harvesting equipment or with the pace of harvest operations, one landowner said it wasn't necessarily easy or profitable to operate smaller equipment:

P2: The problem is paying the bills and getting a decent return. You know, they've got to make more than minimum wage. They're not going to come out here in the snow and cold and flies and heat and all the unpleasanties that can come with it, if they're only getting minimum wage. And you know, the uncertainties of owning your own business and keeping gear going ... no one is getting rich at it. The landowner and the guys working at it, they're getting by. They're not making the kind of money that the almost untrained people can make out in the tar sands.

Another owner said industry should develop a program to highlight the possibilities of selection cutting – using a variety of equipment – on demonstration lots throughout the province:

P27: [T]hey need to work with some of these landowners to do this kind of job, so that the landowner becomes a mouthpiece and says, '[T]hese guys came in. They did a great job on my lot.' That spreads. And then they'll attract [other landowners] ... But they may have to subsidize the shit out of the first 10 lots or whatever in order to get the work done, in order to get the message out and say, 'This, people, is what can be done.'

#### **4.2 TO WHOM (OR WHAT) ARE LANDOWNERS RESPONSIBLE?**

Participants in this study believe they have a duty to protect or enhance certain forest values for the benefit of others. To whom, or what, do they believe they are responsible?

Landowners identified three classes of beneficiaries: their heirs or, in the event of a significant need, themselves; human society in its future need for wood products; and the forest itself.

#### 4.2.1 Preserving Family Heritage and Supporting the Financial Needs of Heirs.

Interviews with participants in this study revealed a widespread desire to benefit future generations of their own family through a bequest of woodland. Forests were perceived not only as a financial asset, but also as a vehicle to transmit family heritage to succeeding generations.

P37: We feel an obligation to try to prepare it [their multi-generation family woodlands] for the next generation. To preserve it and prepare it for the next generation to the extent that we can. So that's got to be really high on our list. We have been in the fortunate circumstance of not being dependent on the income from the property. So we've been able to reinvest pretty much anything we've taken off the property back into it in the form of amenities or bits of infrastructure and so on. And so income, yes. But the income is largely reserved for maintaining and improving the property ... and we've also tended to diversify. We have 13 acres of blueberry fields.

I: Oh, really?

P37: Yes. And they are still under development. And our maple syrup operation is only a couple of years old. And that's something that's really engaged the family too. We have three little girls under 6 [years old] ... Or 6 and under, I guess, now. And they just love that. And of course anything that the kids love, the parents love too.

For the most part, landowners were hopeful but uncertain about whether their offspring would accept the responsibility of protecting the family woodlands and passing them along to succeeding generations.

I: What do you hope comes to this in 50 years?

P33: Well, my daughter is interested in everything that I'm doing now, and so are both of my sons. I mean they are all onboard. Why? Because they've all grown up working hard. They've all grown up around this stuff. And they know that because it's -20, dad still grabbed the saw and went to work. They remember because at times they've gone with me. And so they know that it's not about sitting in a machine with air-conditioning, swinging around, cutting and mowing trees off. I mean that's how people [harvest wood] now. And they have to. I understand that. In order to make payments and to make the almighty dollar, you have to do that.

P33 (Spouse): But how much dollar do you need to live?

P33: Well, that's the other part of the equation, isn't it? What are you content with? If you have to bring in a big income, then boys this is not the place for you. But if you are willing to.

P33 (spouse): If you're willing to accept that you have to meet your needs and not all your wants, because there's a huge difference between needs and wants, then this is the place to be.

P33: Yes. And I'm hoping that my kids walk down that road. I mean you never know that. How do you know that? But if you try to instill those traits into them, values into them, then hopefully they'll remember that. And after I'm dead and gone and one of my grandsons gets it, or hopefully it's in the family, he could take it and mow her off. Then take his \$2 million and go to ... You get what I mean? But you can't always live worrying about things like that. You go on faith. You set it up so that they can enjoy it and they can operate that way.

Twenty-four participants in this study held land that was previously owned by a parent or grandparent. In a few cases, the family ownership extended back to the 1700s. For many of these participants, legacy is perceived not only as a bequest to future generations, but also as a gift from ancestors.

P15: It [this woodland] has memories that go back not just in my lifetime but the stories that I have been told by my 95-year-old cousin. You know, she would talk about what it was like when she grew up. Because she grew up in the house where my grandmother had grown up. And all of the stories and so on, the people who used to be here, the people who tended the land before me, are all important. My own memories, my own personal experiences that I had, are important. But there's also the potential for the future. And that's not in my hands, but I do have the responsibility to preserve it for another generation, should they choose to do that. And if not for them, then for somebody else who would hopefully, we can never guarantee, value it. But there are all the memories of my dad and the horses and the sled, and sitting on those icy logs on top of the straw in the straw-filled burlap bags. And just being there. I can remember as a kid looking up at these trees and there being the snow all around, and thinking, ah, this is a piece of heaven on earth, isn't it?

Another 13 participants bought, rather than inherited, their woodlands. They were just as likely to be concerned about legacy as multi-generation owners. A participant who bought land in

the late 1960s was in the process of involving grandchildren in it. The owner wanted to give them not only a productive asset, but also some important personal values:

P5: Well, like for our grandsons, a prime example is that it's an investment in our kids. That they turn out to be better kids a result of us saying, 'Look what we've done.' They can see, as they grow older, that we've looked after this properly. And if they look after it themselves, it will be theirs. So like there's several lessons to learn in this one situation, I think.

While few of the landowners interviewed for this study said they would never allow a commercial harvest on their lands, most participants said that current income was one of their lower priorities. The issue of legacy seemed to mitigate the desire for short-term gains, even among owners who were actively engaged in timber sales.

I: You mentioned that it's the only ... one of the few remaining mature stands around. Is that going to prevent you from cashing it out at some point?

P22: Probably yes. I would guess that the recreational value or the social value we put on it – it's nice to look at as well – [and it] has some, you know, biological or environmental value. And I don't see the pulp wood being a money maker. You know, to clear cut this and get, I don't know, \$500, \$600, \$800 an acre is simply ... that's not ... no. I would imagine my management plan will switch more to getting rid of the lower value species, obviously the fir, and let the spruce come up. And that will be an issue my kids will, or their grandkids will, have to deal with then. I'm suspecting that [selection cutting], individual high value trees, is going to be the way to make any money on woodlands in the future.

Despite a preference for diversity, maintaining a financial legacy for the landowner's heirs was also a significant concern for many participants.

P14: I'm open to clear cutting where it's necessary. And there are places where it's the right thing to do. And there are places where Category 7 [a provincial program that funds uneven-aged forest management] is the right thing to do. And there are right places to do thinning operations and actual timber cutting. But where are those places on the 250 acres we own? And then, what process do I go through to make this happen so that it's sustainable for our children and the next generations?

Others shared the desire to build a financial legacy for their children, but questioned whether markets would allow it to happen.

P1: If I had a wish list and could wave a magic wand, I would like to see some way that economically my children could make a living off of this. I can't foresee anything in it right now.

A few participants said their desire to leave a financial legacy would not stand in the way of heavy harvesting on their woodland, however, if it was necessary to address unexpected personal needs.

P17: I know I have a crew coming to do some thinning on one of my plantations up here ... but they can only pay me \$12 a cord, and I feel its worth a lot more than that. But the pulp prices went down, so of course their stumpage went down ... if I was in it for a living, I couldn't do it. I couldn't let it go for that. Or I could clear cut it and get \$20 a cord. So guess what? If I need the money, it would be clear cut. And that's what drives a lot of people. If they need the money, they do that.

**4.2.2 Conserving a Valuable Asset for the Future.** Some landowners expressed a duty to conserve forest values not only for heirs, but also to ensure that future Nova Scotians have adequate supplies of wood products. As one participant described it:

P20: If you have a piece of land, you should never have it originally if you don't leave it in better condition than when you got it ... I had a chance to sell everything [growing in the forest]. They'd give me a lump sum payment. But I wouldn't go along with that, because they go in with these big machines and just strip the whole thing.

Selection cutting is one way to encourage landowners to begin or return to the active management of their forests, according to some landowners.

P2: If the pulp companies want to get more fibre off of private land, they've got to pay more. And they're going to have to offer a better package in terms of how it's harvested and what it looks like after it's harvested. Like rather than their traditional model of clear cut, plant and spray, they're going to have to look at investments in [uneven-aged management]. And rather than helping a guy get a million dollars worth of gear, getting people to have smaller gear who can do the work.

Selection cutting appealed to landowners who were concerned about leaving a legacy for their children or for society as a whole. Many of the landowners interviewed for this study addressed not only their own goals for owning the land, but also society's future needs.

P27: First of all, this lot certainly could have been clear cut,. And I'm not opposed to clear cutting by any means. If the forest conditions dictate, then it must be done. But I chose, mainly because of the great species mix here, to go with a commercial thinning. And so the idea is to keep it rolling *ad infinitum* once you're established here.

The issue of society's future needs for forest products typically manifested itself in statements about the responsibility of landowners to consider the impact of their actions on future generations. The topic of clear cutting resulted in some of the strongest statements and widest variety of opinions among participants.

I: Why does it [clear cutting] cause you concern?

P16: Yes, I think it's short-sighted ... I mean, that's part of it. But you know, so those lands are clear cut and they are out of production for 80 years, right. And not that I'm an expert on silviculture but I expect in 80 years, it's not going to be what it was 80 years before. You know what I mean?

I: Yes.

P16: So purely from a sustainability point of view, I think it's short-term gain for longer-term pain. And that's not fair to the next generation.

Many participants interviewed for this study had allowed clear cutting on their lands in the past. Several had clear cut as part of salvage operations in the aftermath of Hurricane Juan. Fewer said they would allow it in the future.

P14: In the last 20 years, we've had so many people ... sell their property to a contractor. The contractor would come in and cut everything, done. And maybe we're getting to the end of the people that have said that, well, I just need some dollars, the rest doesn't mean anything to me. And we're getting to a base number of people that have more than dollar value, like ourselves. Maybe we're getting to

that point. We still have some woodland left in the county, but it's getting down. And quality timber, there's not a lot.

Landowners frequently expressed beliefs that heavy harvesting reduced future timber supplies and eliminated options for their heirs. The topic was raised so frequently that it suggested opposition to clear cutting was more rooted in worry about the long-term impact on legacy than the immediate effects on forest conditions.

P5: My husband's grandmother and mother lived about 2 miles beyond where we turned. So, this was a road. And this is why I chose to come up here, to show you where the changes were made. It was a beautiful drive. Tree lined, healthy ... Well, his people were farmers and lived off the land and got their wood off the land, and looked after it. And you could tell that it was re-used. It wasn't depleted. Now it is like, 'Let's just cut everything we can, and who cares what happens to the rest?' I mean, that's the look it gives to me ... You go, and you drive, and you see just totally flattened and nothing replacing it. It's heart-breaking, because it's such a selfish society. Because there's no rules, it's okay.

Some landowners said they want to see the return of small, local sawmills and wood products companies. They believe that such mills would use a wider variety of species, and would improve both economic opportunities for landowners and the overall health of the forest.

P21: [W]ith global economies, pulp mills in this area probably aren't going to be sustainable. So I think you've got to bring it back down to smaller scale, and local value-added markets, instead of being solely dependent on this corporate entity that we've seen is in trouble and probably will continue to be. And I think you almost have to, like, build it and they will come. Create an industry. And this is where government I think should play a role, getting it maybe up off the ground, a wood pellet plant or small-scale sawmills, community-based, instead of importing lumber from BC or whoever else we're getting it from.

**4.2.3 Protecting the Forest Itself.** For most participants, activities that they perceived as benefitting the long-term health of the forest were more important than short-term financial gains.

I: Tell me about your own ranking. So you're here. You understand finances. You will make money. That's a value. But how does that compare and rank with other values you might have?

P27: It [money] is not necessarily the number one value. Wildlife values to me are important. For example, before they started, I can show you, I marked a tree across the road with a specific flagging tape. There's a pileated woodpecker nest, which I happened to discover last winter. So that value comes first before the economic value in that particular case. If I identify a wildlife nest, hey, that's going to be marked out first. So yes, I want to make some money, naturally, but that's not necessarily the only thing I'm doing here.

The willingness to defer financial gain in order to have a positive impact on the forest ecosystem was widespread. It suggests that many landowners believe that forests have an innate value apart from any benefits they provide to humans.

P30: I don't want all my money at once. I want to farm it, not mine it.

I: That's a good way to put it.

P30: And just the look of it. A clear cut to me, the bigger it is, the more barren it is. And then you have this single ecosystem. I want multi-ecosystems.

I: So there's an aesthetic sense and a wildlife sense also going on.

P30: Yes. But basically what I want to do, the greater amount of species that I have on my property in trees and the greater variety of age classes I have then the more species of animals I will attract, and the richer the whole ecosystem will be.

Participants who felt a responsibility to protect a fully functioning forest ecosystem had remarkably similar definitions of what was required.

P1: The versatility, I think, is probably what we're looking for. Both for wildlife habitat and for the economics ... I like to grow long-lived, high-quality Acadian species. Whether it's my children or my grandchildren that get the full benefit out of it, that's fine. That doesn't bother me. So when I see a good hardwood stem, it gets favoured. Or a nice white pine or certainly good quality spruce ... I like diversity. It's sort of like having a diversified portfolio of investments.

Some owners rejected the notion that forest values could, or should, be ranked.

P26: There isn't a hierarchy [of values in woodland]. A hierarchy suggests there's a most and a least value. My education was in ecology. That was the formal education. I have since relished and experienced the interweaving nature that is ecology on such a variety of scales. All of values need [to be] knit together or something is lessened. When there is an age mix, we know that there is a species



[mix] ... a variety of other species that are complementary. When there's a height mix, we know that. When we have reduced numbers of species, we know that there is increased vulnerability to disease. Similarly, with age there's increased vulnerability to weather. Strength is in diversity - biological diversity, time diversity, spatial diversities. And it is just deeply ingrained [in me] that they are all of equal value ... for me it is too inter-layered to separate out.

For other owners, protecting the forest was simply a matter of moderation. Here, a participant discusses what the woodland would look like if the owner were able to do exactly what was desired.

P9: It wouldn't look a lot different than it does right now. But if I had the money and the ability to do it, I would have a lot more trees planted where the other ones are dying down. I'd probably have more of the dead wood cut out, and probably left in brush piles, a lot of it, because it's not good ... And then there's squirrels and the rabbits have a place to hide. And I would clear it out maybe a little bit. Let more sunlight in and let some more growth come up off the forest floor. But there would be certainly no clear cutting.

I: And species, you like diversity.

P9: I like diversity. Well, when I sit down and eat a meal, I don't want a sandwich every meal. I want something different. And the same with wildlife. Every animal has something else they'd like to eat. They don't always feed on the same type of tree. Like junipers, how few junipers we have left now in NS ... That was one of the trees that birds, a lot of bird species feed on.

*Naturalness* was often discussed by participants, though the personal definitions of this quality or state varied. Here, a landowner compares work on the woodland with management of an adjoining piece of Crown land:

P24: I've looked at what they've done up on the Crown. I'm not saying they done wrong. I probably haven't done right. But it's a toss-up of what's going to happen in time to come according to what you do to your land ... That hardwood is older than it looks. And I've left natural regeneration come up. I will probably cut most of the fir out and leave spruce and whatever. But to try to put it all into spruce, I don't know if that's the right thing to do. I don't know that it's wrong. A fellow don't live long enough, I guess, to know the answers to these questions. But right here you can almost draw a line, the moss and everything, where a fire went through 100 years ago. You can see the differences. And like I say, maybe I'm wrong by not going in and slashing that. I picked a lot of stuff out of it. And as I

picked the stuff out, newer and stronger stuff has started to come. Which makes more of a natural changeover.

Are landowners who believe in sacrificing current income to maintain a diverse forest just dabbling in woodland management?

P21: No. Like I say, maybe it's a form of insanity, but it's just ... I mean, I'm not a wealthy person. I mean I could call a contractor, well, maybe not tomorrow but you know, and say come out and cut 50 acres of my land and I'll get a cheque for \$30,000. Which would be nice, but then there's income tax and whatnot. But ... it's not fair to the land. Yes, it's just not the way I think about it.

### 4.3 A COMMITMENT BEYOND TIME

It is clear that landowners interviewed for this study want their forests to be a personal bequest to a future world. During our long walks through their woodlands, landowners often expressed uncertainty about how to achieve their goals to limit waste, protect beauty and create balance. For most, however, the uncertainty evaporated when they talked about their desire and responsibility to pass this legacy along – whether to benefit family members, to meet broader societal needs, or to ensure the existence of robust, natural forest ecosystems.

I: You said that you would love to have your grandson, in 60 years, be able to look at sort of the history of the stand ... and to have some sort of deeper understanding about what had happened over that time, and what that might suggest for the future. So does that mean that largely your landholdings are a form of intergenerational legacy, bequests, whatever? Or could they all go for development in 40 years, and you'd be happy with that.

P26: No. No, they are a legacy scenario. Can't tell it to family members *per se*, because I can't impose that, but I do consider my ownership to be for greater ... What I initiate, I trust will be furthered, yes.

I: You think they have any interest? One of the things that paper surveys tell us is that a lot of small landowners say this, but a lot of their children don't know it or don't want it. What's your sense about ...

P26: If they don't, I would find ways for the journey to continue.

## **CHAPTER 5 DISCUSSION**

This study sought to learn more about the attitudes and motivations of private forest owners in Nova Scotia through the use of a grounded theory approach to data collection and analysis. While consistency with previous quantitative studies of woodland owners was not an objective, the views expressed by participants in this study were similar to those reported in other research within the province and across the industrialized world.

Some of the main points of agreement are noted first below, followed by a closer look that the main finding: private forest landowners in Nova Scotia are most concerned with the conservation – and ultimately the conveyance – of values that provide them with no immediate economic returns.

### **5.1 SUBORDINATION OF FINANCIAL GAIN TO OTHER MOTIVATIONS**

The future viability of Nova Scotia's forest-products industry depends on access to wood grown on small, private woodlands (Woodbridge Associates, 2011). For several decades, however, researchers in Nova Scotia, across Canada, and throughout the industrialized world have reported that economic gains are not the primary reason that most people own woodland (Belin et al., 2005; Côté et al., 2015; Erickson et al., 2002; Kendra & Hull, 2005; Koontz, 2001; Ma & Kittredge, 2011; MacGregor, 2011; Nadeau, 2011; Nadeau et al., 2012; Sanderson et al., 2000; Sanderson et al., 2013; Ziegenspeck et al., 2004;).

While each participant in this study had a unique combination of attitudes and motivations, their perspectives on issues related to woodland ownership were well within the range of findings reported by previous investigators. For landowners who participated in this study, current economic returns are much less important than concerns about creating a legacy for

the benefit of heirs, society or the land itself and (for a smaller number of owners) with building a financial reserve against unexpected future needs. This strongly suggests it is time for the Nova Scotia Department of Natural Resources and for the provincial forest-products sector to focus on activities that help owners to build long-term value in their woodlands. Specific policy recommendations are made in Chapter 6.

## **5.2 ENVIRONMENTAL CONCERNS**

Participants in this study expressed a wide range of concerns about clear cutting, perceived overharvesting, and the impacts of current management is having on the health of the forest. Earlier studies of woodland owner attitudes noted that environmental protection, enjoyment of wildlife, outdoor recreation, the personal satisfaction of owning land and other non-timber goals and values are significant concerns in Nova Scotia (MacQuarrie, 1981; Sanderson et al., 2000; and Sanderson et al., 2013; Wellstead & Brown, 1995), in other Maritime provinces (Nadeau, 2011; Nadeau et al., 2012) and elsewhere (Belin et al., 2005; Birch, 1996; Brunette et al., 2004; Butler, 2008; Butler & Leatherberry, 2004; Butler & Ma, 2011; Connelly et al., 2007; Egan & Jones, 1993; Erickson et al., 2002; Ma & Kittredge, 2011; Rickenbach & Kittredge, 2009; Stone & Tyrell, 2012).

At the same time, participants in this study also expressed support for and keen interest in harvesting techniques that protect or restore balance and diversity in the forest. For many owners, this strong desire to create healthy, natural forests is hampered by a lack of capable and trustworthy contractors with logging equipment that is suitable for lighter harvests. If the provincial government and the forest-products sector want to increase active management on private woodlands, this problem must be addressed.

### **5.3 LACK OF KNOWLEDGE, TIME AND SKILLS**

Previous investigators have reported that an appreciable minority of forest landowners in the Maritime Provinces – from 7 percent to almost half, depending on where the study was conducted and how the question was asked – said they lack knowledge or experience about forest management or markets (MacQuarrie, 1981; Nadeau, 2011; Nadeau et al., 2012; Sanderson et al., 2000; Sanderson et al., 2013). Except for owners who said they had experience working in the woods, this uncertainty was also common among participants in this research. They often said they did not know which trees should be cut and which should be kept. This was true even among owners with longer tenures in the land. In addition, many landowners said they lacked the time, skills or equipment to work in their woodlands.

This situation suggests an opportunity for government, forest service professionals, woodlot owner groups and non-profits with an interest in the forest. Owners who want to build legacy but need help to succeed constitute a ready audience for information and market for services.

### **5.4 LEGACY: WHAT ARE LANDOWNERS CONSERVING, AND WHO WILL BENEFIT FROM THEIR BEQUESTS?**

Although participants in this study expressed attitudes and behaviours that have been widely reported by other investigators, consistency with prior research is not the purpose of a qualitative study. Charmaz (2006) said the ultimate goal is to move beyond what is quantifiable to find deeper connections among the data. “Grounded theory involves taking comparisons from data and reaching up to construct abstractions and simultaneously reaching down to tie these abstractions to data” (Charmaz, 2006, p. 181). Indeed, some researchers argue that one of the

most important criteria for evaluating a grounded theory study is whether it offers a novel and compelling explanation of the phenomena under consideration (Charmaz, 2006; Glaser & Strauss, 2008; Strauss & Corbin, 1998).

This study focused closely on a collection of attitudes and motivations that have received limited attention thus far from other investigators: landowners' self-professed belief that they have a responsibility to protect and enhance certain woodland values for the benefits they will provide to others in the future. Here, such expressions were collected under the overarching theme of legacy. Although the word appears in other studies of forest landowners, the use of the term is inconsistent. Most commonly, investigators use the term "legacy" only to describe the desire of owners to convey land and its associated financial value to their heirs.

Although earlier studies used narrow definitions of legacy, they clearly showed that woodland owners were seeking to protect a broad array of both economic and non-economic values for the future. In Sanderson et al. (2000) and Sanderson et al. (2013), for example, four of the six highest-ranked reasons for owning woodland were related to legacy. The authors reported that survey participants said they owned woodland "for the sake of future generations, ... to preserve forest ecosystems, ... to give to my children, ... [and] to protect water quality."

In this study, many participants expressed a strong belief that forest ownership conveyed a responsibility to be an active manager and good steward of the land. This impulse toward wise use of forest resources is well supported by the findings of Sanderson et al. (2000) and Sanderson et al. (2013). In both of those studies, survey participants thought protecting the environment was more important than protecting jobs, but also said that a healthy forest was compatible with a healthy economy.

The acknowledgement of responsibility toward someone or something other than the current owner was also considered by Nadeau et al. (2012), which asked New Brunswick landowners to identify the entity toward which they felt the greatest moral obligation. More than half of the survey participants indicated their own families, their land, and the local watershed (Nadeau et al., 2012). Similar findings were reported in Nadeau (2011) for landowners on Prince Edward Island.

The concept of legacy may have been most fully explored in Quartuch and Beckley (2013), which looked at the ways in which forest landowners in New Brunswick and Maine conceived of their stewardship responsibilities. The authors asserted that their study was the first to explicitly ask “to whom or to what owners perceive that they have a duty” (pp. 438-439). Landowners identified three broad categories in answer to that question: the biotic community, the owners and their families, and the broader society (Quartuch & Beckley, 2013). These categories are quite similar to the intended beneficiaries of legacy identified by Nova Scotia landowners who participated in this research.

Unlike Quartuch and Beckley (2013), who provided an interview guide and checklist to landowners prior to speaking with them, the theme of legacy rose to significance in this study solely from analysis of the interview transcripts. During their interviews, every participant expressed forward-thinking motivations for their behaviour, such as ownership for the sake of future generations, to preserve forest ecosystems, or to bequeath to their heirs. Successive levels of coding revealed that these landowners accepted that woodland ownership carried with it a responsibility to steward certain forest values beyond their own lifetimes. This was evident not only by the frequency that conversation turned to this topic, but also by the emphatic way in which participants discussed it. The widespread belief that owners have a moral responsibility to

the land suggests that most participants believe forests have an intrinsic value that stands apart from any benefits they might provide to the owners or to society. This is entirely consistent with their desire to convey healthy and diverse forested parcels to future beneficiaries.

De Young (1985) considered the role of intrinsic motivation in encouraging “environmentally appropriate behavior,” in this case residents’ willingness to participate in a curbside recycling program in Michigan. Among other things, he found that survey respondents gained satisfaction from taking part in activities that helped society to solve problems, from reducing pressure on the Earth’s resources and from “fitting into our place in the natural scheme” (De Young, 1985, p. 286). These sources of psychological well-being are quite similar to the motivations expressed by forest landowners who participated in this study. Acceptance that forests have intrinsic value helps to make people feel good about working to conserve them.

Landowners commonly expressed significant levels of uncertainty about key aspects of their ownership, such as the “right” way to address a specific forest condition, to restore diversity to their woodlands, or to earn income without reducing the future economic potential of the woodland. This questioning was evident not only in their actual statements, but in their tone and (sometimes) their body language.

These indications of uncertainty largely disappeared when the participants discussed the forest condition or assets that they wanted to protect or enhance, and for whom or what the values were being conserved. When talking about issues of legacy, the language and tone of participants suggested certainty or finality. Rather than asking questions, they made declarations. This “language of conclusiveness” does not explicitly appear in literature that describes ways to reveal the essence of interview data or build theory in qualitative studies. Even so, it was a clear indication that participants were discussing things that were fundamentally important to them.



Such nuances are an integral part of the data collected by qualitative researchers. Grounded theory pioneer Barney Glaser insists that all information collected by the researcher is open to analysis and potentially of value.

‘All is data’ is a well known Glaser dictum. What does it mean? It means that exactly what is going on in the research process is data, whatever the source, whether interview, observations, [or] documents. It is not just what is being, how it is being and the conditions of its being told. (Glaser, 2007, p. 1)

Sanderson et al. (2000) anticipated the key finding of this thesis – that concerns about legacy dominate the thinking of Nova Scotia woodland owners. The researchers wrote that owners “saw their land as an investment in the future of their family [sic], an investment in the environment, and an investment in preserving a quality of life” (p. 65).

It is clear that the forest landowners interviewed for this study were most concerned with the protection and enhancement of values that provide them with no current economic benefits. Some viewed the forest as a reserve against unexpected financial need. All, however, said their stewardship would primarily benefit their families, society as a whole or the forest ecosystem. This desire to make gifts to a future world was their overriding motivation.

## CHAPTER 6 CONCLUSION

This research was intended to enrich our understanding of woodland owners' attitudes and motivations in Nova Scotia. Unlike earlier studies, it sought to elicit data about landowners' thinking from their own stories *in situ* on the land, rather than from a survey instrument or a kitchen interview.

### 6.1 IMPLICATIONS FOR FOREST POLICIES AND PROGRAMS

What does this new understanding about legacy suggest for forest policy in Nova Scotia? MacQuarrie (1981), author of the earliest comprehensive survey of Nova Scotia woodland owners, noted the importance of landowners' non-economic motivations in the early 1980s. Decades later, however, provincial planning and policy still treat landowners as the passive providers of wood to the marketplace.

For example, the most recent provincial timber objective assumes that 85 percent of private, non-industrial woodland will be available for timber harvest at some point during the next 100 years (Nova Scotia Department of Natural Resources, 2016b). Given that landowners consistently assign a low priority to timber sales, one could argue that current forest planning in Nova Scotia is built on the hope that disinterested heirs or unexpected financial needs (due to illness, divorce, job loss, etc.) eventually will result in harvesting timber on almost all of the woodland in the province. Even if this is true, it is a poor basis on which to build public policy.

If the owners of small forested parcels are motivated by a duty to conserve and enhance woodland values for future beneficiaries, then the provincial government, forest industry, woodlot owner groups and non-profits with an interest in the forest need to rethink the messages they send and the programs they offer. Incentives that are designed only to encourage timber

harvesting are likely to be ineffective. At the very least, new initiatives should incorporate the recognition that the desire to leave a legacy is a key driver of landowner behaviour. A system that fails to acknowledge well-documented changes in landowners' motivations perpetuates an old paradigm that imagines foresters and government officials have the ability to decide what is 'best' for woodland owners.

Policy-makers and advocates also must recognize that forest landowners – like other residents of Nova Scotia – are worried about the impact of widespread clearcutting and perceived overharvesting. Instead of fighting a continual battle over forest practices, government and industry should develop marketing approaches which emphasize that good forest management can accelerate the process of reaching a landowner's own legacy goals (and simultaneously grow more valuable forests for the benefit of all Nova Scotians). The provincial government also should explore or redesign financial incentives (including funding for silvicultural treatments, changes to the property tax system, and other support for long-term management) to encourage landowners' desires to build asset values over time.

Many of the owners interviewed for this study said that they lacked the knowledge, skills or time to manage their woodlands. They professed to have a poor understanding of the long-term consequences of their decisions, and said that they could not find trustworthy and capable forest professionals to help them make good choices. This is a rich area for new programs and services by woodland owner associations. Given the depth of commitment expressed by participants in this study, such groups should develop approaches and activities that emphasize the long-term enhancement of a wide range of values (timber inventory, species diversity, wildlife habitat, and so on) and infrastructure (roads and bridges, recreational trails, farm ponds, etc.). The approach should also incorporate tax planning, boundary line maintenance, and other activities that have

little or no direct impact on the forest itself but are a necessary component of long-term stewardship.

While it is clear that participants in this study were not primarily motivated by money, financial aspects of woodland ownership came up in all 37 interviews. That suggests that an accounting of the near-term economic benefits from forest management activities still has a place in discussions with landowners. This, too, is a fertile area for woodlot owner associations. In this study, the motivations of government agencies and businesses in the forest-products sector – in particular pulp and paper mills – were viewed with skepticism by many participants.

## **6.2 ACHIEVEMENT OF RESEARCH GOAL**

The goal of this research study was to learn more about what matters to non-industrial private woodland owners in Nova Scotia. The objective was to use qualitative methods to more clearly understand landowner attitudes and motivations.

*In situ* data collection and analysis using the methods of grounded theory showed that participants were strongly motivated to conserve and enhance a wide range of values in their woodlands for conveyance to future beneficiaries. They were worried about the long-term impacts of forest practices across the province. They felt a keen responsibility to be good stewards of their own land. Although elements of this stewardship ethic had been identified in previous research, this study found that building legacy was the primary concern of participants. This new understanding suggests that a discussion of ways to create a forest legacy should be an integral part of programs and services for forest landowners.

### **6.3 SUGGESTIONS FOR FUTURE RESEARCH**

Building a legacy is the primary motivator for owners of non-industrial forest parcels in Nova Scotia, and further research is needed into how landowners can best reach that goal. A number of questions need to be answered, including:

1. How might government, woodlot owners associations and for-profit forestry service providers incorporate the concept of legacy into their programs and services?
2. If industry and government are largely interested in increasing the near-term supply of timber, under what conditions will landowners who are concerned about a creating a long-term legacy allow harvests to take place?
3. No owners of recently clear cut parcels volunteered to participate in this study. Do their attitudes and motivations differ from the owners who were interviewed here?

### **6.4 FINAL THOUGHTS**

This thesis suggests that forest landowners in Nova Scotia see their woodlands as a source of significant financial, environmental, or social benefits that must be safeguarded into the future. The precise values that should be protected, and the specific beneficiaries who will receive that legacy, vary from owner to owner. Collectively, however, the participants in this study were united in their belief that the responsibilities that come with woodland ownership are primarily owed to a future world. This is a powerful concept, and it offers a new way to think about the decisions and the behaviours of forest landowners.

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**APPENDIX A ETHICS APPLICATION**

**APPLICATION FOR SUBMISSION TO  
THE DALHOUSIE UNIVERSITY SOCIAL SCIENCES AND HUMANITIES  
RESEARCH ETHICS BOARD**

**THIS FORM SHOULD BE COMPLETED USING THE FOLLOWING DOCUMENT:  
'GUIDANCE FOR SUBMITTING AN APPLICATION FOR RESEARCH ETHICS REVIEW'**

**SECTION 1. ADMINISTRATIVE INFORMATION**

Project Title What attitudes and motivations do small-woodland owners in Nova Scotia have regarding timber harvests?
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<b>1.1 Local Principal Investigator</b> [Lead researcher affiliated with Dalhousie University]			
Name	Andrew Kekacs		
Department	School for Resource and Environmental Studies		
		Phone	902-818-7626
Email	andrew.kekacs@dal.ca	Fax	
For student Submissions	Supervisor's Name/Department	Dr. Peter Duinker, SRES	
	Degree Program	Master of Environmental Studies	

Co-investigator(s) Names and affiliations	Lauranne Sanderson, NSAC

<b>1.2 Signature of Local PI attesting that:</b>
a. All co-investigators have reviewed the ethics submission and are in agreement with it. b. All investigators have read the TriCouncil Policy Statement <i>Ethical conduct for Research Involving Humans</i> and agree to abide by these guidelines
Signature _____ Date 25 July 2011 _____

Other ethics reviews (if any)	Where	None
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	Status			
Funding (if any)	Agency	Northern Pulp Nova Scotia Corporation		
	Award Number	n/a		
Peer review (if any)	None			
Planned start date	1 August 2011	Planned end date	15 July 2012	
Contact person for this submission (if not PI)	Name			
	Email		Phone	

## SECTION 2. PROJECT DESCRIPTION

[Complete all parts, referring to the Guidance Document corresponding to this form]

<b>2.1 INTRODUCTORY SUMMARY</b>	<b>[250 words max]</b>
2.1.1 briefly describe the rationale, purpose, study population and methods	
<p>Forest products companies and the Nova Scotia Department of Natural Resources report a sharp decline in the willingness of small-forest landowners to harvest timber. Given that 56.6 percent of the wood supply in Nova Scotia comes from such lands, the decline could have a strong negative impact on the provincial economy.</p> <p>Studies of Canadian and U.S. small-woodland owners have found that aesthetics, privacy, inheritance issues, and protection of nature were identified more frequently than timber income as “important” reasons for owning forested parcels. The studies suggest that owners of small wooded parcels have a different perception of what constitutes “value” in the forest than do timber companies. This research will explore the attitudes, beliefs, and motivations of such landowners regarding timber harvesting, wildlife, recreation and other activities and values associated with forests. The qualitative study will use a grounded theory approach, with semi-structured interviews designed to encourage participants to talk freely about topics they think are important in whatever detail they believe is necessary. Interviews will be audio-recorded, transcribed, and then coded and analyzed. At least 30 but no more than 50 interviews will be conducted with people who own from 10 to 1,000 hectares of forestland in central Nova Scotia. New interviews will be sought until no new themes are seen to emerge from the data being collected.</p> <p>A better understanding of landowner attitudes and motivations will be of great value to the forest-products industry; environmental organizations and other NGOs; government natural-resource, economic-development and planning departments; and the community of small-forest landowners itself.</p>	



**2.2 BACKGROUND AND PURPOSE** - In this section discuss [3 pages max, not including references]

2.2.1 why there is a need to undertake the study (including a brief literature review)

2.2.2 what new knowledge is anticipated as an outcome of the study

2.2.3. if this is intended to be a pilot study, or a fully developed project

**2.2.1 why there is a need to undertake the study (including a brief literature review)**

Employees of the Nova Scotia Department of Natural Resources, and of forest-products companies in the province, are privately reporting a sharp decline in the number of small-forest landowners who are willing to harvest timber on their lands. Given that 56.6 percent of the timber supply in Nova Scotia comes from non-industrial private lands (Canadian Council of Forest Ministers, 2011), the decline could have a strong negative impact on the provincial economy. If the unwillingness to harvest timber extends beyond Nova Scotia, it could have serious consequences for the forest-products industry, which accounted for about 8.4 percent of Canadian manufacturing output in 2009 (Statistics Canada, 2011). Rotherham (2003) states that Canada has 23 million hectares of privately owned woodlands, which provide 19 percent of the nation's annual supply of timber. About 82.6 percent of the privately owned land is held by non-industrial "family" owners, who are concentrated in eastern Canada and, to a lesser extent, British Columbia (Rotherham, 2003).

Research suggests that there is a transformation underway in the attitudes and values of people who own small forested parcels in North America. Financial considerations appear to be less important for the current generation of woodland owners than for those who came before. While a number of landowner surveys have been conducted in the United States, there are far fewer data specific to Canada, which makes this a fertile ground for investigation.

In a survey of 298 owners of woodland parcels in Maine, Lyle (2005) found that 25% of respondents were unsure when, or if, they would ever harvest timber from their lands again. That is particularly interesting because Lyle only surveyed people who were members of the Small Woodland Owners Association of Maine, which was founded specifically to help the owners learn how to harvest timber from their woodlands (SWOAM, 2011).

A survey of U.S. small-woodland owners by Roper (2006) found that aesthetics, privacy, inheritance issues, and protection of nature/biodiversity were all identified more frequently than timber sales as "important" reasons for owning forested parcels. The Roper survey found that 56% of woodland owners have never harvested timber on their properties, and 52% never plan to harvest.

More recently, Margo MacGregor, a candidate for the Master of Environmental studies degree at Dalhousie University, reported that her unpublished 2010 survey of almost 500 Nova Scotia woodland owners found that only 4% viewed timber sales as a primary source of income (MacGregor, pers. comm.). For 51% of those surveyed by MacGregor, timber sales were not even considered to be a secondary or minor source of income.

### **2.2.2 what new knowledge is anticipated as an outcome of the study**

There has not been any in-depth, qualitative exploration of Nova Scotia forest landowners' attitudes and motivations. Taken as a whole, the surveys cited above suggest that owners of small wooded parcels have a different perception of what constitutes "value" in the forest than do timber companies. This research will explore the relative importance to small-woodland owners of the values commonly associated with forests, including timber income, wildlife habitat, recreation, and so on. It will also attempt to ascertain whether unfavourable views of clear cutting motivate some landowners to avoid timber harvesting altogether.

### **2.2.3. if this is intended to be a pilot study, or a fully developed project**

This will be a fully developed project.

### **References**

Canadian Council of Forest Ministers. (2011). *Nova Scotia Wood Supply Projections*. Retrieved Jan. 19, 2011, from [http://nfdp.ccfm.org/data/tab24\\_c\\_e.php](http://nfdp.ccfm.org/data/tab24_c_e.php)

Lyle, J.S. (2005) *Characteristics, opinions, attitudes and beliefs of Maine landowners who are SWOAM members*. (Unpublished master's thesis). University of Maine, USA.

Roper Public Affairs and Media. (2006). *Family Forest Owners: An In-depth Profile*. New York: GfK NOP.

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Small Woodland Owners Association of Maine. (2011). *About SWOAM*. Retrieved 12 Feb. 2011 from <http://www.swoam.org/about.shtml>

Statistics Canada. (2011). *Manufacturing sales, by subsector*. Retrieved Jan. 19, 2011, from <http://www40.statcan.gc.ca/l01/cst01/manuf11-eng.htm>

## **2.3 STUDY DESIGN – In this section**

2.3.1 state the hypotheses or the research questions or research objectives

2.3.2 describe the general study design and how it will address the hypotheses / questions / objectives

2.3.3 describe how many participants are needed and how this was determined

2.3.4 describe the plan for data analysis in relation to the hypotheses/questions/objectives

2.3.5 if a phased review is being requested, describe why this is needed for this study and which phases are contained in this application

### 2.3.1 state the hypotheses or the research questions or research objectives

Research questions include:

- a. What is the relative importance to small-woodland owners of the values commonly associated with forestland, such as timber income, recreation, and wildlife habitat?
- b. Do landowners think they are currently being offered adequate compensation for their timber to account for other, non-timber values that might that might be diminished by a harvest?
- c. Should forest-products companies offer less-intensive harvesting regimes that align more closely with landowners' desires to protect non-timber values on their lands?

### 2.3.2 describe the general study design and how it will address the hypotheses/ questions / objectives

This qualitative study will take a grounded theory approach, using the personal stories of participants to develop an explanation of the data (Creswell, 1998). Pidgeon (1996) asserted that grounded theory is especially appropriate for the study of "local interactions and meanings as related to the social context in which they actually occur" (page 75).

Interviews will be semi-structured. Questions asked by the researcher will be open-ended and meant only to clarify issues that are raised by participants. After the consent form is discussed and informed consent is obtained, the researcher will begin the interviews with a prompt, most likely, "Tell me about this land." The interview will then proceed to what is intended to be a wide-ranging discussion of topics related to forests and the values that are commonly associated with them. Participants will be encouraged to discuss whatever issues and topics are important to them, in whatever detail they deem to be appropriate.

Interviews will be audio-recorded, transcribed, and then coded and analyzed. Given time constraints and the availability of funding, transcription services will be purchased. Coding will be done using ATLAS.ti software.

At least 30 but no more than 50 interviews will be conducted with people who own from 10 to 1,000 hectares of forestland in central Nova Scotia. New interviews will be sought until no new themes are seen to emerge from the data being collected.

### 2.3.3 describe how many participants are needed and how this was determined

Research indicates that younger landowners may have sharply different values and goals than older landowners. While 20-30 interviews are often seen as sufficient in grounded theory research (Creswell, 1998), age-related variations in attitudes and motivations may require well over 30 interviews to ensure "saturation" in this project. Creswell (1998) defines saturation as the point at which no new information is being collected from participants.

### 2.3.4 describe the plan for data analysis in relation to the hypotheses/questions/objectives

Grounded theory aims to develop an explanation of data only after a systematic coding and

analysis of the information that has been collected (Creswell, 1998). ATLAS.ti qualitative analysis software will be used to explore, analyze and consider trends and themes within the data, ultimately allowing the researcher to develop a theory about the attitudes and motivations of small-woodlot owners in Nova Scotia.

2.3.5 if a phased review is being requested, describe why this is needed for this study and which phases are contained in this application

Not applicable.

### References

Creswell, J.W. (1998) *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks: Sage Publications.

Pidgeon, N. (1996) Grounded Theory: Theoretical Background. (pp 75-85) In *Handbook of Qualitative Research Methods for Psychology and the Social Sciences*. Richardson, J.T.E. (Ed.) Oxford: BPS Blackwell.

**2.4 RECRUITMENT** – In this section, for each type of participant to be recruited, describe

2.4.1 the study population

2.4.2 any social / cultural / safety considerations

2.4.3 and justify all specific inclusion / exclusion criteria of participants

2.4.4 any recruitment instruments (attach copies)

2.4.5 who will be doing the recruitment and what actions they will take

2.4.6 any screening measures, and how they will be used (attach copies)

2.4.7 any permissions that are needed and attach letters

2.4.1 the study population

The study population is all owners of forested parcels from 10 to 1,000 hectares in size who live in central Nova Scotia, which is defined as the region from Halifax and Windsor north and east to the New Brunswick border and the Canso Causeway.

2.4.2 any social / cultural / safety considerations

There are no social or cultural considerations. Landowners who are concerned about walking in their woodlands during the interview may opt instead to stand or sit outside in the woods, or sit in a motor vehicle in the forest, or to be interviewed in their own homes.

2.4.3 and justify all specific inclusion / exclusion criteria of participants

This research is focused on understanding the attitudes, beliefs and motivations of people who own small to medium-sized forest parcels, so it is necessary to interview only people who meet those

criteria. The definition of what constitutes “small to medium-sized parcels” is deliberately broad, to encompass the range of ownerships typically found in Nova Scotia. Unlike the quantitative research that has been conducted to date, this research aims to elicit attitudes, beliefs and motivations from the landowners’ personal stories, rather than from a survey instrument. It is believed that conducting the interviews while on the owners’ woodlots will facilitate a deeper discussion of personal values, so it is hoped that most of the interviews will be in the field.

2.4.4 any recruitment instruments (attach copies)

Copies of the two recruitment instruments are attached. Participants will be recruited through news stories that appear in newspapers and magazines that serve central Nova Scotia, as well as through posters that will be displayed in places likely to reach people who meet the inclusion criteria, for example chainsaw dealers, agricultural supply stores, and on message boards at gathering places in rural communities within the study area.

2.4.5 who will be doing the recruitment and what actions they will take

The principal investigator do the recruitment. He will answer telephone calls and e-mails from interested parties (copies of the scripts are attached), verify that they meet the inclusion criteria, and arrange face-to-face meetings at which consent forms can be reviewed and discussed.

2.4.6 any screening measures, and how they will be used (attach copies)

Not applicable.

2.4.7 any permissions that are needed and attach letters

Not applicable.

**2.5 INFORMED CONSENT PROCESS – In this section**

2.5.1 describe the informed consent process (attach a copy of all consent forms)

2.5.2 if oral consent is desired, describe why it is necessary and how it will be done (attach a copy of the script)

2.5.3 if a waiver of informed consent is sought, explain why and describe how the four criteria needed for this are met

2.5.4 for third party consent (with or without assent), describe how this will be done

2.5.5 describe plans (if any) for on-going consent

2.5.6 if community consent is needed, describe how it will be obtained

2.5.1 describe the informed consent process (attach a copy of all consent forms)

The principal investigator has prepared a consent form that meets all of the requirements of the Dalhousie research ethics process. He will arrange individual, face-to-face meetings with all potential participants for the purpose of reviewing the consent form. Potential participants will be presented with and asked to read a copy of the form. The principal investigator will be available to

discuss any questions that might arise. When the entire form has been read by potential participants and any questions answered, they will be asked to initial the appropriate statements and print their name and contact information on the last page of the consent form, and then sign it. On average, the process should take about 15 minutes.

2.5.2 if oral consent is desired, describe why it is necessary and how it will be done (attach a copy of the script)

Not applicable

2.5.3 if a waiver of informed consent is sought, explain why and describe how the four criteria needed for this are met

Not applicable.

2.5.4 for third party consent (with or without assent), describe how this will be done

Not applicable.

2.5.5 describe plans (if any) for on-going consent

Not applicable.

2.5.6 if community consent is needed, describe how it will be obtained

Not applicable.

## **2.6 DETAILED METHODOLOGY** - In this section describe

2.6.1 where the research will be conducted

2.6.2 what participants will be asked to do and the time each task will take (plus total time)

2.6.3 what data will be recorded and what research instruments will be used (attach copies)

2.6.4 the roles and qualifications of the study investigators / research staff

2.6.5 how long the participants will be involved in each part of the study

2.6.1 where the research will be conducted

For most participants, this research will be conducted in the woodlots they own. Those who are unable or unwilling to visit the parcels may be interviewed in their own homes.

2.6.2 what participants will be asked to do and the time each task will take (plus total time)

Ideally, participants will be asked to take a walk through the woodland with the principal investigator, while talking about the reasons that they own the property, the things they value about it, and their plans for the future. The discussion can take place in the participants' home if mobility or other issues require it. Participants will be encouraged to talk about any issues or topics that are important to them, in whatever detail they deem to be appropriate. Total time is estimated to be 1-2 hours.

#### 2.6.3 what data will be recorded and what research instruments will be used (attach copies)

The principal investigator will make an audio recording of the interview. An interview guide has been prepared and is attached to this application, but the semi-structured nature of the interviews and the use of a grounded-theory approach mean that the prompts presented in the guide will only be used to clarify points raised by the participant or to stimulate discussion.

#### 2.6.4 the roles and qualifications of the study investigators / research staff

**Andrew Kekacs** is a 2012 candidate for the Master of Environmental Studies degree at Dalhousie University. He received a bachelor's degree in journalism, magna cum laude, from University of Connecticut in 1982. In addition, he studied economics in the graduate program at Trinity College in Hartford, Conn. An award-winning environmental reporter from Maine, he has written about forests and rural communities for newspapers, magazines and online publications in the United States for more than 25 years. He is a member of the Society of Environmental Journalists, a Fellow of the Institutes for Journalism and Natural Resources, and was a founding member of the steering committee for the Forest Ecosystem Information Exchange. He has also owned small woodlands and harvested a variety of timber and non-timber products from the forest.

**Dr. Peter Duinker**, Professor and Director, School for Resource and Environmental Studies, Dalhousie University. Among many relevant activities over his 23-year career as a professor, Dr. Duinker has done extensive research in both the biophysical and socio-political areas of forest management and certification, as well as in land-use planning and environmental assessment.

**Lauranne Sanderson**, Professor and Department Head, Business and Social Sciences, Nova Scotia Agricultural College. Professor Sanderson is active in the Rural Research Centre at NSAC and was the lead researcher in the 2000 and 2010 surveys of woodland owners in Nova Scotia.

#### 2.6.5 how long the participants will be involved in each part of the study

Participants will spend about 15 minutes reviewing the consent form for the study, and from 1-2 hours discussing their attitudes, beliefs and motivations regarding their woodlands.

### 2.7 DECEPTION / INCOMPLETE DISCLOSURE (if applicable) - In this section describe

2.7.1 what misdirection will be used (if any) and discuss its justification

2.7.2 what information will not be disclosed to participants and discuss its justification

2.7.3 how participants will be debriefed and given the opportunity to withdraw

2.7.1 what misdirection will be used (if any) and discuss its justification

Not applicable.

2.7.2 what information will not be disclosed to participants and discuss its justification

Not applicable.

2.7.3 how participants will be debriefed and given the opportunity to withdraw

Not applicable.

## **2.8 RISK ANALYSIS** – In this section describe

2.8.1 what risks or discomforts are anticipated for participants

2.8.2 the estimated probability of these risks (e.g., low, medium, high or more precisely if possible)

2.8.3 what steps will be taken to mitigate the risks

2.8.4 what risks might exist for communities that are involved in the study

2.8.1 what risks or discomforts are anticipated for participants

Minimal to no risks or discomforts are anticipated for survey participants. The interviews are completely voluntary. If participants are uncomfortable with a particular topic or question, they are encouraged to move on to a new area of discussion. Furthermore, they may withdraw from the study at any time. The discussion may cause some owners to question the decisions they have made regarding their woodlands. Inadvertent disclosure of confidential information is always a possibility, but protocols to safeguard such information should make disclosure extremely unlikely. The principal investigator is obligated to tell the authorities about situations that appear to pose a threat to the health or safety of children or adults. This duty to report overrides the promise of confidentiality and could present a risk to some participants. That issue is discussed in the consent form. If he sees other situations with potential legal implications – for example, cultivation of marijuana or pollution of a water body – Andrew Kekacs is not obligated to report the matter, and he will not do so. He will not discuss it with the landowner, nor will he note it in his records of the interview. That situation also is discussed in the consent form.

2.8.2 the estimated probability of these risks (e.g., low, medium, high or more precisely if possible)

The estimated probability of these risks to participants is low.

2.8.3 what steps will be taken to mitigate the risks

The interviews are completely voluntary. If participants are uncomfortable with a particular topic or



question, they are encouraged to move on to a new area of discussion. Furthermore, they may withdraw from the study at any time. If the discussion causes some owners to have questions about decisions they have made regarding their woodlands, the research team can provide a list of resources available to small forest landowners in Nova Scotia. If owners are concerned about walking in their woodlands because of mobility limitations or other reasons, they may opt instead to stand or sit outside in the woods, sit in a motor vehicle in the forest, or be interviewed in their own homes. All information collected from participants in the research will be safeguarded as described in Section 2.10 below.

2.8.4 what risks might exist for communities that are involved in the study

Not applicable.

**2.9 BENEFITS** - In this section describe

2.9.1 the direct benefits (if any) of participation to participants (not compensation)

2.9.2 the indirect benefits of the study (i.e., contribution to new knowledge)

2.9.1 the direct benefits (if any) of participation to participants (not compensation)

There are not expected to be any direct benefits to participants.

2.9.2 the indirect benefits of the study (i.e., contribution to new knowledge)

A better understanding of landowners' attitudes, beliefs and motivations will be of great value to provincial and federal natural-resource, economic-development and planning departments; the forest-products industry; environmental organizations and other NGOs; and the community of small-forest landowners itself. The information can be used to develop programs that inform, support or compensate landowners for the values they perceive to be most important in their woodlands.

**2.10 CONFIDENTIALITY and ANONYMITY** - In this section describe

2.10.1 whether the data to be collected is of a personal or sensitive nature

2.10.2 how the data will be collected, stored and handled in a confidential manner

2.10.3 how long the data will be retained, and what the plans are for its destruction

2.10.4 if it is possible for participants to remain anonymous, and how it will be achieved

2.10.5 how a 'duty to disclose' abuse or neglect of a child, or adult in need of protection, will be

handled

2.10.6 if a waiver of confidentiality is to be sought from participants, and why

#### 2.10.1 whether the data to be collected is of a personal or sensitive nature

Some of the data collected will be of a personal or sensitive nature. All information, including personal information, will be kept confidential as described below. In reporting the results of the research, no participant's name or other identifying information will be linked to their responses in any way.

#### 2.10.2 how the data will be collected, stored and handled in a confidential manner

Most participants will be interviewed in their own woodlots, where the likelihood of observation by others is small. Participants will sign a consent form that includes their names and contact information, as well as a numerical identifier that links them to the audio recording of their interview. The audio recordings will not be marked with any identity information, only the numerical identifier. The transcriber who processes the audio recordings will not have access to the consent forms, and will be required to sign a confidentiality agreement specifying how the data will be protected (discussed further below). The digital recordings, transcripts and any files created for analysis will be stored in a password-protected computer. Paper copies of the material, if created, will be stored in a locked cabinet at SRES, Dalhousie University. The consent forms with the numerical identifiers will be stored in a separate office and locked cabinet at SRES. Only the three members of the research team will have access to any of the materials related to the study.

#### 2.10.3 how long the data will be retained, and what the plans are for its destruction

Consistent with university regulations, research data be maintained for five years after the publication of any papers that result from this study. After that time, the principal investigator will shred paper copies of all research material and erase all digital data using software designed to irrevocably wipe files.

#### 2.10.4 if it is possible for participants to remain anonymous, and how it will be achieved

Because the interviews will be conducted face-to-face in the participants' woodlands, it is not possible for participants to remain anonymous.

#### 2.10.5 how a 'duty to disclose' abuse or neglect of a child, or adult in need of protection, will be handled

On the consent form, participants are advised that the principal investigator will disclose to the appropriate authorities any evidence of child abuse or neglect, or of an adult in need of protection. Participants are advised that this duty to report overrides the promise of confidentiality.

#### 2.10.6 if a waiver of confidentiality is to be sought from participants, and why

No waiver of confidentiality will be sought.

### **2.11 USE OF QUOTATIONS** – In this section describe

- 2.11.1 whether participants will be quoted in the final report, and if so
- 2.11.2 describe how permission will be obtained for this
- 2.11.3 describe whether the quotes be attributed, how permission for this will be obtained and how participants will be given the chance to see how the quotes are used

- 2.11.1 whether participants will be quoted in the final report, and if so

It is likely that some participants will be quoted in the final report. If so, quotes will not be attributed by name, only to “a participant.”

- 2.11.2 describe how permission will be obtained for this

Permission for the use of quotes is requested on the consent form.

- 2.11.3 describe whether the quotes be attributed, how permission for this will be obtained and how participants will be given the chance to see how the quotes are used

Quotes will only be attributed to “a participant,” not to a specific individual. Permission for this is requested on the consent form. Because the quotes are not attributed by name, participants will not be given a chance to see how they are used.

## **2.12 COMPENSATION** - In this section describe

- 2.12.1 what compensation will be offered to participants (if any), how it will be done and how it will be handled for participants who do not complete the study
- 2.12.2 whether participants are likely to incur any additional expenses

2.12.1 what compensation will be offered to participants (if any), how it will be done and how it will be handled for participants who do not complete the study

No compensation will be offered.

2.12.2 whether participants are likely to incur any additional expenses

The only additional expense is anticipated to be travel costs to the woodland for owners who do not live on the property.

**2.13 PROVISION OF RESULTS TO PARTICIPANTS** - In this section, describe

2.13.1 plans to provide results of the study to participants

2.13.2 whether individual results will be provided to study participants, and how

2.13.3 how participants will be informed of results that may indicate they may be at risk

2.13.1 plans to provide results of the study to participants

On the consent form, participants are asked to indicate if they would like to receive an electronic copy of the results of the survey and, if so, to provide contact information.

2.13.2 whether individual results will be provided to study participants, and how

Because individual results are not reported by name, they will not be provided to participants.

2.13.3 how participants will be informed of results that may indicate they may be at risk

Not applicable.

**2.14 COMPLIANCE WITH PRIVACY LEGISLATION** – In this section,

2.14.1 state what software (if any) you will use to collect (e.g. survey software), store (e.g., database software) or analyze your data.

2.14.2 state whether a survey company will be used to assist in data collection, management storage or analysis

2.14.3 describe what provisions (if any) of the University policy on the *Protection of Personal Information from Access Outside Canada* apply and how they have been met.

2.14.1 state what software (if any) you will use to collect (e.g. survey software), store (e.g., database software) or analyze your data.

Audio recording software will be used to record the interviews. A word processing program will be used to transcribe the recordings into text. ATLAS.ti will be used to code and analyze the transcribed data. It is likely that all of this software will not be of Canadian origin.

2.14.2 state whether a survey company will be used to assist in data collection, management storage or analysis

A survey company will not be used.

2.14.3 describe what provisions (if any) of the University policy on the *Protection of Personal Information from Access Outside Canada* apply and how they have been met.

Researchers will likely be using non-Canadian software to collect, store, analyze and manage the data. Form A will be completed and ethics approval will be sought prior to purchasing the software. If software is already owned by the researchers, Form B will be completed and approval will be sought prior to renewing any service or troubleshooting agreements. The consent form will notify participants about these arrangements and explain potential limitations to confidentiality. Personal data will not be transported outside of Canada, nor will it be shared with colleagues outside of the country. Personal information will not be shared outside of the research team.

## **2.15 CONFLICT OF INTEREST – In this section**

2.15.1 whether any conflict of interest exists for any member of the research team in relation to the sponsor of the study

2.15.2 whether any conflict of interest exists for any member of the research team with respect to their relationship to the potential research participants (e.g., teacher / student)

2.15.1 whether any conflict of interest exists for any member of the research team in relation to the sponsor of the study

In 2010, Northern Pulp Nova Scotia Corporation retained Dr. Peter Duinker to help develop a five-year program of research for the company. Among other things, Northern Pulp's senior managers identified a lack of knowledge about the attitudes and motivations of woodland owners as a key uncertainty in their business planning. Although Northern Pulp has committed to fund this study, it has no input into the design or execution of the project. It will have no access to audio recordings, interview transcripts, consent forms, or any other raw data from the project. It will not be able to identify or contact any participants. Northern Pulp will receive occasional written updates from the principal investigator that detail progress toward completion of the study, and a final written report after the data have been collected and analyzed. The results of the study will also be made publicly available in one or more research papers to be submitted to forest-related journals, and provided to participants who request it.

2.15.2 whether any conflict of interest exists for any member of the research team with respect

to their relationship to the potential research participants (e.g., teacher / student)

No conflict of interest exists.

**SECTION 3. INFORMED CONSENT**

**Consult Section 3 of GUIDANCE FOR SUBMITTING AN APPLICATION FOR RESEARCH ETHICS REVIEW**

**3.1 CONSENT FORM CHECKLIST**

Please complete this checklist and submit with the application.

YES	N/A	Have you included the following in your consent form / process?
Y		Identification of document as CONSENT FORM
Y		Title of study
Y		Identity and affiliation of researchers
Y		Contact information of individual conducting the study
Y		Invitation to participate in <u>research</u>
Y		Assurance of voluntariness and right to withdraw without repercussions
Y		Short description of the purpose of the study
Y		Short description of the study design and how many participants are involved
Y		Inclusion and exclusion criteria
Y		Description of what the participant is being asked to do
Y		Estimate of the participant's time commitment
Y		Description of where the research will take place
Y		Description of special clothing or other preparations required of the participant
Y		Description of how anonymity will be handled
Y		Description of how confidentiality of the data will be assured
Y		Description of any necessary limitations of confidentiality protections
Y		Description of the nature and probability of risks for participants
Y		Description of the benefits for participants
	n/a	Declaration of any researcher conflict of interest
	n/a	Description of any possible commercial outcomes of the research
	n/a	Description of how participants will review transcripts of interviews
Y		Description of how study results will be provided to participants
Y		Permissions requested for audio/video taping
Y		Permissions requested for use of quotations
Y		Permission for future use of data in specified studies
	n/a	Permission to recontact participant for participation in future studies
	n/a	Permissions related to transportation/use of data outside of Nova Scotia
	n/a	How assent of participant will be sought when 3 <sup>rd</sup> parties give consent
Y		Signature statement indicating that information has been provided
Y		Signatures of participant and person obtaining consent

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<b>YES</b>	<b>N/A</b>	<b>Have you addressed the following in your Consent Form / Process ?</b>
Y		Appropriate Reading comprehension level (Grade 8)
Y		Avoidance of technical language
Y		Formatting: font size (min 12 pt), headings, page numbering
	n/a	Clear distinction between clinical care / research procedures
Y		No waiver of rights is sought

## APPENDIX B INTERVIEW GUIDE

### Interview Guide

Note: Because this qualitative research project takes a grounded theory approach, questions or prompts by the researcher – if used at all – are meant only to engage participants in the process of telling their stories, or to clarify points that they have already made. After the consent form is discussed and informed consent is obtained, participants will be invited to begin a wide-ranging discussion of topics related to forest ownership and the values and activities that are commonly associated with it. Participants will be encouraged to discuss any issues or topics that are important to them, in whatever detail they deem to be appropriate. The goal is to collect deeply detailed, personal stories about the land and their connections to it.

**Study title:** What attitudes and motivations do small-woodland owners in Nova Scotia have regarding timber harvests?

**Preamble:** Thank you for agreeing to take part in our study. As we discussed a short time ago, you have been asked to participate because you are an owner of forestland in central Nova Scotia. This is a confidential interview, and it is being audio recorded with your permission. I invite you to speak as openly and honestly as you feel is comfortable. You are welcome to talk about any issues that you think are important in relation to your forestland, in whatever detail you feel is needed. There are no right or wrong answers or topics. The research team values your experiences and insights, and we want to hear what you have to say. The questions that I might ask from time to time are meant only to clarify the points you have made, or to stimulate discussion. If you feel uncomfortable with any of question or topic, you do not have to answer. You may stop the interview or withdraw from the study at any time.

#### Land

Please tell me about this piece of land.

Prompts: How long have you owned this land? How large is this parcel? Are you the sole owner of the land? Does anyone else help you to make decisions about what happens on this land? From whom did you acquire the land? Did you know the previous owner? Do you own any other forestland? Do you live on this (or another) parcel of forestland?

#### Demographics

Tell me a little about yourself.

Prompts: In what decade were you born? Where did you go to school? Are you employed? How many years until you expect to retire? Do you have any children? How old are they?

#### Ownership goals



People have many reasons for owning forestland. I'd like to hear more about yours.

Prompts: Why did you acquire this parcel? What do you value most about it? What are your goals for the land over the next few years? What do you hope will happen to the land over the long term? Do your children know about your plans?

### **Timber harvesting**

What do you think about timber harvesting?

Prompts: Have you ever had a timber harvest on this or another parcel of forest land that you own? Why or why not? Who did the harvest? What harvest method was used (clear cutting, shelterwood, selection cutting, etc.)? Did the harvest achieve your objectives? Why or why not? Did you feel adequately compensated for the wood that you sold? Do you plan to harvest in the future? Why or why not? Have you seen harvesting on nearby parcels of forestland? How would you describe the results of those harvests? Do the harvests on nearby parcels make you more likely, or less likely, to harvest on your own land?

### **Aesthetics and personal satisfaction**

What do you enjoy most about this land?

Prompts: How important is your enjoyment of solitude and beauty on this land? Have you personally done any work in this the forest (tree planting, building hiking trails, removal of dead or dying trees, firewood harvesting for personal use, commercial harvesting)?

### **Wildlife**

Do you hunt on this land? Fish? Watch birds or other wildlife?

Prompts: Have you taken any steps to improve wildlife habitat on this parcel? Is that important to you?

### **Recreation**

Do you use this land for outdoor recreation (hiking, snowshoeing, cross-country skiing, snowmobiling, wild food gathering, etc.)?

Prompts: Do other people use this land for outdoor recreation? How important is recreation to you?

### **Income, taxes and estates**

How important is this property as a source of income or as a long-term investment for you?

Prompts: Do you see the economic value as coming primarily from commercial timber sales, personal harvesting of forest products such as firewood, future development of the parcel, or some other opportunity? What percentage of your total income comes from timber sales on this or other forestland you own? What percentage of your total assets is in forestland? How would you describe your understanding of tax and inheritance issues related to forest ownership?

### **Other issues and topics**

Are there any other issues or topics that are important to you when you think about your woodlands?

### **Conclusion**

Thank you for taking the time to talk with me. It has been a pleasure to learn more about you and your woodlands. If you have any questions or concerns about the issues we have discussed – now or later – please don't hesitate to contact me.

As you know, the information you provided will be included in a study of attitudes, beliefs and motivations about timber harvesting and other forest activities and values. Do you want to see the results of this project? If so, I will use the contact information you provided on the consent form.

## APPENDIX C PRESS RELEASE



For more information, please contact Andrew Kekacs at 902-818-7626 or [andrew.kekacs@dal.ca](mailto:andrew.kekacs@dal.ca).

### ***Researcher Seeks to Interview Woodland Owners***

HALIFAX (14 August 2011) – More than half of the wood cut in Nova Scotia comes from “family” forests. That means decisions made by the owners of small woodland parcels can have a big impact on forest resources and the provincial economy.

A graduate student in the School for Resource and Environmental Studies at Dalhousie University wants to interview the owners of forested parcels from 10 to 1,000 hectares (25 to 2,500 acres) in size to better understand their opinions and beliefs about timber harvesting and other activities and values associated with forestland.

The study is titled, “What attitudes and motivations do small-woodland owners in Nova Scotia have regarding timber harvests?” The lead researcher is Andrew Kekacs, a candidate for the Master of Environmental Studies degree at Dalhousie. The research team includes Dr. Peter Duinker, Professor and Director of the School for Resource and Environmental Studies at Dalhousie University; Kate Sherren, Assistant Professor in the School for Resource and Environmental Studies at Dalhousie University; and Lauranne Sanderson, Professor and Department Head, Business and Social Sciences, Nova Scotia Agricultural College. The project is funded in part by Northern Pulp Nova Scotia Corporation, a timber company based in Abercrombie Point, NS.

Landowners who agree to participate in the study will be invited to accompany Kekacs on a one-to two-hour walk in their woodlands. During that time, they will be asked to discuss how and when they acquired the property, what they value about it, and what they hope will become of it. They will be encouraged to talk about whatever issues they believe are important to their forestland, in whatever detail they feel is needed. No compensation will be offered to participants.

The study will help natural resource managers to better understand the thinking of people who own small forested parcels. People with woodland in central Nova Scotia are invited to contact Andrew Kekacs at 902-818-7626 or [andrew.kekacs@dal.ca](mailto:andrew.kekacs@dal.ca) to learn more about the project.

## APPENDIX D EMAIL RESPONSE SCRIPT

### **Subject: Interviews with small-woodland owners**

Thank you for contacting me about the research project titled, “What attitudes and motivations do small-woodland owners in Nova Scotia have regarding timber harvests?”

My name is Andrew Kekacs, and I am conducting the study as part of my Master of Environmental Studies degree at Dalhousie University. The research team also includes Peter Duinker, who is Professor and Director of the School for Resource and Environmental Studies at Dalhousie University; Kate Sherren, Assistant Professor in the School for Resource and Environmental Studies; and Lauranne Sanderson, Professor and Department Head in Business and Social Sciences at Nova Scotia Agricultural College.

We want to talk with people who own from 10 to 1,000 hectares of forestland in central Nova Scotia. More than half of the wood cut in Nova Scotia comes from such “family” forests, which means that decisions made by the owners of small woodland parcels can have a big impact on forest resources.

This study will help natural resource managers to better understand the thinking of people who own forested parcels. It is funded in part by Northern Pulp Nova Scotia Corporation, a timber company based in Abercrombie, NS.

The research will be based on interviews with 30 to 50 landowners in central Nova Scotia. Ideally, the interviews will be audio recorded while on one- to two-hour walks in the owners’ woodlots. If you choose to take part, you will be asked to describe how and when you acquired the property, what you value about it, and what you hope will become of it. You will be encouraged to talk about whatever issues you think are important to your forestland, in whatever detail you feel is needed. No compensation will be offered to participants.

If you are unwilling or unable to walk in your woodlands, the conversation can take place while we are standing or seated outside in your woodlands, seated in a vehicle on the property, or in your own home.

If you want to participate, I would like to schedule a meeting where we can discuss the study in greater detail and obtain your written consent. Please contact me via e-mail at [andrew.kekacs@dal.ca](mailto:andrew.kekacs@dal.ca) or by telephone at 902-818-7626 if you want to proceed.

Best wishes,

Andrew Kekacs

## APPENDIX E TELEPHONE RESPONSE SCRIPT

Thank you for calling. I'd be glad to tell you more about the research project, which is titled, "What attitudes and motivations do small-woodland owners in Nova Scotia have regarding timber harvests?"

My name is Andrew Kekacs, and I am conducting the study as part of my Master of Environmental Studies degree at Dalhousie University. The research team also includes Peter Duinker, who is Professor and Director of the School for Resource and Environmental Studies at Dalhousie University; Kate Sherren, who is an Assistant Professor in the School for Resource and Environmental Studies; and Lauranne Sanderson, who is Professor and Department Head in Business and Social Sciences at Nova Scotia Agricultural College.

We want to talk with people who own from 10 to 1,000 hectares of forestland in central Nova Scotia. More than half of the wood cut in Nova Scotia comes from such "family" forests, which means that decisions made by the owners of small woodland parcels can have a big impact on forest resources. This study will help natural resource managers to better understand the thinking of people who own small forested parcels. It is funded in part by Northern Pulp Nova Scotia Corporation, a timber company based in Abercrombie, NS.

The research will be based on interviews with at least 30 landowners in central Nova Scotia. Ideally, the interviews will be audio recorded while on one- to two-hour walks in the owners' woodlots. If you choose to take part, you will be asked to describe how and when you acquired the property, what you value about it, and what you hope will become of it. You will be encouraged to talk about whatever issues you think are important to your forestland, in whatever detail you feel is needed. No compensation will be offered to participants.

If you are unwilling or unable to walk in your woodlands, the conversation can take place while we are standing or seated in your woodlands, seated in a vehicle on the property, or in your own home.

If you want to participate, I would like to schedule a meeting where we can discuss the study in greater detail and obtain your written consent. Would you be willing to do that now?

Thank you for your interest in this project.

## APPENDIX F CONSENT FORM

### **Project title**

What attitudes and motivations do small-woodland owners in Nova Scotia have regarding timber harvests?

### **Researchers**

Andrew Kekacs, Halifax, NS; e-mail [andrew.kekacs@dal.ca](mailto:andrew.kekacs@dal.ca); telephone: 902-818-7626

Dr. Peter Duinker, Halifax, NS; e-mail [peter.duinker@dal.ca](mailto:peter.duinker@dal.ca)

Lauranne Sanderson, Truro, NS; e-mail [lsanderson@nsac.ca](mailto:lsanderson@nsac.ca)

Dr. Kate Sherren, Halifax, NS; e-mail [kate.sherren@fal.ca](mailto:kate.sherren@fal.ca)

### **Introduction**

We invite you to take part in a research study being conducted by Andrew Kekacs, who is a candidate for the Master of Environmental Studies degree at Dalhousie University. Your participation is voluntary, and you may withdraw at any time. The project is described below. This description tells you about the risks, inconvenience or discomfort that you might experience. Participating in the study might not benefit you directly, but we might learn things that will benefit others. You should discuss any questions you have with Andrew Kekacs.

### **Purpose of the study**

More than half of the wood cut in Nova Scotia comes from “family” forests. That means decisions made by you and other owners of small woodlands can have a big impact on forest resources. This research will help natural resource managers to better understand the attitudes, beliefs and motivations of people who own forested parcels.

### **Study design and methods**

The research will be based on interviews with at least 30 but no more than 50 people in central Nova Scotia who own forested parcels of up to 1,000 hectares. If you choose to take part, your interview will be audio recorded while you are on a one- to two-hour walk in your woodlot with Andrew Kekacs. If you are unable or unwilling to walk in the woods, the interview can be conducted while standing or sitting the forest, sitting in a vehicle that is parked in the woods, or in your own home. You will be asked to talk about issues that are important to you as a forest landowner, in whatever detail you feel is needed. The interview will be conducted in the summer or fall of 2011.

### **Who can participate in the study?**

This study is open to people who own from 10 to 1,000 hectares of forestland in central Nova Scotia. If you choose to take part, you will also be asked to agree to audio recording of the interview.

### **Who will be conducting and funding the research?**

In addition to Andrew Kekacs, the research team includes Dr. Peter Duinker, Professor and Director of School for Resource and Environmental Studies at Dalhousie University; Kate

Sherren, Assistant Professor in the School for Resource and Environmental Studies; and Lauranne Sanderson, Professor and Department Head, Business and Social Sciences, Nova Scotia Agricultural College. The research is funded in part by Northern Pulp Nova Scotia Corporation, a timber company based in Abercrombie Point, NS. Your name, the audio recording and written transcription, and all other information that might identify you or your property will be kept confidential by the research team and will not be shared with Northern Pulp or any other entity or individual. Northern Pulp will receive updates on the progress of the research, and will receive a final report when the study is concluded. The results of the study will also be made publicly available in one or more research papers to be submitted to forest-related journals. Participants may request an electronic copy of any research papers that are produced by initialing the appropriate statement on this consent form and providing contact information.

### **What will you be asked to do?**

As a participant, you will be asked to accompany Andrew Kekacs on a single, one- to two-hour walk in your woodlands. During that time, you will be encouraged to discuss your attitudes and beliefs regarding timber harvesting, wildlife, recreation and other activities or values associated with your forestland. You will be asked to describe how and when you acquired the property; what you value most about it; and what you hope will become of it. You will be encouraged to talk about any topics that you think are important, in whatever detail you feel is needed.

### **Possible Risks and Discomforts**

We expect minimal risk or discomfort to you as a result of participation in this research project. If you find it physically challenging to walk through your woodlands, the discussion can occur while standing still or sitting in a motor vehicle, or in your own home. You might view the discussion as an inconvenience, but you do not have to participate. You may also withdraw from the study at any time. Information collected up to that point will be used as part of the study, and will be retained under the conditions and for the time period described below.

The research team will not evaluate your actions as a landowner. We are only interested in your attitudes and beliefs regarding your land. There are no right or wrong answers. We value your insights, so we want to hear what you have to say in your own words. If you feel uncomfortable with any topic or question, you do not have to answer. If the discussion causes you to be unsure about decisions you have made, the research team can provide you with a list of resources available to small-woodlot owners in Nova Scotia.

Provincial law and the regulations of Dalhousie University require Andrew Kekacs to tell the authorities about situations that appear to pose a threat to the health or safety of children or adults. The duty to report overrides our promise of confidentiality. If he sees other situations with potential legal implications – for example, cultivation of marijuana or pollution of a water body – Andrew Kekacs is not obligated to report the matter, and he will not do so. He will not discuss it with you, nor will he note it in his records of the interview.

## **Possible Benefits**

This research is not expected to benefit you directly, but it will help to inform the activities of natural resource managers as they relate to “family” forest owners. If you desire, you will be provided with copies of any research papers that result from this study.

## **Compensation/Reimbursement**

There is no compensation to you as a participant in this study. Other than your time and any travel costs, there should be no expense to you as a participant.

## **Confidentiality**

If you choose to participate in this study, your comments will be audio recorded by Andrew Kekacs. The recording will be assigned a numerical identifier and will not have your name or any other personal information attached to it. The recording will be sent to a transcriptionist, who will prepare a written record of the conversation. The transcriptionist will be required to sign a confidentiality agreement that specifies, among other things, that all recordings and written records will be returned to the research team, and no copies will be retained by the transcriptionist. Recordings and written records will only be available to the research team. Direct quotes, if used, will be attributed to “a participant.” Information that might reveal your identity (for example, the address of your property or the name of the person you acquired it from) will not be reported in the study. All computers on which data is stored will be password-protected and available only to members of the research team. This consent form, the audio recording of your interview, and the written transcription of it will be kept in locked cabinets or password-protected computers accessible only to members of the research team. University regulations require that the data be maintained for five years after the publication of any papers that result from this study. After that time, it will be destroyed.

## **Use of non-Canadian software**

To minimize the potential for inadvertent release of confidential information, the researchers will fully comply with provisions of the Dalhousie University Policy for the Protection of Personal Information from Access Outside Canada. All purchases of non-Canadian software used in this project will be subject to the prior approval of the Dalhousie University Office of Research Ethics Administration. All renewals of service or troubleshooting agreements for previously purchased, non-Canadian software will also be submitted for approval.

## **Questions**

If you have questions about this project or your participation in it, you may contact Andrew Kekacs at the e-mail address or telephone number listed above.

## **Problems or Concerns**

If you have any difficulties with, or wish to voice concern about, any aspect of your participation in this study, you may contact Dalhousie University’s Office of Human Research Ethics Administration for assistance at (902) 494-1462. Collect calls will be accepted.



## Consent Form

**Project Title:** What attitudes and motivations do small-woodland owners in Nova Scotia have regarding timber harvests?

*"I have read the explanation about this study. I have been given the opportunity to discuss it and my questions have been answered to my satisfaction. I hereby consent (please initial):*

\_\_\_\_\_ *to take part in this study;*

\_\_\_\_\_ *to have an audio recording made of my comments;*

\_\_\_\_\_ *and to allow anonymous direct quotes to be used in any reports or research papers that result from this study.*

\_\_\_\_\_ *Furthermore, I want to receive an electronic copy of all research papers that result from this study.*

*I understand that my participation is voluntary, and that I am free to withdraw from the study at any time."*

Name (please print): \_\_\_\_\_ Phone: \_\_\_\_\_

Address: \_\_\_\_\_ E-mail: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

You may contact me via phone:    yes    no                      You may contact me via e-mail:    yes    no

Researcher: \_\_\_\_\_ Date: \_\_\_\_\_

Numerical identifier: \_\_\_\_\_

## APPENDIX G CODE LIST WITH QUOTE COUNTS

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Code: Access for Public {27}

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Code: Acreage {39}

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Code: Advice {18}

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Code: Age Range 30 {1}

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Code: Age Range 40 {1}

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Code: Age Range 50 {8}

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Code: Age Range 60 {11}

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Code: Age Range 70 {11}

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Code: Age Range 80 {5}

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Code: Andy {19}

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Code: Anger {1}

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Code: Availability {32}

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Code: Balance {25}

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Code: Beauty and Aesthetics {42}

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Code: Because {7}

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Code: Biomass Negative {12}

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Code: Biomass Positive {15}

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Code: Blowdowns {50}

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Code: Cabin {15}

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Code: Carbon {7}

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Code: Certification {14}

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Code: Children {1}

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Code: City {23}

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Code: Clearcutting Negative {66}

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Code: Clearcutting Positive {49}

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Code: Climate {12}

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Code: Co-ops {68}

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Code: College {0}

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Code: Conservation {13}

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Code: Coppice {1}

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Code: Development {8}

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Code: Disappointed {13}

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Code: Diversity and Acadian Forest {77}

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Code: Ecosystem Services {4}

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Code: Education {19}

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Code: Enthusiasm and Excitement {36}

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Code: Equipment {26}

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Code: Exercise (by Working in Woods) {17}

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Code: Family (History with Parcel) {1}

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Code: Family No {2}

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Code: Family Unclear {51}

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Code: Family Yes {24}

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Code: Farm {14}

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Code: Female {6}

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Code: Financial Incentive Program {58}

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Code: Firewood {36}

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Code: Forester Comments {14}

---

Code: Forester No {9}

---

Code: Forester Yes {8}

---

Code: Future (Forest Condition) {3}

---

Code: Future (Hopes) {8}

---

Code: Future (Income, Home Site, etc., for Family) {54}

---

Code: Government {93}

---

Code: Groups No {0}

---

Code: Groups Yes {5}

---

Code: Habitat {22}

---

Code: Hatred and Abhorrence {8}

---

Code: Hectares 0-50 {10}

---

Code: Hectares 201 plus {9}

---

Code: Hectares 51-200 {17}

---

Code: Hectares uncertain {1}

---

Code: Hedge {7}

---

Code: Herbicide {16}

---

Code: Highgrading {16}

---

Code: History {37}

---

Code: Horses {29}

---

Code: House {0}

---

Code: HS {0}

---

Code: Humor {5}

---

Code: Hunting and Fishing {44}

---

Code: Income {75}

---

Code: Indoors {1}

---

Code: Industry Changes {7}

---

Code: Industry Economics {36}

---

Code: Info No {4}

---

Code: Info Yes {4}

---

Code: Inheritance issues {12}

---

Code: Insects {25}

---

Code: Inventory {26}

---

Code: Investment {8}

---

Code: Job {0}

---

Code: Learned {20}

---

Code: Legacy {155}

---

Code: Logger Negative {13}

---

Code: Logger No {4}

---

Code: Logger Pay {12}

---

Code: Logger Positive {12}

---

Code: Logger Yes {22}

---

Code: Logging {26}

---

Code: Love {11}

---

Code: Machinery (Scale) {68}

---

Code: Male {33}

---

Code: Markets {86}

---

Code: Master's {0}

---

Code: Mechanized Recreation {18}

---

Code: Money {37}

---

Code: Multi {25}

---

Code: Natural Regeneration {37}

---

Code: Needs: No {29}

---

Code: Needs: Yes {8}

---

Code: New {3}

---

Code: New Model {39}

---

Code: Non-economic values {1}

---

Code: NTFP {48}

---

Code: Nutrient {16}

---

Code: Observation {33}

---

Code: Overmaturity {23}

---

Code: PCT {17}

---

Code: Plan No {9}

---

Code: Plan Yes {14}

---

Code: Planning Negative {8}

---

Code: Planning Positive {16}

---

Code: Planting {10}

---



Code: Planting Negative {5}

---

Code: Planting Positive {16}

---

Code: Programs No {16}

---

Code: Programs Yes {30}

---

Code: Pruning {3}

---

Code: Pulp Negative {22}

---

Code: Pulp Positive {5}

---

Code: Pulp Prices {13}

---

Code: Pulp Worker {0}

---

Code: Recourse {3}

---

Code: Reforestation {12}

---

Code: Regulations {41}

---

Code: Responsibility {29}

---

Code: Retirement (Work to Keep Busy) {19}

---

Code: Roadbuilding {19}

---

Code: Roads -- Need More or Better {20}

---

Code: Rural {17}

---

Code: Sawmill Market {31}

---

Code: Sawmill Negative {0}

---

Code: Sawmill Positive {0}

---

Code: Sawmill Prices {6}

---

Code: Seasoned {10}

---

Code: Selection Negative {13}

---

Code: Selection Positive {64}

---

Code: Self-sufficiency {15}

---

Code: Shelterwood Negative {10}

---

Code: Shelterwood Positive {3}

---

Code: Sight {0}

---

Code: Small Group Selection {1}

---

Code: Smell {0}

---

Code: Snowshoeing {11}

---

Code: Society {46}

---

Code: Soil {3}

---

Code: Solitude or Retreat {23}

---

Code: Sound {4}

---

Code: Species {19}

---

Code: Spiritual {12}

---

Code: Stocking {3}

---

Code: Surveying {7}

---

Code: Taste {0}

---

Code: Taxes {25}

---

Code: Thinning {41}

---

Code: Thinning Negative {12}

---

Code: Thinning Positive {39}

---

Code: Timber for Home Use {13}

---

Code: Touch {1}

---

Code: Training for Loggers {4}

---

Code: Trust {31}

---

Code: University {2}

---

Code: Upset {10}

---

Code: Urban {2}

---

Code: Value Added Products for Sale {8}

---

Code: Walking {22}

---

Code: Waste {30}

---

Code: Water {20}

---

Code: Whole-Tree {2}

---

Code: Wildlife Habitat {10}

---

Code: Worked as Forester {7}

---

Code: Worked as Logger {11}

---

Code: Worked in Sawmill {5}

---

Code: Working Land Trust {1}

---

Code: Worry {52}

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## APPENDIX H CATEGORIES AND THEMES

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### **Code Family: A New Way of Doing Business**

Created: 2012-08-26 11:59:03 (Super)

Codes (5): [Government] [Industry Changes] [Industry Economics] [Machinery (Scale)] [New Model]

Quotation(s): 234

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### **Code Family: Beauty/Spiritual**

Created: 2017-02-11 09:06:38 (Super)

Codes (4): [Beauty and Aesthetics] [Love] [Solitude or Retreat] [Spiritual]

Quotation(s): 83

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### **Code Family: Family's Non-economic Heritage**

Created: 2017-03-04 12:03:03 (Super)

Codes (3): [Exercise (by Working in Woods)] [Family (History with Parcel)] [Family Yes]

Quotation(s): 42

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### **Code Family: Forest Diversity**

Created: 2012-08-26 11:50:13 (Super)

Codes (5): [Balance] [Conservation] [Diversity and Acadian Forest] [Habitat] [Natural Regeneration]

Quotation(s): 168

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### **Code Family: Future Financial Needs of Owner or Heirs**

Created: 2017-03-04 11:59:36 (Super)

Codes (5): [Development] [Hedge] [Inheritance issues] [Investment] [Money]

Quotation(s): 69

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### **Code Family: Habitat and Wildlife Conservation**

Created: 2017-03-04 11:35:53 (Super)

Codes (6): [Conservation] [Habitat] [Hunting and Fishing] [Non-economic values] [Observation] [Species]

Quotation(s): 130

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### **Code Family: Income and Investment**

Created: 2012-08-26 11:52:34 (Super)

Codes (10): [Clearcutting Positive] [Co-ops] [Development] [Financial Incentive Program] [Future (Income, Home Site, etc., for Family)] [Hedge] [Income] [Inheritance issues] [Investment] [Markets]

Quotation(s): 408

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**Code Family: Landowner Management Activities**

Created: 2012-03-06 08:27:22 (Super)

Codes (5): [Logging] [Planting] [Pruning] [Thinning] [Wildlife Habitat]

Quotation(s): 85

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**Code Family: Legacy**

Created: 2017-02-11 08:59:42 (Super)

Codes (11): [Balance] [Conservation] [Diversity and Acadian Forest] [Future (Forest Condition)] [Future (Income, Home Site, etc., for Family)] [Habitat] [Inheritance issues] [Legacy] [Multi] [Responsibility] [Society]

Quotation(s): 447

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**Code Family: Multi-generation Family Land**

Created: 2017-03-04 12:06:03 (Super)

Codes (3): [Multi] [Responsibility] [Rural]

Quotation(s): 70

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**Code Family: Self-sufficiency**

Created: 2017-03-04 11:39:28 (Super)

Codes (3): [Firewood] [Self-sufficiency] [Timber for Home Use]

Quotation(s): 63

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**Code Family: Society's Future Needs**

Created: 2017-03-04 11:55:40 (Super)

Codes (6): [Access for Public] [Ecosystem Services] [Future (Forest Condition)] [Inventory] [Society] [Species]

Quotation(s): 121

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**Code Family: Waste**

Created: 2017-02-11 09:09:35 (Super)

Codes (6): [Blowdowns] [Hatred and Abhorrence] [Overmaturity] [Responsibility] [Waste] [Worry]

Quotation(s): 185