

# **The Unsustainable Economics of a Sustainable Maine Forest**

Prepared for:

Keeping Forests as Forests Study Group

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February 15, 2008

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### 1. The Changing Economic Environment of Maine's Forest

In the past two decades Maine's North Woods have experienced rapid and unprecedented changes. The traditional structure of the relationship between the forest ownership and the forest products industry that characterized most of the 20<sup>th</sup> century has been dismantled and reorganized. What was once a forest used primarily to supply the raw materials to lumber, paper, and other manufacturing industries while providing a mixture of relatively low impact recreational opportunity has become a forest of highly diverse ownerships with many different purposes. Industrial land owners have sold most of their timberland holdings, replaced by new classes of land owners - investment firms, logging contractors, developers, conservation groups, high net-worth individuals – with different ownership objectives, strategies, and time-commitments.

Rising demand for land has pushed land prices up at the same time that the forest products industry has faced loss of market share in a number of product lines and several older mills have closed or reduced capacity (Innovative Natural Resources Solutions 2005). This price increase coupled with current and future threats to pulp, paper, and lumber demand (e.g., paper mill closures, machine shut-downs, and the slumping housing market) indicate that some new owners are looking beyond wood products to justify their investment, at least in the near term. As the gap widens between income from harvesting activities and income from other uses such as development and conservation easements, keeping forests as forests, (that is, as sources of a sustainable supply of wood fiber, permanent wildlife habitat, and a broad range of public recreational activities), becomes

harder to justify financially. Returns primarily from supplying raw materials for forest products may no longer be enough for landowners to achieve their financial objectives.

The difficulty of realizing an adequate return on investment by managing land for forest products portends an era where keeping land forested becomes less economically feasible, particularly for lands with high amenity values such as accessible lake or river shore frontage or mountain lands with significant views. Increasing land prices for these and other types of forest lands in the face of at best stable returns for stumpage suggests that land buyers are speculating on the rising development value of the land. One of the results of this dynamic is that land owners may significantly increase the level of aggressive harvesting in order to cover the opportunity costs of rising land values.

This matters because Maine's forests are a unique resource in the eastern United States, as the largest contiguous tract of forestland east of the Mississippi, and as the dominant player in the forest products markets in New England (Innovative Solutions 2005). By comparison with other forest areas around the world, Maine's forests are a model of sustainable management (Maine's Forest Resources 2003; State of the Forest Report 2005). While harvest levels have approximately doubled since the 1950s, standing timber volumes have increased by 87% and natural regeneration is not a problem. This resource helps to maintain a wood products and recreational/tourism industry that contributes significantly to the overall Maine economy.

The questions are: what are those paying historically high prices for Maine forest land expecting from that land? And, more importantly, will they undertake actions on their

land that will jeopardize its availability for traditional management, forest product harvesting and public recreation in the future? The purpose of this paper is to outline ways to answer these questions and to highlight some of the implications they pose for public policy in Maine.

## 2. Recent Patterns of Forest Land Prices in Maine

The prices landowners have recently been willing to pay for large tracts of forestland lead to the conclusion that buyers are speculating on extracting income from the land from sources other than long-term, sustainable forest management. With timberland prices reflecting demand beyond that of raw material for forest products, non-industrial owners must consider options other than sustainable forest management in order to justify their investment. These options include development, sub-divisions, the sale of conservation easements, the sale of kingdom lots, and aggressive harvesting strategies. If development or unsustainable harvesting becomes the rule rather than the exception, what will Maine's forests - and communities dependent on those forests - look like in a decade or two decades?

Higher timberland prices, reflecting real and perceived growing demand for other uses, threaten sustainable forest management. As buyers expend more capital to purchase forestland, pressure increases to extract more of the non-speculation value from the land; that is, to remove the value of the standing timber. For example, highly leveraged buyers typically need to realize a substantial return in a very short time-period. Harvesting above levels of sustained yield becomes an attractive option when asset appreciation or the realization of that appreciation is based primarily on the bare land value's rising market

price, independent of the trees. Development of high amenity parcels such as waterfront is an example. Recent demand for conservation is another – conservation organizations may choose to buy or protect land for strategic purposes, even after an aggressive harvest above sustainable yields has substantially reduced the timber and ecological value (Hagan 2005).

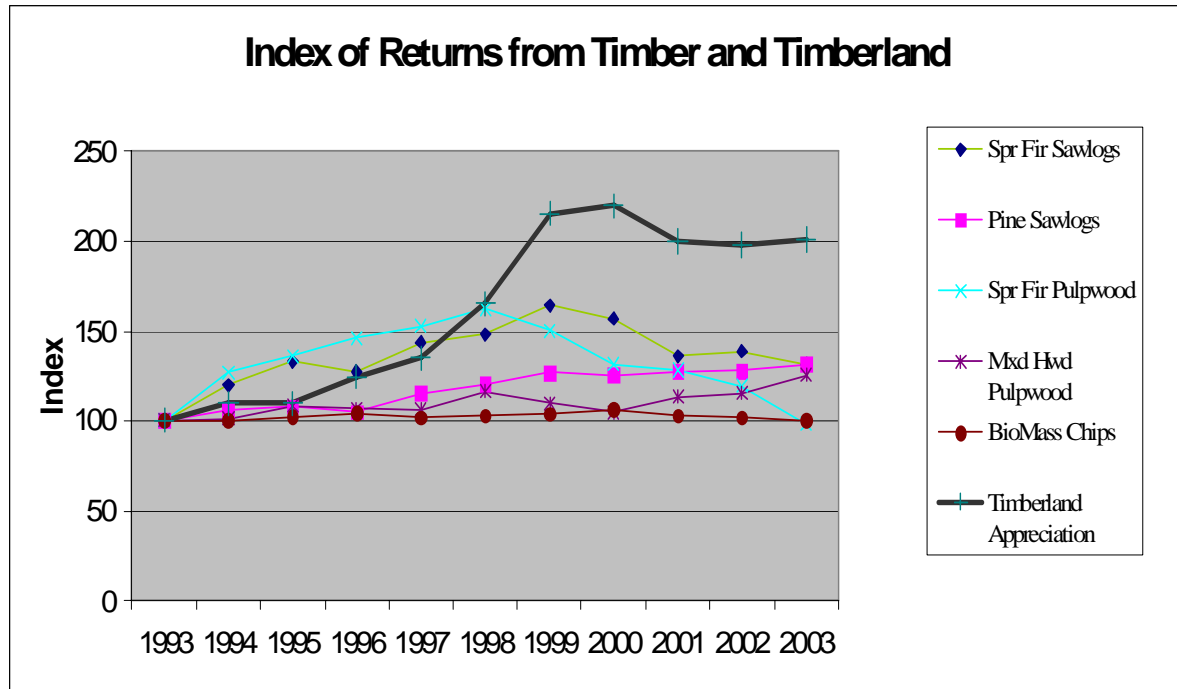
Even if the opportunity cost of sustainable forest management decreases (i.e, demand for alternative, non-forestry uses declines or demand and/or price for other wood-based products increases), new buyers will be challenged to realize adequate returns from sustainable harvesting practices. Maine Revenue Services reports that the average value of net new growth per acre per year over the past 50 years is \$13. Likewise, Maine's Tree Growth Tax Law calculates the value of Maine's forest land in the North Woods as ranging from \$86 to \$142 per acre based on its productivity as a timber-producing asset (Northern Maine average of \$114/acre; statewide average of \$158/acre). As an illustration of the difficulties new forestland owners will face to keep their land as sustainably managed forests, in 2005, an independent appraiser valued approximately 7,700 acres in Maine's North Woods at greater than \$700 per acre (total value of \$5.5 million). Annual revenues from net growth were calculated at less than \$15 per acre per year, implying that, even at favorable loan rates, using the land for sustainable yield timber harvests (simply defined as cutting no more than annual growth) was not a viable financial strategy (Maine Forest Service Undated). Such a parcel held for 50 years would have an internal rate of return of less than 0.2% if only the annual growth were harvested and sold at \$15 per acre.

The existence of this ever important speculative component of timberland prices is being observed as land is being sold and marketed at prices well above its standing timber value. JW Sewall reports that prices as a percentage of gross timber value are at an all time high for Maine. Recent transactions “reflect significant buyer expectations of non-timber products and revenues” (J.W.Sewall 2007). An index of Northeast timberland returns, based on operating income and land appraisals, indicate that timberlands appreciated in value by 12% and 17% in 2003 and 2004, respectively. Given modest increases in stumpage prices during these years (see graph 1), these gains can be attributed primarily to appreciation of the bare land value, that is, the non-forestry value of the land (JW Sewall 2007). Bill Ginn, of The Nature Conservancy, and longtime observer of the North Woods, stresses the demand for recreational use of the forest land, “Increases in prices are being almost exclusively driven by recreational interest. Investors are not paying more for land because trees are worth more, but because of increased interest for recreational use.”<sup>1</sup>

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<sup>1</sup> Recreational use, in this context, is being used to include buying forested tracts for personal purposes; e.g., a camp, retreat, second home.

Figure 1 – Index of Returns from Timber and Timberland



Source: MFS, NCREIF, Author's Calculations

Further evidence of speculation comes from observed sales. One appraiser reports observing an estimated 10-15% increase in the sale prices of large parcels over 50,000 acres since 2004. An internet search for parcels currently on the market (December 2007) shows 11 parcels over 1,000 acres for sale in Northern and Western Maine, averaging \$700/acre. Well known sales where timber was of secondary concern include the 25,000 acres sold by J. D. Irving Limited to Gardiner Land Company near Baxter State Park for \$1,000/acre (2003); 19,000 acres in Bowerbank sold by Hancock Timber Resource Group to Plum Creek Timber Management Company for \$800/acre (2004); 4,100 acres on Square Lake purchased by Lakeville Shores (a.k.a. Haynes) from William Moscovic for \$912/acre (2002); John Malone's purchase of 7,500 acres near Spencer Lake from Plum Creek Timber Company for \$1000/acre; Roxanne Quimby's purchase of 24,000 acres from J.D. Irving Limited for \$500/acre (2003).

In Georgia, research suggests that the threshold for impending land use conversion is \$800/acre (Wear 2004). Maine's threshold may be different, but recent timberland transactions in the range of \$1000/acre indicate that buyers are speculating on land uses other than forest management, and predict a higher likelihood of conversion to non-forestry uses.

### 3. What Lies Behind the Changes in Forest Ownership

Recent opportunities for purchasing land in the North Woods were precipitated by the widespread divestiture by vertically integrated forest products firms (that is, firms that own forestland and used the output from the land as input to paper or lumber mills, hereafter referred to as industrial firms) of their timberlands. The abandonment of vertical integration as a business strategy by traditional industrial firms, particularly the pulp and paper companies has led to the decoupling of timberland assets from their production facilities and the sale of millions of acres of former industrial owned land.

This divestiture was accompanied by globalization of the forest products industry, with the pulp and paper, lumber, and secondary wood product markets losing market share to lower cost competitors from Latin America and Asia since the mid-1990s (Innovative Natural Resources Solutions 2005). Pressure to improve financial efficiencies led to consolidation, specialization, and a reorganization of the U.S. forest products industry. Widespread divestiture of industrial timberland began in the late 1980s, partly to pay down debt incurred from consolidation, partly to provide capital to invest in specialized

products and markets, and partly to provide immediate returns to shareholders (Binkley 2006, Hagan 2005). The sale of 2.3 million acres of former Great Northern Paper land by Bowater to fifteen different owners in the early 1990s served as the seminal event leading to the end of industry's dominant ownership of Maine's forestland (although International Paper had effectively separated its land and mill operations as separate profit centers within the company in the 1970s).

This reorganization of the forest products industry has been accompanied by growing demand from other sources for forestland in the North Woods, influenced by two major trends. First, the rise of investment firms such as Timber Investment Management Organizations (TIMOs) and Real Estate Investment Trusts (REITs) provided a cash-rich supply of timberland buyers. Investors are attracted to timberland because of high historical returns, low risk relative to other types of investments, and low correlation with inflation and other investments (Binkley 2006, Lutz 2006). Further, provisions of the Internal Revenue Code made timberland attractive as investment vehicles for these types of organizations, particularly compared with traditional corporations. Such ownerships, while often focused on management and income from timber harvesting, have very different investment horizons than the vertically integrated forest products landowner. Where the vertically integrated company owned land to feed mill investments that were expected to last 50 years or more, the new ownerships expect to own land for perhaps 10-15 years, capturing as much value as possible in that period of time.

At the same time, a substantial increase in demand from other users has occurred. Demand for recreational properties has increased dramatically and the demand has shifted from traditional camps to second homes, including in some cases, luxury second homes. In the Unorganized Territories, the population has grown by 5% each decade from 1970 to 2000, with an accelerated rate of growth since 2000. The Western Mountain and Moosehead regions of the Unorganized Territories have experienced the bulk of this growth, 17% and 8% respectively. Growth in the number of houses has outpaced population growth, rising by 16% since 1990 (Planning Decisions 2006). Seasonal homes increased by 18% in the 1990s (White), with net land accounts in the Unorganized Territories increasing 31% from 1985 – 2005 (Planning Decisions 2006).<sup>2</sup> Parcelization and the sale of “kingdom lots” are two manifestations of increased demand for properties used for personal recreational purposes. Maine forest land prices may be much higher than historical norms or the underlying value of the standing timber would suggest, but their sheer abundance makes them appear very cheap relative to almost any other privately owned forested region in North America.

Conservation groups have also contributed to this rising demand, with eleven conservation easements of 10,000 acres or more being established between 2000 and 2005 (OPLA 2006).

Taken together, the rise of timberland investors and increased demand from other users has provided an outlet for the divestiture of industrial timberland. The results have been

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<sup>2</sup> (A net land account is a parcel of land or two or more contiguous parcels of land owned by the same individual or entity.)

dramatic. In the fifteen years from 1990 to 2005, the share of ownership by industry fell from 60% to 15%, with one firm, J.D. Irving Limited, a family owned Canadian company, owning 1.2 of the 1.8 million acres of remaining industrial land. Investment firms increased their share of forestland ownership more than tenfold, logging contractors and timber companies increased their ownership over fivefold, non-profit conservation groups increased their ownership twelvefold (this does not include the recent purchases by Roxanne Quimby), and “kingdom buyers,” individuals with high net worth buying land primarily for private recreation, have accumulated well over 100,000 acres (Hagan 2005).<sup>3</sup>

#### 4. Implications of the Changes

The effect of these changes has been a paradigm shift. Whereas vertically integrated forest products companies owned land almost solely to provide a steady supply of raw material to their mills, *non-industrial owners view forest products as only one of a myriad of choices to monetize their asset*. Competing uses and rising land values have increased the opportunity cost of holding land solely to grow and sell timber at rates consistent with the principle of sustained yield, making intensive harvesting, land use conversion and further parcelization more likely events. The same forces also present threats to long-standing public access and recreational uses.

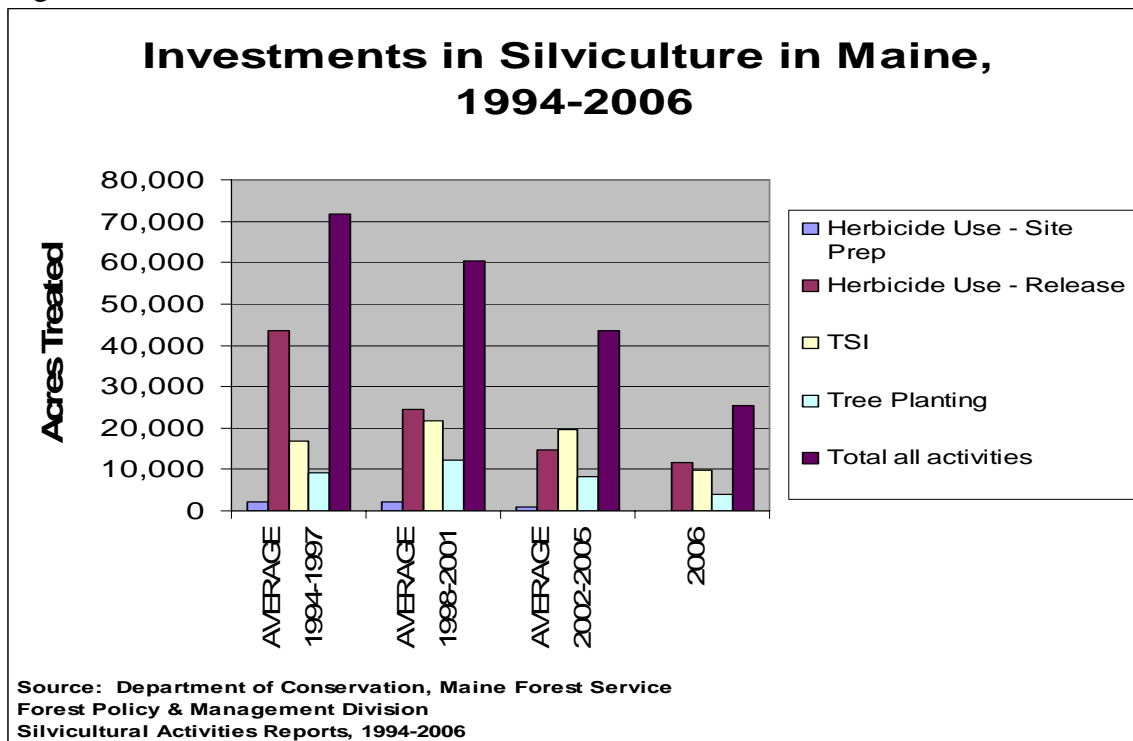
Many new timberland owners are less likely or able to engage in intensive silviculture or fund forestry research and development projects (Hagan 2005, Greis 2005, Weir

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<sup>3</sup> The preceding statistics on land ownership changes refer to transactions and parcels over 5,000 acres in size.

Undated, Clutter 2005). The Maine Forest Service reports a 60% reduction in investment in intensive forest management activities such as planting, pre-commercial thinnings and competition control in less than 15 years. In 1994, approximately 70,000 acres were treated by these techniques. By 2004, that number had declined to less than 30,000, with virtually all the treated acres on the remaining industry-owned lands (Don Mansius pers. corr.). Owners who plan on selling the land within a short time-frame may be unwilling to make such investments, as they do not expect to own the land long enough to realize a benefit or to be paid for the benefit when they sell (Figure 2).

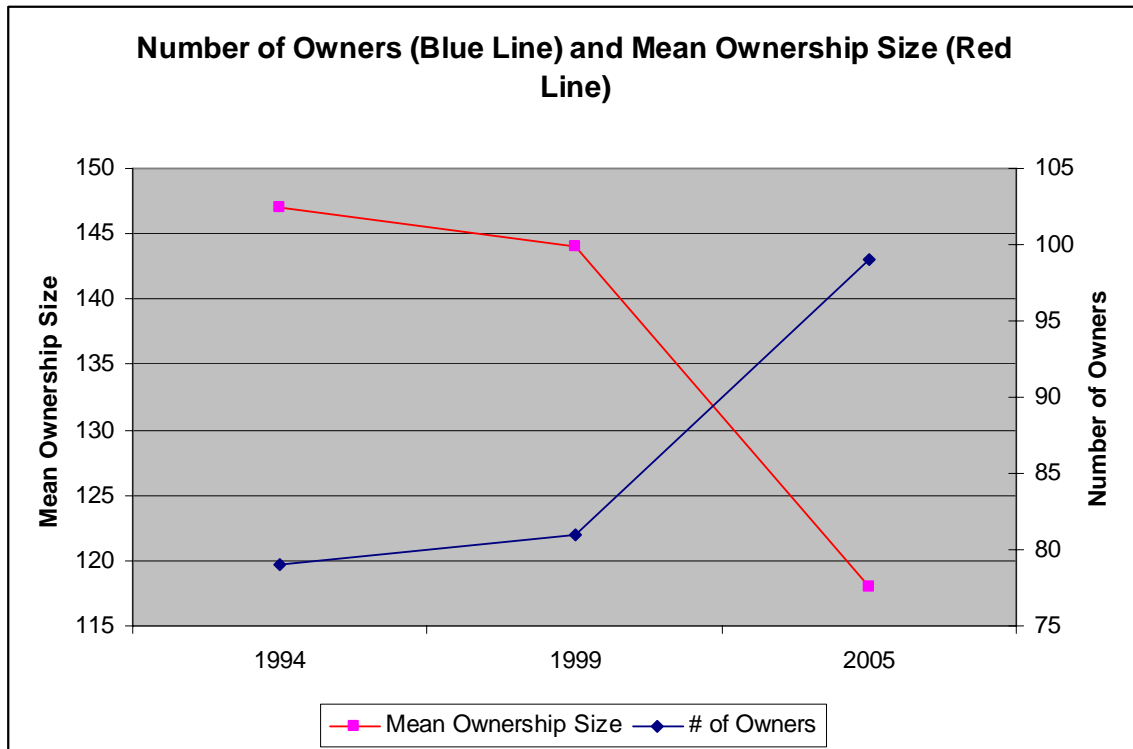
Figure 2 – Investments in Silviculture in Maine, 1994 – 2006



The multitude of owners and their heterogeneous objectives make ecosystem management and public policy decisions significantly more challenging. In Maine's North Woods, from 1994 – 2005 the number of owners with 5,000 acres or more

increased 30%, while the mean parcel size decreased 20% (See Figure 3, reproduced from Hagan 2005). Southern New England offers an example of the problems of a fractionated land ownership pattern, which has contributed to the loss of the forest products industry and wildlife habitat diversity in that area. Because, in general, the owners of small forested parcels do not actually manage them for timber (Butler 2004), these areas have become largely monotypes of middle aged stands of hardwoods and what harvesting does take place is often high-grading.

Figure 3 – Number of Owners and Mean Ownership Size, 1994 - 2005



Graph extracted from Hagan 2004

While public access did not by and large conflict with the ownership objectives of the paper industry, new land uses, such as private recreation or preservation, may be incompatible with traditional public access. Recent statewide surveys to landowners indicate a substantial attitude shift on the part of landowners toward public access: surveys to members of Small Woodland Owners of Maine (SWOAM) in 1991 and 2005 show a doubling of the number of properties restricted to public access (Tom Doak, pers. corr.); The National Woodland Owners Survey estimates 18,000 family owners posted their land in 2006, a 300% increase from 6,000 owners in 2003 (Butler 2008))

How new land owners will manage the forest and under what time constraints is unclear. What development pressures they will be subjected to is also uncertain. Clearly high amenity land will be under increasing pressure for conversion to developed uses, particularly in areas such as Rangeley and Moosehead, where road access and local communities provide the regional infrastructure that can support development. But the extent to which this type demand extends beyond accessible high amenity lands is uncertain. While most of the North Woods now lies within a mile or so of decent roads (MFS 2005), much is still remote in terms of supporting infrastructure or services.

At the same time, demand for wood as input to manufactured products is likely to grow despite recent problems in the lumber and pulp & paper industries. Exchange rates now favor exports of Maine forest products, which have traditionally been Maine's largest export products by volume and value. The interest in using wood chips and pellets to replace oil has increased dramatically. On the horizon are potential technology

developments such as cellulosic ethanol and bioplastics which could greatly increase the demand for wood as a raw material. Such developments probably do not explain the recent run up in forest land prices, but do suggest there are new industrial uses for wood products that could create additional demand for forest land in the future.

What is clear about the recent changes in the structure of the forest industry, of forest land ownership, and of the prices of forest land is that Maine's forest is a much more economically complex and dynamic place than twenty years ago. Determining appropriate forest management policies to assist forest landowners in keeping forests as forests while realizing a reasonable financial return has become correspondingly complex. The growing demand for forest land for non-harvesting uses and differences across large portions of forest land caused by fragmented ownerships make for particularly difficult challenges.

##### 5. The Challenge Ahead

In many ways, the biological and ecological environment of Maine's forest lands has stayed stable or even improved in the years since the last spruce budworm cycle ravaged the forests. But the economic environment has dramatically changed in ways that call into question whether Maine forests can be retained as actively managed lands and continue to improve in condition. The management of Maine's forests must now address the changes in the economic environment with the same energy and intensity with which threats like the budworm were addressed.

While the general nature of the problems can be identified, much remains unclear.

Developing a forest management policy that keeps Maine's forests as forests and insures sustainable management for the Maine woods requires much clearer answers to several questions that could not be answered here. These include:

1. How can land transactions and prices be better monitored to create data for analysis that is spatially and temporally consistent? Much of the evidence for the changing economic environment is comprised of anecdotal evidence from occasional transactions. Public systems for recording land sales and prices are currently not capable of producing data that would allow detailed analysis over time of what is happening in the markets for Maine forest lands. Can these systems be improved in a timely and cost-effective manner?
2. How are differences in the economic environment manifesting themselves in different parts of the Maine woods? Are the patterns of rising land prices affecting all of the woods or are they more of an issue in some areas and not in others. What distinguishes such areas? Are there differences in the types of forest resources (e.g. hardwoods vs. softwoods) being affected?
3. What are the expectations about the future demand for forest land, timber, and forest products held by the owners of Maine's woods? How, if at all, are owners factoring possible changes such as the rising demand for high amenity retirement and recreation lands, for possible new commodity forest products like energy in the form of chips,

pellets, or cellulosic ethanol, or for using forest lands in carbon sequestration strategies to deal with climate change? Is everyone just focused on the next 5-15 years?

4. What is and should be the role of conservation strategies in the new economic environment? Given strained state and federal budgets, how can the amount of money needed to buy conservation easements be matched with the demands? How can conservation strategies be matched with harvesting strategies to better support long term sustainability of the forest as a whole?

5. What is the public's role in the new economic environment? Maine cares a great deal about its forests, and has made significant efforts to assure their health and that a diversity of uses can be sustained. State government has some tools at its disposal, such as harvesting regulation, its own land conservation activities, taxes, and planning and zoning. How can these tools be best deployed in the new environment? What new approaches could be taken to meet landowners objectives while insuring public values for the future (timber supply, wildlife habitat, clean water, public access, etc.)

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