Are Family Forest Owners Facing a Future In Which Forest Management Is Not Enough?

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ABSTRACT

Family forests represent the largest proportion of forestland within the United States; however, the processes of forest conversion, fragmentation, and parcelization are drastically impeding the ability to manage these lands and maintain the benefits they provide. One factor suggested as driving this trend is the inability of landowners to meet the property tax burden on their land. We evaluated the effectiveness of three tools commonly suggested for meeting the financial demands of property taxes: (1) use of economic returns from timber management, (2) enrollment in a current-use tax program, and (3) sale of a conservation easement, within a rural watershed in western Massachusetts. Our results indicate that revenue from timber management is insufficient at covering property taxes and that application of measures such as the sale of conservation easements will be critical in maintaining the viability of forest ownership in areas of rising land values and property taxes.

Keywords: family forests, current-use, sustainable forest management, conservation easements, property taxes, ecosystem services

More than one-half the forestland in the United States (423 million ac) is owned and managed by some 11 million private forest owners, 92% of whom (10 million owners) are "family forest" owners (i.e., private forestland owned by families and individuals; Butler 2008). Conversion, fragmentation, and parcelization are reducing the number of forested acres, increasing the number of owners, and complicating the management and future of these landscapes (Stein et al. 2005). These processes are playing a significant role in shaping our forests, the benefits they provide, and the ability to actively manage them.

One tool commonly suggested as a mechanism to help stem the tide of conversion, parcelization, and fragmentation is the use of economic returns from sound forest management (e.g., Robles et al. 2008, Society of American Foresters Climate Change and Carbon Sequestration Task Force 2008). This approach provides landowners the revenue needed to meet the property tax burden of their land, making ownership a more financially attractive option. Nonetheless, few rigorous evaluations exist that have considered the economic returns from forest management compared with property taxes in areas of rising land values.

In addition to revenue from timber sales, enrollment in a current-use property tax program has been suggested as a tool for helping landowners meet the property tax burden of their land. These programs provide preferential tax treatment for landowners who are providing public benefits by maintaining their property in a forested condition either through reductions in the tax rate applied or the assessed value of the property (Hibbard et al. 2001). Many states re-

quire a forest management plan, as well as the application of periodic silvicultural treatments based on the plan (Borie 1987). Only a small segment of eligible owners have adopted this approach; 3% of private landowners nationwide have a forest management plan (Butler 2008). This participation rate is especially low considering the decades of programs aimed at promoting management planning (e.g., Tree Farm, Forest Stewardship and Forest Land Enhancement Program) and the many dollars of cost share offered to landowners to develop management plans (Damery 2006).

The sale or donation of development rights and placement of conservation easements on a property is becoming an increasingly common method of protecting land from development (Fairfax et al. 2005, Rissman et al. 2007). Conservation easements allow families to retain fee ownership and many of the rights (e.g., residence, forest management, and exclude public access) associated with the property, but relinquish the right to develop. Easement terms can be applied to all or part of an ownership (Byers and Ponte 2005). The financial value of an easement is equal to the reduction in development value of the land, determined through an appraisal process. Conservation easements can represent income if the development rights have been purchased or an opportunity to declare a charitable deduction for income tax purposes if the development rights have been donated to a public or private conservation organization. By eliminating the development potential of land, the assessed value is lowered, thus reducing the annual real estate tax burden and reducing estate tax obligations.

Massachusetts is the eighth most forested state (62% by land use), as well as the third most densely populated, resulting in a land base dominated by human influence. In particular, more than 75% of Massachusetts' forests are owned by over 212,000 private families and individuals with an average statewide ownership size of 17.9 ac (Kittredge et al. 2008). It is estimated that over 40 ac of Massachusetts open space are converted each day to developed use (Breunig 2003). There are few places in the country with such extensive forest cover combined with such intensive pressure from forest conversion and parcelization making the identification of approaches to maintaining forest cover and working forests in Massachusetts critical. In fact, it can be said that Massachu-

setts is on the leading edge of trends other regions have just begun or will soon face.

Materials and Methods

Study Area

For this case study, we focused on the Massachusetts section of the Deerfield River Watershed (DRW) because of the significant amount of forest cover in this region and the presence of regionally common forest types and ownership patterns representative of many regions in the Northeast. The DRW represents the most rural watershed in Massachusetts and is composed of 15 towns collectively encompassing 344.3 mi^2. Forest cover in the region averages 79.7% (ranging on a town basis from 47.9 to 93.7%) and town population densities average 100 people/mi^2 with several towns having densities below 20 people/mi^2 (range, 10–828 people/mi^2). The DRW is roughly 125 mi west of Boston and has some of the largest remaining private forest ownerships in the state.

Massachusetts has had a current-use forest property tax program (Chapter 61) since 1941. Forestland of 10 or more contiguous acres that is used for timber production and has a state approved forest management plan is eligible for this program (Massachusetts General Law Chapter 61 Section 2). Despite the property tax benefits enrollment in this program provides, it is estimated that less than 15% of eligible forest landowners are enrolled (Jennifer Fish, pers. comm., Massachusetts Department of Conservation and Recreation, Nov. 20, 2008).

Ownership Scenarios and Modeling Assumptions

Results of recent surveys of Massachusetts forest landowners (Belin et al. 2005) indicate the average age of owners is over 60 years old. Correspondingly, a 30-year time horizon was chosen for this study, because we assumed this was a realistic period over which landowners could see the impacts of their decisions. Longer periods are likely beyond the lifetime of many forest landowners, whereas shorter periods may not show returns on forest management.

To assess potential economies of scale and the viability of various forest ownership sizes, we developed scenarios based on four representative property sizes encompassing the majority of parcel sizes found in the DRW: 15, 30, 60, and 150 ac. Specifically, a preliminary analysis of tax assessor records indicated that 25% of parcels in the DRW

are 15 ac or less, 50% of parcels are 30 ac or less, 75% of parcels are 60 ac or less, and 99% of parcels are 150 ac or less. This distribution of parcel sizes is representative of broader trends in parcel sizes throughout Massachusetts (Kittredge et al. 2008).

Per acre average property values were generated for each ownership size based on data from forestland property sales occurring within the DRW between 1997 and 2006. Land sales ranging from $1,000 to 10,000,000 were analyzed with interfamily and family trust transactions excluded from the analysis. Only transactions of land greater than 10 ac were included, because this is the minimum acreage for the Chapter 61 current-use program. In addition, each sale transaction was reviewed to determine whether there was a residence, building, or other structure on the land because we did not want land values to be impacted by the value of associated buildings. There were 117 land sales that met all of the forgoing criteria. Average values for each acreage size range were calculated and these data were smoothed with a log regression fit to estimate values for each of the sample parcels. Because of high variability in sale data for the largest sample parcel (150 ac), two property values, a high and a low assessed value, were included in the analysis for this ownership size (see Catanzaro et al. 2007 for property values used in analyses).

Regression analyses of sales price over time were performed to estimate land value inflation for the DRW; however, these analyses failed to yield statistically significant results. This lack of significance was presumably caused by the omission of important valuation variables (e.g., road frontage, presence of views, or other land features) for which we lacked data. Without a region-specific land inflation value, we chose to adopt a 5% inflation rate based on the findings of other studies (Vrooman 1978, Kilgore and MacKay 2007) to project development value and tax burden over our 30-year time frame. Annual tax rates, measured in dollars-per-thousand valuation, were gathered for all 15 towns in the DRW for the period of 1996–2007 (Massachusetts Department of Revenue 2007). From these rates, an overall average tax rate of $16/thousand dollars of valuation was determined.

A series of average stands reflecting the species composition and size structure of forest stands within the DRW were assembled for modeling financial returns from long-term timber management. We focused

on the common cover types (northern hardwood, oak, and white pine) within this region (Alerich 2000) and used US Forest Service Forest Inventory and Analysis estimates of countywide cover type proportions for Franklin County, within which the DRW resides, to determine forest type acreages for each ownership size evaluated. For example, oak forests comprise 10.9% of Franklin County, so we assigned this proportion of oak forests to each model ownership. Importantly, forest composition for Franklin County is quite similar to the other western counties in Massachusetts (Alerich 2000) and portions of southern Vermont and New Hampshire (Frieswyk and Widmann 2000a, 2000b), making these analyses representative of a wide geographic region. Data from 234 Massachusetts Bureau of Forestry Continuous Forest Inventory (CFI) plots located within the DRW (last remeasured in 2000) were used to determine average stand conditions. Specifically, we selected data from plots located within northern hardwood, oak, and white pine cover types and created an average, 1-ac stand for each cover type. In addition, CFI data were used to generate estimates of percent unacceptable growing stock (UGS; below grade 3 based on sawlog tree grade specifications in CFI manual [Massachusetts Department of Environmental Management 1998]) and determine site quality distributions for these main cover types. These data are from state forestlands and, thus, possibly represent a lower proportion of UGS compared with private land, thereby generating potentially increased values from timber management.

The stand growth simulator, NE-TWIGS, was used to simulate forest management for each ownership size and cover type with the primary objective being to sustainably maximize the production of high-quality timber over a 30-year time frame (Bush 1995). Each stand (i.e., cover type) was harvested three times over the 30-year time frame: 2007, 2022, and 2037. The first two entries were a combination of low and crown thinnings aimed at improving stand growing stock and crop tree growth. After these entries, we increased the percentage of high-quality, grade 1 logs and reduced the amount of lower-quality, grade 3 logs harvested, based on work by Nyland et al. (1993). The final entry (year 2037) was treated as a shelterwood establishment cut, reducing the basal area to 60 ft^2 and leaving a residual stand comprised primarily of good quality dominant and codominant trees.

Importantly, this final stand entry assumes that the landowners are concerned with the future stocking and structure of these parcels beyond their tenure; however, more intensive final entries or conversion to another land use (e.g., development) are also realistic scenarios (cf. Favjan et al. 1998, Wear and Newman 2004). The value of the final, residual stand was not included in net present value (NPV) calculations, as the fate of these trees was beyond the 30-year period used in this study.

Data on the volume and quality of each species in each forest type were used to estimate total stumpage values by species at each entry. The southern New England stumpage survey (Kittredge and Catanzaro 2008) provides data on species-specific stumpage prices for 12 years (1994–2006). Our analysis of the available local stumpage prices for the most recent time period of 1994–2006 revealed no significant trend in prices. Nonetheless, to mimic the variability in stumpage that a landowner might receive over a 30-year period, we chose to apply stumpage prices from three points in the data to match our three entry points in this analysis. Stumpage data from the years 1994, 2000, and 2006 were applied for the entry points 1, 2, and 3, respectively (Catanzaro et al. 2007). Stumpage prices used were the average of quarterly prices in each given year selected. In addition, to reflect differences in stumpage based on tree quality, we determined the distribution of stumpage prices during each year and applied the 75th percentile stumpage price to grade 1 volumes, median prices to grade 2 volumes, and 25th percentile prices to grade 3 volumes. Median pulp and cordwood stumpage values were applied to all below-grade volumes.

Per acre total stumpage value estimates were applied to each of our scenario property sizes (15, 30, 60, and 150 ac) to estimate revenues from the sale of timber from well-managed forests over a 30-year period. A 15% reduction in stumpage was applied to represent the cost of a professional forester in managing each timber sale. This value represented the median amount reported by a survey of 30 consulting foresters for marking and administering timber sales in the state (Hersey and Kittredge 2005). In addition, the costs of developing periodic forest stewardship management plans were deducted from timber revenues for those scenarios that included enrollment in the current-use program. These costs were based on the cost share rates set by the Massachusetts Forest

Stewardship program through 2007 ($700 for properties of 10–36 ac or $700 base plus $11/ac for properties larger than 36 ac).

Forest properties often include acreage that is unsuitable for active forest management because of the presence of features such as wetlands and steep slopes. To account for this, we reduced the calculated acreage of each scenario property by 7%. This reduction was based on values derived from management plans developed for the 53,987-ac Quabbin Reservoir Watershed in central Massachusetts (approximately 50 mi east of the DRW). Because this watershed represents the largest continuously managed landscape in the state, we felt this value represented the best overall approximation of potential operational constraints due to steep slopes and wetlands for the region.

Current-use property tax programs commonly assess land according to its value as timberland rather than its development value by assigning a per acre "productive use" value to the land. The 2007 per acre assessed value for the DRW is $173 (Massachusetts Department of Revenue 2007) and was applied to the scenario properties. The average per acre tax rate for properties within the DRW not enrolled in the current-use program between 2002 and 2007 was $30/ac.

The development value of a piece of land is based on several factors (e.g., size, road frontage, zoning, and local real estate values; Byers and Ponte 2005). In addition, easements may be sold, donated as a charitable gift, or sold at a discounted price with the reduction eligible as a charitable gift. For our analyses, we assumed that conservation easements would be sold because a landowner's ability to take advantage of the tax benefits of a charitable gift is based on their individual financial circumstances and therefore highly variable. To model the effect of a conservation easement on landowner income and property taxes, we collected data from appraisals for 44 conservation easement transactions in 11 towns within the DRW in 2007. Data included the assessed value before application of the conservation easement, the value of the easement, and the remainder value (Keith Ross, LandVest, pers. comm., Feb. 1, 2009). The average total assessed value was $1,866/ac, and the average value of the conservation easement was $1,323/ac or 71% of the total assessed value. Gross revenues from the sale of conservation easements were therefore calculated at 71% of the land value estimate. Net revenues were not used be-

Table 1. Net present value (NPV) contributions of property taxes and various conservation tools over a 30-yr period for different ownership sizes within the Deerfield River Watershed, Massachusetts.

Landownership scenario	15 ac	30 ac	60 ac	150 ac low	150 ac high
A. Status quo (property taxes)	−$25,109	−$38,449	−$53,360	−$55,667	−$100,301
B. Timber management only (TM)					
TM[a]	$5,888	$11,776	$23,553	$58,882	$58,882
Total NPV	$5,888	$11,776	$23,553	$58,882	$58,882
Difference from property taxes[b]	−$19,221	−$26,673	−$29,807	$3,215	−$41,419
C. TM and current-use program (CU) tax reduction					
TM[c]	$4,618	$10,506	$21,805	$55,338	$55,338
Tax savings due to CU enrollment	$24,093	$36,417	$49,295	$45,505	$90,139
Total NPV	$28,711	$46,923	$71,100	$100,843	$145,477
Difference from property taxes	$3,602	$8,474	$17,740	$45,176	$45,176
D. Sale of conservation easement on the ownership (CE)					
Tax savings due to sale of CE[d]	$19,712	$28,792	$36,322	$20,585	$60,906
Sale of a CE	$42,873	$65,652	$91,113	$95,052	$171,264
Total NPV	$62,585	$94,444	$127,435	$115,637	$232,170
Difference from property taxes	$37,476	$55,995	$74,075	$59,970	$131,869
E. TM, CU, and CE					
TM	$4,618	$10,506	$21,805	$55,338	$55,338
Tax savings due to CU enrollment	$21,667	$30,106	$44,137	$40,125	$80,445
Sale of a CE	$42,873	$65,652	$91,113	$95,052	$171,264
Total NPV	$69,158	$106,264	$157,055	$190,515	$307,047
Difference from property taxes	$44,049	$67,815	$103,695	$134,848	$206,746

Conservation tools examined were: TM, CU, and CE. Numbers shown in table are based on a 5% land value inflation and a 6% discount rate. Low and high scenarios for 150-ac ownerships correspond to low and high assessed property values.
[a] Includes cost of using consulting forester.
[b] Represents difference between total NPV and property tax values.
[c] Includes cost of stewardship plan for CU enrollment.
[d] Represents tax savings due to reduced property value resulting from sale of CE.

cause they vary depending on legal fees, filing fees, tax adviser fees, and the easement monitoring endowment. A typical range for these costs is $1,500–5,000, some of which are then tax deductible. This positive cash flow was assumed to occur in year 1 of the planning time frame.

Landownership Scenarios

To compare the financial effects of timber management, current-use property taxation, and the sale of conservation easements with the tax burden of an ownership within the DRW, we developed five scenarios.

• Scenario A. Status quo (do nothing), pay full property taxes.

• Scenario B. Timber management only, pay full property taxes.

• Scenario C. Timber management and current-use (Chapter 61) tax reduction.

• Scenario D. Sale of a conservation easement with reduced taxes.

• Scenario E. Timber management, Chapter 61 current-use program participation, and sale of a conservation easement.

To compare these different scenarios, we calculated NPVs of the cash flows, including property tax expense, net timber revenue, and net income from sale of conservation easements over a 30-year time period for each sample parcel size. For this

analysis, we assumed a 6% rate, which represents a midpoint in the range of rates used for typical environmental analyses (Storey 1991). Note this analysis presents pretax cash flows, with income taxes based on the individual landowner's particular financial situation correspondingly reducing NPVs presented here.

Results

Property Taxes and Stumpage Values

The total NPV of property taxes for our 30-year projections ranged from −$25,109 for the 15-ac ownership to −$100,301 for the high value 150-ac ownership (Table 1). The NPVs from stumpage income from timber management over this time period ranged from $5,888 for the 15-ac ownership to $58,882 for the 150-ac ownerships (Table 2). We assumed stumpage prices increased proportionally with parcel size; however, there are likely economies of scale created with larger parcel sizes that we were unable to account for in our models. Beyond parcel size effects, stumpage values increased with each harvest entry because of a greater proportion of grade 1 logs in the residual stand, and income increased because of greater harvest intensities in the final entry (Table 2).

Landownership Scenarios

In all cases except for one (the 150-ac low value ownership), the positive cash flows resulting from stumpage sale income were insufficient to cover the cash outflows in property taxes alone, producing a negative NPV (Table 1, scenario B). Nonetheless, these sales did improve the overall NPV for each property, particularly for the larger acreages. In contrast, the positive cash flows from stumpage sales, combined with the property tax reductions due to enrollment in current use were sufficient to provide a positive NPV for each ownership size, with total NPVs ranging from $3,602 for the 15-ac ownership to $45,176 for the 150-ac ownerships (Table 1, scenario C). Importantly, the effect of tax savings from current-use assessed valuation exceeded the timber revenue effect in all ownership sizes with the exception of the 150-ac low value case under which timber revenues exceeded tax savings by over $9,800. Because the overall tax burden under the current-use scenario is based on a per acre valuation, the NPV of the 150-ac low value and high value ownerships are identical for this scenario (Table 1, scenario C).

The revenues received and tax savings resulting from the sale of a conservation easement had the greatest overall impact

Table 2. Final stumpage values for timber management simulations for each ownership size.

Ownership size (ac)	Entry 1 (stumpage)	Entry 2 (stumpage)	Entry 3 (stumpage)	Total revenue
15	$2,751	$4,711	$7,623	$15,086
30	$5,501	$9,423	$15,247	$30,171
60	$11,003	$18,846	$30,494	$60,342
150	$27,507	$47,114	$76,235	$150,855

Entries 1 and 2 were a combination of low and crown thinnings aimed at improving stand growing stock and crop tree growth, whereas entry 3 was a shelterwood establishment cut. Values represent income totals.

when compared with timber management or current use. NPVs in scenario D ranged from $37,476 for the 15-ac ownership ($2,498/ac) to $131,869 for the 150-ac high value ownership ($879/ac; Table 1, scenario D). Although the tax savings due to the sale of a conservation easement were less than the tax reductions realized from enrollment in the current-use program (Table 1, scenario C), these savings, when coupled with revenues resulting from the sale of the easement, resulted in higher NPV values than those under the current-use scenario. Note the tax reductions experienced under the conservation easement scenario are the result of a lower assessed value because of the removal of the development rights, whereas those under the current-use scenario are based on the estimated current-use value.

As one might anticipate, the combination of active timber management, enrollment in current use, and sale of a conservation easement yielded the highest NPVs (Table 1, scenario E). The largest contribution of NPVs in the scenario was from the sale of the conservation easement. Nonetheless, active timber management and enrollment in current use resulted in increases to NPVs that were at least 17.5% greater than those realized from strictly the sale of a conservation easement (scenario D versus scenario E in Table 1).

Discussion

The most important result from our hypothetical but realistic analyses is that revenue from periodic timber harvests can not keep pace with the annual property tax expenses of landownership in the DRW, the most rural region of Massachusetts. Programs or messages that exhort private woodland owners to practice good forestry to keep their land from being developed can be construed as misleading or uninformed in the context of our findings. For example, Harper and Crow (2006) list income from timber sales as one of four tools to conserve open space and forestall development. Although there may be places in the United States where this still is a feasible option, our case study shows this is not always the case. If timber harvesting is not effective by itself in the most rural part of Massachusetts, there are probably many other regions of the United States where this premise is also no longer valid.

Within the DRW, and likely other areas of the Northeast with increasing property values, landowners pay their communities more in taxes than they can earn through judicious timber management unless some form of property tax intervention is applied through either current-use programs or conservation easements. We suggest it is critical to develop approaches that are effective at meeting the property tax burden of the land while also achieving landowner objectives.

Of the conservation tools examined in this case study, sale of a conservation easement had the greatest impact on meeting the property taxes of forestland. In particular, our results show that this can provide not only a significant source of revenue from its sale, but a significant benefit in reducing assessed value and the annual expense of property taxes. Easements also offer permanent protection from land conversion, ensure continued flow of ecosystem services and public benefit, and can include forest management by right. Despite these benefits, easement sales are even lower than current-use enrollment in this region. In particular, it is estimated that 1.0% of the parcels and 3.1% of the area of private woodland owners in the DRW have a conservation easement on their land. Possible barriers to easement adoption may include landowners simply not knowing it is an option, fear regarding the loss of control over some of their rights, and landowners viewing their land as an economic investment pending liquidation. Because of the significant financial and conservation benefits these provide, we suggest aggressive promotion of conservation ease-

ments to support permanent working forests.

Interestingly, the past 3 years (2006–2008) have shown a significant increase in the number of conservation easements filed within the DRW (Figure 1). Collectively, easements from these years represent 32% of the total easements held within the DRW. This increase coincides with a federal tax incentive that increased the allowable deduction for the charitable donation of a conservation easement and extended the carry-forward period a landowner may use the deduction. A recent survey of land trusts across the country showed a 36% increase in number of acres conserved by an easement from 2004–2005 to 2006–2007, again coinciding with the federal tax incentive (Land Trust Alliance 2008). The increase in easements in the DRW also coincides with increased state funding for land conservation (Massachusetts Executive Office of Energy and Environmental Affairs 2008). In this case, changes in policy and funding resulted in conservation response on private lands.

Although current-use assessed valuation is not a permanent form of protection from forest conversion, our analysis shows it too can have a significant impact on covering the property taxes of forestland. Nonetheless, despite the positive financial implications and years of generous cost sharing, subsidies provided by the Forest Stewardship Program for requisite management plan development, less than 15% of eligible Massachusetts landowners have enrolled (Jennifer Fish, Massachusetts DCR, pers. comm., Nov. 20, 2008). Likewise, estimates based on town assessor records indicate that only 6.5% of eligible landowners within the DRW participate, encompassing 13.7% of the acreage of family forests within this region (Figure 2). Unfortunately, these low enrollment numbers suggest that current use may not serve as a viable conservation tool within the DRW unless it can be made appealing to a wider range of landowners.

One possible reason for low enrollment in the Massachusetts current-use program might be its misalignment with landowner objectives. Landowners whose primary ownership objectives are privacy, aesthetic values, and a place to raise their family (Butler 2008) are satisfied with the benefits that their land provides without active management or management planning. Not only are landowner objectives often being met by "doing nothing" on these ownerships, but many public benefits also result, including

clean water, carbon sequestration, wildlife habitat, and rural character, with no or only sporadic management. Importantly, it is estimated that forest-derived ecosystem services are valued at $ 2.9 billion in Massachusetts or $984/ac per year (Breunig 2003). A current-use program that provides property tax relief to owners of unmanaged land would likely appeal to more family forest owners (Belin et al. 2005) and be justified by the provision of ecosystem services and other amenity values (e.g., rural character and scenic landscapes). We suggest that current-use programs be changed to value ecosystem services, public benefits, and to accommodate the periodic and infrequent or lack of harvesting on family forests, irrespective of formal management.

Conclusions

Our analysis provides evidence that timber management "paying its way" and covering ownership expenses is not a valid assumption in areas of private ownership where stumpage values fail to rise to keep pace with rising property values and taxes. Parcelization into smaller ownerships exacerbates the problem by making land less operationally viable from a timber harvest perspective (e.g., Greene and Blatner 1986). Although beyond the scope of this case study, it is likely the inability of conventional forest management alone to cover ownership costs occurs in similar places with conditions of relatively small ownership size and reliance on property taxation for local revenues. Importantly, the DRW is not suburban. By most conventional indicators (e.g., proportion of forestland use; population density) the area is rural and yet conventional forestry wisdom has already been outstripped by the ownership costs of property taxes. Although the landscape is still dominated by trees, we must reexamine our conventional approaches to programs and tools that can help keep working forests financially viable. We believe important forest policy directions to help landowners meet the property tax burden of their land include,

• Support and promote working forest conservation easements through permanent federal and state tax incentives as well as through increased funding for working forest easements.

• Support outreach programs that build landowner awareness of multiple revenue sources and tax savings to maintain property in working forest conditions.
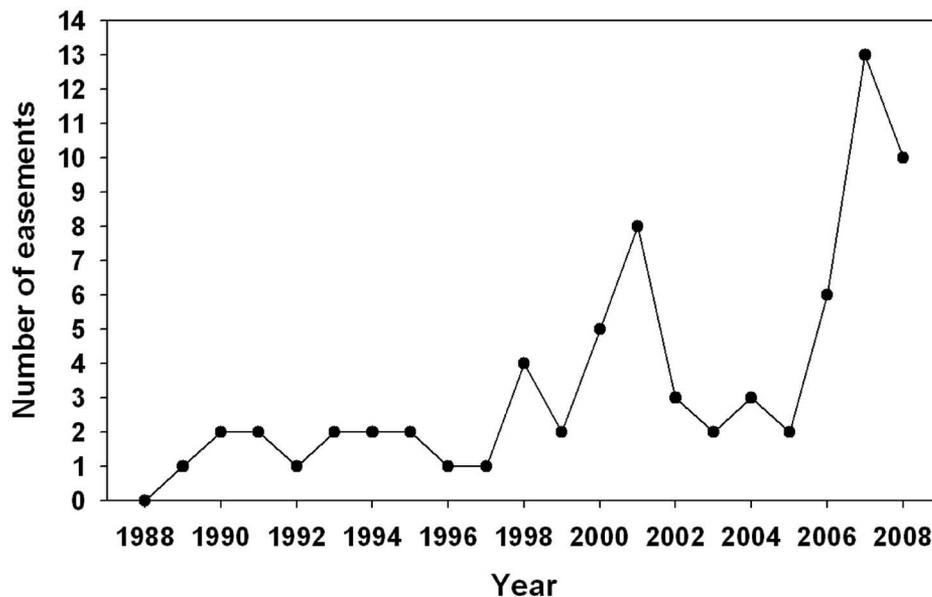
Figure 1. Number of conservation easements filed within the DRW, Massachusetts from 1988 to 2008.
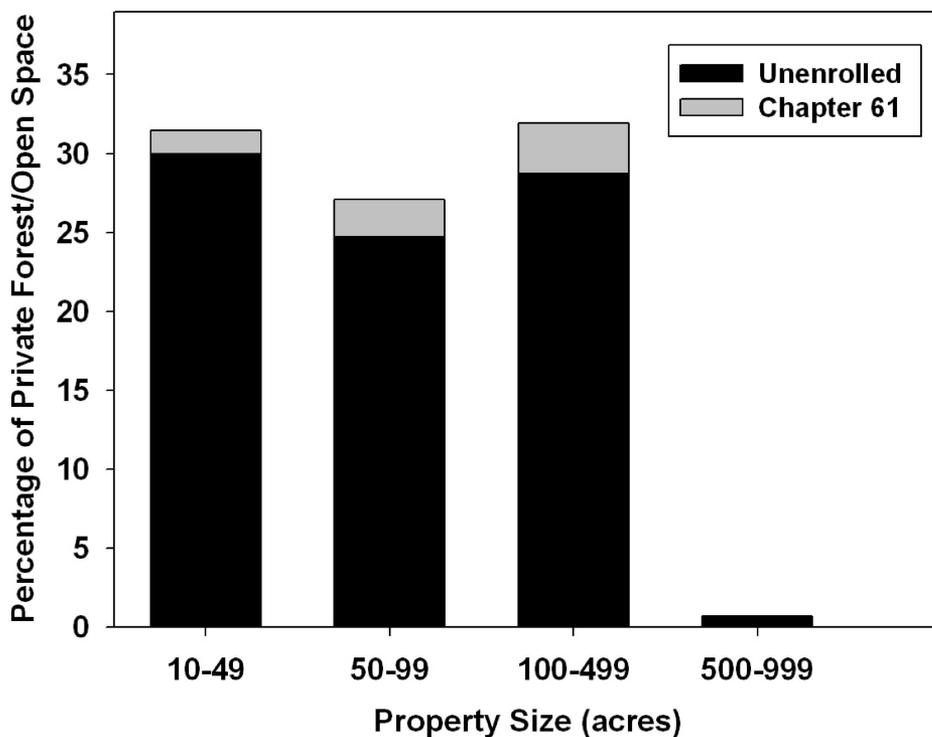
Figure 2. Proportion of eligible private forestland/open space acreage enrolled in Massachusetts' current-use program (Chapter 61) within the DRW, Massachusetts.

• Recognition of the ecosystem value and public benefit of land that is not being managed under a forest management plan and compensate landowners for providing these values through current-use tax reductions, irrespective of whether or not they have a forest management plan and manage their land for timber.

Finally, this case study suggests that the tax, financial, and ownership costs of private forestland can change more quickly than the forest itself. Foresters visiting the DRW would see unbroken, rural landscapes of forest implying real opportunities for management. Despite this heavily forested appearance, this case study implies that without policy intervention, timber management is already a losing proposition. The sagging enrollment in current use and low adoption of

easements suggests the need to be vigilant to changing circumstances and nimble to modify policy and keep it relevant for circumstances that change faster than stumpage prices or the growth of trees themselves.

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