



# Nonindustrial Private Forest Landowners: Building the Business Case for Sustainable Forestry

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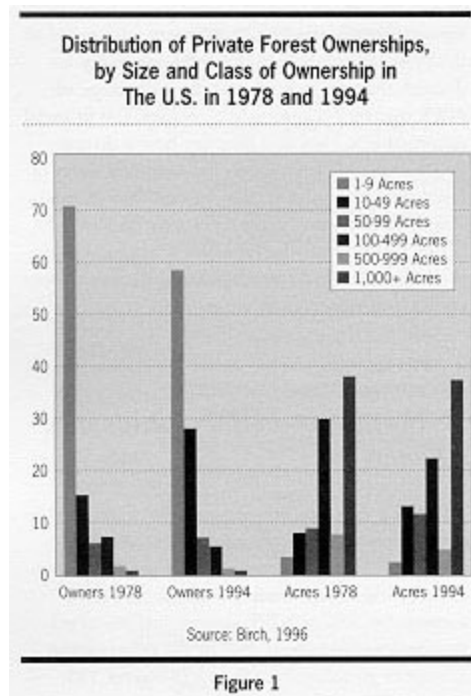
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## ***Introduction***

No discussion of sustainable forestry would be complete without considering the unique aspects of nonindustrial private forests (NIPFs). Owners of these forests control 58% of the commercial forests in the United States. East of the Mississippi this type of ownership accounts for more than two-thirds of the region's timberland, whereas west of the Great Plains the majority of forests are in public ownership. The 261 million acres in NIPFs protect watersheds, provide wildlife habitat, offer scenic beauty, and supply 49% of the timber harvested in the United States, according to the US Forest Service. This supply is critical for many large wood products manufacturers. Weyerhaeuser Co., for instance, harvests 58% of its timber supply from NIPFs nationally, and 90% are in the South.

The ten million NIPF owners, a diverse group including individuals, partnerships, estates, trusts, clubs, tribes, corporations, and associations, confront a variety of challenges that can complicate the practice of sustainable forest management (SFM). Many are not well informed about the economic value of their resource or the importance of consulting professional foresters when making management decisions. Annual property taxes and capital gains taxes can be disincentives to sound, long-term forest management. Without proper estate planning, owners can be forced into making decisions that may prevent them from passing forest land from one generation to the next, and may lead to the conversion of the forest to other uses. Equally important, the objectives of the owners combined with their individual financial circumstances are determining factors whether forest land will be managed sustainably or not.

The cases of seven NIPF ownerships presented here range from a small family forest that is managed for amenity values to a large tract managed for timber and investment. They are located in the Northeast, Pacific Northwest, and Southeast, which represent very different timber-growing regions. Although all these owners use professional forestry advice, and all the properties have been in family ownership for decades, they are indicative of the wide range of NIPF owners' backgrounds, objectives, and financial circumstances. They also illustrate how a diverse group of private landowners has addressed issues of forest sustainability. A section on certification examines three innovative approaches now underway to certify NIPFs: a certified resource manager, a chain-of-custody certified manufacturer, and a single forest owner seeking certification.



**A Portrait of NIPF Lands and Owners**

The NIPF category includes properties not held by government or forest products manufacturing firms. As Figure 1 indicates, 90% of the NIPF owners hold less than 100 acres. These small parcels account for 30% of NIPF acreage. Just 3% of private owners hold about 29% of the private forest acreage in parcels greater than 1,000 acres. This includes forest products companies and some large NIPFs. (The data below treat both NIPF and forest industry lands as "private." The "corporations" category includes forest industry and

**Estimated Number of Private Ownership Units and Acres of Forest Land Owned by Type of Ownership, United States, 1978 and 1994**

Owners Form of Ownership	1978		1994	
	Thousands	Percent	Thousands	Percent
Individual	6,793	87.6	9,319	94.1
Partnership	484	6.2	289	2.9
Corporation	237	3.0	157	1.6
Other	246	3.2	136	1.4
<b>Total</b>	<b>7,760</b>	<b>100.0</b>	<b>9,901</b>	<b>100.0</b>

Acres Form of Ownership	1978		1994	
	Millions	Percent	Millions	Percent
Individual	183.5	55.1	232.3	59.0
Partnership	35.8	10.7	29.7	7.5
Corporation	101.1	30.4	107.1	27.2
Other	12.7	3.8	24.3	6.3
<b>Total</b>	<b>333.1</b>	<b>100.0</b>	<b>393.4</b>	<b>100.0</b>

Source: Birch, 1996

companies that own land but do not manufacture or sell forest products, for example, landholding and investment firms. Timber harvesting is the primary objective on all of these lands.)

The number of NIPF owners continues to grow, increasing by 27% from 1978 to 1994, according to a study done by Thomas Birch of the U.S. Forest Service, Northeast Forest Experiment Station in Warren, Pennsylvania (see Table 1). More than 40% of current NIPF owners acquired their property since 1978. However, during the same period here was a drop in the number of large tracts, over 1,000 acres, which indicates that private forest lands are becoming increasingly fragmented. Tract size is an important criterion in the NIPF sustainability equation. Small forest tracts produce less timber, which can force heavier cutting in the short term to meet immediate financial needs.

In general, recent studies by Birch show that the "new" NIPF owners who have acquired land since 1978 are younger, better educated, and have a higher income than the average owner of 1978. Birch also found that the proportion of retired owners has increased: About 20% of owners are retired, which raises serious questions about the continuity of management philosophy and the need for estate planning. Smaller parcels cannot be managed as efficiently as large ones. And the disposition of lands to several heirs or outright sale to pay estate taxes are major contributors to the fragmentation of forest lands, and the parceling of larger tracts into smaller

ones.

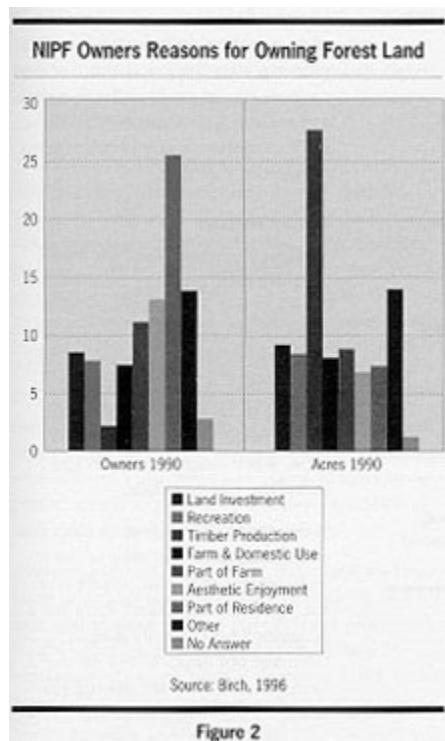


Figure 2

NIPF owners hold their land for a variety of reasons. About 40% cite recreation or hunting as the primary reason for owning forest land, according to Birch (1996) and Jones et al. (1995). Ownership may be incidental to other uses. For example, forest land may be part of the farm. In suburban areas, forests are often conveyed with homes as part of subdivisions. For many, however, their ownership is by design. Nine percent of NIPF owners (10% of the NIPF acreage) purchased their land as an investment (see Figure 2). The reason for ownership plays a critical role in landowners' forest management decisions. However, landowner behavior is not always consistent with their attitudes. Despite citing other objectives as more important, about 50% of owners, representing about 75% of the acreage, have harvested timber at some time during their land-owning tenure, according to 1994 US. Forest Service estimates.

NIPF owners have diverse reasons for owning land, and desire a variety of values, both amenity and commodity. Most owners are not well informed about the economic value of their resource or the importance of consulting professionals when making management decisions. Knowledgeable landowners, and those who use natural resource professionals when making decisions, tend to make decisions more consistent with principles of sustainable forestry.

A 1993 study by Andrew F Egan, Assistant Professor of Forestry at West Virginia University, and Stephan B. Jones, director of the Alabama Cooperative Extension System, found that landowners' forestry decisions vary directly with their knowledge of forests and forestry: Informed landowners are more likely to make decisions that result in sustainable practices. This finding suggests that education should be a component of efforts to promote NIPF sustainability.

Although a number of studies have characterized the "typical" landowner, each real landowner brings a unique set of demographics, motivations, understanding, and objectives to managing an individual property. The seven individual properties in this case each encompass a unique set of circumstances. Collectively, they express a wide range of ownership characteristics that illuminate the broad NIPF case and justify general conclusions about building the business case for sustainable forestry. The properties represent a continuum from the low-intensity approach of a retired brother and sister who manage their 171-acre tract for scenic values, wildlife habitat, and timber production (within the context of maintaining continuous forest cover), to the income-driven activities on a multigeneration, family-owned property of 1,728 acres. The properties and their distinguishing features are listed in Table 2. The key forestry terms used in the cases are explained in the glossary at the end.

## THE BRENT TRACT: A PERPETUAL FOREST OF DOUGLAS FIR

The Brent Tract, 171 acres of farm and forestland located in Oregon's Willamette Valley, is covered with 40- to 80-year-old stands of high quality Douglas fir. The owners, a brother and sister, Matthew Brent and Virginia Picht, value the land not only for the timber income it provides, but also for its scenic beauty, and the ecological and recreational services it provides. Maintaining the health of the forest is the owners' primary objective. That is why they favor selective thinning and natural regeneration of the forest over the clearcutting, industrial-style

Key Characteristics of the NIPF Properties		
Property/Total Acreage	Ownership Type	Owners' Objectives
Brent Oregon, 171	family, brother and sister	scenic values, wildlife habitat, timber
Freeman Pennsylvania, 639	family, husband and wife with three sons	forest stewardship, community education, timber
Trappist Abbey Oregon, 1,350	community, 37 brothers	self-sufficiency, timber, aesthetic quality
Cary Florida, 2,634	individual	maintain ownership through land and timber sales
VanNatta Oregon, 1,728	family, four generations	sustaining family farm business
Lyons Pennsylvania, 2,000	family, two brothers	timber, investment, recreation
Fredrick Alabama, 12,768	corporate trustee	asset growth, investment, estate planning contingencies

Table 2

techniques typically practiced on neighboring properties. Today the Brent tract is one of few examples of uneven-aged management of Douglas fir in western Oregon. The management techniques used on this property offer a practical alternative to clearcutting for the Douglas fir region and make it a good site for further study, demonstration, and refinements of selective thinning.

### **Family Heritage**

Virginia Picht and Matthew Brent consider their property a family heritage and feel a responsibility to be stewards of the land. Their parents acquired the property as a farm and moved there with the two children in 1920 to raise their family. The Brents farmed the property until 1958, when neighboring farmer leased the farming rights.

Today Picht, age 76, lives in Corvallis and is responsible for most of the management of the property. Brent, age 78, lives on the farm. Picht has a daughter who currently lives in Germany but hopes to live on the farm one day. They are striving primarily to maintain a perpetual forest and keep the property in the family. They take a long-term view of management, even though they realize that neither may live to see the final results of their actions.

### **In the Shadow of Mary's Peak**

Picht and Brent own the 171 contiguous acres in a single joint undivided interest. The property is located five miles southwest of the small sawmill town of Philomath, and 15 miles from Corvallis. The property, which sits on the eastern edge of the central Oregon Coast Range, consists of gently rolling hills that reach an elevation of between 600 to 800 feet. It lies near the base of Mary's Peak, the highest point in the Oregon Coast Range. Rock Creek, a source of drinking water for Corvallis, flows through the property for over half a mile. The 10,000-acre Mary's Peak Watershed (Suislaw National Forest and City of Corvallis ownership) borders the Brent property. The reservoir for the city's water is located upstream.

The Brent Tract is located among public, small private, and industrial ownerships. In the foothills region bordering the Willamette Valley, the fertile valley bottoms are farmed, whereas most sidehills and ridges are forested. Grass seed is the primary crop on the valley bottoms, and Christmas tree farms of Douglas fir and noble fir dominate agriculture in the foothills. Much of the heart of the Coast Range is included in the Suislaw National Forest, which until 1993 was managed primarily for commercial timber production. Recently, much of the Suislaw, which contains numerous stands over 100 years old, was taken out of production as part of efforts to protect the northern spotted owl under the Endangered Species Act.

Intermingled with the national forest land are large tracts of industrial forest, mainly Douglas fir, that are managed as short rotation (40-60 years) plantations. At the valley margins most forestland is held by nonindustrial private owners. Since the NIPF land contained younger timber than the surrounding industrial lands, NIPF lands were largely unmanaged until the 1980s, when rising timber prices led to increased clearcutting on those properties.

About 136 acres of the Brent Tract are wooded; the remaining 35 are in fields with a residence. About 111 of the wooded acres are well suited for commercial timber production. The remaining 25 acres are lowland stream areas stocked with mixed hardwoods and conifers. The deep rich soils and abundant rainfall of the Coast Range, which reaches between 50 and 60 inches a year, provide good forest-growing conditions. The average site index for the property is 125 (50-year basis), which means the land has the potential for timber growth of nearly 1,000 board feet per acre annually. The property lacks a current timber inventory, but timber volumes are estimated to be near 1.55 million board feet (mmbf), much of that export grade. Based on an average stumpage value of \$700 per 1,000 board feet (rmbf) the total standing timber value would be \$1,085,000. The total annual growth is estimated to be 95 mbf, or about \$66,500 based on 1996 prices.

By conventional even-aged management standards, many stands would be considered understocked. Regular thinning has kept the stands relatively open, but it has also encouraged very high-quality growth. Thinning has also allowed the firs and hardwoods to regenerate naturally and develop significant vertical stand structure.

The Brent Tract is in the *Tsuga heterophylla* (Western hemlock) zone of the western Oregon Coast Range. Forests are typically dominated by Douglas fir (*Pseudotsuga menziesii*), with Grand fir (*Abies grandis*), big leaf maple (*Acer macrophyllum*), and Oregon white oak (*Quercus garryana*) common associates. The property provides habitat for deer, coyote, beaver, hawks, owls, and trout. Three spotted owl pairs have been identified on the nearby Corvallis Watershed or Suislaw National Forest, although no owl-related restrictions affect the

## Brent Tract.

After settlement until the early 1900s, most of the foothills were small farms and ranches. As marginal agricultural land was abandoned beginning in the early 1900s, it reseeded to fir. Nearly all of the region has been harvested and managed for timber since the 1940s or before.

Prior to the 1960s, forest management of the Brent Tract was limited to isolated small sales for farm use or income production. Cutting occurred where trees were the largest. After a windstorm felled a large number of trees, the property was commercially thinned in 1964-65, then again in 1980, 1985, and 1987, each time under the supervision of consulting foresters.

These thinnings consistently used an individual tree selection technique called high thinning, with limited use of shelterwood and overstory-removal harvests to promote natural regeneration. In the even-aged management techniques used conventionally in the region, low thinning is the primary intermediate harvest method. Low thinning selects trees for cutting from among the subdominant size class to give growing space to the dominant trees of the stand. In contrast, with high thinning, a small number of the dominant trees are selected for harvest, based on how saleable they are, and how much space their removal would provide to neighboring subdominant trees.

The property has been managed sustainably since 1965. Only recently, though, have the owners understood effective uneven-aged management techniques. Previously, low log prices and lack of knowledge and experience with alternative management regimes kept the owners' focused on commercial thinning. Rising timber values were a strong incentive to pioneer high thinning practices.

### **Sustainable Management for Douglas Fir**

Like most NIPF owners, Ms. Picht and Mr. Brent have diverse objectives. They want periodic income, but no family member relies on the property as a primary income source. Timber harvesting is acknowledged as a source of income and a means to promote the health of the forest, but both Picht and Brent want to maintain a perpetual forest and the aesthetic values of the property. They wish to avoid clearcutting whenever possible.

The owners have no formal written management plan or timber inventory. However, they have relied on advice from professional foresters for all management activities since 1964. The foresters have also advised the Brents on tax issues involving timber, and an accountant has provided additional tax advice.

As long as the forest stands are healthy and attractive, timber volumes and values increase, and harvests occur when income is needed, the owners feel their objectives are being satisfied. Regular (annual or biannual) meetings and walks with the forester keep the landowners apprised of actions needed and progress toward fulfilling goals.

The years of SFM have created a healthy forest. Generous riparian set-asides provide wildlife habitat for a variety of species, add to diversity within the landscape, and protect the water quality. Stand management practices enhance the diversity of the tree stands and the landscape. Hardwoods and minor conifers are encouraged, although fir is clearly the dominant species. The owners tolerate brush and shrub growth. The trees are grown to large sizes (larger than 24" in diameter), and old ages (more than 80 years old). Selective thinning has increased vertical stand structure, so much so that in some places it resembles the uneven-aged conditions characteristic of a natural forest.

### **Costs and Rewards of Conservative Management**

Property taxes represent the main fixed cost. Annual taxes on the woodland portion of the property have been between \$600 and \$700 through the 1990s.

Timber sale administration represents the sole variable cost of management. Forester fees were initially 10% of the gross stumpage proceeds. Since log values have risen, however, forester fees have dropped to the current 7%.

Much of the property is zoned exclusively for forest use, which prohibits development. Zoning would allow division and/or establishment of one additional homesite, valued at \$80-100,000. Thus, keeping the property in its present use represents an opportunity cost of \$80-100,000.

	Harvest Volume	Gross Stumpage	Fees	Net to Owner
1987	229 mbf	\$26,376	\$2,638	\$23,738
1985	259 mbf	\$26,144	\$2,614	\$23,530
(no data for sales in 1980 or 1965)				

Since 1985 the conservative management used at the Brent Tract has generated over \$47,000 of net stumpage income. Although there have been no recent appraisals of timber or land value, the total current property value is estimated to be more than \$1.5 million (standing timber \$1,085,000; bare land \$171,000; location value \$250,000). With recent increases in stumpage prices, a conventional regime of heavy cutting and conversion of "underproductive" stands would not have performed nearly as well as the more "conservative" regime chosen.

The property is enrolled in Oregon's "timberland deferral" classification, which allows a lower annual property tax, with a severance tax of 3.8% on the net stumpage proceeds at harvest. There has been no income from nontimber sources.

Careful management of both the timber resource and family estate tax affairs could enable Picht's daughter to live on the land as she one day wishes to do. However, there is no estate plan in place yet. The owners do not fully understand the monetary value of their forest asset, nor the significant role estate planning plays in the ability to maintain and perpetuate that asset. The lack of an estate plan may threaten Picht's and Brent's abilities to achieve those long-term objectives.

### **Practical Alternative Management for Douglas Fir**

Low log prices through the 1980s probably deterred harvesting on the Brent land. Because the owners' financial needs were low, the resulting conservative management has been beneficial. Thinning stands that might otherwise have been candidates for clearcutting has allowed both regular harvests (and income), and a significant increase in the volume of standing timber. The growth in timber coupled with rising prices for stumpage have greatly increased the value of the property. At the same time the property remains an attractive place to live and enjoy, while generous stream area set-asides promote wildlife diversity.

Much of the Brent Tract is gently sloping, which makes it well suited to ground-based logging. Most NIPF timberland in western Oregon lies on similar sites, but much of the industrial timberland in the Northwest does not. Significant modifications would be needed to manage mixed-age stands in those areas on an industrial scale and would probably require the use of more expensive cable logging.

One stand on the Brent Tract was among four sites chosen for a 1995 study of selective thinning and uneven-aged management for Douglas fir by consulting forester Mark Miller. The preliminary results show that 30 years of selective thinning and natural regeneration are leading to uneven-aged stand structures.

Currently the city watershed has no active forest management plan. Such stewardship forestry next to the watershed could provide an example of the successful use of alternative management techniques for Douglas fir, which might be applicable to other sites in the area.

## **THE FREEMAN FARM: STEWARDSHIP IN ACTION**

George Freeman, a retired Quaker State Oil Company executive, and his wife Joan purchased the first 93 acres of the property with a partner who supported strip mining in 1964. The mining company went bankrupt and the coal mining stopped. By 1971 the Freemans were sole owners of the property and have since managed the 639 acres in Pennsylvania, which consist of highly productive stands of mixed hardwoods and a high proportion of red pine and Japanese larch, as a productive forest.

The Freeman Farm is a fine example of stewardship forestry. The Freemans, however, do not rely on timber as a sole source of income. Because they have a variety of objectives, they are willing to accept a disparity between income and costs. Although timber income covers the costs of many of their projects, it does not cover all the costs of running the farm. Essentially, timber income allows the owners to enjoy their retirement, practice sustainable forestry, and provide environmental education, which they consider worthwhile.

**Freeman Mission: Sustain and Share the Forest** The Freemans have a clear mission for the property. They intend to sustain the land as forest and pass it on to their three sons. The Freemans derive great enjoyment from caring for the forest, which they work in almost every day of the year. Both cite "sanity" as the most

important output they get from managing the farm. According to George Freeman, "Some of the best relationships come from working together in the woods." Equally important, the Freemans want to share the forest with as many others as they can, so that others "may learn to preserve these resources for future generations."

The Freemans accomplish their second objective by hosting hundreds of visitors each year who attend workshops that cover topics ranging from timber taxation to forest stewardship. The farm also includes a 12-acre Stewardship Demonstration Area, which is managed with Pennsylvania State University and the Pennsylvania Bureau of Forestry. It shows how six different forest management techniques are applied on two-acre parcels. The farm is also part of the Pennsylvania Forest Stewardship Program sponsored by the U.S. Department of Agriculture to encourage SFM on NIPF lands, and the National Tree Farm system, a private program started in the 1940s to ensure future timber supplies. The Freemans have received a number of awards for their conservation efforts. Most recently, in 1995, they were awarded The Three Rivers Environmental Award for contributing to environmental education in Pennsylvania. George also belongs to a variety of forestry and environmental groups, including the American Tree Farm System, American Forestry Association, and the Pennsylvania Forestry Association.

The couple is implementing an estate plan, which demonstrates their commitment to passing the forest lands on to their three sons. Ninety-three acres of forest land was given to the three sons in 1995 as part of a lifetime giving approach to avoid estate taxes. As a Stewardship Forest, the farm is under a management plan prepared by a professional forester. These factors increase the potential for sustaining the forest for the long term.

**A Farm of Hardwood Forests** The 639 acres are located in Richland Township, Clarion County Pennsylvania, just south of Interstate 80, which makes the farm easily accessible and hard to miss. The Freemans proudly display the "Stewardship Forest" and "American Tree Farm" signs on the interstate. The land surrounding the farm, which is located in Pennsylvania's ridge and valley province, is made up of farms and gently rolling forested hillsides. The farm itself lies at the northern end of the oak-hickory forest type range that stretches south into Virginia and the Carolinas.

The terrain ranges from gently rolling to flat. Ridge tops are narrow but there are no geological features that hinder forestry activities. Forest stand types include northern hardwoods (birch, beech, maple, and pine), mixed oaks (white, black, and chestnut oak, hickory, black cherry, and red maple), and some red pine, Japanese larch, and Norway spruce plantations. Grapevines had invaded many of the stands and were contributing to a decline in tree growth. Due largely to George's efforts of cutting and applying herbicides, the grapevine is under control on 430 acres. In some areas, though, the grapevine has been left as food for wildlife. Many eastern songbirds occupy the farm in summer, and rabbit, whitetail deer, red squirrel, turkey, and coyotes live there year-round. The diversity of wildlife is a primary source of the Freemans, enjoyment of the land and an added incentive for them to practice sustainable management.

### **Forest Management**

Almost all of Pennsylvania's forests were cleared around the turn of the century, primarily for lumber, fuel, and agriculture. The Freeman Farm was cleared for agriculture. As lands became marginal and society urbanized, farmland was abandoned and reverted back to forest. Most of Pennsylvania's forests are currently about 70 years old.

In the case of the Freeman farm, 60 acres is younger because it was actively farmed until 1965. The Freeman forest has been actively managed since 1970. Sixty acres had been clearcut right before purchase. That is now a lush mixed hardwood stand containing mature oaks, tulip poplar, cherry, and an occasional cucumber tree.

The site quality is good over most of the property. Some 497 of the 639 acres are commercial timber-lands. The Freemans manage the forest to encourage the growth of high-value commercial species and regenerate these species after harvest. They conducted their first thinning in 1973 to remove "mature and defective" stems. They held timber sales in 1981, 1986, 1992, 1993, and 1995. Although clearcutting has been used in the past, new selective cutting techniques such as crop tree harvests, which retain the better growing stock to mature and regenerate on the site, are now implemented to regenerate oaks and black cherry while maintaining the aesthetics of the property.

In addition to native stands, the farm has several plantations devoted to red pine and Japanese larch. These



stands are pruned regularly to encourage the growth of more valuable clear wood. Competing vegetation, especially the grapevine growth, is controlled by hand sawing and the careful use of herbicides.

During harvest, care is taken to protect water resources and trees that provide habitat for wildlife. Roads and trails are designed to minimize erosion and sedimentation in streams. Culverts are strategically placed to protect existing water courses. Harvesting is done with chainsaws and skidders. Roads and landings are reseeded after harvest to minimize erosion and to benefit wildlife. Herbicides, which are applied directly to avoid unintended damage and to protect surface waters, are used to control ferns on 15 acres and to control grapevine.

The Freemans base their management decisions on professional advice. They use a private consulting forester and take advantage of the advice of extension and state service foresters. The Freeman's Forest Stewardship Plan was prepared with the cooperation of a forester with the Pennsylvania Bureau of Forestry. The Freemans have had professional legal help. George handles the finances, except for taxes, which are prepared professionally. The family's involvement with Pennsylvania State Forest Resources Extension programs and the Tree Farm and Stewardship Programs also gives them access to natural resource professionals.

The Freemans cite property taxes as a major impediment to sound, long-term forest management. Owners may occasionally receive a return on timber, but taxes are due every year.

The Freemans also face an ongoing issue with the local utility. High-tension wires cross the property on a right-of-way for which the Freemans were paid \$700 in 1966. They have no rights to use the area, yet they must pay property taxes on the approximately seven-acre parcel that the utility uses. They have also had to negotiate with the utility over the use of herbicides, and the utility's need to access the parcel across the Freeman's other lands. The utility now consults with the family before it enters the parcel or conducts any activities there.

The Freemans propose two remedies for these issues. First, that the utility pay the taxes for that portion of the property it uses. Second, NIPF owners should be given special consideration in taxation. George recommends incentive programs that would allow reductions in property taxes in exchange for commitments to practice and achieve sustainable forestry.

The owners realized early that the property had the potential to pay for itself. Timber production is a primary objective. The Freemans have effectively managed timber while enhancing wildlife habitats and aesthetic values, protecting watersheds, and maintaining biodiversity.

The management strategy is aimed at keeping the farm intact and forested. Timber harvests are sporadic. They are scheduled based on a combination of factors: when commercial quality timber is ready to harvest, when improvements are needed to encourage the growth of commercial species, and when market conditions are favorable. The estate plan is designed to pass the farm on to the next generation, but this does not ensure that the land will stay in forest use.

The Freemans own the land because they enjoy caring for the forest and working to develop a high-quality timber stand. But the farm also provides recreation and an opportunity to educate the public about forests and forestry. The objectives of recreation and occasional and incidental income from timber reflect those that are most common among NIPF owners. The Freemans feel that their objectives are being met. The objective of producing high-quality timber is evidently achieved, as indicated by the timber sale figures below.

### **Financial Rewards of Stewardship Forestry**

The single largest fixed cost is payment on an equipment loan. For the period 1993-1995, annual payments averaged \$3,203.61. Combined taxes on the property are the second largest fixed expense. For the period 1990-1995 payments averaged \$2,703.07. Taxes on the property have increased by \$132.05 in this five-year period, which translates into a cost of \$9.24 per acre per year (based on 1995 figures).

The variable expenses on the farm reflect the diversity of activities. They include machinery maintenance, fuels, forester fees, vehicle and facilities maintenance, and insurance. Timber sales far exceed variable costs over the span of ownership, but they do not exceed fixed costs. This indicates that as a sustainable business venture, the farm would not survive in its current form. Timber management alone, however, would be self-sufficient.

Recently the Freemans refused an offer to locate a radio transmission tower on the property, which would have

eliminated several acres of forest land. That and their refusal to strip mine the property for coal represent significant opportunity costs. Although the Freemans have received some revenue from selling corn grown on open fields and limited coal mining, most of the income produced from the property comes from timber.

### Timber Sales

There have been five timber sales since 1980 totaling \$111,857.84. This represents \$11.67 per acre per year of gross timber revenue. Roughly \$1.31 per acre per year has been paid to a consulting forester to administer the sales, which leaves \$10.36 per acre per year to the Freemans. These estimates were calculated from the table above, by averaging the totals over 15 years, and do not account for expenses other than the consultant's fees.

Sale	Total	Freeman	Commission Consulting Forester
1995	\$ 2,240.00	\$ 2,000.00	\$ 240.00
1993	6,971.89	6,431.89	540.00
1992	26,113.98	22,980.30	3,133.68
1985	62,177.52	55,405.00	6,772.52
1980	14,365.45	12,483.00	1,872.45
<b>Total</b>	<b>\$111,857.84</b>	<b>\$99,300.19</b>	<b>\$12,558.65</b>

The complexity of the venture makes calculation of changes in investment value difficult. The land is not currently threatened by localized development pressures. Clearly the value has increased if only in terms of the quality and value of standing timber. Nonmarket benefits include enjoyment of the land, hunting, wildlife observation, and the satisfaction of realizing a dream.

Forestry Incentive Program monies helped pay for some early timber stand improvements. The farm is not currently enrolled in Pennsylvania's "Clean and Green" program, which allows forest owners to have their lands taxed at a low current use rate. The Freemans have not taken advantage of this program because it would not significantly reduce their current assessment. The program also requires owners to "buy out" by paying back taxes at the higher rate if they should choose to convert their lands to other uses at a later time.

The Freemans operate the forest as one would operate a small business. This allows them to depreciate buildings and equipment. Not doing so would neglect tax benefits associated with expenses that are necessary for careful forest management.

### External Costs and Benefits

The Freemans feel that they get little recognition for their efforts by their immediate neighbors. In fact, these neighbors have had some negative effects on the farm. One neighbor has occasionally hosted concerts. In the past these have led to trespass, burglary, and fire damage to the Freeman land, and have even led to legal action against the neighbor. In addition, the farm's proximity to the interstate sometimes brings unwanted visitors, especially during hunting season. To prevent the intrusions, the Freemans have had to buy gates for many of the access points, which they consider a necessary cost to protect their investment in the land.

Within the context of alternative land uses, the Freemans' efforts provide an ecological benefit. By foregoing options for other types of development and making a commitment to long-term forest management, the Freemans have improved wildlife habitat, and protected watershed and the aesthetics of the forest, which could otherwise have been lost.

### Deciding Factor for Forest Stewardship

The Freemans are financially able to practice sustainable forestry. It is questionable, however, whether they could support the multiple objectives they have on timber income alone. They have invested a lot of their own time in the management of the forest, as well. Many NIPF owners are unable to do so. Changes in taxation could improve prospects for sustainability.

On the other hand, it is common for forest lands to be part of a diverse income stream. The Freemans have assured that their efforts can continue through careful estate planning. The prospects that the Freeman Farm can be sustained for the next 50 to 100 years are good.

The primary indirect benefit of the farm is the ongoing education it provides. The workshops and demonstration sites set a strong example for forest stewardship and help to spread the word to other landowners and the public about the benefits of sustainable forestry.

There is no doubt that if the Freemans did not actively manage the land it would look quite different. The grapevine control campaign George has waged has made the tree stands far more productive than they would otherwise have been. Using a professional forester assures that payments for timber are fair and that sound

forestry principles are used in harvesting.

Sustainable forestry means different things to different people. The Freemans are committed to sustaining the forest. By viewing their land as a forest, as opposed to simply a financial asset, they have consistently made decisions that promote sound forestry. They have also chosen to invest their own capital in making the farm work. There is no current threat to the farm from urban sprawl or rapidly increasing land values, which threaten many other NIPF land holdings in Pennsylvania. If there were, the Freemans commitment would be the deciding factor between sustainable forestry and something else.

## ***THE TRAPPIST ABBEY FOREST: EFFECTIVE CONFLICT RESOLUTION***

The Trappist Abbey of Our Lady of Guadalupe, a monastic community of men, owns 1,350 acres of forestland near Lafayette, Oregon. The Abbey purchased the property when it moved from New Mexico to the present site in 1953. The forest is an essential part of the monastic community. It provides the physical and spiritual setting for the community, acts as a buffer to neighbors, and allows for cloistered retreat. It is also the basis for a forestry enterprise, one of the four cottage industries that members run, which enable the Abbey to be self-supporting. To date, each of the other industries (book bindery, fruitcake bakery, and wine storage) has provided more income than forestry. In the future, however, the forestry program is expected to provide an increasing share of the Abbey's income, as members age and income from other industries declines.

In 1996, 37 members with an average age of 67 lived communally at the Abbey and worked collectively in the four cottage industries. A forestry crew of three work year-round to manage the land, including planting, thinning, timber stand improvement, and harvesting. A forestry advisory committee, made up of members within and without the Abbey, was created in 1994 to address forestry issues. The forestry decisions, however, are made democratically, and the entire community is involved in planning discussions.

The forestry experiences of the Abbey illustrate just how much time and effort it takes to build a productive, sustainable forest from the ground up. The Abbey Forest is also a good measure of the financial returns that are possible through continued forest improvement and management. The Abbey community has learned to resolve conflicts over forest use in its own ranks, in part through the use of sustainable forestry. The Abbey's approach to resolving the inevitable conflicts that arise over forest management may offer a useful example for forest use conflict resolution using SFM.

### **The Abbey Forest**

The Abbot of Trappist Abbey, Inc. (ATA), a 501-C3 not-for-profit corporation owns all the land. The various enterprises of the Abbey are organized under the Trappist Monks of Guadalupe, Inc. (TMG), a 501-d corporation. Similar to a partnership, each monk, as a member of TMG, receives shares of income, and pays individual federal and state taxes. TMG receives timber harvest income and pays expenses, including property tax.

The Abbey owns a contiguous block of 1,350 acres on gentle slopes and low hills at the west side of the Willamette Valley, three miles north of the small agricultural town of Lafayette and 30 miles southwest of Portland. The forested area is divided by central fields, the residential and commercial area, numerous stream areas, and a county road.

The soils of the Abbey Forest vary from shallow, rocky, dry southwest-facing ridges and wet low-lands to productive uplands. Elevation ranges from 200 to 1,000 feet. These are seasonally dry sites, since they are in the rainshadow of the nearby Coast Range. Rainfall averages just 40 inches per year. The site quality on average is fair to moderately good, with a 50-year site index of 100 to 125, which means that on average trees grow 100 feet every 50 years.

Of the 885 forested acres, approximately 125 are either too wet or too rocky to grow commercial timber. Of the remaining 760 acres about 150 acres are covered with maturing fir stands, 230 acres with mixed oak-fir stands, 330 acres in 10-26-year-old plantations, and 50 acres in plantations less than 10 years old. Based on a 1996 cruise of the land, timber volumes exceed 7.8 million board feet, with annual growth of 500,000 board feet. At a 1996 stumpage rate of \$550/inbf, present timber values are near \$4.3 million, with annual growth of \$275,000. Most agricultural land has been leased to neighboring farmers since the 1960s, when the community gave up farming.

The Abbey Forest is considered a mixed oak-conifer forest type of the interior Willamette Valley. Forests here are typically dominated by Douglas fir (*Pseudotsi-qa inciiziesii*), grand fir (*Abies grandis*), Oregon white oak (*Qiiercus garryalina*), bigleaf maple (*Accr macr(TIT11141B)*), in either pure or mixed stands. Most of the moderately sloping sites in the area were at one time farmed or grazed. As such, the forests are relatively young. Most trees are less than 100 years old, although a few isolated oaks over 150 years old are still standing. The property provides good to excellent habitat for deer, game birds, songbirds, and a host of other species, but contains no known rare or endangered species.

The Abbey Forest is set in a primarily rural, agricultural area of the densely populated Willamette Valley. Small farms and woodlands dominate the immediate landscape. Agricultural lands are generally productive, raising a variety of crops, including vegetables, small grains, fruit and nut orchards, and wine grapes. About half of the surrounding foothills are forested, mostly in small nonindustrial private ownership.

### **Forestry on Abbey Lands**

Most of the property was logged just before the Abbey purchased it in 1953. At that time most fir greater than 10" in diameter was cut. In the mid-1960s The Abbey started active forest management when a forestry crew and chief were appointed. Initially, they concentrated on replanting cutover stands and surplus agricultural lands. From 1969 to 1981 all suitable timberland was planted, totaling 320 acres. The first commercial harvests began in the late 1960s, but extensive annual cutting did not occur until the mid-1980s, when many plantations were ready for thinning.

The Abbey has used a variety of management techniques over the years in response to changing market opportunities, and the growing expertise of the forestry committee. An early harvest of oak veneer used some of the older high-quality trees left after the early 1950s harvests. Early work with a consultant in 1978 thinned maturing stands. Commercial harvesting in the 1980s thinned young plantations and converted less productive, poor quality residual stands to plantations. In conjunction with these harvests, defective fir and oak was cut for firewood. During the 1988 to 1995 period over 100 mbf were cut annually.

Several early plantations failed on droughty sites. At the time, the 1960s, there was a relative lack of knowledge of how to reforest harsh sites, and few private woodlands in the area were under any type of stewardship management. The Abbey forestry committee learned by trial and error, refining their methods as they gained more experience. In later plantings other species, such as Ponderosa and Radiata pine, Leland cypress, and poplar, which were better suited to the adverse sites, were used in addition to Douglas fir.

Early management needs were easy to recognize, and with the exception of droughty sites, relatively easy to implement. Only in the late 1980s and early 1990s, however, were all parts of the property brought under management. It has been difficult for the Abbey to achieve integrated, sustainable management of the entire ownership due to the lack of a thorough management plan, and until recently, a lack of consensus among the community on how to proceed.

As harvests intensified in the mid-1980s, small clearcuts (5-6 acres) became more common, and resistance in the community to the visual and aesthetic impact of logging grew. In 1989 when a site near the edge of a common picnic area was clearcut, the brothers became openly divided over the forestry program. Some insisted that the cutting stop. Others wanted the program reconsidered. From 1989 until 1994, small clearcuts continued, but they were out of sight of the residence. In 1994 a new Abbot, Father Peter, took over. He created the forestry committee and the community decided to hire an outside forest manager to draw up a long-term plan for the Abbey's woodland, and oversee future harvests.

### **Abbey's SFM Strategy**

Conscientious stewardship has always been a primary goal of the Abbey community in all of their endeavors. In the forestry program, maintaining the spiritual and aesthetic values of the forest are top priorities. Annual timber harvests are planned to help provide for community financial needs, as much as possible without conflicting with other forest uses. The forestry program also aims to increase understanding of forest management activities within the community, and through planning and record keeping, to pass the program on to future members.

Over the years the Abbey has increasingly sought help from outside experts. In 1995 the Abbey contracted with consulting forester Scott Ferguson (ITS Management) to help develop a forest policy, prepare a detailed long-term management plan, and assist in future timber sales. The Yarnhill County extension forester serves on

the Abbey forestry advisory committee. The Abbey has also used outside financial and legal advise in many of their community endeavors.

In 1996 the Abbey adopted specific forest policies for SFNI and integrated them into a long-term management plan to minimize conflicts between the community's financial needs and their needs for the forest's other amenities. Specific policies address ways to maintain diversity in tree species and ages; landscape and preserve unique trees and areas, such as old oak or trees near streams; implement suitable harvest methods, such as thinning; limit the size and use of clearcuts; and maintain the productivity of the soil.

The Abbey is currently implementing these new management policies. Harvests in 1996 used a combination of individual tree selection, high thinning, and regeneration cuts using group selection, and scarification to mechanically expose mineral soil, which helps the forest regenerate naturally. The advisory committee will provide oversight to help ensure that management activities conform to specific policies, and that any conflicts over forestry activities are resolved.

The long-term prospects for the Abbey forestry program are favorable. The program has an impressive record to date, and both timber values and sustainable harvest levels will increase significantly in the future. The long-term success of the Abbey forestry program will ultimately be determined by its ability to provide a greater proportion of the community's financial needs as the brothers get older. Meeting those needs may eventually force changes in the forestry program. In the future, the community will face a major challenge, in maintaining current levels of management, whether by new young initiates or by outside contractors.

**Forestry Balance Sheet**

Property taxes on the 885 forested acres totaled \$1,800 in 1995, or \$2.03 per acre. Taxes are paid by TMG which also pays a modest rent of \$750 per year (\$0.85 per acre) to ATA for use and operation of the forestlands.

The Abbey forestry crew does all logging, road building, timber stand improvement and tree planting. Trucking is contracted. Operating expenses for 1995 were \$29,741, in these main categories:

Depreciation	\$2,811
Administration	\$4,696
Insurance	\$ 365
Gas, oil	\$ 603
Rent	\$ 750
Repairs	\$3,604
Service center allocation*	\$8,799
Supplies	\$2,488
Property, fire taxes	\$1,954
Trucking logs	\$3,000
Miscellaneous, other	\$ 671
*reflects wages, equipment, etc., for items used by forestry but not dedicated to forestry.	

Based on 1995 harvest of 30 acres (26 acres thinned, 4 acres clearcut), operating expenses were \$1,142 per acre harvested. However, the above costs include timber stand improvement and maintenance expenses (plantation, equipment, forestry facilities) for the entire property. With low annual harvest levels, expenses per harvested acre are high. In 1995 logging and management costs were \$292/mbf.

There have been no sales of nontimber products from forestlands. Income from rental of agricultural lands and crop shares provides an average annual income of \$6,000.

The forestland provides important functions for the community that would not be served by liquidation, development, or alternative uses. As such, there are no opportunity costs associated with forestland ownership and management.

**Timber Sales**

Timber sales began in 1966. Annual sales began in 1987, with annual harvests averaging \$46,743 (gross). In recent years, per acre harvests proceeds (mill delivered values) were \$2,306 (1994) and \$1,419 (1995 includes significant hardwood).

Year	Harvest volume	Gross income	Expenses	Net operating income
1987		\$ 20,020	\$ 19,329	\$ 691
1988		\$ 37,456	\$ 21,783	\$ 15,673
1989		\$ 78,143	\$ 32,215	\$ 45,928
1990	144 mbf	\$ 57,383	\$ 30,829	\$ 26,554
1991	130 mbf	\$ 40,555	\$ 28,107	\$ 12,448

Bare land value has appreciated from \$125 per acre in 1953, to at least \$500.00 today (as zoned for forestry, actual market value probably higher). Timber value on the tract in 1953 was zero. Today stumpage values exceed \$5,500 per acre (10 mbf/acre x \$550/mbf).

The forest management program provides other benefits. It gives year-round employment to at least three community members. This

1991	122 mbf	\$ 40,000	\$ 32,137	\$ 8,308
1992	127 mbf	\$ 38,338	\$ 37,053	\$ 1,285
1993	88 mbf	\$ 30,584	\$ 26,881	\$ 3,703
1993Q4*		\$ 29,665	\$ 6,785	\$ 22,880
1994	114 mbf	\$ 57,660	\$ 26,769	\$ 30,891
1995	102 mbf	\$ 42,574	\$ 29,741	\$ 12,853
Total		\$432,378	\$263,582	\$168,796

\* "short year" reflects change of fiscal year from ending 9/30 to 12/30; records prior to 1987 are incomplete.

work is both physically and spiritually satisfying to the forestry crew, a factor the community feels is nearly equal in importance to the financial considerations. The Abbey also lets community members, guests, and restaurants use an extensive network of forest trails and several retreat cabins at no charge.

There has been no government cost sharing used for forest management. All forestland is enrolled under the Western Oregon Small Tract Optional Tax (WOSTOT), a program for NIPF owners, which features a low annual property tax based on forest soil productivity for lands dedicated to timber production and no severance tax.

### Benefits to the Environment

By maintaining the fields and forests in an attractive and productive state, the Abbey helps preserve the aesthetic values of the area. Since this part of Yamhill County has little nonfarm development, the aesthetic qualities probably add little monetary value to surrounding properties today. As residential development spreads throughout the Willamette Valley, however, the Abbeys productive forests, species diversity, and maturing stands will increasingly act as an ecological benefit to the area. Projected regional population growth promises to increasingly fragment forest areas and convert them to other uses. As forest management intensifies in the region, rotations will probably shorten and diversity diminish. That will make the Abbey Forest more unusual and ecologically valuable in time.

### Lessons from the Abbey Forest

Stewardship has always been part of the Abbey values, so striving for it in the forest management Program was automatic. The Abbey has overcome its early forestry difficulties, which stemmed from a lack of expertise in small woodland management techniques within the community and in the field of forestry, and its later conflicts over forest use. The Abbot is excited about sustainable forestry and the prospects of certifying sustainable forestry practices. He sees third-party certification as a way to validate the goals and achievement of the forestry program.

Having a professionally prepared stewardship management plan has been instrumental in reassuring the entire community (and its visitors) that the Abbey is taking a balanced, defensible approach to resource management, and allows the community to make more informed judgments about the future of the forestry program.

The members of Trappist Abbey live within a defined structure, share many basic 'beliefs and philosophies, and have made a long-term commitment to living and working together. This has helped the community adopt SFM. Although the Abbey's structure and the community's values are an advantage for sustainable forestry, 37 individuals still must always agree on a plan, on a year-to-year basis. Annual meetings on each year's harvest plan take place, with a democratic vote, either up or down. The forestry committee's oversight and a concerted effort to educate the community have made this process more effective in recent years.

The Abbey offers several lessons for other private forest owners. The long-term commitment required for forestry is especially true for sustainable forestry. Owners may have to bypass immediate benefits to ensure optimum conditions in the future. Even with a 30-year management history, the Abbey's new management plan recommends conservative harvest levels for the next W years. Restraint now will enable growing stock and sustainable harvest levels to double in the next decade.

Conflicts are inevitable in forestry settings where there are several individuals or groups with differing interests in a piece of forestland. The Abbey with its forestry committee has been able to resolve those conflicts. When crisis became evident, talks involved all members of the Abbey community, as well as individuals from outside the community, in frank discussions of intent and need. Policies based on sustainable forestry were an instrumental part of that process and the solution.

## **THE CARY PROPERTY: THE IMPACT OF ESTATE TAXES**

The 2,364-acre Cary property consists of several tracts of pine forest near Pensacola, Florida, that was inherited by the wife of a career military officer in 1947. Until she and her husband retired she engaged the

services of a consulting forestry firm to manage the property. In 1962 the owner, Mrs. Cary, and her husband, Col. H.T. Cary, then retired, moved to Pensacola, Florida, and took over management. For 50 years, using the advice and help of professional foresters, the Cary's managed the land with the goal of building a productive forested property that would provide income. In the process they participated in conservation activities that included membership in state and regional forestry organizations and contributions to legislative lobby groups representing landowner interests. When Mrs. Cary inherited the land the timber volume was light and the stocking poor. Over the years through sound management, the land produced regular income, and the timber volume and stocking increased to near optimum levels.

Mrs. Cary's death in 1992 forced the single heir, a daughter named Ann Veldy, to heavily cut the timber to pay estate taxes. Current management is aimed at building the volume of longleaf pine, which the owner understands will require time and patience before the timber reaches a good level of productivity. Ms. Veldy hopes to keep the property, then pass it on to her two sons. As the experience of the Cary property indicates, landowners can successfully use their timber like a savings account, but time is the crucial ingredient in building timber value.

### **Fifty Years of Consistent Management**

For nearly 50 years little changed on the thirteen separate parcels making up this 2,364-acre ownership. Most of the parcels are within a three-mile radius located in two counties of northwest Florida. The topography is typically level to gently rolling lower coastal plain and ranges from river bottom hardwood land to deep sandy soil. Most areas are a sandy loam with good site index in the range of 75 to 90. Longleaf pine grows on the sandy uplands and slash, while loblolly pines are found on the heavier soils and lower slopes. Elevation differences in this lower coastal plain are minimal. The streams, creeks, and river bottom areas range from mixed hardwood and pine (including some spruce pine), to cypress, tupelo, gum, bay poplar, magnolia, and many other species in the deep swamps and river bottoms. Approximately 15% of the property is planted pine with the remainder natural stands.

Over the past 150 years the land has been used for timber growing, naval stores operations, grazing, land clearing for some oil, gas, and mineral exploration, and some recreational activities. The original old growth timber was most likely removed before 1925. Although grazing and uncontrolled fire inhibited forest regrowth for many years, starting around 1950 improved fire control, along with owner protection and improvement activities eventually led to a well-stocked and productive forest. In the late 1940s management began with a cruise to estimate timber volumes on each 40 acres. This provided information for management decisions and led to the first improvement cuts that were designed to remove slow-growing, defective, or poor quality trees and encourage regeneration, better quality, faster growth, and good stocking. Other early efforts included clearing up title, boundary line, and encroachment problems. The planting of small, marginal cropland fields and severely under-stocked areas, combined with the girdling of scrub hardwoods (killing a tree, but leaving it standing to reduce costs, provide structural diversity in the stand, and enhance wildlife habitat) where needed, was followed by annual fire line plowing to protect plantations and other vulnerable areas. Regular patrols and boundary line maintenance during this period provided added protection while the timber stands developed.

Cutting plans were developed and periodically revised based on the forest condition, silvicultural needs, and owners changing cash flow requirements. Some years modest annual cuts were made. At other times, several years of logging significant volumes of timber were followed by periods of little or no cutting. Occasionally, hurricanes forced the salvage of damaged timber and required revisions in management plans, activities, and cutting schedules. The level of silvicultural activity and other management work also varied, depending on the owner's situation and wishes as well as the condition of the forest.

When the owner died in 1992, the average volume of timber was at a good level to continue periodic cuts for income. However, Ann Veldy decided, after considering various options for paying estate taxes, to use timber to pay them. After cutting most of the sawtimber to raise the estate taxes, the volume of timber on the property dropped to near the 1947 level. Ann Veldy is now faced with rebuilding the forest. In the meantime, she has built a house on the main tract and plans to sell outlying tracts of land to produce income.

### **Forest Management Strategy**

Currently, the management objectives are aimed at producing periodic income, building the timber volume, and improving timber quality, with emphasis on managing longleaf pine in natural stands and working for natural regeneration. As a result of the heavy cutting to pay estate taxes little or no income from timber sales can be expected for at least 10 years. Eventually the young stands will need thinning and in other stands the residual

seed tree or shelter-wood overstory trees may be removed. Primary products will be longleaf pine sawtimber and poles with pulpwood as a by-product only. This cutting is expected, provided that current market conditions continue.

Forest management for the past 50 years has met the needs of the owners without damaging the long-term productivity of the land. Under the current system, annual tree growth can be removed either each year, or occasionally. Prescribed burning and removal of selected trees are the most useful practices to manage stands of even and uneven aged trees. Once a target volume is reached, it can be maintained indefinitely unless the owners' objectives change or natural disaster disrupts the forest condition.

For the near term, the management needs are basic protection and prescribed burning. Periodic timber estimates and assessments of forest conditions, particularly stocking and growth on the recently cutover areas, will be used to judge progress toward long-term goals.

### **Forest Management Analysis**

In this case, as in most cases where value is being accumulated, income must be deferred. Timberland owners often experience long periods of low cash yield and are acutely conscious of opportunity costs and options foregone. Their land and timber could at any time be cashed in for another investment or use.

Selective marking has been the predominant method of designating trees for sale on the Cary property; however, clearcuts have also been used on occasion. Over the years competitive sealed bid timber sales have been made based on prices per cord, per thousand board feet, per pole, per ton, and per tree. Because of 631 (b) federal tax code requirements, use of the safest, surest, most lucrative method of lump sum sales has been limited. Stumpage prices and land values for the property have increased 15 to 50 times over the nearly 50-year management history. This amounts to a compound annual rate of price appreciation only, unadjusted for inflation, of about 5% to 8%. In addition, the timber also grew and significant income was produced. Management costs were expensed and some outlays were capitalized.

With the exception of ad valorem taxes, management costs for the property are all variable. The general categories in which expenses are budgeted include timber sale activities such as sale planning, marking, inviting bids, and monitoring cutting, patrol and protection, record keeping, boundary line maintenance, and prescribed burning. The owner has the options to elect the timing for most of these costs. Over the years, overall costs have increased from less than \$1 per acre to \$5 or more per acre. At present, with the owner living on the property and able to carry out management functions and the forest in a stage of regrowth, costs should be minimal.

Excluding mineral income, nontimber income has amounted to about 5% of the income derived from the land. Occasionally significant income has come from seismic permits or mineral leases, but there has been no oil, gas, or mineral production. The other income has come from a variety of sources over the years, including hunting agreements since 1980; areas leased for grazing; one field for farming; and an area near a river landing for fishing camps.

The owner derives nonmarket benefits from the land, including the pride of ownership in family land, aesthetic enjoyment, personal recreation, and the satisfaction of providing stewardship for a natural resource. She considers this some consolation for the heavy logging required to pay taxes on the property her mother cared for and improved over half a century. She considers herself fortunate to be able to live on the land, ride horses, and spend time in her woods.

In the late 1950s some government cost-share programs were used in connection with planting open fields and understocked areas and for hardwood (competing species) control. Again in the 1980s, some open lands were planted to trees under the Conservation Reserve Program (CRP). Seedlings from the state nursery were also used and the State Forestry Commission from time to time helped with plowing protective fire lines as well as detecting and suppressing wildfires.

Care has been taken to assure that, to the extent possible, income qualifies for capital gains treatment and all costs were expensed. The property has been taxed at current use value, but because of the rural location this probably has not yet provided an advantage over market value.

### **External Costs and Benefits**



There are several environmental benefits from the continued maintenance of the Cary tract as productive forest. Adjoining timberland properties have probably benefited from having a similar use on the contiguous land. In general, water and soil have been protected, which are ecological benefits. The good volume of sawtimber on the property provided the liquidity to pay estate taxes, which has allowed the heir to keep most of the land, although in a largely cutover condition. The ability to keep the land, even in this condition, could be considered a benefit for future generations.

### **Lessons from the Cary Property**

As the experience on the Cary property indicates, land and timber investment, over the long term, can provide appreciation and protection from inflation, but it is a low-yield investment and requires active management. A good volume of standing timber can afford landowners liquidity. A low volume of timber produces poor cash flow and little liquidity. With patience and attention timberland can be a good investment and produce the extra dividend of owner enjoyment. Timber growing, however, requires an appreciation of the dynamic nature of a forest. The condition of timberland may change from cutover to well stocked or vice versa, yet economic productivity and environmental values can continue. Successful private forestland management, however, depends on meeting the owner's objective and recognizing the long-term nature of timber growing.

The case also highlights the dramatic changes that can result from failing to plan for successful intergenerational continuity of an estate. Had timber volume not been high, Ann Veldy might have been forced to sell most or all of her land. If so, the land might have converted out of forest use.

## ***THE VANNATTA FAMILY TREE FARM: A LIVELIHOOD FOR THREE GENERATIONS***

George VanNatta and his late wife, Irene, purchased the 1,728-acre VanNatta Family Tree Farm in the northern Oregon Coast Range, which was then a cattle ranch, in 1940. They wanted to raise their three sons in a safe, rural setting. In the mid-1960s timber harvesting replaced cattle raising as the primary farm occupation.

The VanNattas express their management objectives simply: They want to make a living from forestry, have a nice place to live, and keep the farm family-owned. The family hopes to perpetuate the Tree Farm and the family business indefinitely for future generations.

Timber management at the VanNatta Tree Farm has provided annual income since 1966, and nearly every year the harvest volumes and values have increased. Annual timber harvests and other forest management activities are carried out by VanNatta Bros., the family timber management business. The VanNattas have used conservation-based timber management strategies since they bought the farm. Although the family does not necessarily embrace "sustainable forestry," they are vocal advocates for a range of progressive and conventional management techniques. As a result, the VanNatta property is one of the few examples of uneven-aged management of Douglas fir on high-quality sites in western Oregon and demonstrates a successful alternative forest management system for the Douglas fir region.

Currently, four generations live on the property, with timber harvest revenues providing most of the income to support three households. George VanNatta, born in 1907, practiced law in the nearby county seat of St. Helens. His oldest son, K.C., who holds a degree in biology, lives on the farm and manages the family tree farm. He is the prime operator of VanNatta Bros., the family timber management company, which also does contract logging for other landowners. K.C. is active in a variety of forestry organizations and currently serves as director of both the Columbia County Small Woodland Association and the Columbia Soil and Water Conservation District. A second son Fred lives in Salem where he owns and manages a public relations firm. A third son, Robert, maintains the VanNatta law practice, lives on the farm, and is K.C.'s business partner in VanNatta Bros. K.C.'s son, Jeffrey, 36, also lives on the farm with his wife and son. He works for the family business and may one day take it over.

### **Productive Timberland in the Oregon Coast Range**

The VanNatta Tree Farm is wholly owned by five family members in divided interests. Of the 1,728 total acres, fields, roads, residences, and a power line encompass approximately 68 acres. The remaining 1,660 acres are wooded. The bulk of the ownership consists of one contiguous block of 1,578 acres outside of the central Columbia County community of Apiary, 40 miles northwest of Portland. A second 150-acre parcel is located 3/4 mile east. The property is located in a remote part of the northern Oregon Coast Range, on gently rolling hills

at an elevation of 1,125 to 1,300 feet. Ninety percent of the property can be logged using ground-based machines.

Of the 1,660 wooded acres, approximately 1,650 are suited for commercial timber production. In Columbia County annual rainfall of about 55 inches and deep fertile soils combine to create some of the most productive timber-growing ground in the nation. The Site index on a 50-year base averages 130 (high Site 11), which means that the land has an annual growth potential of over 1,000 board feet per acre.

A 1984 timber inventory estimated net timber volume of 27.5 mmbf, with annual growth of 1.3 mmbf. Since 1984, 7.8 mmbf have been harvested, an average of 649 mbf/yr, which is 50% of growth. As of September 1996 the standing timber volume was nearly 36.2 mmbf. At a 1996 stumpage rate of \$500/mbf, that timber was valued at about \$18.1 million, with an annual growth value of \$650,000-850,000.

The VanNatta property is in the western hemlock zone of the western Oregon Coast Range. Forests here are typically dominated by Douglas fir (*Pseudotsuga menziesii*), with western hemlock (*Tsuga heterophylla*) and western red cedar (*Thuja plicata*) also commonly growing on the same site. Douglas-fir plantations managed intensively on 30-50 year rotations dominate much of the country landscape. The property provides good to fair habitat for deer, elk, songbirds, and a host of other species. No rare or endangered species are known to exist on the property or nearby.

The VanNatta Tree Farm is centered in what is sometimes termed temperate coniferous rain forest. This broad forest region extends most of the length of Oregon and Washington, and is one of the most important timber-producing regions of the Northwest. Though 40 miles inland from the coast and east of the Coast Range divide, the wet, mild, maritime climate encourages lush growth of numerous tree, plant, and animal species.

### **Forest Management on the VanNatta Farm**

Old growth Douglas fir forest with stump diameters of 3' to 6' originally covered the VanNatta property and much of the surrounding county. This forest was logged between 1920 and 1928. Wildfires were common after this logging, and burned much of the area in 1932. After the fire, the VanNatta land went back to Columbia County for nonpayment of taxes, and was grazed extensively by sheep until purchase in 1940. During that time Douglas fir was beginning to seed in from a remnant stand on a distant ridge. George VanNatta kept a herd of cattle, but gradually the forest began to dominate the landscape again, and in 1965 the VanNattas began logging, shifting the focus of the farm from cattle to forestry.

Early management focused on replanting under-stocked areas and commercially thinning over-stocked areas. In the 1970s a year-round network of roads was built for access to the timberlands. Initial thinning involved primarily the selective cutting of the largest trees. The trees that were initially logged were some of the only ones that were saleable at the time. They often were the "roughest" trees, which had large limbs, high taper, and wide rings. This type of thinning released the second tallest size class in the stand from competition, and resulted in their rapid growth into high-quality timber. Encouraged, the VanNattas continued to practice "high thinning," which involves removing the tallest, largest trees. The VanNattas still maintain a small herd of cattle that they graze throughout the forest during the summer to reduce dry grass fire hazard, control brush, and aid in natural regeneration.

The VanNatta family considers tax laws and increasing regulations as the greatest impediments to sustainable family tree farm management. Commonly, when an owner dies, most saleable timber must be sold to pay estate taxes, which often makes sale of the land inevitable to pay taxes. The family also fears increasing restrictions on logging to protect endangered species.

Inversely, however, they also view effective tax policies as potentially the greatest encouragement for sustainable practices. Reduction of estate taxes on family-owned businesses would allow family tree farmers to make management decisions based on maintaining a healthy forest, rather than on tax management needs. They also support a reduction in the capital gains tax, and allowances for writing off reforestation and forest maintenance as expenses to encourage additional investments in sustainable practices.

Increasing log values over the past decade have aided sustainable practices by offering dependable markets for forest products. Markets for a wide variety of forest products are located nearby the VanNatta farm, including log export facilities at Longview, Washington, 25 miles north.

The VanNatta family believes that family expertise in logging, biology, and legal fields leaves little need to regularly seek outside professional assistance.

Two family members have completed Master Woodland Manager training (Oregon State University Extension Service program). The VanNattas have allowed their property to be used as a study site for research on root rot control and uneven-aged management. The timber management company has been trained and is certified under the Professional Logger program of the Associated Oregon Loggers (1995). In fact, family members frequently give advice about forestry, logging, and legal issues to others. The VanNattas have used very little government technical assistance.

**VanNatta SFM Strategy** The family's primary objective is that management activities and the cash flow resulting from them support the family and allow it to live on the tree farm long term. As a secondary objective they hope to provide an example of good sustainable family tree farm management.

The VanNatta family currently uses a variety of progressive and conventional management techniques. Most harvests in healthy young stands are conducted at 6-12 year intervals and use selective high thinning methods. At harvest, competing vine maple is mechanically cut and/or uprooted, which helps fir and hemlock to regenerate naturally. In stands thinned repeatedly and/or heavily, natural regeneration and isolated enrichment planting is leading to uneven-aged stands.

Annual harvest levels have fluctuated based on family financial needs, market prices, and outside employment. Each year harvest priorities are influenced by which market may be paying premium prices, such as those for domestic logs, export logs, pulp, or hemlock/alder. The current and long-term financial needs of each family owner also influence the annual harvest on each site, as well as long-term management of those lands.

To combat the laminated root rot (*Phellinus wiererii*), a native disease common OD rich Coast Range sites, clearcuts are used to salvage infected and at-risk stands. These clearcuts are replanted with resistant species (cedar, white pine, alder). Excavation of infected roots has also been studied as a potential control measure.

The family has no formal management plan or rigid harvest schedule, although complete background information and records are kept. Harvest levels are maintained at 50-75% of annual growth, with a constant goal of increasing the vigor of tree stands and their growth rates.

The family's estate planning is informal but thorough, two family members are lawyers. They are aware of the value of their assets and have structured land ownership and plan harvest operations to best meet the family's long- and short-term financial needs. Recent logging, for example, has focused on George's (father) land, because he has higher financial needs, and needs to keep his asset value down for estate tax purposes. Meanwhile, K.C. has delayed harvesting on his small noncontiguous lot, allowing volumes and values to accumulate. He assumes this parcel will be sold at some point to help pay estate taxes. The family has not invested in insurance for estate tax purposes because they calculate that the growth of their trees provides better returns.

### **Forest Management Analysis**

The property is paid for. Fixed costs are primarily property taxes, which average \$4.35 per acre for undeveloped forest land, or approximately \$7,200 per year. In 1940 the property tax rate was under \$0.10 per acre.

The bulk of property taxes on timberland are paid as a severance tax of 3.8% on net stumpage proceeds at harvest. The family calculates management costs to include harvesting labor and equipment expenses, as well as all associated road building and reforestation costs. In 1994, payroll, logging operations, and depreciation costs were \$191,137, which averages \$235/mbf. Records of harvest acreage have not been kept, however, so accurate per acre cost estimates are unavailable. The Oregon Department of Revenue uses \$190/mbf as a standard for regional cutting/yarding/hauling costs, which would be at least 10% higher for uneven-aged management.

There are no significant opportunity costs involved with the current management situation. The property is zoned for exclusively forestry use, restricting development to one house per 160 acres. The property's remote location precludes development potential. Timber volume and value growth rates exceed comparable alternative

investments, so there is little incentive to liquidate and reinvest. The annual volume growth is 3.5-4%, log grade appreciation 1%, and real stumpage value appreciation 1-2%.

Annual sales of livestock and mushrooms make modest contributions to the farm income, averaging \$2,500 and \$250 respectively.

### Timber Sales

Timber sales are perpetual on the tree farm, with a full time crew of four. In 1995 timber sales grossed \$578,000, from 781 mbf of export and domestic sawlogs, and 1316 tons of pulp (equivalent to 120 mbf). In 1994, timber sales grossed \$481,213, from 742 mbf of export and domestic sawlogs, and 136 tons of pulp (12 mbf equivalent). Sales have generally increased every year for 30 years. Historically 25% of the harvest volume has been export quality. In recent years this percentage has risen, as the VanNatta timber has increased in size and quality, and export specifications have loosened.

There has been a timber sale every year since 1966. Since then, sales have totaled 12,561 mbf. During the period the sales price for Douglas fir has increased from \$50/mbf in 1966 to \$650/mbf in 1995. Sales in the period 1990-1995 averaged 730 mbf/year. Bare land value has appreciated from \$1/acre in 1940 to over \$300/acre in 1996. Timber value on the tract in 1940 was zero. Today stumpage values likely exceed \$10,000 per acre (20mbf/acre x \$500/mbf).

Cost data for the operating company VanNatta Bros. for 1994 (the most recent available) are as follows:

Payroll	\$ 70,110	wages, taxes
Logging operations cost	\$ 97,777	supplies, repairs, fuel, etc.
Depreciation	\$ 23,250	
Stumpage paid to landowners	\$171,220	all to VanNatta family
Payments to partners (VanNatta Bros.)	\$ 72,000	most reinvested in equipment
Ordinary income (pretax profit)	\$ 36,650	distributed to partners

The VanNatta family places significant value on the tree farm as a good, rural place to live. They use harvest residues for fuel wood to heat the four households. They do not use government cost-sharing support, nor are there any tax incentives for sustainable management. There is a current use (timberland deferral) assessment for property taxes, but due to zoning restrictions and the remote location of the tract, growing trees is the only likely use of the property. The severance tax is viewed as a beneficial form of taxation, because it delays the bulk of tax payment until the time of harvest, when cash is available. It also helps to reduce loss in the case of natural disaster. (A severance tax is a one-time tax paid at time of harvest.)

The family takes full advantage of all timber and business-related tax provisions, with business activities timed and structured to minimize tax consequences. The management company, VanNatta Bros., receives gross timber revenues, assumes all relevant costs (including equipment, wages, road building, reforestation, etc.), and pays net stumpage to the five property owners.

Through continued management the property should be able to provide a similar living for successive generations, if estate tax burdens and regulations don't become confiscatory.

### Lessons from the VanNatta Farm

The VanNatta experience demonstrates that although it is difficult to finance the necessary land, knowledge, and equipment to start and maintain a sustainable forestry enterprise from normal family income, it can be done. Conservative harvesting strategies have led to significant increases in timber volumes over the ownership period. Rising timber values have resulted in significant growth in the value of the family's woodland assets.

K.C. VanNatta attributes the family's success, in part, to its attention to natural processes, a practice he advises other landowners to follow: "Study mother nature and duplicate what you see, and be very careful about major species changes." K.C. VanNatta also considers attention to government regulations and policies essential for successful management. "Political discussions about management practices and animal populations can have very definite effects on your tree farm," he cautioned.

The history and physical condition of the VanNatta land contributed to the success of the family's management. The mixed-age nature of the existing stand, and the VanNatta's ability to successfully use natural regeneration is based, to some extent, on the fire and grazing history of the property. Douglas fir regenerates well on mineral soil (as after fire) and when brush is controlled, through grazing, for instance. It is unlikely that the

efforts would have been so successful without the careful control of both overstory stocking and competing vegetation. Much of the VanNatta land is gently sloping, which makes it well suited to ground-based logging. Although much NIPF land in the region is similar, most of the industrial land in the Northwest is not. On those lands, significant modifications would most likely be needed to manage mixed-age stands with cable logging. For these reasons wholesale application of these methods in the region might not be so successful.

Nevertheless, the management techniques used by the VanNatta family offer alternatives for conventional management in the Douglas fir region, which is generally synonymous with clearcuts. Experience has shown that natural regeneration and selective thinning can work well on high-quality sites, if thinning intensity and competing vegetation are controlled.

## ***THE LYONS FAMILY TRACT: INCOME THROUGH SOUND FORESTRY***

As far as Paul Lyons is concerned, "you'll never find a better investment than a good piece of timber." The Lyons family owns about 2,000 acres of timberland in northwest Pennsylvania and southwest New York State. Mr. Lyons acquired the tracts mainly in the 1940s and 1950s as an investment and managed them, periodically removing selected trees. To ensure a smooth ownership transition and reduce the estate tax burden he has transferred ownership to his four sons.

Although they have no firsthand knowledge of timber management, the sons share their father's dedication to properly managing the woodlots. Their current goal is to manage the property aggressively for maximum timber production using the best forestry principles, selling when the market is strong, and cutting with an eye to future timber harvests. The brothers intend to pass the land to their heirs and are working to instill in them a strong management ethic. The sons recently turned down an unsolicited offer of \$500,000 for their 200-acre tract in New York. Instead, they want to acquire other tracts of timber.

The Lyons's management provides an excellent example of landowners who are generating income while practicing sound forestry, so much so that the family was featured in the Forbes Magazine 1996 Money Guide issue of June 17, 1996.

Paul Lyons graduated from high school and attended two years of college before being pressed into service during World War 11. He was, and still is, an astute businessman. The eldest son, Wilham Lyons, who holds a B.A. and an M.A. in education, taught in the public school system, and served as an assistant principal. Since retiring from public education he has pursued real estate full time as a salesman and owner/manager of income properties. Lynn Lyons, who holds a B.A. and an M.S. in education, spent his professional career as an educator and administrator in a large Florida school district.

Cress Lyons attended college for two years, and later purchased Central Distributors, a chain saw and small engine retail and repair business, from Paul Lyons. Sam Lyons, who holds a B.A. degree, currently owns and operates a marina in Florida.

### **Hardwood Forest in the Allegheny Foothills**

The 2,000 acres are owned in eleven tracts that are located in western Warren County, eastern Erie County, Pennsylvania, and southwest Chautauqua County, New York. The tracts are located on the eastern foothills of the Allegheny Mountains. They range from flat to gently rolling with few steep slopes. Blue Eye Creek dissects the Blue Eye property and is listed as an "exceptional quality" stream by the Pennsylvania Fish and Boat Commission. Two other properties border on French Creek and the south branch of French Creek. The parent soil is generally of glacial origin. No geological features exist that limit silvicultural activity.

The properties contain mostly northern hardwoods, mainly sugar and red maple, tulip poplar, black cherry, American beech, and ash. The Blue Eye tract has a significant red oak component. Eastern hemlock and white pine are a minor component. Approximately 20-25 acres are in larch plantation on the Blue Eye tract. The forests support white-tailed deer, black bear, turkey, beaver, songbirds, and birds of prey. The creeks contain native trout; French Creek even supports a population of fresh water mussels.

### **Management for Regular Income**

Site quality is very good over all of the properties. A high percentage of the sawtimber is of veneer quality, and nearly all of the acreage grows commercial-grade timber. All of the tracts appear to have been commercial

woodlots for a long time. There is no evidence of grazing, mining, or other nontimber-related activity. Like most of the region, these lands were heavily cut over at the turn of the century. The Blue Eye tract did have approximately 50 acres disturbed by a fire in the early 1950s, but it was not hot enough to cause extensive mortality. Likewise, the Greenfield tract was extensively damaged by wind storms in the early 1970s and a thorough salvage operation recovered most of the economic value of the fallen timber. Salvage is only viable when the value of the timber exceeds recovery costs.

Both generations agree that the current tax laws are a deterrent to forest ownership. Pennsylvania's Clean and Green tax program has given some property tax relief on the Blue Eye tract. However, the owners view estate and capital gains taxes as obstacles to good long-term management.

Although timber production is the primary owner objective, the family (now three generations) enjoys their properties for other values as well. Several of them hunt deer in the fall and will travel from Florida to spend a week hunting with friends. They also enjoy just being in the woods, and spend time controlling unwanted grapevines and other competing vegetation. They take satisfaction that their activities are not only compatible with other uses but in many cases help to enhance those activities. Skid trails, for example, make excellent hiking paths and increase access for hunting. Satisfaction also comes from knowing that they are helping to assure future generations of clean water and pure air as well as providing wood products from the trees they produce.

The current goal is to provide regular income from the harvest of high value hardwoods. Those harvest areas are selected through a stand analysis to determine management options and when markets are strong to ensure top dollar for the timber harvested. The Lyons will harvest no areas (except salvage) unless it is silviculturally prudent and market conditions are favorable.

The Lyons currently use SILVAH, a computerized stand inventory and analysis tool, that can show how various levels of harvesting will affect a stand. The program accounts for species composition, wildlife habitat quality, and the ability of the stand to regenerate to a new forest. Prior to cutting, a SILVAH stand analysis is taken, and the subsequent recommendation is used as a guideline in marking trees to be cut. The Lyons intend to cut each tract/stand when appropriate both from an economic and silvicultural standpoint. While being aggressive, they would rather err on the side of caution, cutting less and waiting for markets to improve.

Each time timber is harvested, care is taken to minimize disturbance to the site and ensure the appropriate reclamation. Locally rare species of trees have been left in certain areas. Wet areas and stream seeps are protected. Typically, rubber-tired skidders and chainsaws are used for harvesting. On some wet sites, horses have been used to minimize the impacts. Temporary plank roads have been built with rough cut wood to protect soil. Potential and certain den trees and snags are identified and retained for wildlife.

The Lyons are careful to ensure that each stand is in a healthy and vigorous condition following treatment. As some of the stands near maturity, the owners plan to use proper regeneration techniques including herbicides to control undesirable competing vegetation. The use of herbicide is expensive but, in some cases, the failure to use it results in a loss of tree cover due to an invasion of ferns and grasses.

The Lyons base their management decisions on professional advice. They rely on a consulting forester for silvicultural and financial advice. They do not use any on-site assistance from the government with the exception of the timber stand improvement (TSI) project on the Greenfield tract. Two of the brothers have attended the SILVAH training sponsored by Pennsylvania State Extension and the U.S. Forest Service Northeast Forest Experiment Station in Warren, Pennsylvania. The Lyons also use the services of an attorney and a professional accountant.

The Lyons have prepared a formal estate plan to pass the land on to the third generation which is the goal of the four sons. A trust has been set up to hold the land for Paul Lyons's six grandchildren.

### **Returns from Forest Management**

The only fixed cost of ownership is property taxes. In the period 1990-1995, property taxes averaged \$5 per acre per year. (\$10,000/year total) Variable costs include site inspection visits, consultant fees, and miscellaneous expenses for management activities. Three of the four brothers travel to the property twice a year at a cost of approximately \$1,200 per year total. During these trips, they conduct activities such as boundary line confirmation and painting and grapevine removal. These expenses are estimated to reach \$500

per year. Consultant fees for the same period have totaled \$79,812.00 total for four timber sales. This is equivalent to \$7.98 per acre per year for this period.

By not leasing for natural gas production on selected sites, the owners have incurred a significant opportunity cost in the interest of sustainable forestry. Similarly, rejecting the offer of \$500,000 demonstrates the family's interest in practicing forestry.

### Timber Sales

There have been 10 silvicultural treatments since 1983, 9 of which were commercial.

Sale year	Revenue	MBF
1983	\$125,000	122
1984	\$ 12,000	35
1986	\$ 54,900	239
1992	\$ 90,559	252
1994	\$ 55,500	55
1994	\$220,015	340
1996	\$ 61,450	103
1996	unavailable	
1996	unavailable	

The appreciation in the value of the Lyons's property has been dramatic. The stateline tract was purchased in 1933 for \$500 for the 237 acres. In 1996 they turned down an unsolicited offer of \$500,000. The Blue Eye Tract was purchased at tax sale for \$5/acre. The current offer far exceeds that amount. The Pennsylvania Game Commission (the adjoining owner on the east) will pay as much as \$400/acre for cut-over land. It is not uncommon for individuals and clubs to pay substantially more than that just to own a property for hunting in this part of Pennsylvania.

The Lyons completed a TSI cutting on their Greenfield tract in fall 1996. This was the first time they had ever used any cost-share funds.

It was done through the federal Forestry Incentive Program (FIP). They would not participate in the Forest Stewardship Program due to the 10-year commitment it requires to the plan's objectives. They consider such written plans too inflexible to be useful.

### External Costs and Benefits

H.B. Lyons was in the timber and mill business. His son, Paul, followed in his footsteps. Paul's four sons have a deep and abiding affection for the forests they now tend. They are introducing their heirs to the forests they will one day own, and have provided a trust to help ensure that the family legacy lives on. This gives the Lyons tract a multigenerational tie.

### Lessons from the Lyons Tract

The owners cite current federal tax policies as impediments to sustainable management. They also consider the inability to expense carrying costs of land and the current treatment of timber in income and capital gains tax structures as significant issues.

Despite those impediments, the Lyons family has demonstrated that a profit can be made from timber, under certain circumstances, without destroying the resource. Many owners, however, might have accepted the offer for \$500,000 without regard for the future of the forest resource or generations that will depend on it.

The Lyons have an intergenerational link that should be the envy of most NIPF owners. They also have the satisfaction of seeing the positive results of their labor. This occurs in the form of a strong financial return along with recreational enjoyment.

For this landowner a strong financial return is the prime motivator. However, the Lyons case demonstrates that a strong financial return can be compatible with sustainable forestry. Patience, careful planning, and execution improve prospects for sustainability.

## THE FREDERICK PROPERTY: AN INVESTMENT CORPORATION

The 12,768-acre Frederick property was purchased in 1967 with the proceeds from the sale of a family-owned sawmill. The owner bought it to provide long-term financial security for himself and his heirs. He had spent his career from the 1920s to 1960s managing the woodlands and forestry operations for a large family-owned lumber company, then conducted a forestry consulting business for private landowners. He had faith in the inherent value of land and timber as an investment and knew from experience that good management could return extra dividends.

That is why he purchased back 15,000 acres when the family company was sold to a major forest products firm. He managed the land through his consulting forestry business until his death in 1973. The property then became part of a trust, which is managed by a bank as the corporate trustee. The bank is charged with managing the land to provide income for his widow and two daughters as primary beneficiaries, and for grandchildren and other heirs as residual beneficiaries. This trust will last until the death of the owner's wife and daughters, which could be 60 years or more. Although not an absolute restriction, the trust directs the trustee to follow sound forestry practices, so that the timber volume will be increased and retain land and timber as a long-term investment. The terms of the trust also relieve the trustee of the duty to diversify.

### **Predominantly Pine Property**

The owner originally purchased 14,597 acres located in four south Alabama counties. The property consisted of nearly 20 separate parcels ranging from about 40 acres to about 7,000 acres. The topography of the parcels is generally gently rolling upper coastal plain interlaced with branches, creeks, streams, which contain some swamp and river bottom areas. Soils range from heavy clay to loamy to light sand, with many gradations among the three. The majority of the forest is classified loblolly-shortleaf pine. Longleaf is a major species on some parts, and there are areas of slash pine and some spruce pine. Pines predominate in the upland areas, which usually have site indexes from 75 to 90. Hardwood-pine mixtures are found along the branches and creeks and on a few upland areas. Swamps and river bottoms support hardwood and some cypress trees. Approximately 14% of the currently owned 12,768 acres has been planted to pine.

### **Forest Management Situation**

Timber harvesting, land clearing, farming, woods grazing, uncontrolled hunting and some turpentine were all part of the early land use history for this property. The land was logged initially in the 1800s and early 1900s, some for farming by original settlers and some for lumber export or use. Cutover areas regrew naturally despite uncontrolled fire and grazing by cattle and hogs. Forests regenerated on the farmland after it was abandoned.

From about 1900 the lumber company owners mined the land for timber. In the mid-1930s they began sustained yield operations, selectively marking trees and cutting less than growth. Later, forestry practices, such as planting open fields and girdling hardwoods overtopping pines, were followed and by 1967 the lumber company management had built volume to near optimum.

The new owner wished to leave this, his primary asset, to provide for his family. Familiar with the potentially destructive effect of estate taxes he began a planned program of removing most of the merchantable timber. He hoped this would allow the property to pass through his estate at more favorable cutover land values. Only a small part of the property had been cut when the owner died at age 69.

The corporate executor applied and received a special use 10-year payout of estate taxes as provided by IRS tax regulations. For the next 10 years cutting was designed primarily to provide funds to pay estate taxes. Some small land acquisitions were made before the owner's death, but total acreage has since been reduced to 12,768, following the sale of some tracts. This was an attempt to provide the trust with some diversity; block ownership, and in recent years, build liquidity for estate taxes due upon death of the owner's widow. The widow has also withdrawn some lands as gifts to daughters. All timber sale proceeds by the terms of the owner's will are allocated to income for the family. Upon sale of timberland, 80% of the land value is distributed as income and the balance retained as principal for the trust.

### **Strategy to Build Timber Volume**

The trustee's overall objective is to meet the beneficiaries' needs for current income, while bearing in mind the rights of and obligations to future beneficiaries, all in keeping with the trustee's legal and fiduciary responsibilities.

Currently, the objective is to build the stocks of pine sawtimber to a target level of about 4,000 feet (Doyle log scale) per acre of pine sawtimber through a combination of area and volume control. This will involve cutting less than the annual growth while rebuilding stocking. The goal is to produce the higher value products of pine poles and pine and hardwood sawtimber, with lower value pulpwood as a by-product only. Even aged and multiaged stands are managed with prescribed fire and selective cutting.

There is no set age for harvesting; size is used as the measure. Most trees, however, are harvested by age



60. Both natural regeneration and planting are used to establish new stands, with emphasis on the former. Prescribed fire may be used several times during the life of pine stands to maintain favorable conditions for growth and reseedling. In those situations where hardwood competition or other conditions are judged to be too severe for good natural regeneration, site preparation and planting may be prescribed. Site preparation may include mechanical treatments such as shearing, raking, disking, or bedding to prepare the soil for planting, or aerial application of herbicides followed by burning. Depending on conditions, either hand or machine planting is done.

Timber sales have been conducted every year since 1967, but the size of sales has varied considerably. Whether thinnings, improvement, regeneration, or harvest cuts, sales are all designed to meet income needs and maintain the land in as well stocked a condition as possible. Current removals, forest condition, and estimated volume and growth are continuously tracked to measure progress toward the long-term goal of cutting annual growth once the target volume is reached.

The property has been managed by a consulting forestry firm for 30 years. Through its Natural Resource Department the bank trustee provides knowledgeable oversight for management. The services of accounting and legal advisors have been consistently sought.

### **Forest Management Analysis**

Some lands have been sold to diversify and provide liquidity. However, the trust instrument does express the trust creator's strong feeling for timber-land as the preferred investment. In spite of the sale of over 2,000 acres (14% of the original purchase), there has been a 700% gain in total asset value over the 30 years. Some of this is attributable to a 22% increase in timber volume, but most is due to land and timber appreciation. Net income has averaged less than 3% of current asset value, not including income from land sales.

Annual timber sales produce over 98% of the income, and since 1967 have been primarily to one buyer. When acquired in 1967, the property was subject to a forest products company's right of "first offer" on the sale of any land or timber. This restriction expires in less than a year and thereafter timber sale income is expected to be enhanced through use of competitive sealed bid sales

Historically, sales preparation (marking and tallying trees, drafting contracts, negotiating price) and inspecting, monitoring, and tracking income generally costs between 4% and 8% of sale proceeds. Over the 30 years, pine sawtimber prices have increased from about \$50/iubf Doyle to over \$400, pine pulpwood increased from \$6.50 to \$34 per cord, and hardwood pulpwood from \$2.50 to \$20 per cord. The average value of land in the area of the property also changed from about \$50 per acre to \$400 per acre.

Regeneration costs, which generally must be capitalized, account for the largest financial outlay, but may not be incurred every year. Fire protection, road and boundary line maintenance, lease administration, and office records are the other categories of expense.

Nontimber income has totaled less than 2% of all income. Since the 1970s hunting permits, leases, or agreements have produced regular income and seismic permits or mineral leases have produced income occasionally. A small amount of income comes from miscellaneous land use permits, such as gardens, driveways, or dog pens.

The bank trustee is entitled to a management fee, in this case calculated as a percent of asset value and a percentage of timber income, similar to that of an investment manager. This could be considered a fixed cost, but might not be classified as a forest management cost since it would be applied to any asset in the trust. Although money has been borrowed to meet cash flow needs, interest is not considered a fixed cost for this property. Ad valorem taxes are the only true fixed cost.

The State Forestry Commission has provided wildfire detection. Until the 1986 tax law changes, capital gain treatment of income and the ability to deduct most management costs as expenses were major tax incentives. The property has been assessed at current use value for ad valorem tax purposes, but due to its rural location, this has not provided any advantage over market value.

### **External Costs and Benefits**

Forestry is the best possible use of the land for soil and water protection. Ecological benefits also accrue for the many plant and animal species that depend on a forest habitat. Because of the owner's faith in the value of

land and timber as a secure investment and use of a long-term trust as a vehicle to hold and protect the asset, this particular property has provided an intergenerational benefit.

### **Lessons of the Frederick Trust**

As this case demonstrates, land and timber can be a solid investment, and forest management and estate planning can foster resource productivity, preserve environmental values, and meet owner objectives across multiple generations. It also highlights the potential of even absentee owners to practice good forest management.

### **Certification of NIPFs**

The certification of forest products has increasingly become a tool with the potential to provide forest owners with an array of benefits in return for sound management practices on their lands. However, NIPFs, which make up 85% of the forest parcels in the Northeast, of which at least one-third are in parcels of 500 acres or less, face a number of barriers to certifying their lands.

The cost of certification can range enormously, but traditionally has been disproportionately skewed to favor large land holdings. As the size of acreage increases, certification begins to become more and more cost-effective, and may, in parcels over several hundred thousand acres, cost only a few cents per acre. In contrast, the owner of a very small parcel may pay up to \$5,000 for a single assessment, according to the Forest Stewardship Council (FSC).

The requirements for certification can be equally imposing, especially for owners of very small parcels-50 acres and less. In 1996 the FSC, the international accrediting body of forest management certifiers, required, for example, the following documentation from a forest operation: 1) environmental impact assessment; 2) guidelines for erosion control, reduced stand damage, water resource protection; 3) a comprehensive management plan; and 4) research on yields, growth rates, regeneration, environmental and social impacts, and cost and productivity of the operation. Such requirements, albeit "appropriate to the scale and intensity of the forest management," according to FSC documents, can be burdensome for many landowners, particularly when only a fraction of NIPF owners have management plans.

Even if an owner of a small parcel can afford the cost and can meet the requirements of certification, there are still many barriers that hinder effective marketing of certified forest products. Irregular and uneven flow of species and volume and lack of access to "certified chain-of-custody" processors, manufacturers, and distributors are likely to prevent the landowner from realizing any significant financial benefits from certification.

Many certifiers are aware of the difficulties that private landowners face in certification, and are developing new certification models to address these barriers. Traditional models focus on a single forest operation. New models for small landowners focus instead on creating an umbrella structure, which involves several forest operations and landowners. This structure relies on a single forest manager to be responsible for the management of a number of small forest holdings. This forest manager may be associated with a forest owners' cooperative, a land trust, or a chain-of-custody certified buyer or processor, according to 1996 FSC guidelines for such a structure.

Under such an umbrella structure, it is possible that each forest owner may have a separate management plan, or the entire umbrella organization can have a single, shared management plan. In either case, certification assessments are conducted by a random sampling method, rather than on every individual parcel.

One of the key distinctions between the traditional and the new certification models is the legal right to manage the forest resource. Traditionally, the certifier has had a contract directly with the forest owner. In the new model, the certifier has a contract with the resource manager, who, in turn, may have numerous contracts with their landowner clients. However, in both cases, certification still relies upon a commitment by landowners and managers to long-term management, not just a single harvest.

This new approach to certification raises a number of unresolved issues. What are the criteria for membership into the umbrella association? What is done if any one landowner fails to comply? How are landowners admitted into formal contracts, and how do they withdraw? How are changes of land ownership, governance structure, sampling frequency and intensity, chain-of-custody certification, and annual monitoring to be handled?

Although such issues would have to be addressed, an umbrella certification model could offer numerous

advantages to the owner of a small forest parcel who is seeking certification. Many of the written requirements posed by certifiers and the FSC, such as management plans and environmental impact assessments, could be spread out among all participants in the program. Costs of the certification assessment, program fees, and audits could be similarly shared, thereby drastically reducing the cost to any one landowner. In addition, a cooperative approach to marketing is likely to ensure an even flow of volume and species of certified forest products, and thus have a better chance of getting the product into a certified chain of custody, which potentially would allow it to command a market premium.

## ***INNOVATIONS IN CERTIFICATION OF NIPFs***

A number of experiments are underway that are taking innovative approaches to solve the certification hurdles that small landowners face. Three of these new programs are discussed here. Chip Chapman, owner of the Northeast Ecologically Sustainable Timber Company (NEST), is developing a system based on a single certified forest resource manager, who will provide certification services for a number of small, private forest landowners. Eric Bloomquist, president of Colonial Craft, a certified chain-of-custody manufacturer, is hoping to expand a certified line by serving as a contact point for small forest owners in the region, as well as for large distributors of certified forest products. James Drescher, owner of Windhorse Farm, would like to form a landowners' cooperative to gain access to the certified marketplace. Although all three of these examples are based on different certification models, they all present similar challenges and opportunities in certification for the small landowner.

### **Linchpin between Small Landowners and Market Premiums**

In 1994 New Hampshire forester Chip Chapman, frustrated by years of working with landowners who were practicing sound forest management but were not receiving financial rewards for their efforts, started NEST. The majority of his clients, whose holdings average less than 200 acres, have been frustrated with the lack of incentives needed to practice long-term forest management on a small scale. "The problem," according to Chapman, "is that the market doesn't care if you liquidate or manicure your forest. You get the same price."

Chapman initially planned to develop a regional sawmill that would be able to provide high value-added processing options, and a certified chain-of-custody linkage for certified forest operations throughout New England. However, starting up a sawmill is a high-capital, high-risk operation. Furthermore, many of his clients found certification to be an expensive and burdensome process. So Chapman created NEST and approached Rainforest Alliances SmartWood program, a certifying body, with a proposal to establish a resource manager-based certification program.

In 1996 NEST became certified by SmartWood. The participating landowners, almost two dozen, are all committed to long-term ownership of their lands, have demonstrated sound forest management practices in the past, have developed at least some type of forest management plan and resource inventory, and are committed to work with a pool of responsible loggers. In some cases these landowners are a local neighborhood association; in other cases they are scattered throughout New Hampshire, Vermont, and Massachusetts. Chapman hopes to expand the program and increase the land base by increasing participation from his existing clients, as well as by cooperating with additional foresters and their clients who agree to follow agreed-upon management practices.

With this structure, Chapman also hopes to be able to pay a premium of 10-20% directly to the landowners, as well as pay a competitive wage to the logger. He is banking on the efficiencies and shortcuts provided by certification in the "labyrinthine marketplace" of forest products. This includes enormous markups between felled log and the sorted, graded, and milled end product. He also hopes that his certification venture will pay for the cost of participation in SmartWood's resource manager program, and provide a modest income.

By mid-1996, investments, including fees, labor, and direct costs, have totaled close to \$35,000, far out-stripping any tangible benefits. Chapman, however, remained optimistic. "When you put your soul into something like this," he remarked, "there ought to be some recognition." In 1996 Chapman was asked to serve on a Northern Forest Lands Council committee in New Hampshire to develop sustainable forestry guidelines. According to Chapman, many of his clients have joined the program simply because "it was the right thing to do." A number of loggers are also approaching him, hoping to have access to well-stocked, mature stands in exchange for a meticulous logging job.

Perhaps the biggest challenge, and the greatest potential opportunity, comes in finding the loop-holes in the "labyrinthine marketplace" by linking up with certified chain-of-custody dealers, such as neighboring giant Seven Islands Land Company. By providing Seven Islands, which manages nearly a million acres of certified forest lands in Maine, with an increased supply and diversity of certified products, Chapman could become the linchpin between small landowners and realized market premiums. In mid-1996 Chapman was negotiating with Seven Islands to sell certified wood from the landowners' parcels, but "so far nobody's cut me a check," he admitted.

### **A Manufacturer Willing to Share Certification Costs**

Manufacturers that want to sell certified wood products typically face difficulties finding enough certified supply. Colonial Craft, a manufacturer of a variety of milled products, including picture frames, moldings, and window and door grills, is based in St. Paul, Minnesota. For two years, Colonial Craft President, Eric Bloomquist, has had a standing offer to share with landowners the direct costs of certification, in return for access to the supply of certified wood, an increasingly scarce commodity. So far, no landowners have taken him up on the offer.

Until recently, problems in establishing a certified line of products had been twofold: 1) finding forest owners interested in participating in certification, and 2) finding traders interested in purchasing certified products. In 1996, a barbecue grill manufacturer approached Colonial Craft with an offer to purchase wooden grill handles. Its customer, a major British retail chain, is a member of the 1995-Plus Buyers Group, a voluntary consortium of British retailers and manufacturers committed to trading in FSC, certified products over the next several years. The buyer tracked down Colonial Craft through the Good Wood List, a list compiled by the Good Wood Alliance, now part of the Certified Forest Products Council, of all certified producers, manufacturers, distributors, and retailers. "The only reason they initially contacted us, said Bloomquist, "is because we're certified."

The customer is creating a major business opportunity for Colonial Craft, with six-figure sales and possible expanded products. To date, the grill handles are made from low-grade materials, such as 9-inch to 15-inch lengths of aspen and basswood. Bloomquist has not yet calculated the extent to which the order represents a premium over an equivalent product; the handles are a new product line and it is difficult to compare to non-certified products. However, Bloomquist noted that the buyer approached Colonial Craft expecting to pay a premium for certified wood.

Bloomquist hopes to expand Colonial Crafts line of certified products by increasing the number of landowners, the size of the land base, and by switching to landowners who are willing to have their forests certified. The biggest challenge, according to Bloomquist, is "finding an adequate and reliable supply of certified forest products."

### **Cooperative Certification**

Jim and Margaret Drescher recently purchased the 140-acre Windhorse Farm in Nova Scotia with the intent of managing the farm for long-term objectives. The Dreschers are also managing a neighbor's property, an additional 150 acres. The farm has a board sawmill, dry kiln, planer, and custom molding shop on the property; and the Dreschers sell approximately 150,000 board feet of lumber annually. To date, most of the products have been sold locally. Although not certified, Windhorse Farm has established a regional reputation for high-quality, responsibly managed forest products.

Over the past year, Drescher has considered certification, both as a tool for improving forest management and as an external verification of sound forest management. Until recently, there had been no indications by the marketplace that such verification was needed. However, a Belgian buyer approached Drescher early in 1997 with an offer to buy a product that represented slightly more than the total annual yield from Windhorse Farm, provided the products carry an FSC-accredited certification label.

Consequently, Drescher is pursuing certification. More importantly, he is exploring with neighboring landowners the possibility of applying for joint certification, to reduce costs and to increase the supply of certified products, thereby leveraging their position in the certified marketplace. Five nearby woodlot owners are interested in certification if the cost to each owner is less than \$1,000. The Dreschers currently pay a 10% premium for logs from several well-managed woodlots, and receive a 10% premium on "ecoforestry wood." They are hoping to double their lumber production over the next three years, which would take them close to their kiln and shop capacity.

## ***FUTURE OF CERTIFICATION SCHEMES FOR SMALL LANDOWNERS***

The innovations represented by Chapman, Bloomquist, and Drescher raise a number of issues, including which potential models for small landowner certification make sense, what future barriers to certification are likely to be, and the economic feasibility of certification on NIPF lands.

Several programs for small landowners already exist that might serve as an appropriate umbrella certification scheme. These include 1) the Tree Farm Program, in which landowners are required to have a management plan and comply with some harvesting restrictions; 2) logger education programs, in which loggers participate in a comprehensive training program in environmentally-sensitive logging; 3) cooperative management programs, such as the Connecticut/Vermont Project, in which landowners share management resources for shared management objectives; they might, for example, have a forester look at their lands jointly; 4) homeowners associations, in which adjacent landowners may cooperate to reduce costs, protect a forest resource, or have access to better markets; and 5) state and local land trusts holding forest conservation easements.

Creating an umbrella structure for certification may challenge certifiers, as well. Finding resource managers with the full array of skills needed to fulfill the certification requirements and to meet all of the administrative details may prove difficult. Costs are still likely to remain high, even with the economies of scale afforded by multiple landowners. Certifiers will be challenged to find ways to economize on the assessment and monitoring costs, while still providing a rigorous and reliable service.

It is far too early to predict whether certification of small forest lands will be a boom or bust: More likely it will fall somewhere in between. Provided there is an adequate organizational infrastructure, the benefits of certification are likely to be comparable for any size forest ownership. These may include receiving a premium for certified wood, better access to markets, enhanced competitiveness, improved quality of product over time, and improved overall efficiency. Similarly, as the economies of scale become more equitable for small landowners, the direct cost of certification is likely to become relatively equivalent for most size land holdings.

Even if the certification of small forest parcels does become competitive with larger ones, the question remains, can certified forests be competitive with non-certified forests?

## ***Conclusions***

The seven properties profiled in this case provide a brief abstract of the complexity surrounding the motivations of NIPF landowners. The overriding lesson from these properties is that the interests of NIPF owners cannot be captured in the explicit arithmetic of business or in the implicit heuristic of "love of the land." The objective function for NIPF management incorporates the apples of hard financial logic, both short and long-term, and the oranges of aesthetics, legacy, and land health. It is, in essence, the cleavage in attitudes towards the land that Aldo Leopold made famous in *A Sand County Almanac*:

In each field one group (A) regards the land as soil, and its function as commodity-production; another group (B) regards the land as a biota, and its function as something broader. How much broader is admittedly in a state of doubt and confusion. In my own field, forestry, group a is quite content to grow trees like cabbages, with cellulose as the basic forest commodity. It feels no inhibition against violence; its ideology is agronomic. Group B, on the other hand, sees forestry as fundamentally different from agronomy because it employs natural species, and manages a natural environment rather than creating an artificial one. (p. 221)

NIPF owners are knitting that cleavage, which is the essence of sustainability. The doubt and confusion remain, however, and may be an essential characteristic of NIPF management-comparing money and meaning does not reduce confusion. Without question, the motivations, skills, and capacities of NIPFs vary, among people and properties, and through time for any person and property.

## ***NIPF ACCOUNT BOOK HAS VARIED ENTRIES***

It would make no sense then to assess the likelihood for sustainable management of NIPF lands solely in terms

of monetary returns or sociopsy-chological benefits. The NIPF account book needs to balance some financial costs against financial gains, but it also needs to acknowledge that owners would invest some wealth and personal energy in their land even if there was no financial gain: Many NIPF owners own and manage land for the same reasons that people carefully steward their homes and gardens, invest in community projects, or attend church. The inverse is just as true, most NIPF owners will trade these nonfinancial benefits for a financial return when the need or opportunity becomes compelling.

Furthermore, the NIPF account book must credit some external benefits that accrue to the larger society. NIPF stewardship is often closely tied to community and ecological stewardship, with owners creating recreational opportunities, educational sites, stable soils, and aesthetic viewsheds for the surrounding community. Sustainability of forested lands is good for owners and for communities.

In addition to the basic complexity in the motivations of NIPF owners, the properties described below illustrate a series of other characteristics that affect the ability of landowners to practice sustainable forestry.

### **Cost of Buying Land Is Not Included in the Sustainability Calculus**

None of the properties profiled here have mortgages. All have been owned by an individual, family, or group for at least 25 years, and purchase price does not enter into the financial equation of annual costs versus income. In general, these landowners can be less concerned about the flow of income from their properties than someone who is making annual mortgage payments. Many NIPF owners, therefore, are the equivalent of family farmers whose land has been handed down from parents or grandparents. They are "land poor," but they fully understand the value of their property as a capital asset for themselves and their heirs.

### **Annual Property Taxes Are a Major Concern**

Although most NIPF owners aren't making mortgage payments, they are all paying property taxes. The fundamental issue is the burden imposed by an annual tax when income is generated only occasionally. For most NIPF owners, annual property taxes are the largest fixed cost and the fundamental impediment to sustainable management in the short-term. When cash flow is restricted for a landowner, standing timber may be the most liquid asset, requiring cutting that is suboptimal in the long term. Current use tax plans tailored to the income potential of sustainably managed forests are in place in some states and locales, but forest-friendly taxes are still the exception rather than the rule.

### **Changes in Capital Gains Taxes Worry NIPF Owners**

The appreciation of timber over time represents a major capital gain for a forest landowner. In recent years, tax rates on capital gains have increased, reducing the overall returns for landowners. Similar to the issue of annual property taxes, the development of forest-friendly capital tax programs would go a long way to promoting sustainable forestry on nonindustrial parcels.

### **Estate Planning Is a Necessity for Sustainability**

A primary goal of the landowners profiled here is the maintenance of their forestlands across generations. Sustainability in general also depends on continuity in ownership and management strategy. On several properties, management plans have been interrupted by the need to generate income to pay inheritance taxes. The problem has been handled adequately in these properties, but failures in sustainability are often ascribed to failures in estate planning. Properties are often divided into smaller parcels, sold, and/or harvested without regard for long-term effects when they pass between generations. Careful estate planning can prevent such problems, but the legal and land management activities may require decades to implement. Most landowners need the services of competent legal assistance to assure smooth intergenerational transfers.

### **The Intensity of Management Is Highly Variable**

The properties profiled here include lands that are tended daily by a resident owner to those that are visited and manipulated only every few years. The intensity of management relates to a variety of characteristics, but is largely a function of landowner objectives. For the resident owners of relatively small tracts, land stewardship is likely more hobby than business. The owners may prune trees, control exotic plants, build trails, repair fences, and do dozens of other chores, some of which are almost entirely uneconomic. For the absentee owners of relatively large tracts, for whom financial profit is the major motivation, land management is most likely confined to assuring regeneration, performing standard silvicultural treatments, and harvesting. It is important to note that forest sustainability does not depend on high-intensity management, but landowner satisfaction might.

### **Sustainability Will Look Different on Small Properties Than on Large Properties**

The conditions on any area of land will change through time. If the area is large, the "average" condition over the entire area is likely to be similar through time, but for a small area, the "average" condition will be much more variable. For NIPF lands, averaging a few dozen to a few hundred acres, many events can force changes to the land that will give the appearance of unsustainability. A storm, fire, or disease may necessitate unplanned timber harvest, as might the need to generate income. However, the long-term sustainability of the area may be preserved if the land is maintained in the same ownership and if the long-term motivations of the owners remain unchanged. The definition of sustainability must allow for the dynamic condition of small properties.

### **Professional Advice Is a Necessity for Sustainability**

Most of the properties described here use formal professional advice to set their strategies and to oversee implementation. However, recent studies indicate that less than 20% of NIPF harvests involve a professional forester. The source of advice varies, including consulting foresters, forest stewardship advisors, and management committees. In the few cases where formal advice has not been sought, the property owners hold substantial technical expertise themselves. Professional advice becomes especially important in planning and executing for financial returns. A properly managed forest returns much more profit, in both the short- and long-terms, than a forest growing randomly and harvested by people concerned more with what is cut than what is left.

### **Landowners Who Are Better Informed Make Decisions That Favor Sustainability**

Implicit in these cases is the evidence that points to landowner awareness and knowledge as essential components for SFM. Informed landowners make better decisions. Knowledgeable landowners recognize alternatives that sacrifice future potential for short-term gain. Professionally assisted landowners can make optimum decisions, for themselves and for society.

### **Certification of NIPF Lands Requires New Models**

The final portion of this case explores the dilemma of certifying small tracts of NIPF lands. Because per acre certification costs rise greatly as parcel size decreases, certifying each NIPF parcel individually is impractical. New models are needed to allow efficient and affordable certification. The case explores three options, including certification of forest managers (who warrant that lands they manage are sustainable), chain-of-custody certification by manufacturers (who warrant that the wood they use is from sustainable forestland), and group certification of multiple tracts (which are managed cooperatively).

## ***Glossary of Forestry Terms***

*Board Foot:* Timber sales are often transacted in board feet with "mbf " (one thousand board feet) and "mmbf (one million board feet). A boardfoot is one foot by one foot by one inch.

*Conversion:* The outright loss of forest land to other uses, which often creates permanent fragmentation. Conversion may also mean changing one forest type to another; for example, a stand containing several species may be converted to a single species plantation.

*Even-aged Stand:* a stand of a single age created through treatment such as a clearcut, or a natural event, such as a hurricane, that creates conditions that eliminate trees of varying ages and replaces them with trees that all begin to grow at the same time.

*Forest Fragmentation:* The reduction of overall forest cover and the isolation of forest patches.

*Forest Management:* All the activities done to tree stands over a period of time while timber matures to meet specific objectives. These objectives might include creating a stand of a given species, encouraging the growth of high-value species, creating a forest similar to a natural one, or to enhance aesthetic quality.

*Forest Stewardship Program:* a federal program that offers NIPF owners technical support and cost sharing for conducting forestry practices and, in some states, for preparing forest management plans. The plans are used to identify forest management objectives and strategies for meeting them. It is intended to give landowners tools to adequately consider the forest management options available within the context of professional

standards. Professional foresters prepare plans with oversight by state service foresters.

*Riparian Set-Asides:* Reserves of trees that are not cut along water corridors. Leaving them prevents sedimentation of streams and maintains stream temperatures by providing shade, which is important for protecting aquatic life.

*Rotation:* Period of time between commercial harvests, which varies depending on growth conditions and is different for various regions, species, and timber management objectives.

*Shelterwood Cut:* A silvicultural treatment in which some mature overstory (the higher, older trees) trees are left on-site to provide shelter for a regenerating under-story. This regenerating younger stand is essentially even-aged. Once regeneration is successful, this overstory shelterwood may be removed, or simply left. An uneven-aged stand exists while the shelterwood is still standing.

*Silviculture:* The science and art of cultivating tree crops to yield a harvestable resource or other forest values and benefits. It includes any mechanical and chemical treatments that may be involved in the process.

*Site:* The area (environment) in which stands or even a particular tree grows. Site resources, then, are factors such as light, heat, water, available space, and other nutrients that influence the growth of trees.

*Site Index:* a measure of the capacity for a given site to grow trees. It usually is a reflection of height growth that can be expected on a given site at some base age. Most commonly, a 50-year base age is used. So, for example, a site index of 100 at base age 50 means that dominant (tallest) and codominant trees of that species will average 100 feet in height after 50 years of growth.

*Stand:* a community of trees that grow together at a particular place and that foresters can effectively manage as a unit. Transitions between stands in a natural forest are often gradual, and can be the result of changes in site. For example, a slope may have varying water availability, thus creating a line between two forest types. Silviculture, however, can create "hard lines" between stands.

*Stand Structure:* The variation in size, age, spacing, and height of trees in a stand.

*Stocking:* The density of trees on-site as compared to the maximum possible for that site. Optimal stocking refers to a density at which trees are achieving the best possible annual growth. An understocked stand is one that has not yet fulfilled its potential.

*The Forest Incentive Program (FIP):* Offers federal money to cost-share activities that foster healthy forests. FIP was created along with the Forest Stewardship Program as part of the 1990 Farm Bill.

*The Tree Farm Program:* a program created by the forest product industry in the 1940s to encourage investment in forest land to help provide a continuing source of wood and fiber. The program continues today and is the oldest of the national programs designed to encourage NIPF forestry.

*Thinning:* The removal of selected trees to achieve the management objectives for a particular stand of trees.

*Timber Stand Improvement (TS1):* The collective term for thinnings and other management techniques that improve the condition of a stand of trees. A commercial thinning is one in which trees are actually sold. A precommercial thinning is a treatment in which no sale occurs, but rather a stand is being treated in anticipation of a later sale.

*Uneven-aged Stand:* a stand of trees of various ages. It is produced from smaller scale disturbances ranging from a single tree felling to groups of trees that are selected for harvest.

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