The Forest Industry and the
Small Landowner: Planning and
Public Policy Issues

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Economic and Social Role of Private Non-Industrial Forests

The private non-industrial forest (PNIF) is an extremely important component of the wood supply in the United States. It has been estimated that there are 7.8 million private owners in the U.S. (Birch/Lewis/Kaiser, 1982).

Data developed by the U.S. Forest Service (USDA-FS, 1982) show that, nationally, PNIF's:
- account for 58% of the commercial timberland acreage (278 million acres) in the U.S.,
- account for a dominant share of the hardwoods growing stock, and a significant share of the softwood growing stock,
- are the dominant source of hardwood supply (both round wood and saw timber) and will continue to be so over the next several decades,
- are the dominant source of softwood roundwood supply and will continue to be so over the next several decades.

National and industry forests together supply most of the softwood sawtimber, but PNIF's also make a significant contribution to that supply,
- offer the greatest number of acres of forest land that are available for economically increasing intensive management.

Additional data on the above is shown in figures 6.3, 6.8, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, and 9.3 (USDA-FS, 1982).
Of course, the contribution of PNIF's to the timber supply varies from region to region in the country: PNIF's constitute relatively large proportions of commercial timberland and harvest in the northern and southern forest regions (i.e., east of the Rocky Mountains) but relatively small proportions in the Rocky Mountain and Pacific Coast regions. Figures 7.1-7.5 illustrate the difference among these regions.

**Private Nonindustrial Forest Land**

<table>
<thead>
<tr>
<th>Region</th>
<th>All commercial forest acreage</th>
<th>All removals of growing stock</th>
<th>All removals of saw timber</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>71%</td>
<td>73%</td>
<td>74%</td>
</tr>
<tr>
<td>South</td>
<td>71%</td>
<td>65%</td>
<td>62%</td>
</tr>
<tr>
<td>Pacific Coast</td>
<td>19%</td>
<td>11%</td>
<td>10%</td>
</tr>
<tr>
<td>Rocky Mountains</td>
<td>22%</td>
<td>13%</td>
<td>13%</td>
</tr>
<tr>
<td>U.S. Total, 1977</td>
<td>56%</td>
<td>48%</td>
<td>40%</td>
</tr>
</tbody>
</table>


PNIF's not only produce wood and fiber for sale to industry, but also produce substantial amounts of such products for their owners' own use. For example, in Wisconsin more PNIF owners report harvesting saw/veneer logs, posts/poles, and firewood for their own use than they do for sale (Roberts/Tlusty/Jordahl, 1986); in New York, 35% of the PNIF's who harvested wood products from their lands cited
"source of forest products for own use" as a primary benefit they derived from their woodlands, compared to 4% who cited "sale of timber" (Birch, 1983); in Minnesota, the comparable percentages were 25% and 4% for "major" harvesters, and 37% and 1% for "minor" harvesters. ("Major" harvesters were those who, in their most recent harvest, harvested more than 30 cords of firewood or 3,000 bd. ft. of saw logs or large amounts of posts, poles or Christmas trees primarily for sale to others; Carpenter/Hansen/St. John, 1986). A relevant question is whether PNIF's harvest larger volumes of products for sale or for their own use. We do not know of any data that would permit us to answer this question at this time.

Percent of Harvesting PNIF Owners
by Product, Wisconsin

<table>
<thead>
<tr>
<th>Saw/Veneer</th>
<th>Firewood</th>
<th>Posts/Poles</th>
<th>Logs</th>
<th>Pulpwood</th>
</tr>
</thead>
</table>

| Harvest for Own Use | 72% | 29% | 23% | - |
| Harvest to Sell     | 1%  | 2%  | 14% | 16% |
| Harvest Both for    | -   | -   | -   | -   |
| Own Use and to Sell | 9%  | 2%  | 10% | -   |

Source: Roberts, Tlusty, Jordahl, 1986
Of course, these forest lands also have values other than for the production of wood/fiber products. It has been estimated that, nationally, recreation on PNIF lands (by the owner, family and friends) equals the number of user days on all the national forests, or in all the national park system, or half the user days in all state parks in the U.S. (Clawson, 1979). In some areas of the country, PNIF lands are a principal source of hunting for those who do not own forest lands. At least 2/3 of hunter days afield are in pursuit of forest wildlife and 80% of this takes place on PNIF lands (Ruff, 1986).

To some extent the recreation/tourism industry in the United States is based upon the scenic amenities of the forest resource. Forests are also highly valued by their owners for their scenic amenities. Four out of five PNIF owners in Wisconsin say that "scenic enjoyment" is an important reason for their owning their woodlands. Viewing nature and hunting are the most often cited recreation use of woodlands by Wisconsin PNIF owners (Roberts/Tlusty/Jordahl, 1986). Studies in other states show similar values on the part of PNIF owners (e.g., Carpenter/Hansen, 1985; Carpenter/Hansen/St. John, 1986; Birch, 1983).

Forests have value as wildlife habitat: many species depend upon the forest for food and shelter; certain species cannot survive without the forest. An indicator of the importance that PNIF owners attach to their forests for wildlife habitat and associated activities, such as hunting, is that 87 percent of PNIF owners in Wisconsin say that "wildlife habitat" is an important reason (in
fact, the most often cited reason) for their owning their forest (Roberts/Tlusty/Jordahl, 1986).

Some owners value and use their PNIF woodlands as investments, hoping someday to profit from the sale of the woodland, although several surveys indicate that less than one owner in five considers this a primary or important reason for owning woodlands (Roberts/Tlusty/Jordahl, 1986; Clawson, 1979; Carpenter/Hansen/St. John, 1986; Carpenter/Hansen, 1985; Birch, 1983).

Finally, PNIF woodlands if properly managed, contribute to maintaining a "healthy" natural environment by reducing soil erosion, stabilizing water runoff, assisting in recharging aquifers, stabilizing surface temperatures, and purifying the air. (Wallace, 1970).

**Characteristics of Private Non-Industrial Ownership**

In many respects, PNIF owners are similar to the population in general; in some respects they differ. A national survey of owners (Birch/Lewis/Kaiser, 1978) and, for comparison, a survey of owners in Wisconsin (Roberts/Tlusty/Jordahl, 1986) revealed the following:* 

-The average size of PNIF woodlands is relatively small. U.S. average was 32 acres/owner, the Wisconsin average was 42 acres/owner.

*The national survey included forest industry forests, the Wisconsin survey did not. Nationally, forest industries accounted for 2.5% of all private ownerships, and 26.9% of all private acreages. Therefore, data on the owners (not the acreages) from the national survey can be roughly compared to owner data from the Wisconsin survey.
- Size of woodland tract ranges from as small as 1 acre or less, to more than 10,000 acres in size. In the U.S., most ownerships (71%) are estimated to be less than 10 acres in size (Wisconsin, 30%). In the U.S., 86% of the ownerships are estimated to be less than 50 acres in size (Wisconsin, 76%).

- In the U.S., 92% of the owners control less than 100 acres each; in Wisconsin 51% of the owners control less than 100 acres each.

- Most owners are sole proprietors or husband/wife combinations. These two groups account for 88% for all owners in the U.S., 89% in Wisconsin.

- Farmers are a significant proportion of PNIF ownerships, but not a majority. Nationally 7% of owners are farmers. In Wisconsin, an agricultural state, 33% of the owners are farmers.

- Retired people also make up a significant share of ownerships: 23% in the U.S., 26% in Wisconsin.

- The largest single occupational groups owning private forest lands are white collar workers (28% of all owners in the U.S.), and blue collar workers (27% in the U.S.).

- Most private forestland owners live in close proximity to their woodlands. In the U.S., 58% live in the same county as their woodlands; in Wisconsin, 75% live within 10 miles of their woodlands.

- Nationally, most owners are over 50 years of age; in Wisconsin, the mean age is 53.

- With respect to education and income, private forestland owners are similar to the general landholding population.
- The great majority of private owners acquired their woodlands by purchasing them (in the U.S., 79% acquired by purchase, in Wisconsin, 87%). Inheritance accounts for only 10% of the acquisitions in the U.S., 6% in Wisconsin. Acquisition by gift or other means accounted for 5% of the acquisitions in the U.S.; 6% in Wisconsin.

- About one-third of private owners had owned their woodlands for a decade or less (35% of owners in the U.S., 30% of owners in Wisconsin). More than half had owned them for less than two decades (62% of owners in the U.S.; 59% in Wisconsin).

- While there is a preponderance of owners of relatively small tracts, the majority of private forestland acreage is concentrated in the hands of relatively few owners. In the U.S., 1% of the owners control 48% of the private forestlands (includes industry forests). In Wisconsin, 11% of the owners control 48% of the private forestlands. While the Wisconsin percentages don't include industry forests, it is believed that their inclusion would not substantially change the owner percentage, since numbers of industrial owners of 100-500 acre tracts are relatively small.

- Most private non-industrial woodland owners do not seek or use professional advice for managing their woodlands. In Wisconsin, for example, nearly two thirds of these owners did not utilize any professional management advice in the past decade. Most owners (60%-80% in Wisconsin) are not aware of the public forest management assistance programs that might be available to them; even when they are aware only small proportions (3%-10% in Wisconsin) participate in them.
<table>
<thead>
<tr>
<th>Size (acres)</th>
<th>Percent of Owners</th>
<th>Percent of Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U.S.*</td>
<td>Wisc.*</td>
</tr>
<tr>
<td>9 or less</td>
<td>71</td>
<td>30</td>
</tr>
<tr>
<td>10-49</td>
<td>15</td>
<td>46</td>
</tr>
<tr>
<td>50-99</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>100-499</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>500-999</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td>1000 or more</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

* Includes forest industry

** Does not include forest industry
Productivity of Private Non-Industrial Forest

Many people believe that private non-industrial forests are not as productive as industry forests because of management differences. Data from one 1977 national forest survey (Clawson, 1979) however, provide some evidence that between 1952 and 1977 (and perhaps up to the present) this situation changed greatly. Using regional data, Clawson concludes that most differences in productivity between industry and non-industrial forests are due primarily to climate and other natural factors, and to forest type, rather than to management. His case is based on comparisons of the net growth per acre of growing stock (all species) of non-industrial private forests with that of industry forests for various regions of the U.S., and by comparisons of net annual growth to productive capacity for the two ownership categories. His conclusions, on a state and regional basis, are:

1. "...in general, the nonindustrial private forests achieved as high a percentage of their potential as did the forest industry forests." and

2. "...the nonindustrial private forests rather closely resemble the forest industry forests, when comparisons are made for regions or for states...the relatively small differences between ownership groups suggest either (1) that the differences in management practices are not very great, or (2) that differences in management have had relatively little impact upon results, or (3) that enough of the nonindustrial private forests have actually been managed by forest industry firms to account for the closely similar results."
Stone and McKeever (1983), after analyzing data from Arkansas, Florida, Michigan, Pennsylvania, South Carolina, and Tennessee also concluded that the differences in productivity among PNIF and industry forests diminished during the late 1960's and late 1970's in those states.

**Reasons for Owning Woodland: Owners' Objectives**

Professional foresters and others who provide management advice need to be as much aware of the owner's objectives as they are of their own. While the professional's interests may focus principally on such matters as the efficient growth and harvesting of wood products and on maximizing the dollar return for the woodland owner, these are not the only nor necessarily the most important concerns of the woodland owner.

It has been widely believed for some time that private non-industrial woodland owners, on the whole, value their woodlands as much for non-timber purposes--recreation, wildlife, aesthetics, wood products for the owners use, and so forth--as for the production of timber for sale. Until the last decade or so, the research information to support this belief has been lacking. A number of studies done since the late 70's now provide clear evidence that PNIF owners value their woodlands for a wide variety of reasons, many of which are at least if not more important to the owner than timber production. Studies in which landowners were asked why they owned woodlands and/or the benefits they received from their woodlands have been conducted in many states, including New York, Pennsylvania,
Michigan, Minnesota, Illinois, Maryland, Ohio, West Virginia, Southern New England, Connecticut, Massachusetts, Rhode Island, Kentucky and Wisconsin. Findings of the Wisconsin survey that may be most relevant to our interests are:

1. Most PNIF owners have multiple reasons for owning their woodlands.

2. Wildlife habitat, scenic enjoyment, and the woodland's value as a source of forest products for the owner's use were the most often cited by owners as important reasons for owning woodlands.

3. The woodlands value for timber production (for sale) ranked 7th out of 11 possible important reasons for owning woodland.

4. Wildlife habitat and scenic enjoyment were the most often cited important reasons for owning by owners of both smaller (1-9 acre) and larger (50 or more acre) woodlands. Eighty to 90% of owners cited those reasons. (See Chart 1)

5. As woodland size increased, a greater proportion of owners cited timber production (for sale) as an important reason for owning. More than half of the owners of tracts of 50 or more acres felt this was an important reason for owning.

6. Owners of small tracts (1-9 acres) often valued their woodlands for the "green space" values it provided around their home or cottage. This implies that there is little interest on the part of these owners in managing for timber production.

7. There did not appear to be any strong relationship between the number of years a woodland was owned (tenure) and the reasons cited for owning woodland.
8. Farmers were more likely than non-farmers to place a high value on their woodlands as a source for wood products for their own use. At the same time, they also placed a high value on wildlife and scenic values.

Even though timber production (for sale) is not the principal or overriding reason for ownership by most owners, this does not necessarily mean that PNIF owners will not harvest their timber. After all, 48% of removals of growing stock and 40% of removals of saw timber in 1977 occurred on PNIF lands. There is some evidence (Clawson, 1979; Stone, 1970; Carpenter, 1985) that over time, most PNIF lands are eventually harvested for timber, either for the owners own use, for sale, or for both. Carpenter’s study of 293 PNIF owners in Michigan’s Upper Peninsula concluded that while the proportion of owners favoring or opposing timber harvest was consistent over time, some owners apparently changed their attitudes from opposition to harvesting to favoring it; at the same time, some timbered tracts were sold by owners opposing harvest to new owners who favored harvesting. It may also be that some owners who originally opposed harvesting because they believed it would be inconsistent with other values of their woodlands (wildlife, aesthetic, recreation) eventually discovered ways of harvesting without seriously compromising—perhaps even enhancing—those values.
Chart 1: Somewhat Important or Very Important Reasons For Owning Woodlands, By Acre Class

<table>
<thead>
<tr>
<th>Reasons and Estimated Percent of 1-9 Acre Owners</th>
<th>Reasons and Estimated Percent of 10-49 Acre Owners</th>
<th>Reasons and Estimated Percent of 50 or More Acre Owners</th>
</tr>
</thead>
<tbody>
<tr>
<td>WILDLIFE HABITAT (86)</td>
<td>WILDLIFE HABITAT (89)</td>
<td>WILDLIFE HABITAT (86)</td>
</tr>
<tr>
<td>PART OF LAND AROUND HOME/COTTAGE (82)</td>
<td>SCENIC ENJOYMENT (81)</td>
<td>SCENIC ENJOYMENT (83)</td>
</tr>
<tr>
<td>PREVENT DEVELOPMENT (57)</td>
<td>FARM/DOMESTIC USE (61)</td>
<td>FARM/DOMESTIC USE (63)</td>
</tr>
<tr>
<td></td>
<td>NON-MOTOR RECREATION (52)</td>
<td>NON-MOTOR RECREATION (58)</td>
</tr>
<tr>
<td></td>
<td>PART OF LAND AROUND HOME/COTTAGE (47)</td>
<td>TIMBER PRODUCTION (56)</td>
</tr>
<tr>
<td></td>
<td>PREVENT DEVELOPMENT (39)</td>
<td>PART OF LAND AROUND HOME/COTTAGE (52)</td>
</tr>
<tr>
<td></td>
<td>TIMBER PRODUCTION (37)</td>
<td>PREVENT DEVELOPMENT (46)</td>
</tr>
<tr>
<td></td>
<td>PART OF FARM (32)</td>
<td>PART OF FARM (32)</td>
</tr>
<tr>
<td></td>
<td>LAND INVESTMENT (23)</td>
<td>LAND INVESTMENT (31)</td>
</tr>
<tr>
<td></td>
<td>MOTOR RECREATION (12)</td>
<td>MOTOR RECREATION (11)</td>
</tr>
</tbody>
</table>

Non-respondents were not included in the calculations, therefore these percents are not directly comparable to the percentages in other tables in this section nor to the Appendix Table.

(Source: Roberts/Tlusty/Jordahl, 1986)
Public Policy Issues

There are a number of issues regarding PNIF lands and their management that landowners, land users who are not owners but who benefit from PNIF lands, and public policy makers will need to continue to struggle with or address anew in the future. Although the following list is not exhaustive, it does identify some of the more prominent issues, all of which have a public policy orientation.

Influencing Forest Management Behavior

There are those who advocate that we should forget about trying to influence the management behavior of the PNIF owner. They say, let the market take care of calling forth forest products from PNIF lands (to say nothing of maintaining environmental values). There may be some problems with this approach. First, some evidence indicates that price is not always well related to supply, especially in areas other than the south (Adams/Haynes, 1980). Second, in order for timber prices to influence landowner decisions, they must be aware of the prices. They often are not. Even when they are, timber prices are considered in conjunction with other forest values held by the landowner. Third, as a society, we may not want to totally place our timber future in the hands of a market that may not be sensitive to the fact that should shortages be detected, it may be 20 or more years before supply could be restored.

Public opinion seems to support some public intervention in the management of the private forestland resource. For example, a 1984 Illinois survey (Absher/Anderson, 1984) of four groups (the general
public, forestry agency and professional people, an advisory panel, and involved citizens) indicated that most agreed that:

1) The amount of private forestland being cleared for residential development should be limited (87%-93% agreed) as should the amount being cleared for row crops (82%-90% agreed).

2) The preferred ways of limiting deforestation are: tax incentives (78%-83% agreed); voluntary action (38%-45% agreed); state zoning (17%-35% agreed).

3) Tax incentives to encourage forest management practices need to be developed for private forestland owners (90%-94% agreed).

A 1979 survey in Indiana (O’Leary/Zumeta/Pace, 1983) found 59% of nonforest landowners and 61% of forest landowners agreeing that"...state government should spend more money in technical assistance programs that encourage private woodland owners to practice wildlife management."

Increasing Productivity Through More Intensive Management

Are the current public programs which aim at increasing productivity through more intensive management the most effective ways of accomplishing that goal? Current programs include tax relief incentives, cost sharing, technical assistance to the landowner, and educational programs. Studies of these types of programs in several different states have produced various and sometimes conflicting conclusions. Some quotes, without the caveats contained in each article, will illustrate the variety and sometimes conflicting conclusions.

For example, three studies of technical assistance/educational type programs indicate that they achieved some beneficial results:
"...there has been a significant reduction in price variation for pine pulpwood prices, at the stump, in Louisiana since the introduction of [Timber Mart South] price data" (Schworn/Hoas/Hide, 1983, p. 106).

"Owners (in the Georgia Piedmont) advised by foresters generally left more pine trees for seed purposes or for future timber harvests. Preliminary calculations suggest that they also received a greater average price per thousand than did owners handling their own sales" (Cubbage, 1983, p. 257).

"...if the costs are similar, a government policy that relies more on the dissemination of technological and market information is probably a better measure of increasing timber supply than a policy involving large-scale reforestation subsidies. (Boyd, 1983, p. 202).

Some studies conclude that some tax related incentives are not (in the situations studied) particularly effective in changing landowners behavior:

"Where cost-sharing is widely available and widely used for reforestation after harvest, the tax incentives seem to function more as a reward than as an incentive." (Royer, 1987, p. 192).

"A model of NIPF owner behaviour shows that increasing the yield tax rate has no effect on the timber sales strategies of landowners." (Max, 1983, p. 139).

"...it is clear that changes in the top capital gains tax rate cause changes in neither industrial or nonindustrial reforestation investments..." (Chang, 1983, p. 145).

On the other hand, two studies indicate that property tax rates, tax incentives or cost sharing can effect landowner behavior:
"The likelihood of reforestation is increased by 19 percent if a landowner is familiar with either tax incentives or cost sharing" (Royer and Moulton, 1987).

"The more interest a landowner has in recreation, the less he is likely to sell timber and the more he is likely to maintain higher stockings. A property tax increase causes landowners to sell more timber and to maintain a lower steady stocking rate" (Max, 1983, p. 139).

Several studies of the Forestry Incentive Program (FIP) conclude that, in some cases it does not achieve some of its expected results, while in other cases it does:

"The regression analysis indicates that there is a trade-off between public funding and private investment in forestry associated with cost-share programs. A substantial percentage of acreage planted under FIP in a representative state in the south would have been planted had subsidies not existed. This means that FIP is not responsible for as much private investment as the enrollment of acreage in FIP might at first suggest. The Virginia cost-share program is the only program that appears to encourage investment, because of the way the program and law are structured" (Cohen, 1983, p. 188).

"...the productivity benefits of FIP-related timber improvements far outweighed the costs" (Boyd, 1983, p. 189, describing studies by Mills and Cain in 1976,'78 and '79).

"The study provided evidence that government cost-share payments have no significant effect on the level of autonomous reforestation investment...but capital substitutes, as defined here, does not seem to be a valid criticism of these programs" (deStiegher, 1983,
p. 163). That is, the federal FIP and ACP programs in the states studied, as well as some state cost share programs, neither bring forth additional landowner investment in reforestation nor do they substitute for reforestation investments landowners would otherwise have made on their own.

"Our a priori notion was that any exogenous incentive provided to landowners to invest in reforestation would cause harvest to occur sooner than it otherwise would..., in no case did we find the FIP to have any statistically significant impact" (Wallace and Silver, 1983, p. 179).

"Results indicate that the 1979 FIP is an efficient and effective use of public dollars for increasing the overall level of management on nonindustrial private forestlands" (Dicks/Kurtz/Ervin/McHugh/Myles, 1983, p. 225).

Clearly, much more evaluation of the results of these programs, taking into account species, region, owner type and other factors, would be helpful in assessing their influence on landowner behavior and developing more effective programs. Moving to the Wisconsin scene, we know of no such studies of the Woodland Tax Law, Forest Crop Law, or Managed Forestland Program. From a public policy point of view such studies would seem to be desirable.

**Regulating Management Practices to Achieve Societal Goals**

To what extent, if at all, should woodland management practices be regulated to achieve certain societal goals? At least sixteen states and some municipalities regulate the harvesting of private forest lands, primarily to prevent degradation of the environment
including erosion, stream sedimentation and aesthetics. Approaches vary from state to state (Irland, 1985). Maine, for example, regulates logging and major haul roads by standards and permits in selected areas. In Connecticut, some towns regulate management practices. Massachusetts has a statewide advance permit requirement for all operations cutting more than 25,000 board feet or 50 cords in one parcel. Vermont responds to complaints about sedimentation with suggestions for corrective and preventive actions, followed by enforcement action when necessary. Oregon has rules covering chemical application, slash disposal, reforestation, road construction and maintenance and harvesting; roughly 15,000 commercial forest operations are annually subject to the rules. Regulation is not universally popular within the forestry community—perhaps not even in the general community—so the extent to which regulations may be adopted elsewhere in the country will vary. Moreover, the success of the regulatory programs cited above is not clear. The Vermont program had not, as of 1985, had a thorough outside evaluation. In Connecticut, there are questions about the effectiveness of having different zoning regulations for each of the 169 towns affected. Clearly, there is a need to assess the successes, and failures, of these programs to determine their effectiveness and any potential applications in other states in the nation.

Targeting Public Resources

To what extent should public resources for PNIF's be targeted and what criteria should be used to determine where they are
targeted? There is evidence that larger forested tracts are capable of producing more output per unit of investment and have a greater overall potential for increasing wood production (Straka/Wisdom/Moak, 1984; Thompson/Jones, 1981; Kingsley, 1987). Although the minimum acreage to qualify for assistance may vary from region to region, some research indicates that an effective minimum would be in the 50 to 100 acres size range, in some regions. Some research also indicates that as an owner's acreage increases the need for public subsidies to encourage management or harvest declines, implying that there should also be maximums on acreage qualifying for subsidies. Moreover, many, if not most, PNIF owners are not in a position to devote substantial amounts of time to management, not so much because of distance from their woodlands but because of other commitments. (About 72% of PNIF owners in Wisconsin have jobs not directly related to management of their woodlands.) Even if one assumed that all farmers and retirees could or would want to devote the necessary time to management of their woodlands, 50% of the PNIF owners are not in those categories. Some may lack the capital necessary for large scale management, and those who own smaller acreages may simply not be able to produce enough products to justify intensive management activities. Judging by criteria such as these, should publicly funded technical assistance, cost-sharing and tax relief be targeted to those categories of owners who are most likely to undertake and carry through on management?

Equity criteria (e.g., income, unemployment) that result in concentrating incentives into those regions whose economies may need
external infusions of investments have also been suggested
(Ellefson/Wheatcroft, 1983).

**Effects of Parcelization**

Continuing division of PNIF lands into smaller parcels has implications for 1) management for and production of forest products and 2) public use of private woodlands for recreation. There is some evidence to suggest that, over time, PNIF lands are being subdivided into smaller and smaller parcels (i.e., the mean or median size of PNIF ownerships are declining). Binkley (1981), for example, quotes several studies that show declines in median size of holding in 5 New England States between 1945 and 1973 of as much as 67% to 84%. This may not be true for all areas. Carpenter (1985), for example, found that during 1960-79 in one area of Upper Michigan, there were increases in the numbers of parcels of <35 acres and parcels of >150 acres and declines in the numbers of parcels in the 35-150 acre class; the average size of holding increased.

Evidence suggests that owners of smaller woodland parcels are less likely to have harvested wood products (for sale), seek or use professional advice regarding management of their woodlands, intend to harvest wood products (for sale) in the future or permit public use of their woodlands for recreation (Roberts/Tlusty/Jordahl, 1986). The long run implications of all this are obvious. Where diminishing parcel size leads to these outcomes, should public policies be directed at dealing with it? If so, what kinds of policies would be feasible and effective? The encouragement of landowner associations to overcome the diseconomies of small
holdings, and corporate leasing to assemble small holdings into efficient operations have been suggested (Straka/Wisdom/Moak, 1984).

**PNIF Lands and Public Recreation**

There are growing concerns about the future availability of PNIF lands for public recreation. As indicated earlier, private non-industrial forest lands contribute substantially to meeting the recreation needs of the owners, their families and friends. Other than some data on leasing—a minor factor in Wisconsin—we know of no data quantifying the use of private woodlands by people other than owners/families/friends. A diminishing supply of PNIF land for recreational use could conceivably lead to higher densities of recreational use on such lands and/or greater pressures on publicly owned recreational land, which is not expanding at the same rate as demand.

Some data indicate that, by and large, PNIF owners want to exclude others or maintain very close control over who uses their woodlands for recreational purposes. One national survey, for example, concludes that 69% of U.S. PNIF acres are considered closed to public recreation by their owners (Cordell/Stevens, 1983).

There are a variety of reasons that lead PNIF owners to exclude others from recreational use of their lands including: fear of littering or other property abuse, concern about owner liability in case of an accident, maintenance of one’s privacy, or concern for personal safety, and to protect one’s exclusive use of game or other woodland benefits (Roberts/Tlusty/Jordahl, 1986; Cordell/Stevens, 1983). In response, some states have 1) passed laws to limit
landowner liability for injury to recreationists on their land, 2) required that landowners permit public access for certain activities (e.g., hunting, fishing, hiking, cross country skiing) in exchange for tax reductions or deferrals, 3) leased private land for public use, 4) encouraged private leasing, as well as 5) sponsored programs to encourage responsible use by non-owners.

**Integrating Individual and Societal Goals**

Clearly, there are large numbers of owners (and not just those who own small tracts) who hold multiple values for their woodlands. They do not own their woodlands for a single purpose (such as timber production) but for combinations of purposes (such as timber production and wildlife enjoyment and scenic enjoyment). Efforts to encourage them to manage for one purpose will not be fully successful unless attention is also given to their other values. An important issue then, for those who advise owners on their forest management plans is how to integrate the owners' diverse values into a management program that will permit achievement, at some level, of all or most of the values; or at least assist the owner in assessing the trade-offs involved in achieving various combinations of values.

Wisconsin's new Managed Forestland Program allows owners who receive the tax benefits of the program to manage a portion of their lands for recreation, watershed protection, wildlife habitat, aesthetics and public recreation access as well as for timber production. The application submitted by the owner for entry into the program must contain a statement of the owner's forest management objectives. An approved management plan developed by the owner,
their agent, or the DNR, is required. The law also encourages those owners who have multiple objectives to specify activities that will be undertaken for the management of wildlife habitat, watersheds, aesthetics and other non-timber values. Thus, the program provides some opportunity for those owners who want to achieve multiple values to do so. Of course, the extent to which they plan and manage for non-timber objectives is influenced by the willingness and competence of the foresters advising them to advise on non-timber practices. This requires an understanding of how to achieve non-timber as well as timber values and a commitment to doing so. The extent to which the advisors understand how to achieve non-timber values depends, in large part, on the breadth of their forestry training and experience. The commitment to do so depends, in large part, on their organization’s commitment to promoting non-timber values.

Even if the professional advisors were to follow the prescription above, the fact would remain that most PNIF owners do not seek professional management advice, and even those who do seek such advice do not put it into practice on their lands (Roberts/Tlusty/Jordahl, 1986). Clearly, in addition to providing the landowner with advice on how to achieve timber and non-timber values, we need to search for additional, more effective ways of reaching and motivating many more of these owners.

Facilitating Marketing and Stimulating Demand

Do marketing opportunities for PNIF’s need to be improved? If so, what actions might be taken? For a number of reasons, PNIF owners are generally in a weak bargaining position when it comes to
marketing their timber: they have no processing facilities of their own, most have little knowledge of the value of their timber, the volume and value of their timber may be too small to interest some buyers, in some areas there are few or no buyers of PNIF timber. Marketing cooperatives have been suggested and in some cases have had success where owners will commit themselves to long-term participation in the co-op. Another approach would be to expand markets by inventing new ways to use wood products (Stier, 1987). In the past, emphasis has been placed on increasing supply with the hope that in the long run the balance between demand and supply will support a market. In the short run however, perhaps it would be more effective to invest resources (technical assistance, tax relief, education, research) into developing new ways to use wood products.

**Summary**

PNIF owners contribute significantly to meeting the wood and fiber needs of the timber industry in the U.S., and will continue to do so in the future. Their forestlands also contribute to the recreation needs of the owners themselves and the general public, and to the maintenance of a "healthy" natural environment. We now know quite a lot about the socio-economic characteristics of these owners; and although we tend to characterize the "average" owner, we should not lose sight of the fact that each owner is somewhat unique, possessing unique sets of values and characteristics.

On the whole, PNIF forestlands are no less productive than industry forestlands; natural factors and forest type account for
most of any difference in productivity.

Although PNIF landowners on the whole respond positively to industrial wood and fiber demands, for many the decisions about how to manage their forests and when and how to supply wood and fiber (i.e.: to harvest) are influenced as much—perhaps more—by their non-economic as their economic values. Perhaps this is why studies of the impacts of economic incentives for forest management seem to be less conclusive than do studies of the impacts of technical assistance. In the future, as ownership shifts from farmers to non-farmers and into smaller size ownerships, purely economic incentives, at present levels, may be attractive to even fewer owners. Targeting economic as well as non-economic incentives to the groups most likely to change behavior as a result of receiving them may be desirable.

As recreation demand increases, the non-timber values of private forests will become of even greater importance than they are today. A major challenge, then, is how to successfully integrate non-timber uses such as recreation and aesthetics with timber production.

There seems to be broad public support for some public intervention in the management of PNIF lands, particularly in the form of technical assistance and incentives rather than regulations, although some states do regulate primarily for environmental ends. There is a need to more comprehensively and systematically evaluate the impacts of the technical assistance, incentive and regulatory programs that are in place in order to fashion more effective public policies. Effective targeting of public incentives to PNIF owners, as well as methods for making PNIF lands more available for public
recreation and for improving marketing mechanisms for PNIF owners need to be considered.

Finally, both PNIF owners and industrial forest owners, could benefit from investments into developing new ways to use the forest resource.
Commercial Timberland Area Trends, 1952-77, with Projections to 2030

Million acres

United States

By Section

North

South

Rocky Mountain

Pacific Coast

By ownership

National Forest

Other public

Forest industry

Farmer and other private


Softwood Roundwood Harvests, 1952-76, with Projections of Supplies to 2030

Billion cubic feet

United States

By section

North

South

Rocky Mountain

Pacific Coast

By ownership

National Forest

Other public

Forest industry

Farmer and other private

Figure 7.3
Softwood Sawtimber Harvests, 1952-76, with Projections of Supplies to 2030
Billion board feet, International 1/4-inch log rule

United States

1952 62 '70 '76 '80 '90 '00 '10 '20 '30

North

Rocky Mountain

Pacific Coast

South

By section

By ownership

National Forest

Other public

Forest Industry

Farmer and other private

1952 62 '70 '76 '80 '90 '00 '10 '20 '30

1952 62 '70 '76 '80 '90 '00 '10 '20 '30

1952 62 '70 '76 '80 '90 '00 '10 '20 '30

1952 62 '70 '76 '80 '90 '00 '10 '20 '30


Figure 7.4
Hardwood Roundwood Harvests, 1952-76, with Projections of Supplies to 2030
Billion cubic feet

United States

1952 62 '70 '76 '80 '90 '00 '10 '20 '30

North

Rocky Mountain

Pacific Coast

South

By section

By ownership

National Forest

Other public

Forest Industry

Farmer and other private

1952 62 '70 '76 '80 '90 '00 '10 '20 '30

1952 62 '70 '76 '80 '90 '00 '10 '20 '30

1952 62 '70 '76 '80 '90 '00 '10 '20 '30

1952 62 '70 '76 '80 '90 '00 '10 '20 '30

Hardwood Sawtimber Harvests, 1952–76, with Projections of Supplies to 2030
Billion board feet, International 1/4-inch log rule

Figure 7.6
Softwood Sawtimber Harvests in the Pacific Coast, 1952-76, with Projections of Supplies to 2030
Billion board feet, International 14-inch log rule

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Non-respondents were not included in the calculations, therefore these percents are not directly comparable to the percentages in other tables in this section nor to the Appendix Table.

(Source: Roberts/Tusty/Jordahl, 1986)
Commercial Timberland Area Trends, 1952-77
Million acres

United States

By section
North
South
Rocky Mountain
Pacific Coast

By ownership
National Forest
Other public
Forest industry
Farmer and other private

1952 1962 1972 1977
1952 1962 1972 1977
1952 1962 1972 1977
1952 1962 1972 1977
Commercial Timberland Area Trends, 1952-77, with Projections to 2030

Million acres

United States

By Section

North

South

Rocky Mountain

Pacific Coast

By ownership

National Forest

Other public

Forest industry

Farmer and other private
Figure 7.2

Softwood Roundwood Harvests, 1952-76, with Projections of Supplies to 2030
Billion cubic feet

United States

North

Rocky Mountain

Pacific Coast

By ownership

National Forest

Other public

Forest industry

Farmer and other private

By section

South
Figure 7.3

Softwood Sawtimber Harvests, 1952-76, with Projections of Supplies to 2030

Billion board feet, International 1/4-inch log rule

United States

By section

North

Rocky Mountain

South

Pacific Coast

By ownership

National Forest

Other public

Forest industry

Farmer and other private

1952 '62 '70 '76 '90 '00 '10 '20 '30
Figure 7.4

Hardwood Roundwood Harvests, 1952-76, with Projections of Supplies to 2030
Billion cubic feet

United States

1952 '62 '70 '76 '90 '00 '10 '20 '30

By section

North

1952 '62 '70 '76 '90 '00 '10 '20 '30

South

1952 '62 '70 '76 '90 '00 '10 '20 '30

Rocky Mountain

1952 '62 '70 '76 '90 '00 '10 '20 '30

Pacific Coast

1952 '62 '70 '76 '90 '00 '10 '20 '30

By ownership

National Forest

1952 '62 '70 '76 '90 '00 '10 '20 '30

Other public

1952 '62 '70 '76 '90 '00 '10 '20 '30

Forest industry

1952 '62 '70 '76 '90 '00 '10 '20 '30

Farmer and other private

1952 '62 '70 '76 '90 '00 '10 '20 '30
Hardwood Sawtimber Harvests, 1952–76, with Projections of Supplies to 2030

Billion board feet, International ¼-inch log rule

United States

By section
- North
- South
- Rocky Mountain
- Pacific Coast

By ownership
- National Forest
- Other public
- Forest industry
- Farmer and other private
Figure 7.6

Hardwood Roundwood Harvests in the North, 1952-76, with Projections of Supplies to 2030
Billion cubic feet

By region

By ownership

National Forest

Other public

Forest industry

Farmer and other private
Figure 7.7

Softwood Roundwood Harvests in the South, 1952-76, with Projections of Supplies to 2030
Billion cubic feet

South

By region

Southeast

1952 '62 '70 '76 '90 '00 '10 '20 '30

South Central

1952 '62 '70 '76 '90 '00 '10 '20 '30

By ownership

National Forest

1952 '62 '70 '76 '90 '00 '10 '20 '30

Other public

Farmer and other private

1952 '62 '70 '76 '90 '00 '10 '20 '30
Figure 7.8

Softwood Sawtimber Harvests in the Pacific Coast, 1952-76, with Projections of Supplies to 2030
Billion board feet, International 1/4-inch log rule

Pacific Coast

By region

Pacific Southwest

Douglas-fir

Ponderosa pine

By ownership

National Forest

Other public

Forest industry

Farmer and other private

1952 '62 '70 '76 '90 '00 '10 '20 '30
Figure 9.3

Economic Opportunities for Management Intensification by Ownership

Total 168 million acres

Farmer and other private 124

Forest Industry 34

Other public 10