Forest Resource Management Planning:
Who Prepares Forest Management Plans and How Do They Differ by Ownership Type?

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Forest management objectives, planning intensity and complexity, public participation in the planning process, and formats for forest resource management plans differ by the type of ownership. Different owners have different planning needs and resources (both on the ground and in their pockets to pay for the planning). Some planning processes, especially for public ownerships, stress public participation; some are financially-oriented and stress cash flow; and many are oriented to one natural resource (and not necessarily timber). In some respects they are very similar, in other aspects they can differ greatly. Some of the differences come from regional aspects of timberland and others from differences in landowner management objectives. The pattern of ownership, by region and owner type, gives interesting insight into these management plan differences.

Distribution of Forestland and Timberland in the United States

There are 766,234,000 acres of forestland and 521,154,000 acres of timberland in the United States. The total land area of the country is 2,260,952,000 acres. That means the United States is one-third forested and nearly a quarter of the nation is timberland. So, just over two-thirds of forestland is timberland.

What is the difference between forestland and timberland? Forestland is at least 10% stocked by forest trees of any size, or is land that formerly had such tree cover, that is not currently developed for a nonforest use. Timberland is a subset of forestland capable of growing commercial timber (capable of producing in excess of 20 cubic feet per acre per year).

There are two other categories of forestland: reserved forestland and other forestland. Reserved forestland is land permanently reserved from timber production through statute or administrative designation, like wilderness areas and national parks and monuments. This reserved forestland occupies 73, 520,000 acres in the United States. Other forestland is that land not capable of producing 20 cubic feet per acre of wood annually under natural conditions. This type of forestland occupies 171,560,000 acres. Timberland is 68% of forestland, reserved forestland is 10%, and other forestland is 22%.

Forestland is fairly evenly distributed between the East and West *(Figure 1)*. In the East, it is fairly evenly distributed between the North and South. There is a distinct difference in public and private ownership patterns when examined regionally *(Figure 2)*. Just over three-quarters of public forestland is in the West. Seventy percent of the western forestland is publicly-owned, while only a quarter of northern and only 13% of southern forestland is publicly-owned. This creates a clear difference in forest management by regions, since forest management intensity and timber production differ between private and public forestlands.

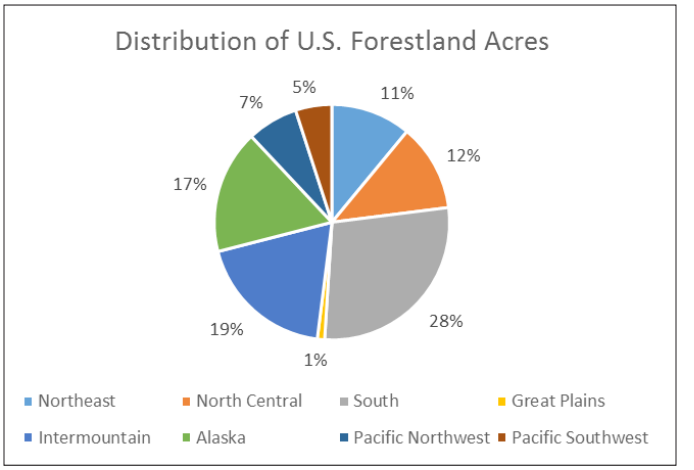

Figure 1. Distribution of forestland area of the United States 2007 (Smith et. al. 2009).

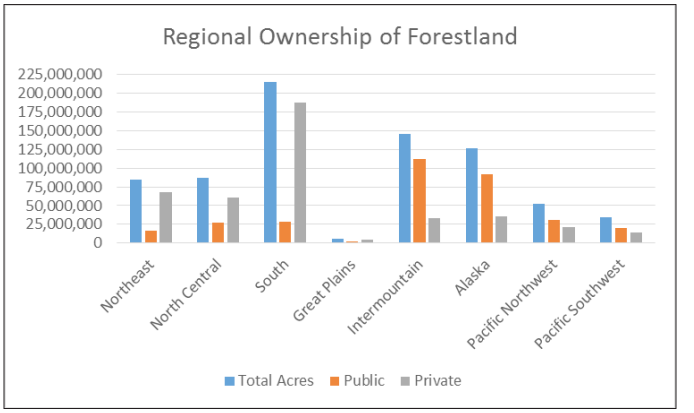

Figure 2. Acres of public and private forestland by region 2007 (Smith et. al. 2009).

The distribution of timberland in the United States is presented in *Figure 3*. Distribution patterns for timberland are more pronounced than forestland because much of the less productive forestland is in the West and does not meet the productivity standards to be classified as timberland. While the East has just over half the forestland acreage, it has over 70% of the timberland.

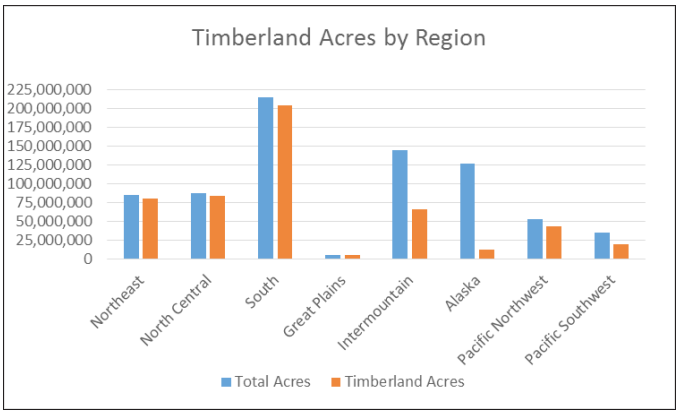

Figure 3. Distribution of timberland acres of the United States by region 2007 (Smith et. al. 2009).

The distribution of timberland in the United States by region is in Table 1. Well over half of the timberland in the West is in public hands. Nearly 80 percent of timberland in the East is in private hands. Overall, 69 percent of timberland is in private hands. These trends follow federal land ownership patterns and differences in regional timber types and productivity.

Table 1 also displays the timber volumes by region. Most of the timber volume is in the East, especially the South, with the productive timberlands. But some regions of the West have very productive timberland and correspondingly high timber volumes. Forest resource management planning will reflect these regional differences.

Table 1. Timberland area of United States, 2007 (Smith et. al. 2009).

Region	Percent of Total Timberland	Percent of Total Timber Volume	Percent Public Timberland	Percent Forestland that is Timberland
Northeast	16	14	15	94
North Central	16	12	30	97
South	40	32	12	95
Great Plains	1	1	28	92
Intermountain	13	15	77	45
Alaska	2	3	77	9
Pacific Northwest	8	16	55	83
Pacific Southwest	4	7	53	57
U.S. Total	**100**	**100**	**31**	**68**

Forest and Timberland Ownership in the United States

Who owns and controls the nation's timberland? How much of it is privately-owned and how much publicly owned? About 30% of America's timberland is publicly-owned. Due to federal land ownership being concentrated in the West, most of the public timberland is in the West. Regionally, larger percentages of the western timberlands are publicly-owned. Likewise, the opposite holds true with private lands. They tend to be concentrated in the East. This is especially true when noncorporate private land is considered; this ownership group includes family forests. *Figure 4* illustrates the classification of acres by region using the current USDA Forest Service Forest and Inventory Analysis (FIA) ownership classifications: public, private corporate (forest industry and investment grade), and private noncorporate. Seventy percent of all U.S. timberland is privately owned. Forty-nine percent of the privately owned timberland is owned by private noncorporate owners. The remaining twenty-one percent of the timberland is owned by private corporate entities.

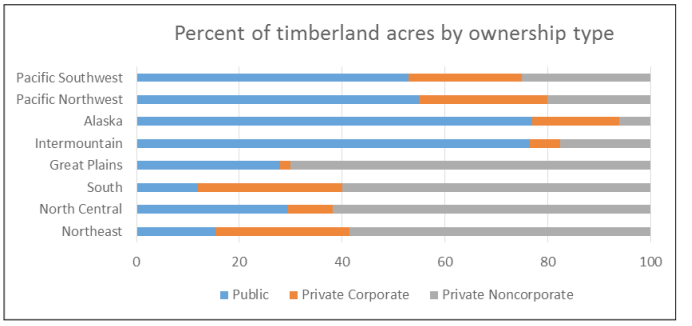

Figure 4. Ownership of timberland by region 2007 (Smith et. at. 2009).

Major timberland regions are the South, Northeast, North Central, Pacific Northwest, and Intermountain regions. Private corporate (forest industry, TIMOs, and REITs) are mainly in the South, Northeast, Pacific Northwest, and North Central regions. Private noncorporate owners are mostly in the eastern United States.

Who are these owners?

Private forestland and timberland owners are commonly broken down into categories: Forest industry owners that own forestland and operate primary wood-processing facilities and nonindustrial private forest (NIPF) owners that are families, individuals, corporations, and other private groups who own forestland, but do not own and operate a primary wood-processing plant. NIPF owners are further broken down into two categories: Family forest owners and other nonindustrial owners. Family forest owners are families, individuals, trusts, estates, family partnerships, and other unincorporated groups of individuals that own forestland. Thus, family forest owners are a subset of NIPF owners and NIPF owners are a subset of private owners.

Private ownership can also be divided into corporate and noncorporate. Private corporate owners include forest industry owners. However, there are other incorporated owners without timber processing facilities. Many corporations own land as part of their operations. Much of this land is managed with a profit motive, usually with strong environmental considerations, to enhance overall corporate returns. Timber Investment Management Organizations (TIMOs) and Real Estate Investment Trusts (REITs) have traditionally been included in the NIPF category, but are now a major part of the private corporate ownership category to better represent the similar ownership objectives. There are approximately 106 million acres of forest industry, TIMO and REIT timberland.

Shift in private corporate ownership and its implications

Forest industry has been divesting itself of acreage over the last two decades, but still owns and controls significant forestland area. Most forestland owned by forest industry is timberland, as this owner group has a strong timber production management objective. Most of this timberland is managed under a detailed, comprehensive forest resource management plan. While timber production is the reason most of forest industry owns forestland, most companies make a strong effort to practice professional forest stewardship and these forests tend to be managed for multiple-uses. Many forest industry companies have made strong environmental commitments. It is not unusual for environmentally-sensitive lands to be protected from timber harvest.

At the same time, forest industry purchased these forestlands with shareholder funds and they represent assets on a balance sheet. Often forest management planning will emphasize cash flows and rates of return. Thus, the planning process and resulting written plan often emphasizes financial analysis concerns. The forest resource management plan will be a component of a larger business management plan and will be expected to contribute to overall company objectives. It is also likely to be detailed in terms of operational planning in order to achieve these objectives.

As forest industry started to divest itself of timberland starting in the early 1980's, much of the land was purchased by investor groups to be managed for timber production and investor financial returns. Timberland Investment Management Organizations (TIMOs) purchased these properties to be managed for timber production and investor financial returns. Many of the forest industry firms that did not divest instead restructured themselves so that ownership and control of their forestland was in a Real Estate Investment Trust (REIT), separate from ownership and control of their manufacturing facilities. This was a major transition in private ownership in the United States. In the past forest industry was an easily-identified ownership group with fairly consistent ownership objectives.

Management planning and management intensity of TIMOs and REITs is similar to the forest industry that sold the land; TIMOs have the same type of financial objectives, so manage about the same as forest industry. TIMOs manage about 25 million acres worth about $30 billion. Examples of TIMOs are Hancock Timber Resource Group, RMK Timberlands, The Campbell Group, Resource Management Services, and Forest Investment Associates.

The three largest publicly-traded REITs are Plum Creek, Rayonier, and Potlatch. These three REITs own about 11 million acres of timberland. Plum Creek is the largest private landowner in the U.S. at over 7 million acres. Generally these forestlands are managed with a profit motive for timber production. The firms tend to be environmentally sensitive and most planning considers multiple objectives. While public participation in the planning process is likely to be low, the firms will be sensitive to local management concerns and adjust their planning accordingly.

What issues led to this shift in ownership? First, forest industry owned both mills and timberland. As a result timber supply objectives greatly influenced timber harvesting decisions and land acquisition policies. TIMOs and REITs generally have few timber supply restrictions and can harvest timber when market conditions are most favorable; they also have the advantage of being able to hold timber when the market is poor. Second, TIMOs and REITs apply modern portfolio theory to their investment policies and diversify across geographic regions, age class distributions, and markets. Forest industry tended to concentrate its timberland around mill locations and timberland would be purchased to provide for mill input requirements. Third, forest industry could find itself constrained by capital availability limitations, while TIMOs have access to large capital pools. REITs, unless publicly-owned, can have some of the same capital limitations that were an issue for industry. Fourth, TIMOs can have relatively short investment timeframes of 10 to 15 years. In addition, they are often obligated to maximize shareholder returns over that timeframe. Finally, taxes tend to be a big issue with forest industry firms, while TIMOs and REITs have more favorable tax treatment.

How does all this affect forest management planning by three organization types (forest industry, REITs and TIMOs)? In terms of forest management practices and forest management intensity, all three ownership types practice about the same level of forestry. All three are investment-oriented; all three have shareholders or investors who expect returns. TIMOs may have a shorter planning horizon, but still need to invest the capital to have a viable forest at the end of investment term. TIMOs and REITs do have more flexible timber harvesting options than forest industry. All three exist primarily to produce timber. All three manage for multiple objectives and make huge efforts to protect the environment, but all three are primarily profit-

oriented. TIMOs and REITs don't have the mill supply requirements of forest industry, so may be more willing to convert some of their holdings to non-forest uses. However, both also seem to be willing to protect environmentally-sensitive lands with conservation easements. This sometimes makes timber harvesting easier in areas with high public concern over the environment.

Seventy percent of American timberland is in private hands. Just over 20% is in private corporate hands. This is primarily forest industry, TIMOs, and REITS. These lands are managed intensively for timber management, usually under strong forest certification standards and environmental controls.

Table 2. Nonindustrial forestland acres in the United States, 2007 (Smith et. al 2009).

Region	Total Acres Forestland	Acres NIPF NIPF	Acres Family Forest	Acres Forest Industry
Northeast	84,796,000	62,158,000	43,825,000	6,017,000
North Central	87,243,000	57,055,000	50,215,000	2,830,000
South	214,644,000	156,652,000	125,522,000	29,313,000
Great Plains	5,757,000	4,088,000	3,736,000	0
Intermountain	144,905,000	31,097,000	20,399,000	2,722,000
Alaska	126,869,000	35,875,000	4,058,000	0
Pacific Northwest	52,449,000	13,480,000	6,974,000	7,385,000
Pacific Southwest	34,565,000	11,256,000	8,928,000	3,101,000
U.S. Total	**751,228,000**	**371,661,000**	**263,658,000**	**51,368,000**

Private noncorporate timberland is owned by individuals, partnerships, clubs, and Native Americans. Almost 90% of private noncorporate timberland is in the eastern United States, divided nearly equally between the North and the South. This category is mainly the small family forests. There are over 10 million family forest owners in the United States and their forest management objectives vary widely. At any point in time some family forest timberland will be unavailable for harvest, but these owners change over time and so do ownership objectives. Thus, timberland that is unavailable for harvest today may prove to be available in the future.

There are 423 million acres of private forestland; 138 million acres are corporate and 285 million acres are noncorporate. As a subset of forestland, there are about 356 million acres of timberland; 106 million acres are corporate and 250 million acres are noncorporate.

The big player is the family forests at 35% of all forestland *(Table 2)*. These owners have a variety of management objectives and timber production does not top the list when they are surveyed. These family forests play a crucial role in protection of America's forestlands and sustainability of long-term timber goals. Efforts to educate these family forest owners are important to forest sustainability and efforts to encompass these lands under forest certification programs would contribute greatly to these forest sustainability goals.

Seventy-two percent of the family forests are in the eastern United States. Family forests are often small tracts, as nearly three-quarters are less than 20 acres in size. However, over a half million family forest owners control 100 acres or more. Plus, about 20,000 owners have tracts of over 1,000 acres in size.

Table 3. Size of forest holding influences family forest owners management planning (Butler 2008).

Size of forest holding (acres)	Percent of Owners with Forest Management Plan	Percent of Acreage under Forest Management Plan
1,000+	39	41
100-999	18	21
50-99	11	12
10-49	5	5
1-9	1	1

Family forests are crucial to long-term sustainability of the nation's forests and a sustainable timber supply. About 11 million private forest owners control 56% of America's forestland. Family forest owners account for over 10 million (or 92%) of these private forestland owners. That means family forest owners control 62% of the private forestland in the country, or 35% of all forestland. Over 10 million family forest owners equates to a huge population of owners and forest properties. Sixty-one percent of family forest owners control tracts of less than 10 acres in size. Management of tracts that small is challenging. However, just over half of family forestland area is in tracts of 100 acres or more. So, many of the family forests are small and difficult to manage, but many are large and often owners are active forest managers. Family forest owners can receive advice, technical assistance, and financial assistance in managing their forest resources.

Note the acreage controlled by family forest owners is huge. Almost the same amount of acreage as BLM, but roughly 90% of this acreage would be timberland. The type of management plan these owners have varies from none to detailed plans that consider financial, silvicultural, conservation, and operational

issues. Only 4% of family forest owner's reported having a written management plan. Those same owners controlled 17% of the family forestland. *Table 3* illustrates the relationship between the size of a family forest holding and likelihood that the forestland is under a professionally-prepared forest management plan. Owners of larger family forests are much more likely to have a forest management plan than those with smaller forest acreages. The lack of a management plan does not mean those same family forest owners do not receive professional forest management advice. Fourteen percent of family forest owners received forest management advice; those same owners controlled 37% of family forests.

The forest management plans prepared for family forest owners vary by management objectives. Plans prepared by forestry commission foresters, service foresters, stewardship foresters, and the technical advice supplied by other natural resource professionals (water quality, wildlife, recreation) tend to be multiple-use oriented, stewardship-focused, and stress forest values of the state agencies that prepared them. Consulting foresters and forest industry landowner assistance foresters prepare forest management plans for landowners with a financial interest. These plans tend to stress forest management and often are timber production and profit-motivated.

Public Forest Management Planning in the United States

Public forestlands tend to receive public scrutiny, especially when forest management activities like timber harvesting and road construction are planned. Both legislative and judicial actions have impacted the planning process for these forests. Federal forestlands tend to have very detailed, researched, documented, and complex forest resource management plans due to high levels of public scrutiny. Public participation is a requirement for the planning process and adaptive management is commonly used in plan implementation. In general, public input into the planning process is a hallmark of forest management on public forestlands. Of course, public lands are subject to changing government regulations over time, as courts, Congress, and the public interest interact over forest management issues. Some states (e.g., California, Oregon, Washington, and Maine) have very strong state-level forest practices acts that can impact reforestation, harvesting, aesthetics, water quality, and wildlife habitat. Many states without formal forest practices acts have adopted best management practices that serve as a minimum set of recommended forest practices. All of this impacts forest resource management planning.

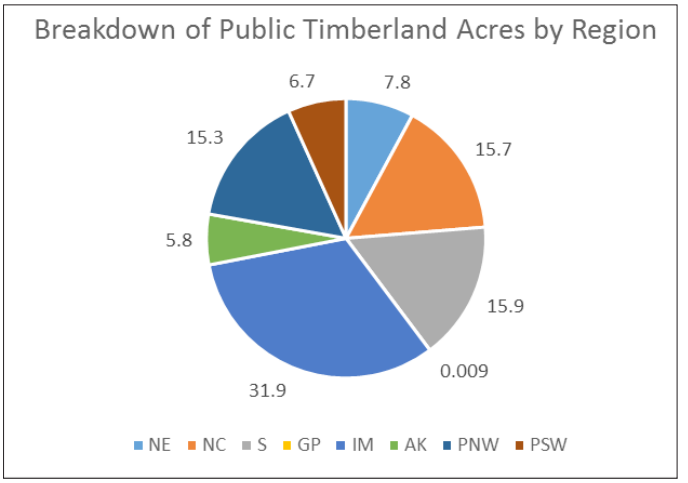

Figure 5. Public timberland by region 2007 (Smith et. al. 2009).

The intensity, management objectives emphasized, public participation levels, depth of analysis, plan structure, and management philosophy differ by the type of organization preparing the plan. Management plans can vary from simple to very complex documents. Public forestland and timberland are managed by government agencies and, thus, these public lands represent the largest single entity forestland managers in the nation. The public owns and controls almost 40% of the nation's forestland and nearly 31% of its timberland.

Figure 5 and Table 4 present the public ownership of timberland by region. The national forests account for over 60% of public timberland. This explains why forest industry has always been concerned with federal timber harvesting policies on the national forests. State, county, and municipal ownership of public timberland is also significant. The Bureau of Land Management (BLM) manages much of the federal public lands, but very little of the public timberland. Notice how important non-federal public ownership of timberland is in some regions.

Table 4. Public ownership of timberland by region in the United States, 2007. (Smith et al. 2009).

Region	National Forest	Bureau of Land Management (BLM)	Other Federal	State, County, Municipal
Northeast	19	0	5	76
North Central	31	0	5	64
South	49	0	20	31
Great Plains	71	3	13	13
Intermountain	88	6	0	6
Alaska	41	9	2	48
Pacific Northwest	74	10	1	15
Pacific Southwest	88	6	0	6
U.S. Public Total	62	4	5	29

The USDA Forest Service manages 45% of the public forestland (147 million acres) and 63% (99 million acres) of the public timberland. This is 19% of total timberland, making the Forest Service the nation's largest timber manager. These lands undergo some of the most intense forest and natural resource planning activities of all forestlands in the nation. In terms of management plans, these are highly-developed, complex, and very public participation-oriented.

The Bureau of Land Management manages 15% of the public forestland and 4% of the public timberland. The BLM administers about 256 million acres of land area (including about 38 million acres of forestland). These public lands make up about 13% of the U.S. land area and more than 40% of land managed by the federal government. Most of these lands are in the western United States. The BLM manages about 57 million acres of commercial forests and woodlands. It also manages significant grazing permits and rangelands. Federal regulations require complex multiple-use management plans developed with high levels of public participation. The BLM is in the United States Department of Interior.

There are other major agencies in the Department of Interior. The Fish and Wildlife Service manages about 92 million acres, the National Park Service manages about 85 million acres, the Bureau of Reclamation manages about 9 million acres, and the Bureau of Indian Affairs manages about 66 million acres. Natural resource management objectives will center on agency priorities. For example, National Parks are reserved forestland, so management plans will stress non-timber resources and recreation opportunities.

The Department of Defense manages about 28 million acres of land. Obviously, land management is not its primary function. However, given the location of many of its holdings (bases in remote areas), it does manage much ecologically significant land. Some of its holdings have tremendous biological diversity. Thus, natural resource management planning is an important function for maintaining these lands. Complex planning takes place on these lands.

State governments administer about 69 million acres of forestland which includes about 35 million acres of timberland. Much of this land is managed in state forests or similar arrangements and involves detailed management planning, often with significant public participation. County and municipal governments manage about 11 million acres of forestland and about 10 million acres of timberland (as a subset of forestland). These forests are usually well-managed and a well-developed management plan commonly exists. These are public lands and management plans are usually subject to significant public participation.

Summary

The management objectives of the forest owners determine the type of forest management planning that will take place on any forest acreage. Public agencies tend to have complex, detailed procedures, planning processes, and plans. Public participation is a hallmark of the public forest planning process. Private forestland is managed with vast differences in forest owner's objectives and forest planning on private lands varies from very complex to none at all. Management objectives control the process. Forestland and timberland ownership patterns across the country give valuable insights into the type of forest management planning practiced, as there are clear differences in planning across these ownerships.

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