

SURVEY IMPLICATIONS FOR NONINDUSTRIAL PRIVATE LANDS

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Abstract—The 1995 forest survey data generally indicates that the physical conditions found in the nonindustrial private forests of Arkansas have improved since the 1988 survey. There is nothing in the data to suggest the need for public policy initiatives to correct current trends in the slowly changing conditions in the forests of the State.

INTRODUCTION

In the huge body of data, which we call the forest survey, is there anything of importance to the nonindustrial forest owner? A collateral question is whether there is anything of importance about the private nonindustrial forest.

With respect to nonindustrial private forest owners, I understand a little about how most of them think. In fact, I think along the same lines myself. The reality is that most nonindustrial private forest owner decisions are made in what I call a micro-scale context.

The nonindustrial private forest owner makes short-term management decisions on the basis of what is possible and what seems to be best at the moment. In the longer term, he wants to know that his behavior is in harmony with the actions of other intelligent people. Confidence is gained by observing what other nonindustrial private forest owners do and then judging the results of that behavior. An even higher level of confidence is sometimes achieved by getting help from a competent and independent professional. The nonindustrial private forest owner takes comfort from believing that the free market system will provide a suitable reward for his land management decisions.

Is there anything of great importance to the nonindustrial private forest owner in the forest survey data? Probably not. Few will ever see the data, and most will not even know of its existence. There may be popular articles in newspapers or magazines, but, in the absence of some startling revelations and large headlines, the information will be largely unnoticed by the nonindustrial private forest owner.

Is there anything of importance about the nonindustrial private forest? The answer is an emphatic yes!

For the industrial community, it is important to know what raw materials can be produced from the forest and what will be the likely availability of the various forest products in the future. That information can be found in the forest survey data. We will take a look at some of that information in just a moment.

As a matter of public policy, the data is also quite valuable as it can show, to some degree, how well the nonindustrial private forest is fulfilling economic, social, and environmental needs. To the extent that we can predict future social needs, the data shows the capacity of the private nonindustrial forest to fulfill those requirements. Public policy makers are properly concerned with the question of whether estimated future requirements can be satisfied and, if not, what remedial action would be useful.

There are seven areas of interest in the data that I think are particularly useful to consider in connection with the private nonindustrial ownership: (a) acreage, (b) inventory, (c) condition, (d) growth, (e) removals, (f) land quality, and (g) balance.

I plan to talk a little about each category and then to conclude with a few opinions.

PRIVATE NONINDUSTRIAL FOREST ACREAGE

Table 1 shows forested acreage in nonindustrial private ownership and total forested acreage.

In all regions of the State, private forest ownership is significant, and, only in the Ouachita region where 44 percent of forests are owned by the government, is it not the dominant ownership class. For the State as a whole, 58 percent of forest land is owned by nonindustrial private owners.

An interesting side note can be made by reaching back to the 1988 data. In every region of the State, the nonindustrial private forest acreage has increased, and the percentage of the forest held by nonindustrial private landowners has increased in all but the Delta region.

PRIVATE NONINDUSTRIAL FOREST INVENTORY

There are a number of different ways to look at the quantity and quality of the forest biomass. Cubic feet in live trees does not address many of the qualitative questions, but gross volume information certainly can be useful in some of the environmental and social questions. In fact, volume in live trees is becoming of increased importance in addressing economic questions as well because the commercial acceptability of what we used to call rough, rotten, and cull material has improved considerably. I am

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Table 1—Forested area in nonindustrial private ownerships and total forest area in Arkansas for 1988 and 1995

	1988	1995
<i>Area in thousands of acres</i>		
NIPF forested acreage		
Ozark	4,417.1	4,689.3
Ouachita	990.8	1,207.0
Southwest	3,018.8	3,277.1
Delta	1,367.9	1,482.6
Total	9,794.6	10,656.0
Total forested acreage		
Ozark	5,729.6	6,010.0
Ouachita	3,172.7	3,413.2
Southwest	6,445.8	6,880.5
Delta	1,899.0	2,110.0
Total	17,247.1	18,413.7
<i>----- Percent -----</i>		
Percent NIPF forested acreage		
Ozark	77	78
Ouachita	31	35
Southwest	47	48
Delta	72	70
Total	57	58

NIPF = nonindustrial private forest.

not sure how bad a tree has to be to deserve assignment to the category of economically worthless, but I can tell you that, in every part of the State trees and even stands of trees that have been considered worthless for generations now have significant economic value.

In every region of the State, both for softwoods and for hardwoods, the total volume in live trees on private nonindustrial ownership has increased since the 1988 inventory. Table 2 reflects the increased gross wood volume in our State's private nonindustrial forests. For the State, the total volume has increased nearly 14 percent from 1988 to 1995.

THE CONDITION OF THE FOREST

One important indicator of the condition of the nonindustrial private forests is the stocking level. I have often repeated the fundamental forestry principle that the productivity of a tract of forest land is a function of stocking. To the extent that the land is occupied by suitable growing stock, it will be productive.

Table 3 shows that the nonindustrial private forest is generally well stocked with 73 percent of timberlands having at least 60 percent stocking. The forest survey specifications define optimally stocked stands as those that are between 61 percent and 100 percent stocked. By

Table 2—Volume in live trees in private nonindustrial forests in Arkansas for 1988 and 1995

	1988	1995
<i>-- Millions of cubic feet --</i>		
Softwoods		
Ozark	569.4	765.1
Ouachita	331.3	445.3
Southwest	2,282.9	2,396.8
Delta	175.9	205.1
Total	3,359.5	3,812.3
Hardwoods		
Ozark	3,146.1	3,879.4
Ouachita	614.6	804.4
Southwest	2,161.0	2,197.4
Delta	1,639.0	1,748.0
Total	7,560.7	8,629.2
Totals		
Ozark	3,715.5	4,645.5
Ouachita	946.0	1,249.7
Southwest	4,443.9	4,594.2
Delta	1,814.9	1,953.1
Total	10,920.2	12,441.5

Table 3—Percentages of NIPF forests in Arkansas stocked at 60 percent or greater

Area	Stocking: >60 Percent
Ozark	67
Ouachita	73
Southwest	82
Delta	75
Total	73

comparison, the data for all ownerships for the entire State shows 80 percent of the forest area to be stocked at the 60-percent level or higher. Obviously, the nonindustrial forest has lower stocking than public and industrial lands. This is not an unexpected fact. Ownership objectives for the nonindustrial private owners are clearly different from either industrial or government owners, and the condition of the forests should be expected to reflect those differences. There are also some land-quality differences that affect stocking levels, which will be discussed later.

NET TIMBER VOLUME GROWTH

For the State as a whole and for all regions but the Ozarks, the average net annual growth of both growing stock (cubic

feet) and sawtimber (board feet) has increased since the 1988 survey (table 4). In the Ozark region, softwood net volume growth has increased in both growing stock and sawtimber. The only declines in growth have been in the Ozark hardwood categories. Current net volume growth of hardwood growing stock in the Ozark region is down by 15.2 percent whereas net hardwood sawtimber volume growth is down by 21.7 percent.

It is interesting to note that the decline in net hardwood growth in the Ozarks has developed in spite of a 23-percent increase in hardwood live tree volume and whereas growth has exceeded harvest by 39.1 percent. There has been recent concern about some aggressive timber harvesting practices in the Ozark region. In fact, one of the most interesting parts of this symposium is the presentation by Drs. Gray and Guldin tomorrow afternoon when these very questions will be addressed.

Much of the timber harvesting that is causing concern began too late in the cycle to be reflected in the 1995 data, but it is clear that the recent aggressive cutting practices

Table 4—Average net annual growth on private nonindustrial lands in Arkansas or all species

Area	1988	1995
Million cubic feet		
Ozark	140.2	118.9
Ouachita	33.3	48.9
Southwest	199.0	204.2
Delta	53.4	63.8
Total	425.9	435.8
Million board feet		
Ozark	471.9	369.4
Ouachita	126.9	176.6
Southwest	889.2	1,016.9
Delta	249.2	289.9
Total	1,737.2	1,852.8

are not the cause of the volume growth decline in the Ozarks. I suspect the opposite may be true.

GROWTH EXCEEDS REMOVALS

A measure of the direction of the changes occurring in the nonindustrial private forests is the growth vs. removal ratios. Softwood growth exceeds the harvest in every region of the State.

Table 5 shows removals and growth volumes in million cubic feet. When the question addresses the more qualitatively meaningful sawtimber growing stock instead of total growing stock, the results are the same: in every region softwood sawtimber growth exceeds harvest.

The hardwood growth/removal ratios are only a little different. When the hardwood growth/removal ratio is in totals measured in cubic feet, growth exceeds harvest in all regions but the southwest region. For the southwest region, the hardwood removals exceed growth by 41 percent and the softwood hardwood combined data indicates removal in excess of growth by 9.8 percent.

The hardwood growth/removal ratio for the higher quality sawtimber shows growth in excess of removals for the State with the overall growth exceeding removal by 15.3 percent. Only in the southwest region where the hardwood sawtimber removals are 4.4 percent over growth does sawtimber removal exceed growth.

It is occasionally useful to refer back to certain milestones to get a clear picture of where we are. In reviewing some old data, I discovered that the 1995 removals in cubic feet were higher than the 1977 removals by 35 percent and that 1995 growth exceeds 1977 growth 3.5 percent for the nonindustrial private forest.

LAND QUALITY

The quality of the forested land in nonindustrial ownership is below average for the State. Approximately 59 percent of private nonindustrial forest land is below site class 85 whereas only 46 percent of all of the other forest lands are in the 85 and lower site classes.

Table 5—Average net annual growth and average annual removal of growing stock on private nonindustrial land, 1995, in Arkansas

Region	Softwood		Hardwood		Total	
	Growth	Removal	Growth	Removal	Growth	Removal
----- Million cubic feet -----						
Ozark	33.9	21.6	85.0	45.9	118.9	67.4
Ouachita	25.3	22.7	23.6	14.7	48.9	37.4
Southwest	141.2	135.2	63.0	88.8	204.2	224.2
Delta	6.5	5.8	57.4	37.8	67.8	43.5
Total	206.9	185.3	229.0	187.2	439.8	372.5

This fact is an important consideration when comparing the condition of the private nonindustrial forests with the conditions found in other ownerships. For example, about 74 percent of the nonindustrial ownership is found to be in either the sawtimber or poletimber size classes, whereas 79 percent of the other ownerships are found in the sawtimber and poletimber size classes.

Both longer time in regeneration stages associated with poorer land and landowner willingness to invest in less productive quality land explain, in part, the fact that there is a lower proportion of the nonindustrial private forest land occupied by the larger size classes.

A similar pattern is found in the sawtimber stocking levels where nonindustrial private owners have nearly 43 percent of their ownership stocked at a level of less than 1,500 board feet per acre whereas other ownerships have only 28 percent stocked below the 1,500-board-feet-per-acre level. Certainly this fact is explained in part by different landowner objectives, but the land quality factor is undoubtedly a part of the explanation as well.

THE BALANCE AND SENSITIVITY TEST

As reassuring as all of the above data is, there is an understandable reluctance to feel secure about the future of the nonindustrial private forest for several reasons:

1. No one is in charge. All of the various landowners, some wise, some not, are proceeding in what may seem to be a helter-skelter fashion. Certainly some of their management decisions seem poorly advised. I am not sure that this characterization is peculiar to private nonindustrial forests. I have seen both industrial and governmental situations where it was difficult to determine if anyone was in charge.
2. Individual cases of aesthetically displeasing landscapes are not difficult to find. Even cases where elevated erosion hazards exist as a result of forest management activities can be found, particularly in hill country.
3. How accurate is the data anyway? I will leave that one to other speakers but do acknowledge, in passing, that some seemingly small changes in definitions could result in significantly different conclusions based upon data differences.

So, what comfort should we take from the data with respect to the private nonindustrial forest of Arkansas? Engineers routinely use a concept called sensitivity testing. My unsophisticated interpretation of their concept is, "How responsive are the results to changes in the inputs?" or "If we are wrong, how much latitude do we have for the results to fall within the safety range?" That same concept can apply to our use of the forest survey data.

Even if we were going the wrong way, a situation not supported by the data, the margin of safety is so great as to cause little concern in the context of the present survey data.

Figure 1 shows that forest growth exceeds timber removals by a significant margin for both pine and hardwood. Granted that the marginal differences seem rather small.

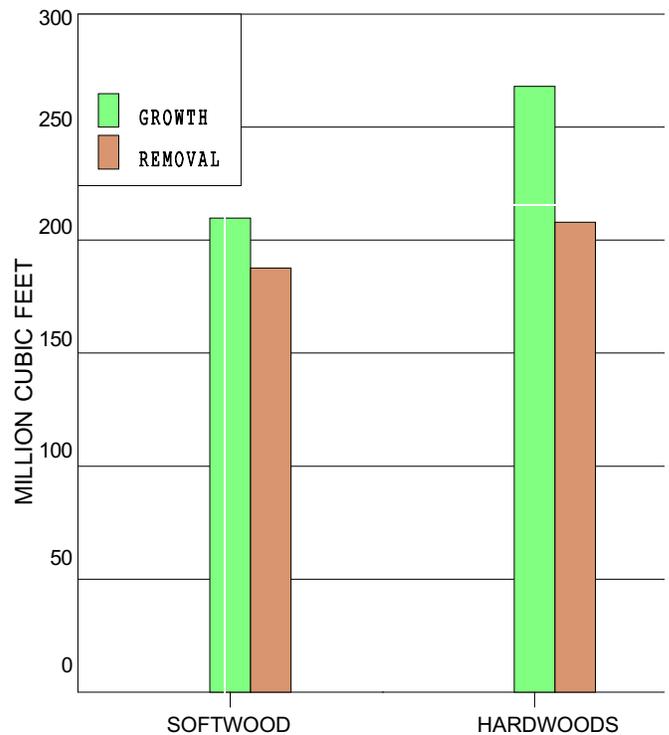


Figure 1—Timber growth and removal for nonindustrial private ownership in Arkansas.

Figure 2 is significant because it shows the timber volume removal from the forest relative to the inventory. The private nonindustrial forest is not in danger from anything that is happening now or likely to happen in the next survey cycle. If the need for change in forestry practices becomes evident at some future time, there will most certainly be ample time in which such changes can be developed with a minimum of risk to the environment or the economy of the State.

Table 6 shows the excess of growth over removals relative to inventory for softwoods and for hardwoods in all four regions of the State. The only negative figure is for hardwoods in the southwest region where the deficit is only 1.17 percent of the inventory.

The hardwood removal data suggests the possibility that some of the hardwood supply requirements from that region may shift to other regions in the future. In the alternative, more intensive culture of the hardwood forests of the southwest region may occur as a result of price escalations associated with a decline in the total regional inventory.

CONCLUSION

The forest survey data indicates that the physical condition of the private nonindustrial forests of Arkansas is improving. There are a few troublesome areas, which merit further analysis such as the growth and removal ratios in the southwest region and the decline in net annual growth in the Ozark region. Neither of these conditions is of sufficient size to indicate a problem or the need for any remedial action.

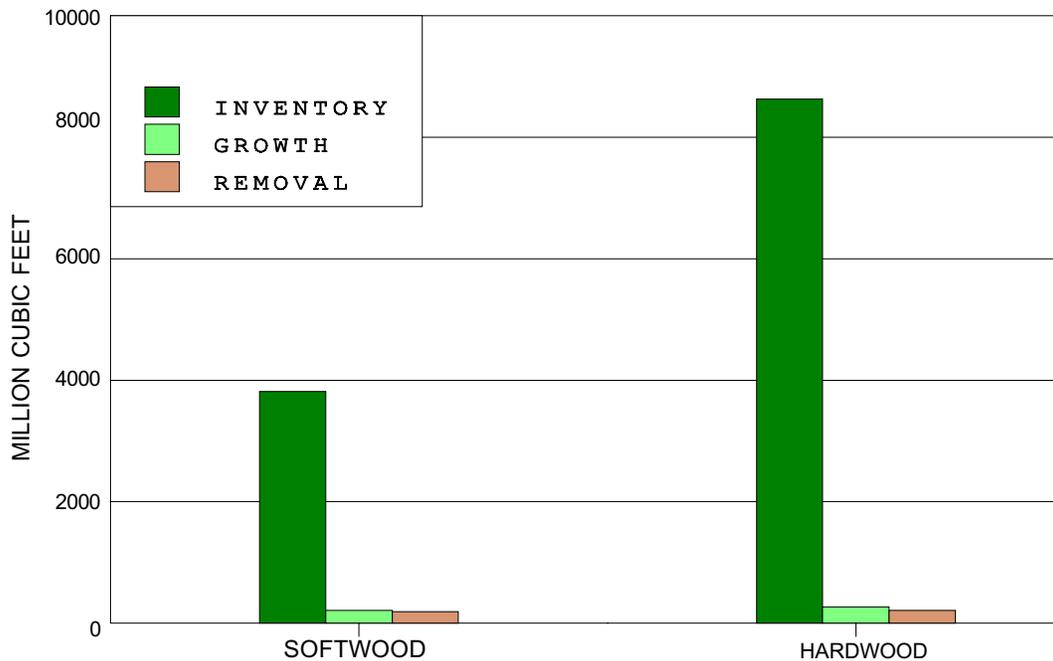


Figure 2—Timber inventory, growth, and removal for nonindustrial private ownership in Arkansas.

Table 6—Excess growth over removals relative to inventory on nonindustrial private lands in Arkansas

Region	Inventory	Excess growth over removals
----- Million cubic feet -----		
Softwoods		
Ozark	765.1	12.3
Ouachita	445.3	2.6
Southwest	2,396.8	6.0
Delta	205.1	0.7
Total	3,812.3	21.6
Hardwoods		
Ozark	3,879.4	39.1
Ouachita	804.4	8.9
Southwest	2,197.4	-25.8 ^a
Delta	1,748.0	19.6
Total	8,629.2	41.7
All woods	12,441.5	63.4

^a 1.17 percent of total hardwood inventory for the region.

Many adverse trends that might develop in the future have self-corrective mechanisms built in. For example, harvest levels that result in reduced inventories and reduced productive capacities will result in increased scarcity and therefore relative value increases. Value increases in turn will result in better stewardship of the forest resource. It is human nature, I think, to take good care of things that have high value and carelessly treat things that have low value.

In view of the mostly positive changes in things addressed by the survey during the last survey period and the size of the resource, there should be a general predisposition against any public policy initiatives having to do with regulation of nonindustrial private timberlands, whether for environmental, social, or economic reasons. The forest survey of 1995 shows the private nonindustrial forest to be in good condition and getting better.

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