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A Timber Resource Assessment of Northwest Louisiana (Bulletin #873)

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Introduction

An innovative approach has been developed at the Louisiana Forest Products Laboratory to stimulate economic development and alleviate chronic long-term economic deterioration in rural resource-based regions (Vlosky et al., 1998). Targeting the secondary forest products industry as a driver for economic development, the methodology addresses a number of areas including markets for value-added products, industry labor skill requirements, training needs, sociological factors that affect or influence the labor market and potential economic outcomes based on various industry development scenarios.

The methodology incorporates a holistic approach that emphasizes long-term sustainable industry development. The goal is to develop the wood products industry while adding value to existing resources, creating employment opportunities with transferable skills and maintaining the stewardship of renewable resources in rural communities.

As is the case with most economic development efforts, forest sector strategies rely on either retention and expansion of existing companies or attracting new industrial investment. In addition, most industry development efforts focus on value-added secondary processing (dimension products, furniture, flooring) rather than primary production (lumber and plywood) to retain and expand jobs in rural areas. Value-added secondary wood processing offers opportunities for increased profitability through higher margins and greater profits. Employment is encouraged with larger numbers of smaller local companies instead of a few large primary-processing plants. In addition, higher economic multipliers are realized in secondary manufacturing compared to primary conversion (Syme and Duke 1991).

Making secondary wood products often offers opportunities that primary processing does not normally offer. For example, secondary manufacturers can generally increase prices to make up for lost profits when raw material costs rise. Secondary products also earn higher profits by adding value and meeting specific customer needs. Secondary products can lead to better resource use also. Making specialty products instead of commodities

allows a company to take better take advantage of new markets. Secondary processing also allows a producer to respond quickly to new trends, such as home remodeling-repair markets (Syme and Duke 1991).

In locales where jobs are in short supply, locally generated secondary forest products industry jobs that create transferable skills may offer a viable alternative to forced migration to maintain or increase employment (Skog 1991). Further, secondary forest products wages often exceed average wages of other jobs in rural areas, adding incentives for recruitment and development efforts aimed at secondary forest products industry companies (Skog 1991).

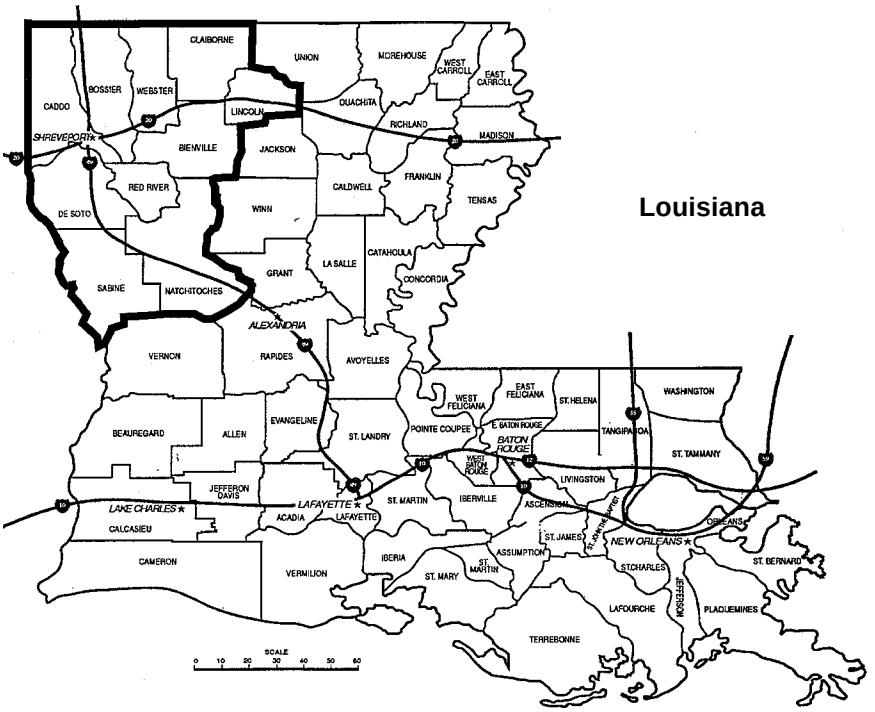
Many states and regions in the United States are diversifying rural economic opportunities through forest resource based industry sector development. Kentucky, Maine, Oregon, Pennsylvania and Washington are taking advantage of forest resources to improve economic conditions within their borders (Jones et al., 1989). In this study, industry development opportunities specific to northwest Louisiana were examined. This publication focuses on forest resources and implications for industry development in this region.

The Problem

In the wood products industry, Louisiana produces only $.97 of value-added product for every $1.00 of lumber created by the sawmills operating in the state. This compares to the southern average of $2.13 of value-added for $1.00 of sawmill product produced. Improvement of industry competitiveness can increase potential for jobs creation and resource use in the rural-based forest products industry. To attain this potential, a wide variety of issues must be addressed. For example, existing consumer market trends, location decision criteria, raw materials availability and applicability, labor force skills and training requirements, target market identification, recruitment and retention strategies, comparative advantages and effects on community stability should all be considered as part of an economic development initiative.

The study region parishes are Bienville, Bossier, Caddo, Claiborne, DeSoto, Lincoln, Natchitoches, Red River, Sabine and Webster (**Figure 1**). The area is chronically lagging the rest of the country with regard to employment and other economic indicators. In addition, forest resource depletion is exceeding sustainable levels for some key species. All parishes in the contiguous 10-parish region conform to Long-Term Economically Depressed (LTED) eligibility as defined by the U.S. Department of Commerce, Economic Development Administration.

Figure 1. Study Region



Summary of Findings

Regional Forest Resources

1. The 10-parish study region represents 15.6 percent of the parishes of Louisiana, but timber lands in the region account for about 3.6 million acres, or nearly 26 percent of the total 13.9 million acres of forested land in Louisiana.
2. Predominant species include 2.37 million acres of southern yellow pine and oak, 691,000 acres of upland hardwood species such as oak, hickory and sweetgum and about 535,000 acres of bottom-land species such as water oak, tupelo gum and cypress.
3. The data clearly indicate that the study region contains significant quantities of quality commercial softwood and hardwood timber to support further development of the secondary forest products industry.
4. Companies in the region produce a wide variety of products from the resource base and distribute these products around the world. In addition to the use of raw materials from within the region, these companies also import raw materials from adjacent states and parishes to manufacture products for industrial, commercial and end-user markets.
5. Most parishes in the region have seen increases in their respective volumes of forestland in the period between 1984 and 1991. Sabine Parish is reported to have the greatest volume of softwood, and Natchitoches Parish contains the greatest volumes of hardwood species. Considering softwoods and hardwoods combined, Natchitoches Parish has more timberland than any other parish in the study region.
6. Volumes of cypress timber in the region, though significantly smaller than that of pine, have grown during the past decade. This increase in standing cypress timber may well represent a niche-specific opportunity for job creation.

7. A reduction in growth/removal ratios for the region indicates that harvesting pressure is being placed on the resource.
8. Volume for all diameter size classes except pole timber has increased over the 1974-1984-1991 time periods. This finding is important, given the conventional wisdom that holds that private landowners are less likely to replant once they have harvested the commercial timber on their lands.
9. Future supplies of hardwood resources for value-added solid wood processing may be affected if the existing hardwood timber stands of immature trees are sold for chip and paper production.
10. Private non-forest industry landowners make up the majority of the land ownership structure in the region. This is a crucial factor because it could have significant impact on the availability of raw materials, how and to whom these raw materials are sold and the amount and distribution of regeneration of timber resources on these lands.

Why Conduct a Forest Resources Assessment?

The initial step in forest sector development is to discern the current and potential availability of raw materials both at the forest resource and intermediate product levels. In this methodology, we examine more than 25 resource variables including forest types, timberland area by parish, ownership and stand size class, growing stock volume by species, sawtimber volume by grade, diameter class, and species and sawtimber growth/removal ratios by species. In addition to resource data collection for the study region, comparable information is gathered for adjacent counties within 100 miles of the edge of the region. The reason for doing this is that forest-based industry may be viable in an area even if it is not considered a “wood basket.” Effective transportation and haul distances from region manufacturing facilities are often up to 150 miles.

The data that constitute the basis for the resources of the methodology were derived from numerous sources. In an application of the methodology in Louisiana, these sources included the 1984 and 1991 Forest Inventory Analyses (FIA) conducted by the United States Forest Service (USFS). The FIA survey is a three-phase process that begins with the use of aerial photos of the area of analysis. Forest-nonforest classification of land use is based on identified points of about 230 acres each. This classification is then adjusted through on the ground observations at sample locations. Field data are gathered for per-acre estimates in a grid with points located at 3-mile intervals. The reader is advised to consult USDA, Forest Service Resource Bulletin SO-165 1991 for a more detailed discussion of the statistical methods for data collection.

In addition, the USFS bulletin series for forest statistics of Louisiana published by the Southern Forest Experiment Station (Vissage et al., 1995; Rosson 1991), the 1992 Census of the United States (U.S. Census Bureau 1995), Forests of the South, Southern Forest Based Economic Development Council (Faulkner et al., 1995) and the *Woods of Louisiana* (Harding et al., 1995) were used.

Throughout this section, in discussing growing stock and sawtimber volumes, there are references to species groups. **Table 1** defines the species included in each species group.

Table 1. Species List by Species Group

SOFT HARDWOOD

Allegheny chinkapin
American basswood *(Tilia americana)*
American chestnut *(Castena dentata)*
American elm *(Ulmus americana)*
black cherry *(Prunus serotina)*
blackgum *(Nyssa sylvatica)*
box elder *(Acer negundo)*
butternut *(Juglans cinerea)*
catalpa *(Catalpa bignonioides)*
cedar elm *(Ulmus crassifolia)*
cottonwood *(Populus spp)*
cucumber tree *(Magnolia acuminata)*
Kentucky coffee tree *(Gymnocladus dioicus)*
pumpkin ash *(Fraxinus)*
red maple *(Acer rubrum)*
reedy river birch *(Betula nigra)*
sassafras *(Sassafras albidum)*
September elm *(Ulmus serotina)*
slippery elm (*Ulmus rubra)*
silver maple (*Acer saccharinum)*
southern magnolia *(Magnolia grandiflora)*
sugarberry (*Celtis laevigata)*
swamp tupelo *(Nyssa silvatica var. biflora)*
sweetbay *(Magnolia virginiana)*
sweetgum *(Liquidambar styraciflua)*
water tupelo *(Nyssa aquatica)*
white basswood *(Tilia heterophylla)*
willow *(Salix spp.)*
winged elm *(Ulmus alata)*
yellow-poplar *(Liriodendron tulipifera*)

HARD HARDWOOD

apple spp. (*Malus* spp.)
American beech (*Fagus americana*)
American holly (*Iiex opaca*)
American hornbeam (*Carpinus caroliniana*)
Bigleaf magnolia (*Magnolia grandiflora*)
black locust (*Robinia pseudoacacia*)
black oak (*Quercus velutina*)
black walnut (*Juglans nigra*)
blackjack oak (*Quercus marilandica*)
bluejack oak (*Quercus marilandica*)
buckeye (*Aesculus*)
chestnut oak (*Quercus prinus*)
cherries (*Prunus spp*.)
Chinese tallowtree
chinquapin oak (*Quercus muehlenbergii*)
chittamwood
common persimmon (*Diospyros virginiana*)
delta post oak (*Quercus stellata margaretta*)
Durand oak (*Quercus*)
eastern hophornbeam (*Ostyra virginian*)
eastern redbud (*Cercis canadensis*)
Florida maple (*Acer floridanum*)
flowering dogwood (*Cornus florida*)
green ash (*Fraxinus pennsylvanica*)
hawthorn (*Crataegus spp*.)
hickory (*Carya spp*.)
honeylocust (*Gleditsia triacanthos*)
laurel oak (*Quercus laurifolia*)
northern red oak (*Quercus rubra*)
Nuttall oak (*Quercus nuttalli*)
osage-orange (*Maclura pomifera*)
overcup oak (*Quercus lyrata*)
paulownia
pecan (*Carya illinoensis*)
pin oak (*Quercus palustris*)
plums (*Prunus spp*.)
post oak (*Quercus stellata*)
red mulberry (*Morus rubra*)
scarlet oak (*Quercus corcinea*)
serviceberry (*Amelanchier arborea*)
Shumard oak (*Quercus shumbardii*)
sourwood (*Oxydendrum arboreum*)
southern red oak (*Quercus falcata*)
sparkleberry (*Vaccinum arboreum*)
swamp chestnut oak (*Quercus michauxii*)
swamp white oak (*Quercus bicolor*)
tung-oil tree
turkey oak (*Quercus laevis*)
water hickory (*Carya aquatica*)
water oak (*Quercus nigra*)
water-elm (*Planera aquatica*)
waterlocust (*Gleditsia aquatica*)
white ash (Fraxinus quadrangulata)
white mulberry *(Morus)*
white oak (*Quercus alba*)
willow oak (*Quercus phellos*)

PINES

loblolly pine *(Pinus taeda)*
longleaf pine *(Pinus palustris)*
shortleaf pine *(Pinus echinata)*
slash pine (*Pinus elliottii)*
spruce pine *(Pinus glabra)*
pond pine *(Pinus ponderosa)*

CYPRESS

baldcypress *(Taxodium distichum)*
eastern redcedar *(Juniperus virginiana)*
southern redcedar *(Juniperus silicicola)*

Red and White Oak Species Group Definitions

In the discussion of growing stock, reference is made to species groups not previously discussed. These groups, Select Red Oak, Other Red Oak, Select White Oak and Other White Oak, are defined in **Table 2.**

Table 2. Select Red Oak, Other Red Oak, Select White Oak and Other White Oak Species

Select Red Oaks	Black Oak (*Quercus velutina*)
	Cherrybark Oak (*Quercus facota*)
	Northern Red Oak (*Quercus rubra*)
	Nuttal Oak (*Quercus nutalli*)
	Shumard Oak (*Quercus shumardii*)
Other Red Oaks	Laurel Oak (*Quercus laurifolia*)
	Pin Oak (*Quercus palustris*)
	Scarlet Oak (*Quercus coccinea*)
	Southern Red Oak (*Quercus falcata*)
Select White Oaks	Chestnut Oak (*Quercus prinus*)
	Chinquapin Oak (*Quercus muehlenbergii*)
	Durand Oak (*Quercus*)
	Swamp Chestnut (*Quercus michauxii*)
	Swamp White Oak (*Quercus bicolor*)
	White Oak (*Quercus alba*)
Other White Oaks	Delta Post Oak (*Quercus stellata margaretta*)
	Overcup Oak (*Quercus lyrata*)
	Post Oak (*Quercus stellata*)
	Water Oak (*Quercus nigra*)
	Willow Oak (*Quercus phellos*)

Major Species in the Region

Southern Yellow Pine *Pinus sp.* The most plentiful species found in the region collectively are known as southern yellow pine. These species are used extensively in the production of paper and dimension construction materials. Because of increased global demand in paper markets and restrictions on softwood timber harvesting in the Pacific Northwest, pressure has increased on the South's pine resources. This impact on virtually all of the pulpwood, sawtimber and pole timber softwood resources is reflected on the resources data in the region.

American beech *Fagus grandifolia* American beech grows in mixed hardwood bottomlands. It is a relatively low cost utility wood used primarily in flooring, furniture, handles and pallets.

Ash *Fraxinus sp.* Because the smaller diameter classes are increasing, commercial availability of the species should continue for the foreseeable future. The wood from this species is used for cabinets, furniture, boxes, bats and handles (Harding and Smith 1995).

Baldcypress *Taxodium distichum v. distichum* Decay resistance is a characteristic for which cypress is renowned, but the sapwood of this species lacks the decay resistance of the heartwood. To develop sufficient heartwood to be commercially important would require the trees to be allowed to grow to become very old. There is, however, a growing market for cypress chips, mulch and economically priced solid wood furniture made from this species.

Boxelder *Acer negundo* This bottomland species is usually found in conjunction with other species and is used as other low cost utility woods as firewood, in the production of turnings and some carvings.

Cottonwood *Populus deltoides* This fast growing poplar is used in a number of applications including excelsior, boxes, pallets, caskets and upholstered furniture frames. Because of the white color of the wood and the length of the wood fiber, cottonwood is used in the production of paper. This species is the subject of significant research into short rotation fiber farming of fast growing timber species for use in the pulp and paper industry. Such research may offer an opportunity for reversion of

unused or underused agricultural lands as global demand for pulp and paper increases.

Hickories and Pecans *Carya sp.* This species includes the true hickories and pecans. Both groups have been depleted since 1984 and may not remain commercially significant. These species are used to produce handles, dowels, furniture, cabinets and sporting goods (Harding and Smith 1995). It is likely these woods are harvested in conjunction with other species and represent incidental commercial opportunity.

Elm *Ulmus sp.* American elm (Ulmus americana) and winged elm (Ulmus alata), which represent the soft elms, are used extensively to produce crates, furniture, boxes and pallets.

Sweetgum *Liquidambar sp.* Sweetgum is a utility wood abundant throughout the study region. Recently this species has been in demand for millwork, furniture frames, chips, marsh matting, crossties and pallets. This fast growing, ubiquitous hardwood probably will continue to be in ample supply in the region for the foreseeable future.

Red oaks *Quercus sp.* Red oaks comprise a number of species found on a variety of sites. Upland sites produce cherrybark, shumard and northern red oak. Bottomland sites will produce southern red oak or swamp red oak, water oak, obtusa oak, willow oak and others. Cherrybark and shumard are the most valuable of these species, but virtually all red oaks have ready markets and consistent demand.

Depending on grade, color and mineral staining, there is a wide price range as well as range of application for the wood of this species. Red oak wood is used in many applications from furniture and cabinetry to marsh matting and oriented strand board. The wood is often kiln dried and processed into dimension stock to be used for further value-added manufacturing and is available in lumber and veneer forms (Harding and Smith 1995).

Sugarberry *Celtis Laevagata* Commonly called hackberry, this wood is used in crates, pallets, furniture frames and inexpensive solid wood furniture and is available in lumber and veneer forms (Harding and Smith 1995).

Sycamore *Platanus occidentalis* Sycamore is available in both lumber and veneer (Harding and Smith 1995). Because of the scarcity of the resource, use in veneers may extend its commercially viable life.

Tupelo/blackgum *Nyssa sp.* These utility woods are of limited commercial value to the region because of the limited quantity, difficulty of access to bottomland and flooded sites where they grow and the relative low value of the wood. The wood is used in boxes, pallets, baskets and inexpensive furniture and cabinets (Harding and Smith 1995).

Water hickory *Carya aquatica* This species is a bottomland species frequently found on flooded sites. It is a low quality wood with limited commercial value, primarily because of the wood's characteristics and the difficulty in logging. The larger trees are being logged, but the removal rate appears to be low. In relation to other bottomland utility woods, significant inventory is available.

White oak *Quercus sp.* This valuable species grows in a variety of sites from upland areas to bottomlands. The species is valued for its ability to contain liquids and as a valuable cabinet and furniture wood (Harding and Smith 1995).

Willow *Salix sp.* This bottomland species grows profusely along the banks of streams and rivers as well as other low-lying areas in the region. Willow is a relatively low cost wood and is used much like other utility woods in crates, low cost furniture, excelsior and caskets.

Yellow-poplar *Liriodendron tulipifera* The wood from this species is moderately expensive and is used in such applications as millwork, furniture, cabinets and caskets (Harding and Smith 1995).

Forest Types

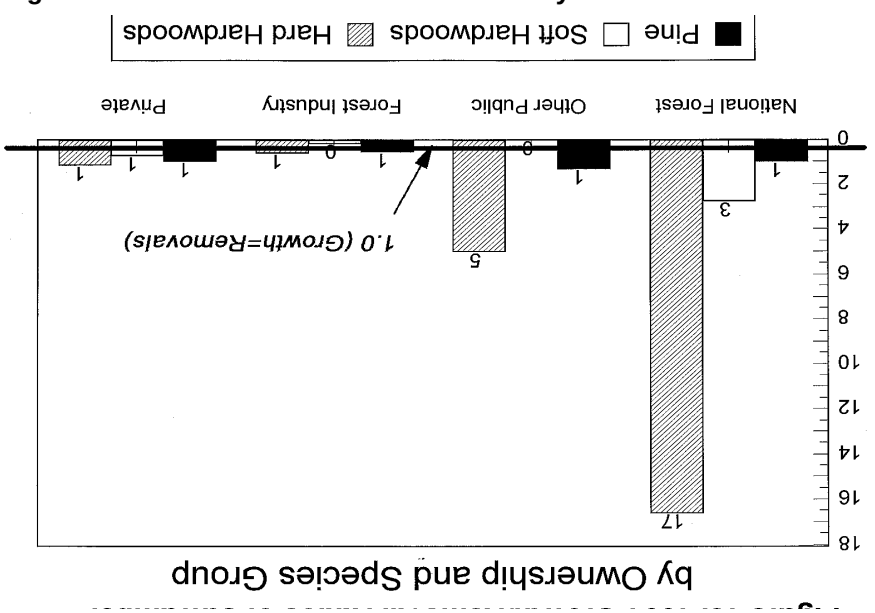
The 10-parish study region represents 15.6 percent of the parishes of Louisiana, but timber lands in the region account for about 3.6 million acres or nearly 26 percent of the total 13.9 million acres of forested land in Louisiana. The data presented are from a 1991 source, but the most recent available.

Predominant species found in the region include about 2.37 million acres of southern yellow pine and oak, 691,000 acres of upland hardwood species such as oak, hickory and sweetgum and about 535,000 acres of bottom-land species such as water oak, tupelo gum and cypress.

Sabine Parish is reported to have the greatest volume of softwood, and Natchitoches Parish the greatest volumes of hardwood species. When combined, Natchitoches Parish has more timber land than any other parish in the study region.

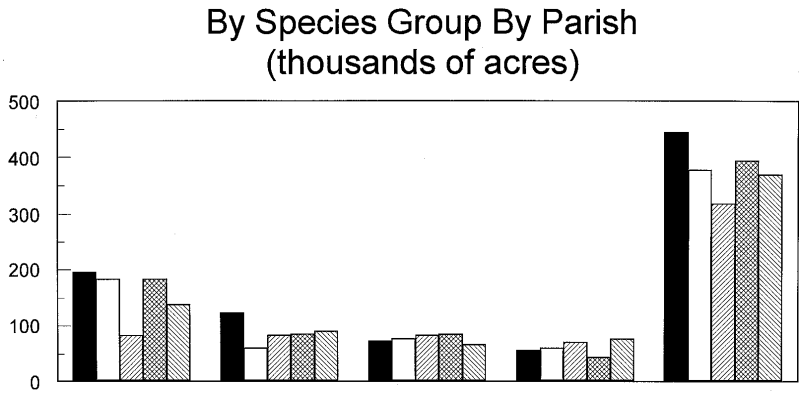
Figure 2 shows forestland by parish in the region. **Figures 3 and 4** break forestland down further by species group, by parish.

Figure 2. 1991 Northwest Forestland Area by Parish



Source: USDA, Forest Service, Forest Inventory Assessment

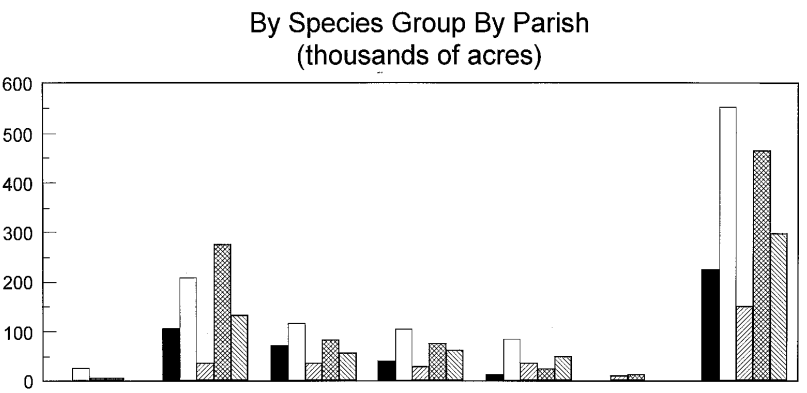
Figure 3. 1991 Northwest Forestland Area



	loblolly/shortleaf	oak-pine	oak-hickory	oak-gum-cypress	total
Bienville	195	123	72	56	446
Bossier	183	59	75	59	377
Caddo	82	82	82	71	317
Claiborne	182	84	85	42	394
DeSoto	138	88	66	77	370

Source: USDA, Forest Service, Forest Inventory Assessment

Figure 4. 1991 Northwest Forestland Area



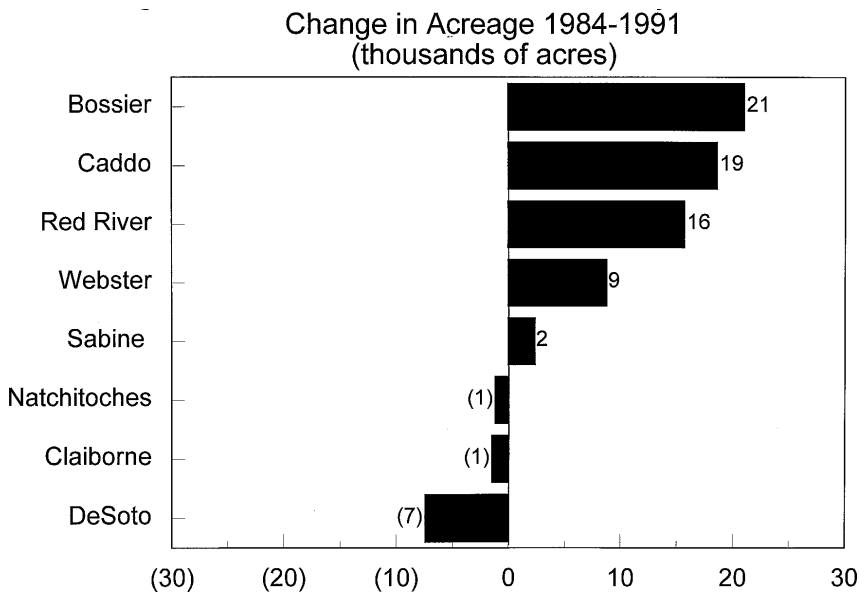
	longleaf/slash	loblolly/shortleaf	oak-pine	oak-hickory	oak-gum-cypress	elm-ash-cottonwood	total
Lincoln	0	104	69	41	12	0	226
Natchitoches	27	209	116	104	85	11	553
Red River	6	35	35	29	35	12	151
Sabine	6	276	82	75	25	0	465
Webster	0	133	56	60	50	0	299

Source: USDA, Forest Service, Forest Inventory Assessment

Changes in Forestland Areas

Figure 5 indicates that most parishes in the region have seen increases in their respective volumes of forestland in the period between 1984 and 1991. In Bossier, Caddo and Red River, the increases have been significant. Only Claiborne, DeSoto and Natchitoches experienced a decrease in the number of acres of forestland over this period. The data do not indicate the reasons for the decrease and may include lands that have been reclassified for any number of reasons and land use shifts.

Figure 5. 1991 Northwest Forestland Area by Parish



Source: USDA, Forest Service, Forest Inventory Assessment

Overall the region has seen an increase of more than 56,000 acres of forestland. Data were not available for Bienville and Lincoln parishes. The increase in forestland area does not mean that these lands now contain commercial volumes of timber.

Land Ownership Patterns

Table 3 shows the ownership structure of forestlands in the study region. In Natchitoches Parish, federal land ownership in the form of national forests represents a significant portion of the total forestland in the parish. Region-wide national forests and other forms of public sector ownership in total represent a much smaller portion of the total forestland ownership than any other group. Private land holdings are nearly 2.5 times that of forest industry holdings, which in turn is more than three times the size of total public sector holdings. This ownership structure may be significant in terms of the availability of raw materials as well as the rate at which timber resources, once harvested, are replanted.

Table 3. 1991 Northwest Forestland Area

By Ownership By Parish
(thousands of acres)

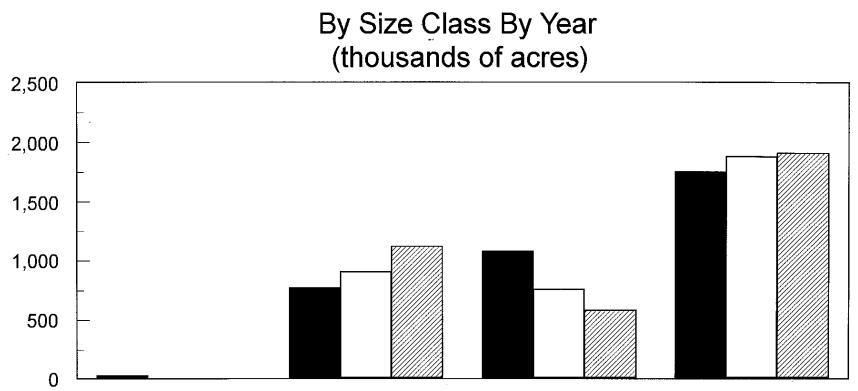
	National Forest	Other Public	Forest Industry	Private
Bienville	0	0	267	178
Bossier	0	38	86	264
Caddo	0	16	5	295
Claiborne	17	0	20	360
DeSoto	0	6	55	309
Lincoln	0	0	6	220
Natchitoches	114	17	139	284
Red River	0	0	35	116
Sabine	0	19	264	182
Webster	12	31	44	213
Total	143	126	921	2,422

Source: USDA, Forest Service, Forest Inventory Assessment

Timber Stand Size Class

Figure 6 shows that all size class volume except pole timber has increased over the 1974-1984-1991 time periods. This finding is important, given the conventional wisdom that holds that private landowners are less likely to replant once they have harvested the commercial timber on their lands. Because the amount of understocked lands had been significantly reduced at the time the data was recorded and all other size class volumes have increased except pole timber, however, the future of available timber resources in the region seems secure. Pole timber, a valuable class size, has been reduced by nearly half. Sawtimber, if allowed to continue to grow, however, could easily restore volumes removed or depleted.

Figure 6. 1991 Northwest Forestland Area



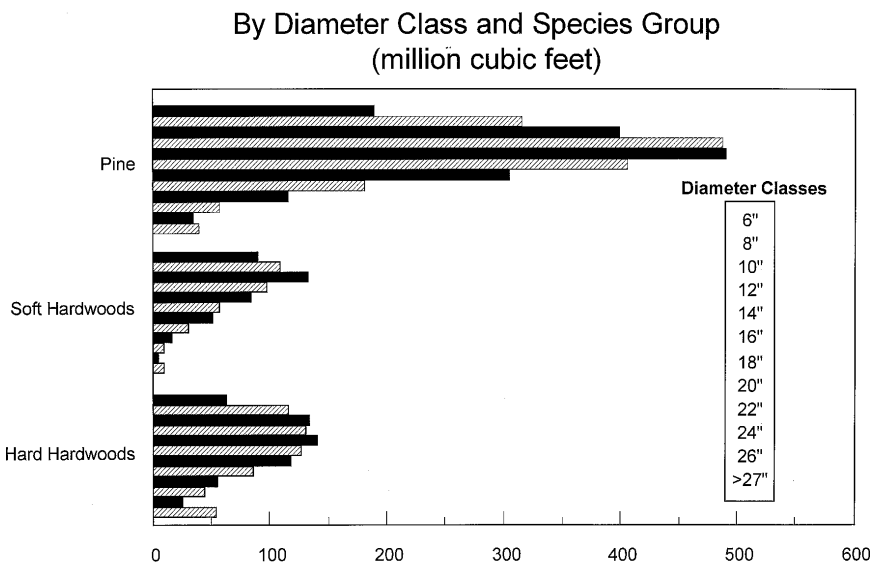
	understocked	seedling/sapling	poletimber	sawtimber
■ 1974	27	768	1,079	1,750
□ 1984	5	905	756	1,880
▨ 1991	0	1,115	579	1,918

Source: USDA, Forest Service, Forest Inventory Assessment

Growing Stock Volumes

Typical of timber resources in the South in general, the diameter growing stock in the region is largely 16 inches and less (**Figure 7**). Companies interviewed in the region which use the timber or process the timber resources in log form report a shift in processing technologies which take advantage of these smaller bole diameters. The distribution of size class structure holds for all types of timber in the region.

Figure 7. 1991 Growing Stock Volume

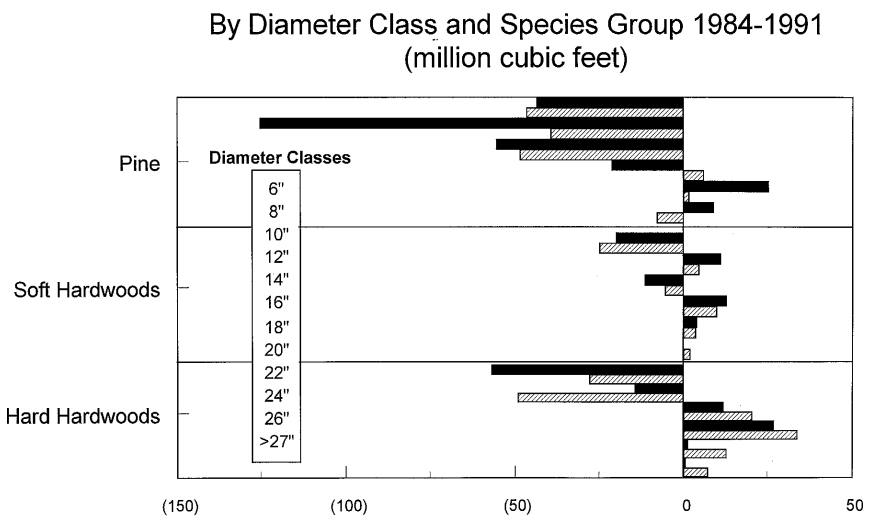


Source: USDA, Forest Service, Forest Inventory Assessment

Changes in Growing Stock Volumes

Significant depletion of growing stock volumes has occurred between 1984 and 1991 in most timber groups and species, especially in the smaller diameter sizes. This is very interesting since **Figure 8** indicates the volume of pine growing stock far exceeds other timber groups. Especially hard hit have been the smaller diameter pines and hard hardwoods. This trend may reflect increased use of smaller trees in the production of pulp and chips. The present use of small diameter trees may have significant impact on the availability of future supplies of sawtimber as well as the quality of those future supplies.

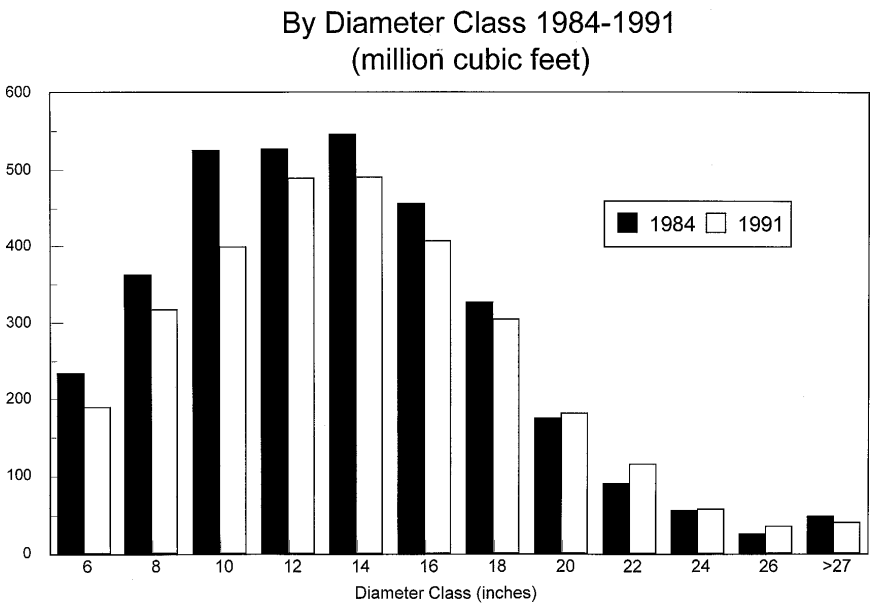
Figure 8. Change in Growing Stock Volume



Source: USDA, Forest Service, Forest Inventory Assessment

Figure 9 provides further evidence of the depletion of small diameter softwood resources from 1984 through 1991. Virtually all size classification volumes have been reduced. The current rate of harvesting is reported by most companies interviewed to continue for the foreseeable future. These managers all felt there would be ample supplies of materials, yet no concrete evidence of this was offered by anyone interviewed. Interestingly, one large producer of veneered panel products in the region has recently closed down one operation, citing competition for scarce resources as the reason for closing the plant. The same company, however, has announced the closed plant will be used in another secondary processing application.

Figure 9. Change in PINE Growing Stock Volume

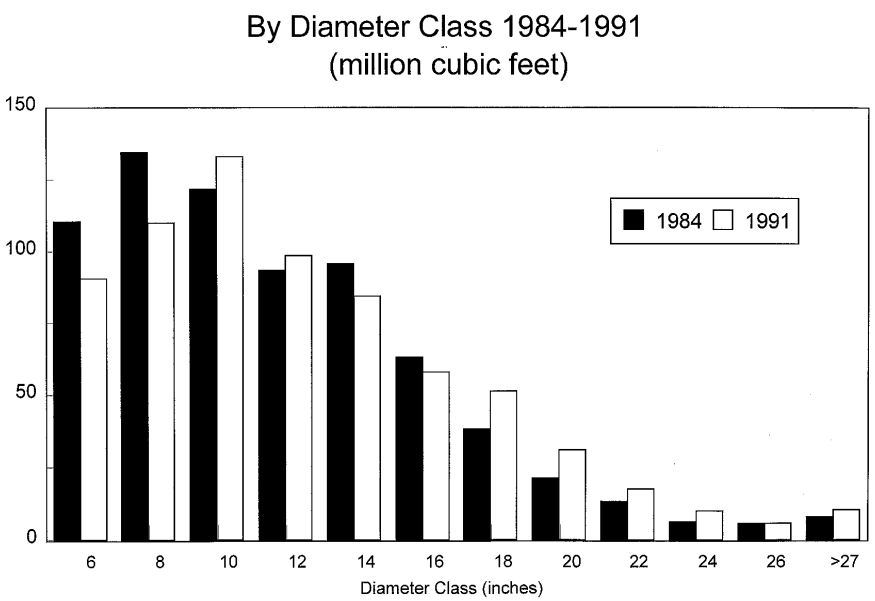


Source: USDA, Forest Service, Forest Inventory Assessment

■ Hardwood Growing Stock Volumes ■

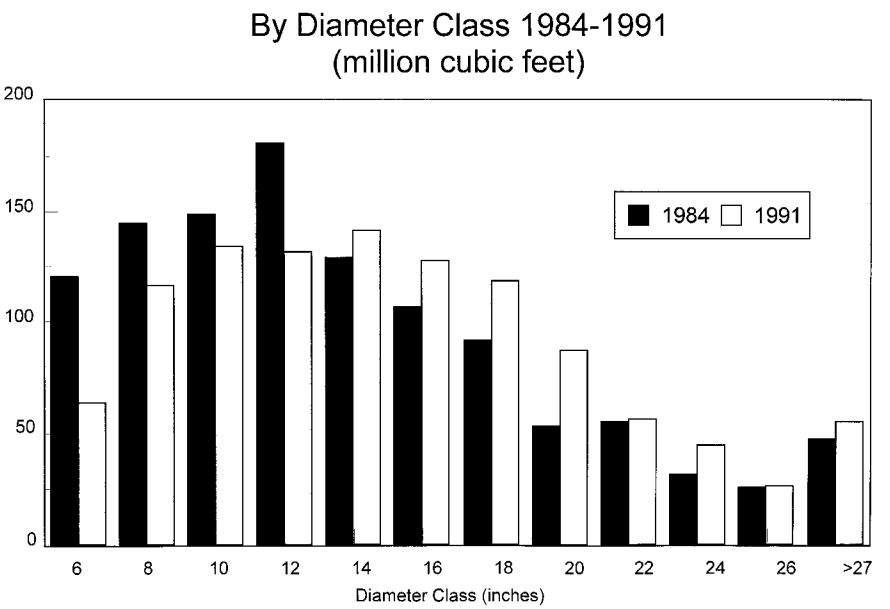
Figures 10 and 11 indicate the same condition concerning the distribution of hardwood growing stock class sizes which is prevalent amongst softwood species. In both cases, small diameter trees are in greater quantity and these volumes have increased since 1984. These data are important again because they reflect the relative quality and potential value of the resource and predetermine the types of applications for which the resource is best suited.

Figure 10. Change in SOFT HARDWOODS Growing Stock Volume



Source: USDA, Forest Service, Forest Inventory Assessment

Figure 11. Change in HARD HARDWOODS Growing Stock Volume



Source: USDA, Forest Service, Forest Inventory Assessment

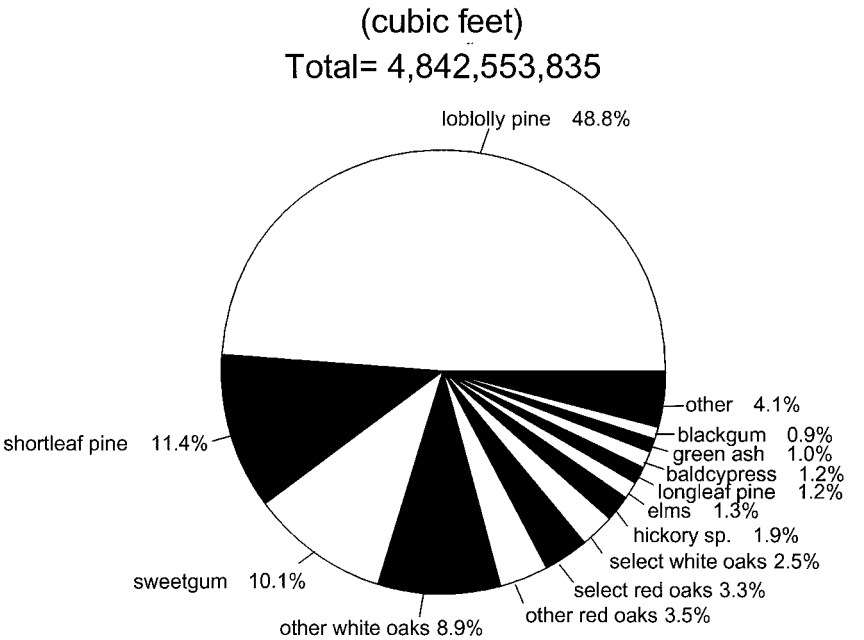
These small diameter trees indicate timber will likely be of reduced quality and therefore bring less in the market than those of larger diameter. In addition, these resources may not be appropriate for high value-added applications. Depending on the needs and wants of the owners of these resources, future supplies of hardwood resources may be affected if the existing hardwood timber stands of immature trees are sold for chips and paper production.

Growing Stock Volume by Species - 1991

Softwoods, predominantly loblolly and shortleaf pine, make up the largest group of timber in the region. Sweetgum is the most abundant hardwood, with classifications of white and red oak dominating other species. These timber groups are all of very high commercial value and comprise hundreds of millions of cubic feet of materials with which to create products and hence jobs and economic opportunity.

Figure 12 shows the distribution of growing stock by species in the region. This distribution is similar to data for the entire state of Louisiana. In both cases, softwood species dominate the landscape in volume and acreage.

Figure 12. 1991 Growing Stock Volume by Species

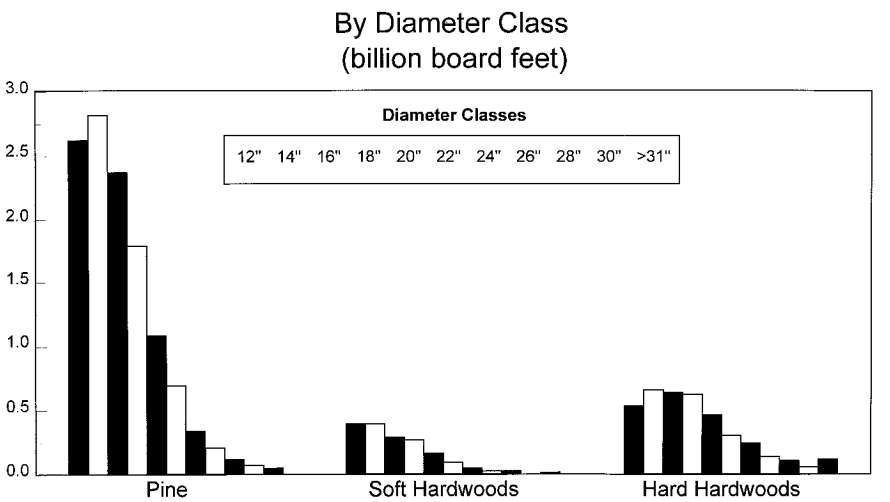


Source: USDA, Forest Service, Forest Inventory Assessment

Sawtimber Volumes

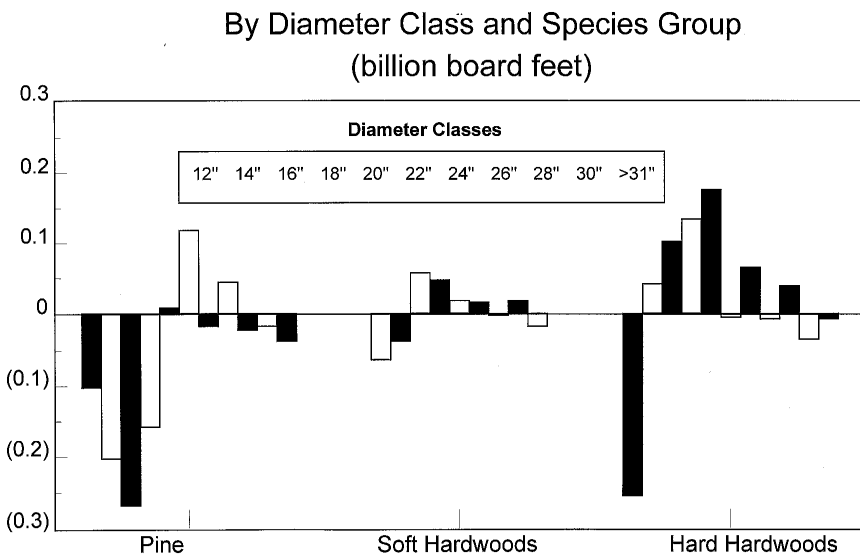
Figure 13 shows 1991 volume by diameter class for pine, soft hardwoods and hard hardwoods. Figure 13 indicates that, while there have been reductions in the smaller diameter sawtimber size classes, larger diameter sawlogs, both softwood and hardwood, have increased over the 1984-1991 time period. This also would tend to lead to the expectation that there are notable quantities of high quality timber available for use in the region. This expectation is validated by Figure 14, which shows that sawtimber quality is dominated by grade 3 and higher.

Figure 13. 1991 Sawtimber Volume



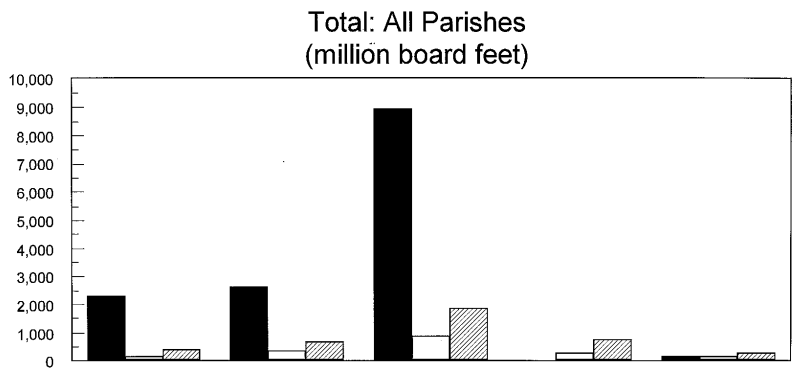
Source: USDA, Forest Service, Forest Inventory Assessment

Figure 14. Change in Sawtimber Volume 1984-1991



Source: USDA, Forest Service, Forest Inventory Assessment

Figure 15. 1991 Sawtimber Volume by Grade



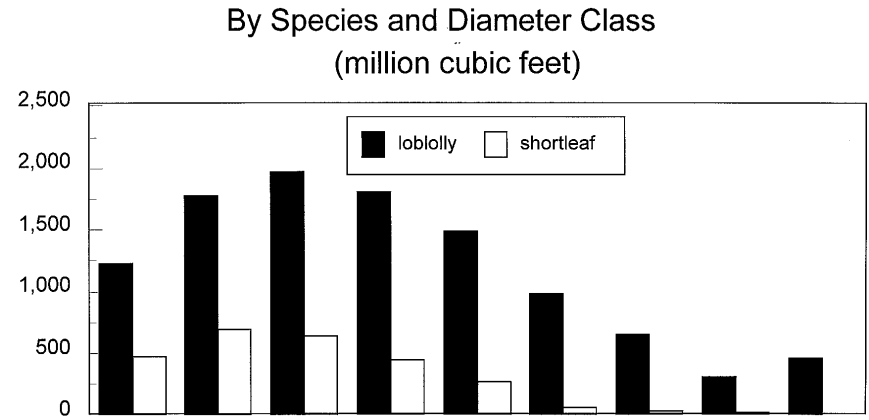
	Tr. Grade 1	Tr. Grade 2	Tr. Grade 3	Tr. Grade 4	Tr. Grade 5
■ Pine	2,286	2,630	8,907	0	144
□ Soft Hardwoods	160	361	854	246	158
▨ Hard Hardwoods	379	684	1,847	750	282
Total	2,825	3,675	11,608	996	584

Source: USDA, Forest Service, Forest Inventory Assessment

The trend in high grade sawtimber is reflected throughout for each parish in the study region. However, the reader should consider the importance of bole diameter as a factor in the grade distribution. Previous graphs demonstrate the preponderance of small to medium-sized trees.

Figures 16 and 17 again demonstrate the volume of sawtimber by diameter size in the study region for softwood and hard wood species, respectively. The data for both softwood and hardwood species indicate the shape of the distribution curve is skewed to the left or smaller diameter sizes.

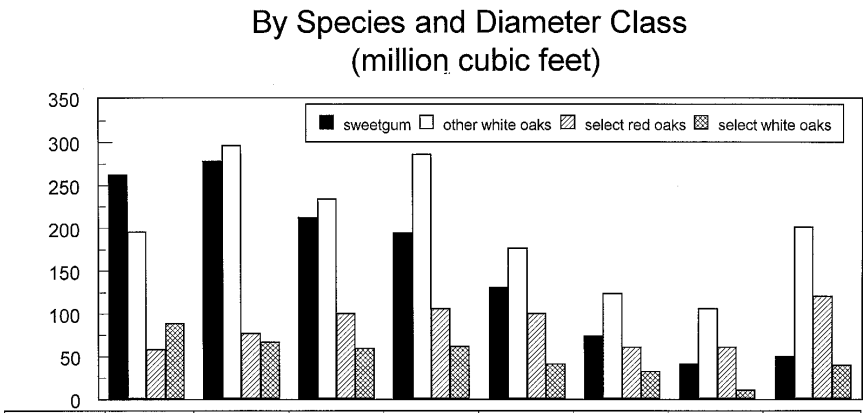
Figure 16. 1991 Softwood Sawtimber Volume



	10"	12"	14"	16"	18"	20"	22"	24"	>26"
■ loblolly	1,227	1,786	1,975	1,809	1,487	981	652	314	457
□ shortleaf	470	694	645	445	262	61	38	24	10
Total	1,697	2,480	2,620	2,255	1,749	1,041	690	338	466

Source: USDA, Forest Service, Forest Inventory Assessment

Figure 17. 1991 Hardwood Sawtimber Volume



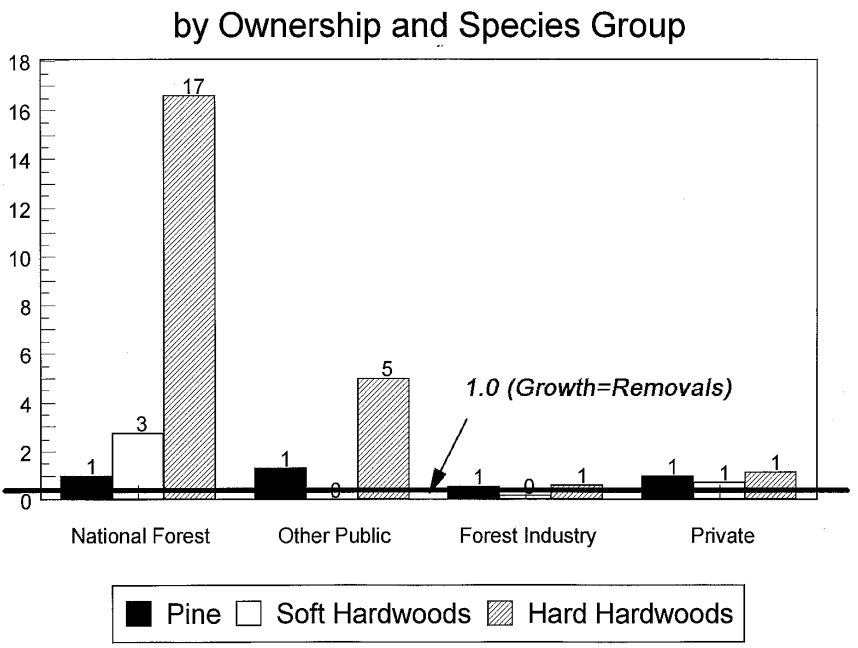
	12"	14"	16"	18"	20"	22"	24"	>26"
sweetgum	262	278	211	194	131	74	42	50
other white oaks	196	295	234	285	177	123	107	201
select red oaks	57	76	101	106	100	60	61	121
select white oaks	89	67	59	62	41	33	11	41
Total	604	716	605	646	449	291	221	413

Source: USDA, Forest Service, Forest Inventory Assessment

Growth/Removal Ratios by Ownership and Species Group

Figure 18 indicates that, in 1991, only hard hardwood on other public lands was experiencing more rapid rates of removal than replacement. In the same ownership group, soft hardwood species were reported at a breakeven rate of growth/removal. The ratio of growth over removal for hard hardwoods on national forests was significant. All other species groups on all other land ownership categories show positive growth/removal ratios, indicating that, at the time the data was collected, harvesting activities in the region were not depleting the resource faster than the resource was being replaced.

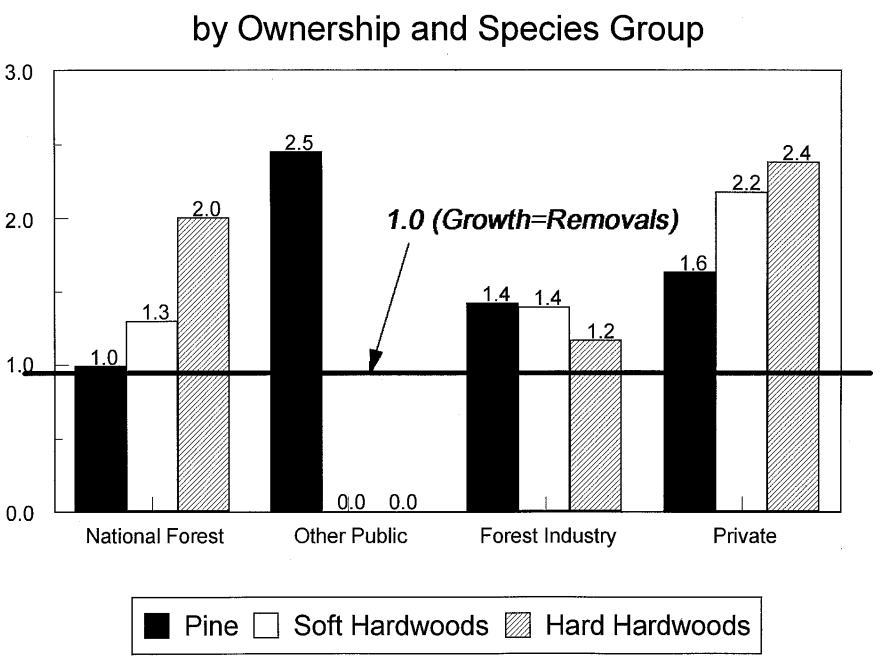
Figure 18. 1991 Growth/Removal Ratios of Sawtimber



Source: USDA, Forest Service, Forest Inventory Assessment

As good as this may seem, however, when the study region's 1984 growth/removal ratio is compared to 1991 data, one can readily see that harvesting activities have increased dramatically in most ownership classes during the seven-year period (Figure 19). Data on growth/removal ratios since 1991 are not available, but the reduction in the growth/removal ratios for the region indicate that severe harvesting pressure was being placed on the resource. As soon as more recent data are available, policymakers may wish to have this analysis conducted again to make decisions and policy recommendations concerning regeneration incentives and harvesting activities.

Figure 19. 1984 Growth/Removal Ratios of Sawtimber



Source: USDA, Forest Service, Forest Inventory Assessment

Resources Assessment Summary

The data indicate a wide variety of raw materials in the region and significant commercial quantities. The distribution of tree sizes is heavily skewed to smaller diameter trees, indicating that timber processing industries in the region must implement technologies that can use small diameter trees. Many company representatives participating in this study indicated that there is a trend in the industry toward that end.

Private non-forest industry landowners make up most of the land ownership structure in the region. This is a crucial factor, because it could have significant impact on the availability of raw materials, how and to whom these raw materials are sold, and the amount and distribution of regeneration of timber resources on these lands.

The data clearly indicate the study region contains significant quantities of commercial softwood and hardwood timber of such quantity and quality as to represent an important economic development opportunity and ample supplies for further development of the secondary forest products industry.

Companies in the region produce a wide variety of products from the resource base and distribute these products around the world. In addition to using raw materials from within the region, these companies also import raw materials from adjacent states and parishes to manufacture products for industrial, commercial, and end user markets.

References

Faulkner, Gary, Jim Gober, Jim Hyland, Ken Muehlenfeld, Steve Nix, Pat Waldrop and DeWayne Weldon, 1995. Forests of the South. Southern Forest Based Economic Development Council. June.

Harding, O. Victor and W. Ramsay Smith, 1995. Woods of Louisiana. Louisiana Cooperative Extension Service, Louisiana Forest Products Laboratory, Louisiana State University Agricultural Center, Baton Rouge, La.

Jones, Stephen B. and Mary Carol Koester.1989. Evaluation of State and Interstate Programs to Encourage Forest Resource Based Economic Development, College of Forestry, Pennsylvania State University. University Park, Pa.

LeJuene, Cyril, 1995. Associate State Forester. Personal Communication. Louisiana Department of Agriculture and Forestry.

Quarterly Report of Forest Products, 1985 - 1994. Louisiana Department of Agriculture and Forestry.

Rosson, James F. Jr. 1995. Forest Resources of Louisiana, 1991. USDA Forest Service. Resource Bulletin SO-192. Southern Forest Experiment Station. New Orleans, La.

Skog, Kenneth. 1991. Supporting Rural Wood Industry Through Timber Utilization Research. Research Paper FPL-RP-506. U.S. Department of Agriculture, Forest Service, Forest Products Laboratory, Madison, Wisc.

Syme, John H. and Charles R. Duke. 1991. Forest Products Research Initiative for Abbeville and McCormick Counties in South Carolina. Final Report to the Savannah Valley Authority. Clemson University. December.

U.S. Census Bureau, U.S. Dept. of Commerce, 1995. 1992 Census of Manufacturers. MA24T - Lumber Production and Mill Stock. August.

USDA. Forest Service. 1991. Resource Bulletin SO-165. Washington, DC.

USDA. Forest Service. 1991. Forest Inventory Analysis (FIA). Washington, DC.

USDA. Forest Service. 1984. Forest Inventory Analysis (FIA). Washington, DC.

Vissage, John S., Patrick E. Miller and Andrew J. Hartsell. 1992. Forest Statistics for Louisiana Parishes-1991. USDA Forest Service. Resource Bulletin SO-168. Southern Forest Experiment Station. New Orleans, La.

Vlosky, Richard, N. Paul Chance, Pamela Monroe, David Hughes and Lydia Blalock. 1998. “An Integrated Market-Based Model for Value-Added Solid Wood Products Sector Economic Development.” Forest Products Journal. 48(11/12): 29-35.

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