The Status of Precommercial-Sized Softwoods in Louisiana, 1991

James F. Rosson, Jr.

SUMMARY

The status of precommercial-sized softwoods in Louisiana was analyzed on 2,897,100 acres of sapling-seedling-sized timberland. There were 1,258,100 acres of upland seedling-sized stands and 1,639,000 acres of upland sapling-sized stands. Forty-six percent of seedling-sized stands and 51 percent of sapling-sized stands originated from plantations. Most of the seedling-sized stands (58 percent) were on nonindustrial private forest (NIPF) lands, along with 50 percent of sapling-sized stands.

There were 952,500 acres of seedling-sized stands and 765,800 acres of sapling-sized stands that were <60 percent stocked with softwoods. Seedling- and sapling-sized stands with initially low softwood stocking levels have a higher risk of becoming understocked poletimber and sawtimber stands, especially where conditions (e.g., drought, competition, pests, disease, and/or poor seedling quality) impact mortality rates during the first 15 years of stand development.

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INTRODUCTION

The results of the 1991 Louisiana forest survey showed a removal-to-growth ratio of 1.26 to 1 for softwoods[1], raising concerns about future sustainable supplies of the softwood resource for the State. At present, the growing-stock softwood inventory is adequate to meet short-term goals, but long-term decisions and unforeseen drains on the resource from new users require an indepth look at the future softwood resource, primarily the precommercial-sized softwoods in sapling-seedling-sized stands.

Currently, Louisiana has 13,783,000 acres of timberland. Of these, 3,403,400 acres (2,897,100 acres on upland sites; 506,300 acres on bottomland sites) are in sapling-seedling-sized stands. With one-fourth of Louisiana timberland in this size class, long-term managers and policymakers concerned with the softwood resource need to know the status of softwoods on these timberlands. Because of the amount of Louisiana timberlands in this size class and the increasing intensity of environmental regulations, it is even more important that lands targeted for timber production be maximized. Therefore, harvesting pressure would be taken off timberland set aside for such things as esthetics, wildlife, recreation, and watershed protection.

Specifically, this study focused on the stocking levels and tree densities of softwoods in upland sapling- and seedling-sized stands by ownership, stand origin, forest type, and diameter classes. Resource tables for seedling-sized stands are provided in appendix A, tables A1 through A9; resource tables for sapling-sized stands are provided in appendix B, tables B1 through B17.

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[1]Rosson, James F., Jr. [In preparation]. The forest resources of Louisiana, 1991. To be published as a resource bulletin by the U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station, New Orleans, LA.

METHODS

The USDA Forest Service, Southern Forest Experiment Station, headquartered in New Orleans, Louisiana, administers the Louisiana forest survey; the Forest Inventory and Analysis (FIA) unit, located in Starkville, Mississippi, is responsible for conducting the survey.

Data from the 1991 Louisiana forest survey were used to analyze the precommercial-sized softwood resource in upland sapling-seedling-sized stands. Tree measurements were made on a total of 2,413 sample plots. Of the 510 sapling-seedling-sized plots on upland sites, 290 were sapling sized and 220 were seedling sized.

The sample design was a two-phase method: dot counts for estimating timberland area and tree measurements on sample plots for determining stand and tree attributes. Sample plots were located on a 3-mile square grid with a 10-point satellite system covering approximately 1 acre at each plot location. Trees ≥ 5.0 inches in diameter at breast height (d.b.h.) were measured with a 37.5-basal area factor prism. Saplings were measured on a 7.1-foot radius plot at satellite points 1, 2, and 3. For stocking assessment only, saplings were tallied on points 4 through 10 if less than two live trees ≥ 5.0 inches in d.b.h. were sampled at the respective point; seedlings were tallied on points 1 through 10 if no live trees ≥ 1.0 inch in d.b.h. occurred at the respective sample point. This design allowed the determination of stocking levels for a particular strata without oversampling small trees.

The sampling procedure was based on the premise of a theoretical maximum stocking level. In this scenario, each point in the satellite sample cannot be over 16 percent stocked with trees (maximum plot stocking thus equals 160 percent). Stocking is expressed as the ratio (in percent) of sampled stand density (based on

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Table I. – *Current stocking standard for the South by tree size*

Diameter class	Stocking standard
Inches	*Trees per acre*
<1	600
2	560
4	460
6	340
8	240
10	155
12	115
14	90
16	72
18	60
20	51
22	42
24	36
26	31
28	27
≥30	24

the aggregation of individual tree stocking) to the specified density given in table I. Thus, each tree tallied contributed a relative stocking percentage to the total plot stocking level based on its size and density relationship to the stocking standard in table I. Because of the theoretical maximum stocking level of 16 percent at each satellite point, only the four most dominant saplings (or seedlings) were tallied at each point to obtain maximum stocking when plot circumstances called for sampling saplings on points 4 through 10 or seedlings on points 1 through 10. Therefore, no absolute seedling densities were available from the survey sample. Absolute sapling densities were available because all trees ≥1.0 but <5.0 inches in d.b.h. were tallied on points 1, 2, and 3.

It is important to be aware of the unavoidable subjectiveness in assigning stocking level designations such as understocked and overstocked. Management objectives vary tremendously. Additionally, initial and interim stocking levels will differ accordingly as stands develop. Some authorities consider 150 trees per acre (t.p.a.) adequate softwood sapling stocking, while others might consider 600 t.p.a. inadequate. Because stocking levels ranged from 0 to 160 percent, an arbitrary decision was made on stocking level classifications considered understocked and overstocked.

The stocking standard in table I (developed in the 1950's by a consortium of forestry professionals from industry and government) was based on basic references for normal yield tables of average stocking levels found in natural uncut stands. The survey standard was derived by reducing these normal stocking averages to averages found on recently cut areas judged to be well managed. Thus, the stocking standard used in the forest survey represents about 50 to 70 percent of normal stocking for poletimber- and sawtimber-sized stands. The sapling and seedling tree standard was reduced even farther, to less than 50 percent below normal stocking. Originally set at 1,000 t.p.a., the

normal stocking level was revised to 600 t.p.a. in the 1960's to reflect standards based on new studies of southern forests. Reasons for adopting standards so much lower than normal for small trees reflect the well-recognized tendency for young forest stands of varying stocking levels to reach or approach normal stocking as they grow older.

The arbitrary levels of stocking used in this study were based on this revised stocking standard. Stands <60 percent stocked with softwoods were considered understocked, stands >60 but <120 percent stocked with softwoods were considered fully stocked, and stands >120 percent stocked with softwoods were considered overstocked. By definition, there were approximately 360 softwood t.p.a. or less in an understocked seedling- or sapling-sized stand (0.60 × 600 t.p.a.). References to Louisiana's softwood timberlands being understocked or overstocked implies comparison to this stocking standard of timber production. Many owners will have different objectives, both economically and esthetically; therefore, this paper is only a vehicle to demonstrate realized (or unrealized) softwood production based on the stocking standard described.

These classes of timberlands that are understocked or overstocked with softwoods would be in general agreement with the consensus established for optimum production and quality of softwoods (Hughes and Kellison 1983). However, individual nonindustrial private forest (NIPF) owners may have entirely different objectives. Low market prices might cause them not to reinvest in stand establishment after harvest. The highest return might result from their doing nothing. This seems evident based on the large amounts of NIPF timberlands that are regenerating naturally.

The information concerning sapling-sized timberland is presented in both a proportional (for stocking level percent) and absolute count (for t.p.a.) format. The acreage of softwood timberland in the various stocking level percentage categories cannot be directly compared to acreage of softwood timberland in the various t.p.a. categories because the category thresholds were not exactly comparable and because the sampling techniques for the two formats were slightly different. However, the acreages for understocked and overstocked stands were similar regardless of whether the stocking level or the t.p.a. method was used.

Saplings were defined as trees ≥1.0 inch but <5.0 inches in d.b.h. Hardwood seedlings were ≥1.0 foot in height but <1.0 inch in d.b.h.; softwood seedlings were >6.0 inches in height but <1.0 inch in d.b.h. Longleaf pine seedlings were ≥0.5 inch in diameter at the groundline but <1.0 inch in d.b.h.

The Southern Forest Experiment Station FIA unit normally defines stand size in three categories: sawtimber stands, poletimber stands, and sapling-seedling-sized stands. This study focused only on sapling-seedling-sized stands, which were stands with

Table II. – *Stocking proportion of trees by diameter class and size for sapling- and seedling-sized stands, Louisiana, 1991*

Stand size	n*	Tree diameter class (Inches)		
		<1.0	≥1.0 but <5.0	≥5.0
		------------------- *Percent* -------------------		
Seedling	220	76.2	11.4	12.4
Sapling	290	9.1	69.5	21.4

*Total number of sample plots.

>50 percent of total stocking in trees <5.0 inches in d.b.h. Furthermore, precommercial-sized softwood was defined as those trees <5.0 inches in d.b.h. in sapling-seedling-sized stands. By this definition, a minor portion of stocking in sapling-seedling-sized stands was in trees ≥5.0 inches in d.b.h. Likewise, softwood trees <5.0 inches in d.b.h. occurred in poletimber and sawtimber stands. For this study, it was assumed that these stands were being managed under guidelines that targeted poletimber and sawtimber in management; therefore, trees <5.0 inches in d.b.h. in these stands were not included.

The study was enhanced by the separation of sapling-seedling-sized stands into sapling-sized stands and seedling-sized stands. A sapling-sized stand was a sapling-seedling-sized stand in which >50 percent of stand stocking was in trees ≥1.0 but <5.0 inches in d.b.h. Seedling-sized stands were sapling-seedling-sized stands in which >50 percent of stand stocking was in trees <1.0 inch in d.b.h. Sample plots were not completely homogeneous with respect to tree size. Table II illustrates the overall average proportion of trees in three size-class parameters for each stand-size class. For example, 76.2 percent of total stocking in seedling-sized stands was in trees <1.0 inch in d.b.h. (seedlings), 11.4 percent was in trees ≥1.0 but <5.0 inches in d.b.h. (saplings), and 12.4 percent was in trees ≥5.0 inches in d.b.h. (poletimber and sawtimber).

RESULTS AND DISCUSSION

Seedling-sized Stands

There were 1,258,100 acres of upland seedling-sized stands in Louisiana at the time of the 1991 survey. Most of these stands (1,045,100 acres) were located in the Southwest and Northwest forest survey units (fig. 1). Fifty-eight percent of the seedling-sized stands were on NIPF lands, 36 percent were on forest industry lands, and the remaining 6 percent were on public lands. A large proportion of stands originated from natural regeneration: 796,600 acres versus 461,500 acres originating from plantations. Most of the naturally regenerated seedling-sized stands were on NIPF

lands (545,800 acres); the plantation acreage was almost evenly split, with 242,800 acres on forest industry lands and 187,700 acres on NIPF lands.

The predominant forest type found in seedling-sized stands was oak-hickory, with 559,000 acres (44 percent of seedling-sized stands). Twenty-six percent of the seedling-sized stands were in the loblolly-shortleaf pine forest type, and 24 percent were in the oak-pine type. The longleaf-slash pine type was a minor component of seedling-sized stands, with 64,000 acres.

A total of 952,500 acres had <60 percent softwood stocking. Seventy-six percent of seedling-sized stands were in this understocked condition. However, it is not possible to discern with absolute certainty the number of seedling-sized acres that were in an understocked condition. In the 1990 and 1991 growing season, 414,100 acres were clearcut in Louisiana.[2] It is not reasonable to assume that all of this acreage either had naturally regenerated fully or had been site prepared and planted by the time of field measurement.

Furthermore, there are regional differences in softwood stocking. In the Southwest unit, 67 percent of seedling stands had a softwood stocking level of <60 percent, while in the Northwest unit, 83 percent of seedling stands were in this condition. Thirty-five percent of the understocked stands were on forest industry lands, and 58 percent were on NIPF lands. On forest industry lands, 74 percent of the 453,100 acres of seedling-sized stands had <60 percent softwood stocking levels (fig. 2). The status of NIPF lands was slightly worse, with 553,600 acres (75 percent) understocked. A large portion of these understocked stands, 679,500 acres (59 percent of stands with a softwood stocking level <60 percent), was on lands that had regenerated naturally after harvesting (fig. 3). On naturally regenerated stands, most of the acreage was <30 percent stocked, while in plantations, most was 30 through 59 percent stocked.

Very few stands, only 18,300 acres, are overstocked with softwoods (>120 percent softwood stocking). A total of 287,400 acres is adequately stocked with softwoods (>60 but <120 percent softwood stocking). Overall, there are more seedling-sized stands satisfactorily stocked on NIPF lands than on forest industry lands, 167,200 and 111,800 acres, respectively. However, the proportion of satisfactorily stocked stands is considerably less for NIPF lands. There are 182,300 acres of seedling-sized plantations in the >60 but <120 percent stocking level category (40 percent of all seedling-sized stands on plantations).

[2]Rosson James F., Jr. [In preparation]. Current stand characteristics of Louisiana timberland harvested between 1975 and 1991. To be published as a research paper by the U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station, New Orleans, LA.
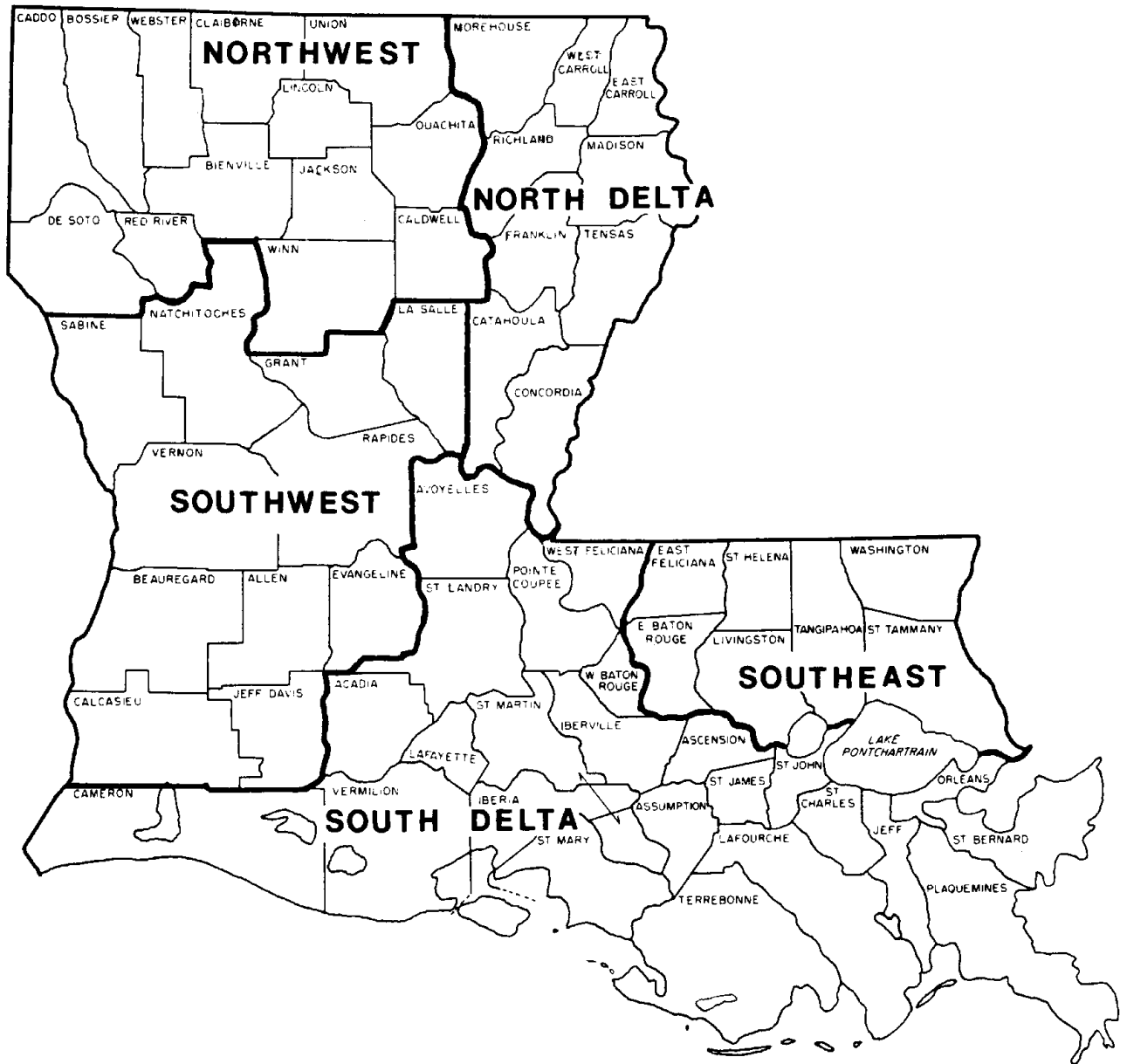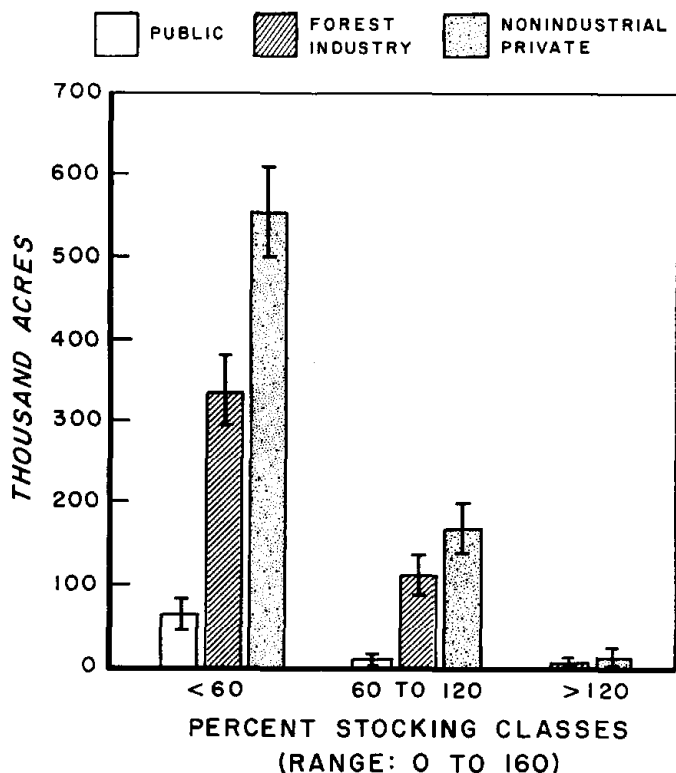
Figure 1.—*Forest survey units for Louisiana.*

Figure 2. —*Area of seedling-sized stands by softwood stocking class and ownership class, Louisiana, 1991. Error bars represent one standard error.*
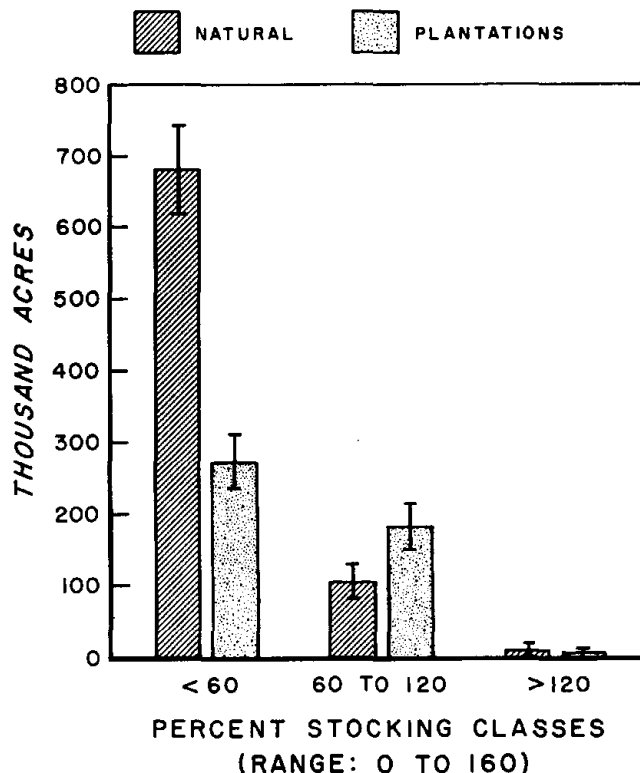

Figure 3. —*Area of seedling-sized stands by softwood stocking class and stand origin, Louisiana, 1991. Error bars represent one standard error.*

Another way to characterize seedling stands is by the relative proportion of the total stand stocking level that is in softwood trees. This method of characterization expresses the ratio between softwoods and hardwoods in the total stand density. The survey shows that there were 638,600 acres of seedling-sized stands that had <30 percent of their total stand stocking in softwoods and >70 percent in hardwoods. Most of these stands were in the Northwest survey unit: 302,700 acres of seedling-sized stands had ≥70 percent of the total stand in softwoods and <30 percent in hardwoods.

The major portion of stands with <30 percent of the total stand in softwoods (381,200 acres) was on NIPF lands.

Forest industries hold 216,100 acres of stands in a similar condition. Most of the stands (516,200 acres) were naturally regenerated. This acreage was 81 percent of all seedling-sized stands in the <30 percent proportion class. Only 234,700 acres in plantations (51 percent) had >50 percent of the total stand in softwoods. In natural stands, only 168,600 acres (25 percent) had >50 percent of the total stand in softwoods.

Sapling-Sized Stands

There were 1,639,000 acres of upland sapling-sized stands in Louisiana. As with seedling-sized stands,

most of these stands were in the Southwest and Northwest forest survey units. Forty-four percent of these stands were on forest industry lands, and 50 percent were on NIPF lands. A total of 853,800 acres originated from natural regeneration; 785,300 acres originated from plantations. Most of the plantations (500,100 acres) were on forest industry lands; only 239,100 acres were on NIPF lands.

The predominant forest types were loblolly-shortleaf pine, oak-pine, and oak-hickory, accounting for 50, 22, and 20 percent of all sapling-sized stands, respectively. These percentages are in sharp contrast to seedling-sized stands in which 44 percent was in the oak-hickory type. One explanation for this difference is that as stands become older, sample dominance shifts toward softwoods because of their faster height growth rate as compared to hardwoods. Much of this difference can be explained by the Southern Station FIA sample design. Based on the theoretical 16-percent maximum stocking at each satellite point, only the four most dominant saplings (or seedlings if there were no trees >1.0 inch in d.b.h.) were tallied when less than two 5-inch trees occurred on the prism sample. Because of their superior sprouting capability, hardwoods are sampled as the four dominant trees in very young stands. As these young stands develop, pine height surpasses hardwood height, and, subsequently, pines are

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picked up in the sample. Therefore, softwoods not dominant when stands were seedling-sized may have become dominant (and subsequently were sampled) as these stands shifted to sapling size. Additionally, where implemented, management activities, such as fire or mechanical methods, favor the status of softwoods over hardwoods.

More than 765,800 acres (47 percent) had <60 percent softwood stocking. Recall that just over three-fourths of the seedling-sized stands were in this condition. In many instances the acreage of understocked stands may decrease between seedling size and large sapling size because of two reasons. As tree size increases, a higher proportion of the stocking standard becomes filled. Additionally, many stands may not have fully regenerated or may not have been planted by the time the sample was taken.

A large portion of these understocked sapling-sized stands was on NIPF lands (65 percent) (fig. 4) and in naturally regenerated stands (79 percent) (fig. 5). A total of 174,600 acres (11 percent) was overstocked with softwoods (stocking ≥120 percent). Sixty-three percent of these stands were on forest industry lands, and 82 percent originated from plantations (fig. 5). A total of 698,500 acres (43 percent of all sapling-sized stands) was adequately stocked with softwoods.

There was a sizeable amount of acreage (402,800 acres) in which the proportion of the total stand stocking level in softwoods was <30 percent. Most of these stands were in the Northwest survey unit (231,000 acres). Seventy-eight percent of these stands were on NIPF lands, and 93 percent were naturally regenerated. In contrast, there were 591,800 acres on which >70 percent of total stand stocking was in softwoods. Most of these stands (322,500 acres) were in the Southwest survey unit. In addition, 337,500 acres (57 percent) were on forest industry lands, and 448,800 acres (76 percent) were on plantations.

Overall, Louisiana averaged 545 t.p.a. for softwoods and 513 t.p.a. for hardwoods, a total of 1,058 t.p.a. (of trees ≥1.0 but <5.0 inches in d.b.h.). Total softwood and hardwood site occupancy averaged approximately 1,000 t.p.a. for both natural and plantation stands. However, because of a shift in management options that favored softwoods, plantation stands had a higher proportion of total site occupancy in softwoods. Highest t.p.a. was on other public lands, but with only four sample plots, the inference was weak. Average softwood densities for the State were lowered by low density levels on NIPF lands. There, densities averaged 405 t.p.a. for softwoods. Forest industry and national forest lands had satisfactory densities with 650 and 899 t.p.a. for softwoods, respectively.
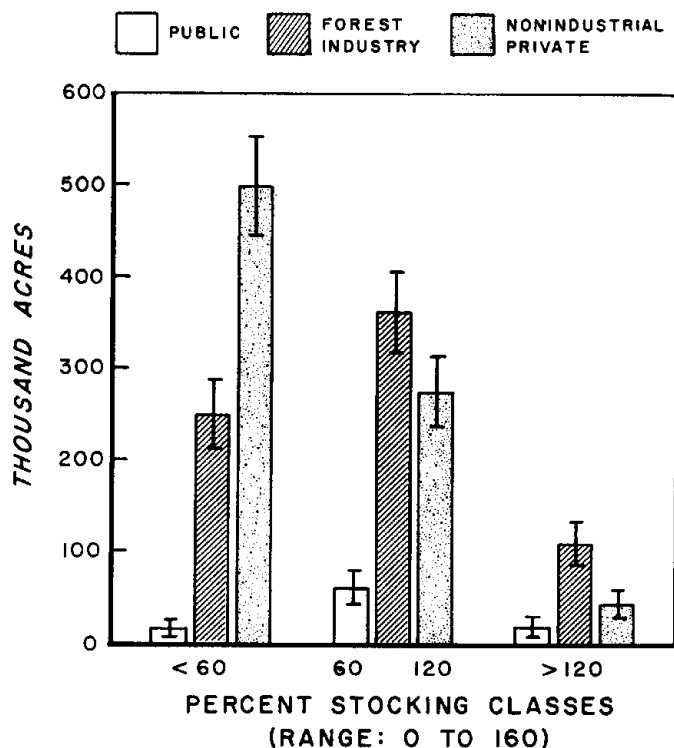

Figure 4.—*Area of sapling-sized stands by softwood stocking class and ownership class, Louisiana, 1991. Error bars represent one standard error.*
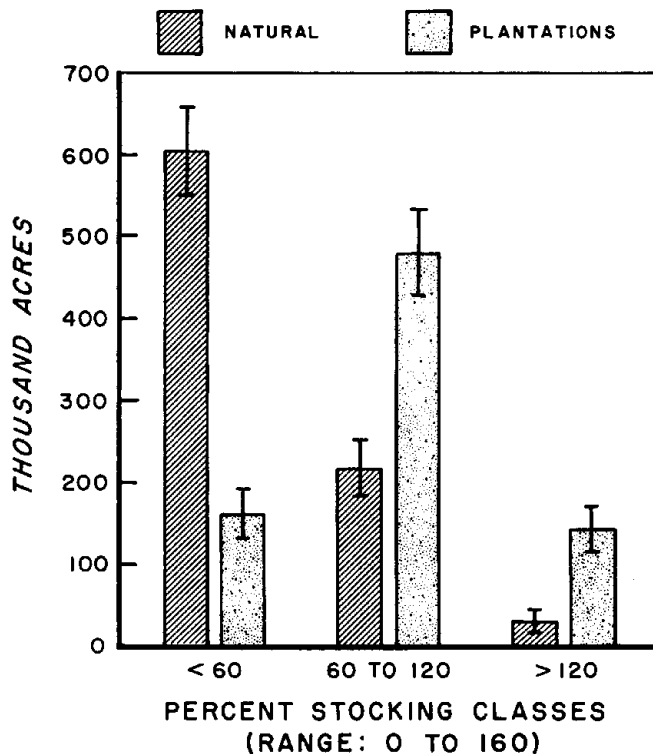
Figure 5.—*Area of sapling-sized stands by softwood stocking class and stand origin, Louisiana, 1991. Error bars represent one standard error.*

Overall, naturally regenerated stands had lower softwood densities than plantations. Statewide, they averaged 421 t.p.a. for softwoods. In contrast, plantations averaged 680 t.p.a. Forest industry and NIPF plantations were almost equal with 679 and 669 t.p.a. for softwoods, respectively. Naturally regenerated stands on NIPF lands averaged 296 t.p.a. for softwoods, whereas naturally regenerated stands on forest industry lands averaged 582 t.p.a., an indication that early management opportunities had been utilized on forest industry lands.

In Louisiana, there were 585,100 acres of sapling-sized stands with less than 200 t.p.a. for softwoods. Again, most of these stands were in the Southwest and Northwest forest survey units. Seventy percent of these stands were on NIPF lands, and 26 percent were on forest industry lands (fig. 6). Most of these understocked stands (76 percent) were naturally regenerated.

There were 281,900 acres in stands in which softwoods exceeded 1,000 t.p.a. Fifty-three percent of these stands were on forest industry lands, and 34 percent were on NIPF lands. Surprisingly, there were 139,400 acres of plantations that had less than 200 t.p.a. for softwoods. In contrast, 147,900 acres of plantations had softwood densities exceeding 1,000 t.p.a. At the least, there were 287,300 acres of sapling-sized plantations that needed followup regeneration or density control measures.

CONCLUSION

At the time of the 1991 Louisiana forest survey, there were 1,258,100 and 1,639,000 acres in seedling-sized and sapling-sized stands, respectively. The largest portions of these stands were on forest industry and NIPF lands. Only a very small portion was in the public domain — 71,500 and 98,600 acres in seedling-sized and sapling-sized stands, respectively. Most of the seedling-sized and sapling-sized stands were naturally regenerated — 63 percent and 52 percent, respectively.

The survey shows that 305,700 acres of seedling-sized stands were adequately stocked with softwoods (>60 percent stocking level) and that 952,500 acres were inadequately stocked with softwoods (<60 percent stocking level); however, 414,100 acres had not had adequate time to regenerate after harvest by the time of the sample. Most of the understocked, seedling-sized acreage was on NIPF lands (553,600 acres) and in naturally regenerated stands (679,500 acres of forest industry, NIPF, and public lands combined). Many of these understocked seedling-sized stands may reach adequate softwood stocking levels by the time they attain sapling size, but many will fail due to drought, poor establishment, hardwood competition, etc. Therefore, until these seedling-sized stands become older, only their current stocking levels can be used for assessment.
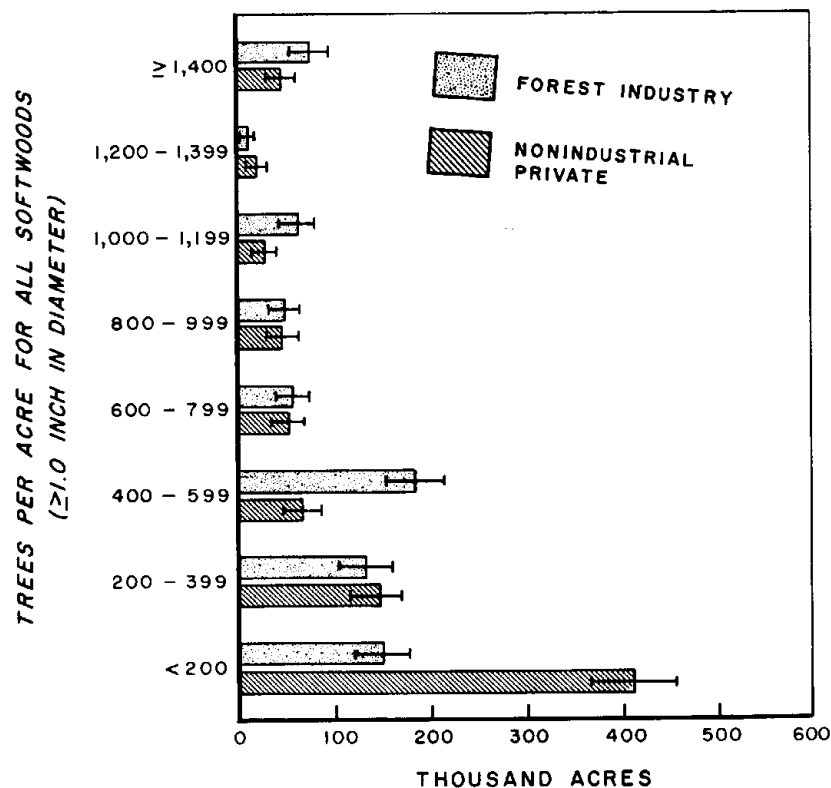
Figure 6. — Softwood tree density class (trees per acre) by area of sapling-sized stands and ownership class, Louisiana, 1991. Error bars represent one standard error.

Sapling-sized stands had 765,800 acres understocked (stocking level <60 percent), 698,500 acres adequately stocked (stocking level 60 to 120 percent), and 174,600 acres overstocked (stocking level >120 percent). Most (498,100 acres) of the understocked acreage is on NIPF lands; the majority of overstocked acreage (109,700 acres) is on forest industry lands. Again, almost all of the timberlands understocked with softwoods are on NIPF lands that have naturally regenerated; they averaged 296 t.p.a. If maximum softwood production is to be realized, there are far too many sapling-sized stands (585,100 acres) in Louisiana with <200 softwood t.p.a.

Lack of procedures and policies to ensure adequate regeneration of softwoods on NIPF lands after harvesting gives rise to the possibility of reduced future supplies of softwoods in Louisiana. Young stands with marginally low initial stocking levels risk becoming understocked poletimber and sawtimber stands, especially where conditions (drought, competition, pests, disease, and poor seedling quality) increase softwood seedling and sapling mortality. Currently, 932,500 and 765,800 acres of seedling-sized and sapling-sized stands, respectively, have inadequate softwood stocking levels. Opportunities exist to substantially increase and develop the softwood resource by ensuring the adequate establishment of softwood seedlings and saplings in the initial phases of stand development.

LITERATURE CITED

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Table A1.—*Area of seedling-sized timberland by forest survey unit and ownership class, Louisiana, 1991**

Forest survey unit	n[†]	S.E.[‡]	Ownership class				
			All classes	National forest	Other public	Forest industry	Nonindustrial private
			Thousand acres				
North Delta	2	0.5599	18.2	0.0	0.0	0.0	18.2
South Delta	0	0.0000	0.0	0.0	0.0	0.0	0.0
Southwest	95	0.1016	532.4	38.2	0.0	181.4	312.8
Southeast	33	0.1701	194.7	0.0	12.9	43.1	138.8
Northwest	90	0.1036	512.7	14.1	6.3	228.7	263.7
All units	220	0.0643	1,258.1	52.3	19.2	453.1	733.5
S.E.[‡]			0.0643	0.3300	0.5456	0.1105	0.0859
n[†]			220	13	3	78	126

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).

Table A2.—*Area of seedling-sized timberland by forest survey unit and forest type, Louisiana, 1991**

Forest survey unit	n[†]	S.E.[‡]	Forest type				
			All types	Longleaf-slash pine	Loblolly-shortleaf pine	Oak-pine	Oak-hickory
			Thousand acres				
North Delta	2	0.5599	18.2	0.0	0.0	0.0	18.2
South Delta	0	0.0000	0.0	0.0	0.0	0.00	0.00
Southwest	95	0.1016	532.4	40.7	170.9	138.8	182.1
Southeast	33	0.1701	194.7	23.3	54.0	25.0	92.4
Northwest	90	0.1036	512.7	0.0	107.9	138.4	266.4
All units	220	0.0643	1,258.1	64.0	332.8	302.2	559.0
S.E[‡]			0.0643	0.2980	0.1294	0.1360	0.0991
n[†]			220	11	58	54	97

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).

Table A3.—*Area of seedling-sized timberland by stand origin and ownership class, Louisiana, 1991**

Stand origin	n[†]	S.E.[‡]	Ownership class				
			All classes	National forest	Other public	Forest industry	Nonindustrial private
			Thousand acres				
Natural	139	0.0823	796.6	27.7	12.7	210.4	545.8
Plantation	81	0.1094	461.5	24.6	6.5	242.8	187.7
All origins	220	0.0643	1,258.1	52.3	19.2	453.1	733.5
S.E.[‡]			0.0643	0.3300	0.5456	0.1105	0.0859
n[†]			220	13	3	78	126

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).

Table A4. — *Area of seedling-sized timberland by forest survey unit and softwood stocking class, Louisiana, 1991**

Forest survey unit	n[†]	S.E.[‡]	All classes	Softwood stocking class (Percent)				
				<30	30–59	60–89	90–119	≥120
				----------------------------------- Thousand acres -----------------------------------				
North Delta	2	0.5599	18.2	18.2	0.0	0.0	0.0	0.0
South Delta	0	0.0000	0.0	0.0	0.0	0.0	0.0	0.0
Southwest	95	0.1016	532.4	192.0	162.2	127.3	39.3	11.7
Southeast	33	0.1701	194.7	104.0	48.3	29.0	13.4	0.0
Northwest	90	0.1036	512.7	297.0	130.8	73.7	4.7	6.5
All units	220	0.0643	1,258.1	611.2	341.3	230.0	57.4	18.3
S.E.[‡]			0.0643	0.0946	0.1278	0.1563	0.3149	0.5587
n[†]			220	106	61	40	10	3

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).

Table A5. — *Area of seedling-sized timberland by ownership class and softwood stocking class, Louisiana, 1991**

Ownership class	n[†]	S.E.[‡]	All classes	Softwood stocking class (Percent)				
				<30	30–59	60–89	90–119	≥120
				----------------------------------- Thousand acres -----------------------------------				
National forest	13	0.3300	52.3	20.2	23.7	3.7	4.7	0.0
Other public	3	0.5456	19.2	6.3	12.9	0.0	0.0	0.0
Forest industry	78	0.1105	453.1	187.1	148.7	82.2	29.6	5.5
Nonindustrial private	126	0.0859	733.5	397.7	155.9	144.1	23.1	12.8
All owners	220	0.0643	1,258.1	611.2	341.3	230.0	57.4	18.3
S.E.[‡]			0.0643	0.0946	0.1278	0.1563	0.3149	0.5587
n[†]			220	106	61	40	10	3

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).

Table A6. — *Area of seedling-sized timberland by stand origin and softwood stocking class, Louisiana, 1991**

Stand origin	n[†]	S.E.[‡]	All classes	Softwood stocking class (Percent)				
				<30	30–59	60–89	90–119	≥120
				----------------------------------- Thousand acres -----------------------------------				
Natural	139	0.0823	796.6	521.7	157.8	92.8	12.3	12.1
Plantation	81	0.1094	461.5	89.5	183.5	137.2	45.1	6.2
All origins	220	0.0643	1,258.1	611.2	341.3	230.0	57.4	18.3
S.E.[‡]			0.0643	0.0946	0.1278	0.1563	0.3149	0.5587
n[†]			220	106	61	40	10	3

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).

Table A7.—*Area of seedling-sized timberland by forest survey unit and proportion of total stocking in softwoods, Louisiana, 1991**

| Forest survey unit | n[†] | S.E.[‡] | All classes | Percentage class[§] | | | | | | | | | |
				0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–100
			*Thousand acres*										
North Delta	2	0.5599	18.2	18.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Delta	0	0.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Southwest	95	0.1016	532.4	95.4	69.3	54.5	42.5	59.1	44.4	63.8	57.8	5.5	40.1
Southeast	33	0.1701	194.7	51.0	34.9	12.5	6.5	6.1	29.6	11.7	0.0	5.2	37.3
Northwest	90	0.1036	512.7	171.8	62.5	68.4	43.9	58.2	51.7	16.4	22.7	5.4	11.7
All units	220	0.0643	1,258.1	336.4	166.7	135.5	92.8	123.4	125.7	91.8	80.4	16.1	89.2
S.E.[‡]			0.0643	0.1287	0.1840	0.2044	0.2472	0.2142	0.2122	0.2486	0.2657	0.5948	0.2523
n[†]				220	57	30	24	17	22	22	16	14	3	15

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).
[§]Proportion of total stand stocking level that is in softwoods. Percentage of softwoods = [softwood stocking/(hardwood + softwood stocking)] × 100.

Table A8.—*Area of seedling-sized timberland by ownership class and proportion of total stocking in softwoods, Louisiana, 1991**

| Ownership class | n[†] | S.E.[‡] | All classes | Percentage class[§] | | | | | | | | | |
				0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–100
			*Thousand acres*										
National forest	13	0.3300	52.3	8.8	11.3	8.4	3.9	11.4	0.0	8.4	0.0	0.0	0.0
Other public	3	0.5456	19.2	6.3	0.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0	6.5
Forest industry	78	0.1105	453.1	107.1	58.2	50.8	44.0	53.4	45.2	24.4	40.9	0.0	29.2
Nonindustrial private	126	0.0859	733.5	214.2	97.2	69.8	44.9	58.6	80.5	59.0	39.5	16.1	53.5
All owners	220	0.0643	1,258.1	336.4	166.7	135.5	92.8	123.4	125.7	91.8	80.4	16.1	89.2
S.E.[‡]			0.0643	0.1287	0.1840	0.2044	0.2472	0.2142	0.2122	0.2486	0.2657	0.5948	0.2523
n[†]				220	57	30	24	17	22	22	16	14	3	15

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).
[§]Proportion of total stand stocking level that is in softwoods. Percentage of softwoods = [softwood stocking/(hardwood + softwood stocking)] × 100.

Table A9.—*Area of seedling-sized timberland by stand origin and proportion of total stocking in softwoods, Louisiana, 1991**

| Stand origin | n[†] | S.E.[‡] | All classes | Percentage class[§] | | | | | | | | | |
				0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–100
			*Thousand acres*										
Natural	139	0.0823	796.6	287.7	155.0	73.5	61.7	50.1	46.7	35.2	28.1	10.7	47.9
Plantation	81	0.1094	461.5	48.7	11.7	61.9	31.2	73.3	79.0	56.7	52.3	5.4	41.3
All origins	220	0.0643	1,258.1	336.4	166.7	135.5	92.8	123.4	125.7	91.8	80.4	16.1	89.2
S.E.[‡]			0.0643	0.1287	0.1840	0.2044	0.2472	0.2142	0.2122	0.2486	0.2657	0.5948	0.2523
n[†]				220	57	30	24	17	22	22	16	14	3	15

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).
[§]Proportion of total stand stocking level that is in softwoods. Percentage of softwoods = [softwood stocking/(hardwood + softwood stocking)] × 100.

Table B1.—*Area of sapling-sized timberland by forest survey unit and ownership class, Louisiana, 1991*

Forest survey unit	n[†]	S.E.[‡]	Ownership class				
			All classes	National forest	Other public	Forest industry	Nonindustrial private
			Thousand acres				
North Delta	5	0.4117	33.6	0.0	0.0	20.9	12.7
South Delta	1	0.0000	6.0	0.0	0.0	0.0	6.0
Southwest	131	0.0857	737.6	51.0	11.9	418.2	256.5
Southeast	27	0.1879	160.0	0.0	0.0	59.7	100.3
Northwest	126	0.0879	701.8	24.7	11.0	222.9	443.2
All units	290	0.0555	1,639.0	75.6	23.0	721.7	818.8
S.E.[‡]			0.0555	0.2741	0.4981	0.0867	0.0811
n[†]			290	19	4	126	141

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).

Table B2.—*Area of sapling-sized timberland by forest survey unit and forest type, Louisiana, 1991*

Forest survey unit	n[†]	S.E.[‡]	Forest type				
			All types	Longleaf–slash pine	Loblolly–shortleaf pine	Oak–pine	Oak–hickory
			Thousand acres				
North Delta	5	0.4117	33.6	0.0	14.4	11.7	7.5
South Delta	1	0.0000	6.0	0.0	6.0	0.0	0.0
Southwest	131	0.0857	737.6	115.7	377.7	133.4	110.9
Southeast	27	0.1879	160.0	18.1	82.1	29.3	30.4
Northwest	126	0.0879	701.8	0.0	334.4	183.6	183.8
All units	290	0.0555	1,639.0	133.8	814.7	358.0	332.6
S.E.[‡]			0.0555	0.2057	0.0813	0.1247	0.1295
n[†]			290	24	146	63	57

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).

Table B3.—*Area of sapling-sized timberland by stand origin and ownership class, Louisiana, 1991*

Stand origin	n[†]	S.E.[‡]	Ownership class				
			All classes	National forest	Other public	Forest industry	Nonindustrial private
			Thousand acres				
Natural	151	0.0793	853.8	41.3	11.2	221.6	579.7
Plantation	139	0.0829	785.3	34.3	11.8	500.1	239.1
All origins	290	0.0555	1,639.0	75.6	23.0	721.7	818.8
S.E.[‡]			0.0555	0.2741	0.4981	0.0867	0.0811
n[†]			290	19	4	126	141

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).

Table B4.—*Area of sapling-sized timberland by forest survey unit and softwood stocking class, Louisiana, 1991**

Forest survey unit	n[†]	S.E.[‡]	All classes	Softwood stocking class (Percent)				
				<30	30–59	60–89	90–119	≥120
				------------------------------ Thousand acres -------------------------------				
North Delta	5	0.4117	33.6	7.5	18.6	0.0	7.5	0.0
South Delta	1	0.0000	6.0	0.0	0.0	0.0	0.0	6.0
Southwest	131	0.0857	737.6	117.1	192.9	165.6	175.6	86.4
Southeast	27	0.1879	160.0	29.6	30.2	46.3	24.6	29.4
Northwest	126	0.0879	701.8	229.2	140.8	171.1	107.8	52.9
All units	290	0.0555	1,639.0	383.3	382.5	383.0	315.5	174.6
S.E.[‡]			0.0555	0.1204	0.1205	0.1204	0.1330	0.1797
n[†]			290	66	67	69	57	31

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).

Table B5.—*Area of sapling-sized timberland by ownership class and softwood stocking class, Louisiana, 1991**

Ownership class	n[†]	S.E.[‡]	All classes	Softwood stocking class (Percent)				
				<30	30–59	60–89	90–119	≥120
				------------------------------ Thousand acres -------------------------------				
National forest	19	0.2741	75.6	0.0	11.5	23.2	27.3	13.5
Other public	4	0.4981	23.0	0.0	5.7	0.0	11.0	6.3
Forest industry	126	0.0867	721.7	65.4	185.1	195.9	165.5	109.7
Nonindustrial private	141	0.0811	818.8	317.9	180.2	163.9	111.6	45.1
All owners	290	0.0555	1,639.0	383.3	382.5	383.0	315.5	174.6
S.E.[‡]			0.0555	0.1204	0.1205	0.1204	0.1330	0.1797
n[†]			290	66	67	69	57	31

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).

Table B6.—*Area of sapling-sized timberland by stand origin and softwood stocking class, Louisiana, 1991**

Stand origin	n[†]	S.E.[‡]	All classes	Softwood stocking class (Percent)				
				<30	30–59	60–89	90–119	≥120
				------------------------------ Thousand acres -------------------------------				
Natural	151	0.0793	853.8	360.8	243.8	132.5	85.5	31.2
Plantation	139	0.0829	785.3	22.6	138.7	250.5	230.0	143.4
All origins	290	0.0555	1,639.0	383.3	382.5	383.0	315.5	174.6
S.E.[‡]			0.0555	0.1204	0.1205	0.1204	0.1330	0.1797
n[†]			290	66	67	69	57	31

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).

Table B7.—*Area of sapling-sized timberland by forest survey unit and proportion of total stocking in softwoods, Louisiana. 1991**

Forest survey unit	n[†]	S.E.[‡]	All classes	Percentage class[§]									
				0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–100
							Thousand acres						
North Delta	5	0.4117	33.6	0.0	0.0	7.5	0.0	11.7	0.0	6.9	0.0	0.0	7.5
South Delta	1	0.0000	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
Southwest	131	0.0857	737.6	46.8	46.6	34.7	68.6	47.6	59.9	111.0	84.4	99.7	138.4
Southeast	27	0.1879	160.0	6.1	0.0	30.2	17.7	5.8	16.9	17.7	17.3	18.6	29.8
Northwest	126	0.0879	701.8	126.5	39.7	64.8	67.1	69.2	93.9	50.3	61.4	54.4	74.4
All units	290	0.0555	1,639.0	179.3	86.3	137.2	153.4	134.3	170.7	185.9	163.2	172.6	256.01
S.E.[‡]				0.0555	0.1773	0.2565	0.2031	0.1919	0.2052	0.1818	0.1741	0.1860	0.1808	0.1480
n[†]				290	31	15	23	27	24	31	32	30	31	46

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).
[§]Proportion of total stand stocking level that is in softwoods. Percentage of softwoods = [softwood stocking/(hardwood + softwood stocking)] × 100.

Table B8.—*Area of sapling-sized timberland by ownership class and proportion of total stocking in softwoods, Louisiana, 1991**

Ownership class	n[†]	S.E.[‡]	All classes	Percentage class[§]									
				0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–100
							Thousand acres						
National forest	19	0.2741	75.6	0.0	0.0	0.0	7.6	7.8	7.7	0.0	20.0	7.6	24.8
Other public	4	0.4981	23.0	0.0	0.0	0.0	5.7	0.0	0.0	5.5	0.0	5.5	6.3
Forest industry	126	0.0867	721.7	10.6	7.5	71.4	45.7	57.1	95.1	96.7	89.2	97.3	151.0
Nonindustrial private	141	0.0811	818.8	168.7	78.8	65.8	94.5	69.4	67.9	83.7	53.9	62.2	73.9
All owners	290	0.0555	1,639.0	179.3	86.3	137.2	153.4	134.3	170.7	185.9	163.2	172.6	256.0
S.E.[‡]				0.0555	0.1773	0.2565	0.2031	0.1919	0.2052	0.1818	0.1741	0.1860	0.1808	0.1480
n[†]				290	31	15	23	27	24	31	32	30	31	46

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).
[§]Proportion of total stand stocking level that is in softwoods. Percentage of softwoods = [softwood stocking/(hardwood + softwood stocking)] × 100.

Table B9.—*Area of sapling-sized timberland by stand origin and proportion of total stocking in softwoods, Louisiana, 1991**

Stand origin	n[†]	S.E.[‡]	All classes	Percentage class[§]									
				0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–100
							Thousand acres						
Natural	151	0.0793	853.8	174.2	80.3	119.7	125.4	75.1	84.6	51.4	77.2	24.2	41.6
Plantation	139	0.0829	785.3	5.1	6.1	17.4	28.0	59.3	86.1	134.5	86.0	148.4	214.4
All origins	290	0.0555	1,639.0	179.3	86.3	137.2	153.4	134.3	170.7	185.9	163.2	172.6	256.0
S.E.[‡]				0.0555	0.1773	0.2565	0.2031	0.1919	0.2052	0.1818	0.1741	0.1860	0.1808	0.1480
n[†]				290	31	15	23	27	24	31	32	30	31	46

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).
[§]Proportion of total stand stocking level that is in softwoods. Percentage of softwoods = [softwood stocking/(hardwood + softwood stocking)] × 100.

Table B10.—*Softwood and hardwood tree density of sapling-sized timberland by ownership and diameter class, Louisiana, 1991**

Ownership class	n[†]	S.E.[‡]	All soft[§]	S.E.[‡]	All hard[¶]	1.0–1.9		2.0–2.9		3.0–3.9		4.0–4.9		≥5.0	
						Soft[§]	Hard[¶]	Soft[§]	Hard[¶]	Soft[§]	Hard[¶]	Soft[§]	Hard[¶]	Soft[§]	Ha
								Trees per acre							
National forest	19	0.2751	899.0	0.3569	263.4	369.1	143.3	255.9	79.7	148.2	9.2	84.1	15.1	41.7	1
Other public	4	0.4042	1,098.3	0.1347	836.4	191.4	549.5	370.6	205.9	262.2	67.2	163.8	0.0	110.3	1
Forest industry	126	0.0809	649.5	0.1001	438.1	251.0	309.0	175.1	83.7	106.6	24.6	72.0	10.3	44.9	1
Nonindustrial private	141	0.1131	405.2	0.0763	593.6	170.9	372.8	106.7	118.9	62.2	50.1	34.0	20.9	31.4	3
All owners**	290	0.0654	545.3	0.0602	513.3	215.6	336.6	147.4	102.8	88.5	37.2	54.9	15.6	38.9	2
S.E.[‡]			0.0654		0.0602	0.0910	0.0684	0.0903	0.0816	0.0993	0.1263	0.1125	0.1570	0.0773	0.08

*Numbers in rows may not total due to rounding.
[†]Number of sample plots in rows.
[‡]Sampling errors (for one standard error) for column averages and row totals (on a relativized scale ranging from 0.0000 to 1.0000).
[§]Softwood species.
[¶]Hardwood species.
**Average trees per acre for all plots.

Table B11.—*Softwood and hardwood tree density of sapling-sized timberland by forest type and diameter class, Louisiana, 1991**

Forest type	n[†]	S.E.[‡]	All soft[§]	S.E.[‡]	All hard[¶]	1.0–1.9		2.0–2.9		3.0–3.9		4.0–4.9		≥5.0	
						Soft[§]	Hard[¶]	Soft[§]	Hard[¶]	Soft[§]	Hard[¶]	Soft[§]	Hard[¶]	Soft[§]	Ha
								Trees per acre							
Longleaf–slash	24	0.1525	517.5	0.4652	158.8	185.0	110.2	110.2	31.9	77.9	8.8	87.3	4.3	57.2	
Loblolly–shortleaf	146	0.0651	861.7	0.0924	344.6	336.8	245.0	246.1	67.8	146.3	14.8	84.8	8.2	47.6	
Oak–pine	63	0.1093	252.5	0.0909	737.9	110.4	477.6	46.1	137.8	36.9	62.4	21.1	30.3	38.0	2
Oak–hickory	57	0.3975	96.5	0.0949	827.2	44.2	500.6	29.5	179.5	6.8	76.4	4.8	22.8	11.2	4
All types**	290	0.0654	545.3	0.0602	513.3	215.6	336.6	147.4	102.8	88.5	37.2	54.9	15.6	38.9	2
S.E.[‡]			0.0654		0.0602	0.0910	0.0684	0.0903	0.0816	0.0993	0.1263	0.1125	0.1570	0.0773	0.08

*Numbers in rows may not total due to rounding.
[†]Number of sample plots in rows.
[‡]Sampling errors (for one standard error) for column averages and row totals (on a relativized scale ranging from 0.0000 to 1.0000)
[§]Softwood species.
[¶]Hardwood species.
**Average trees per acre for all plots.

Table B12.—*Softwood and hardwood tree density of sapling-sized timberland by stand origin and diameter class, Louisiana, 1991**

Stand origin	n[†]	S.E.[‡]	All soft[§]	S.E.[‡]	All hard[¶]	Diameter class (Inches)									
						1.0–1.9		2.0–2.9		3.0–3.9		4.0–4.9		≥5.0	
						Soft[§]	Hard[¶]	Soft[§]	Hard[¶]	Soft[§]	Hard[¶]	Soft[§]	Hard[¶]	Soft[§]	Hard[¶]
						--- Trees per acre ---									
Natural	151	0.1123	421.4	0.0703	642.5	188.5	401.8	114.5	131.9	59.8	52.9	27.6	21.4	30.9	34.4
Plantation	139	0.0759	679.9	0.1033	372.8	245.0	265.8	183.1	71.2	119.7	20.2	84.5	9.3	47.6	6.3
All origins**	290	0.0654	545.3	0.0602	513.3	215.6	336.6	147.4	102.8	88.5	37.2	54.9	15.6	38.9	20.9
S.E.[‡]			0.0654		0.0602	0.0910	0.0684	0.0903	0.0816	0.0993	0.1263	0.1125	0.1570	0.0773	0.0838

*Numbers in rows may not total due to rounding.
[†]Number of sample plots in rows.
[‡]Sampling errors (for one standard error) for column averages and row totals (on a relativized scale ranging from 0.0000 to 1.0000).
[§]Softwood species.
[¶]Hardwood species.
**Average trees per acre for all plots.

Table B13.—*Softwood and hardwood tree density of forest industry sapling-sized timberland by stand origin and diameter class, Louisiana, 1991**

Stand origin	n[†]	S.E.[‡]	All soft[§]	S.E.[‡]	All hard[¶]	Diameter class (Inches)									
						1.0–1.9		2.0–2.9		3.0–3.9		4.0–4.9		≥5.0	
						Soft[§]	Hard[¶]	Soft[§]	Hard[¶]	Soft[§]	Hard[¶]	Soft[§]	Hard[¶]	Soft[§]	Hard[¶]
						--- Trees per acre ---									
Natural	39	0.1776	582.5	0.1517	566.1	283.5	370.1	145.0	119.8	69.4	39.8	46.8	14.0	37.7	22.3
Plantation	87	0.0891	679.2	0.1306	381.3	236.6	282.0	188.4	67.7	123.1	17.9	83.1	8.6	48.1	5.2
All origins**	126	0.0809	649.5	0.1001	438.1	251.0	309.0	175.1	83.7	106.6	24.6	72.0	10.3	44.9	10.4
S.E.[‡]			0.0809		0.1001	0.1164	0.1039	0.1192	0.1311	0.1322	0.2255	0.1517	0.2750	0.1144	0.1906

*Numbers in rows may not total due to rounding.
[†]Number of sample plots in rows.
[‡]Sampling errors (for one standard error) for column averages and row totals (on a relativized scale ranging from 0.0000 to 1.0000).
[§]Softwood species.
[¶]Hardwood species.
**Average trees per acre for all plots.

Table B14.—*Softwood and hardwood tree density of nonindustrial private sapling-sized timberland by stand origin and diameter class, Louisiana, 1991**

Stand origin	n[†]	S.E.[‡]	All soft[§]	S.E.[‡]	All hard[¶]	Diameter class (*Inches*)									
						1.0–1.9		2.0–2.9		3.0–3.9		4.0–4.9		≥5.0	
						Soft[§]	Hard[¶]	Soft[§]	Hard[¶]	Soft[§]	Hard[¶]	Soft[§]	Hard[¶]	Soft[§]	Hard[¶]
						Trees per acre									
Natural	100	0.1513	296.2	0.0790	697.0	128.3	434.5	78.3	138.4	46.0	59.2	15.0	24.8	28.5	40.0
Plantation	41	0.1536	669.4	0.1887	342.8	274.1	223.3	175.5	71.7	101.5	28.0	80.2	11.2	38.3	8.6
All origins**	141	0.1131	405.2	0.0763	593.6	170.9	372.8	106.7	118.9	62.2	50.1	34.0	20.9	31.4	30.9
S.E.[‡]			0.1131		0.0763	0.1548	0.0929	0.1487	0.1111	0.1803	0.1548	0.2015	0.1979	0.1126	0.0888

*Numbers in rows may not total due to rounding.
[†]Number of sample plots in rows.
[‡]Sampling errors (for one standard error) for column averages and row totals (on a relativized scale ranging from 0.0000 to 1.0000).
[§]Softwood species.
[¶]Hardwood species.
**Average trees per acre for all plots.

Table B15.—*Area of sapling-sized timberland by forest survey unit and softwood density class, Louisiana, 1991**

Forest survey unit	n[†]	S.E.[‡]	All classes	Number of softwood trees per acre[§]							
				<200	200–399	400–599	600–799	800–999	1,000–1,199	1,200–1,399	≥1,400
				Thousand acres							
North Delta	5	0.4117	33.6	0.0	0.0	11.7	0.0	0.0	14.4	0.0	7.5
South Delta	1	0.0000	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
Southwest	131	0.0857	737.6	242.2	144.9	138.5	66.2	43.0	28.6	23.2	50.9
Southeast	27	0.1879	160.0	48.7	29.2	6.5	23.5	17.9	17.7	10.4	6.1
Northwest	126	0.0879	701.8	294.1	121.3	97.8	26.6	38.7	31.2	11.6	80.3
All units	290	0.0555	1,639.0	585.1	295.3	254.6	122.4	99.7	91.9	45.2	144.8
S.E.[‡]				0.0555	0.0967	0.1376	0.1484	0.2151	0.2385	0.2484	0.3548	0.1976
n[†]				290	102	52	46	22	17	16	9	26

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).
[§]Includes all softwood trees ≥1.0 inch in diameter.

Table B16.—*Area of sapling-sized timberland by ownership class and softwood density class, Louisiana, 1991**

Ownership class	n[†]	S.E.[‡]	All classes	Number of softwood trees per acre[§]							
				<200	200–399	400–599	600–799	800–999	1,000–1,199	1,200–1,399	≥1,400
				Thousand acres							
National forest	19	0.2741	75.6	23.4	7.8	3.9	12.5	2.9	0.0	12.1	13.1
Other public	4	0.4981	23.0	0.0	11.2	0.0	0.0	0.0	0.0	0.0	11.8
Forest industry	126	0.0867	721.7	149.7	132.3	184.3	57.5	48.8	63.2	11.1	74.8
Nonindustrial private	141	0.0811	818.8	412.0	144.1	66.4	52.5	48.0	28.7	22.1	45.1
All owners	290	0.0555	1,639.0	585.1	295.3	254.6	122.4	99.7	91.9	45.2	144.8
S.E.[‡]			0.0555	0.0967	0.1376	0.1484	0.2151	0.2385	0.2484	0.3548	0.1976
n[†]			290	102	52	46	22	17	16	9	26

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).
[§]Includes all softwood trees ≥1.0 inch in diameter.

Table B17.—*Area of sapling-sized timberland by stand origin and softwood density class, Louisiana, 1991**

Stand origin	n[†]	S.E.[‡]	All classes	Number of softwood trees per acre[§]							
				<200	200–399	400–599	600–799	800–999	1,000–1,199	1,200–1,399	≥1,400
				Thousand acres							
Natural	151	0.0793	853.8	445.7	158.0	61.1	30.9	24.0	28.0	31.7	74.3
Plantation	139	0.0829	785.3	139.4	137.3	193.4	91.5	75.6	63.9	13.5	70.5
All origins	290	0.0555	1,639.0	585.1	295.3	254.6	122.4	99.7	91.9	45.2	144.8
S.E.[‡]			0.0555	0.0967	0.1376	0.1484	0.2151	0.2385	0.2484	0.3548	0.1976
n[†]			290	102	52	46	22	17	16	9	26

*Numbers in columns and rows may not total due to rounding.
[†]Number of sample plots in columns and rows.
[‡]Sampling errors (for one standard error) for column and row totals (on a relativized scale ranging from 0.0000 to 1.0000).
[§]Includes all softwood trees ≥1.0 inch in diameter.

Data on precommercial-sized softwoods in seedling- and sapling-sized
stands are presented and discussed. Inadequate levels of softwood
stocking on NIPF lands could diminish long-term supplies of soft-
wood in the State.

Keywords: Density, forest inventory, NIPF lands, pines, sapling-
seedling, stocking.

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