

Forest-Range Resources of Southwest Louisiana

HERBERT S. STERNITZKE AND HENRY A. PEARSON

Highlight: Findings of the first forest-range inventory of southwest Louisiana conducted as part of the nationwide Forest Survey are described and evaluated. Measurements indicate that the grazing potential of the region's forest ranges is not being fully used. Little competition with wildlife populations and timber stands is indicated at existing levels of understory utilization by livestock.

The Forest Survey has been inventorying the nation's timber resources for several decades. Authority for this Forest Service activity is contained in the McSweeney-McNary Forest Research Act of 1928 and subsequent amendments. Not until 1973, however, did the Forest Survey conduct multiple-use inventories. Then, coincident with the scheduled reinventory of southwest Louisiana (Fig. 1), it devised field methods and sampling procedures for studying understory vegetation (Pearson and Sternitzke, 1974).

This paper describes the inventoried land area that is the forest-range environment, presents estimates of livestock grazing activities on these lands, and appraises the resource. Detailed tabulations resulting from the inventory are available (Sternitzke and Pearson, 1974).

Two in every three acres in southwest Louisiana are forested. The region with a land area of nearly 7 million acres, lies entirely on the Gulf Coastal Plain. Native forage often grows abundantly beneath timber stands, in natural openings, and on cutover lands, providing feed for

substantial numbers of range livestock. Of the 11 parishes (i.e., counties) that make up the region, all but two have significant amounts of forest. The

latter two are immediately north of the neighboring coastal marshes and mostly encompass low, flat prairies where timber growth is restricted to the better-drained soils along streams.

Largely because of inroads by other agricultural land-uses, forest acreage is shrinking. It now totals 4.5 million acres, or 6% less than in 1964, when

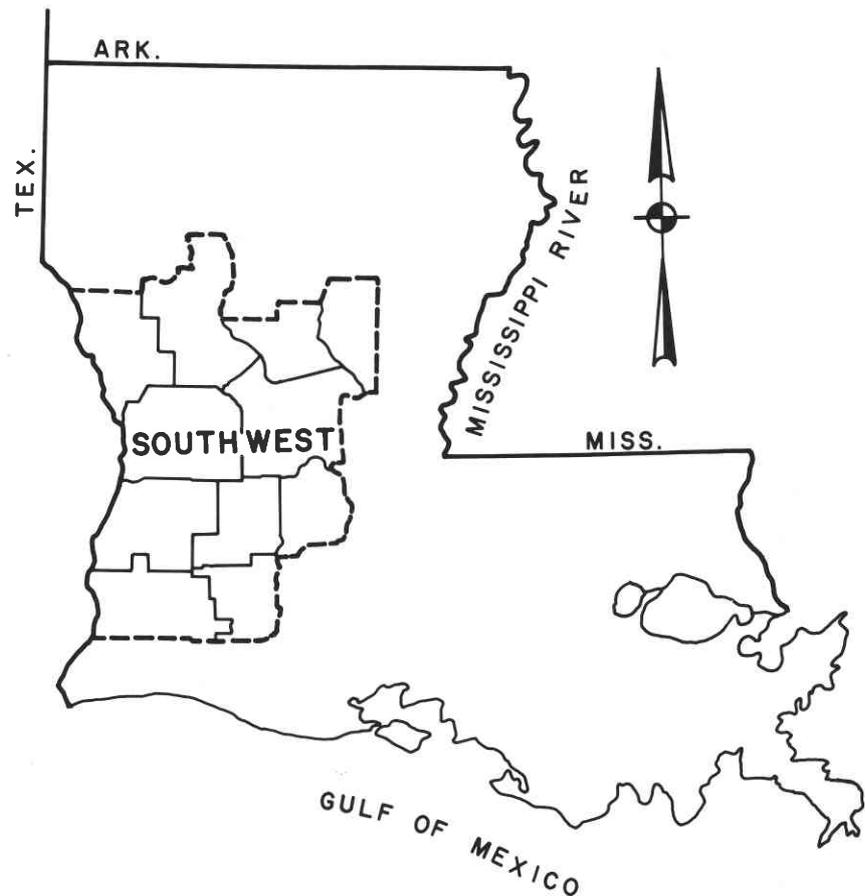


Fig. 1. Southwest Louisiana parishes.

Authors are principal resource analyst (New Orleans, La.) and principal range scientist (Pineville, La.) of the Southern Forest Experiment Station, Forest Service, U.S. Department of Agriculture.

Manuscript received August 24, 1974.

the previous inventory was made. This is a continuation of earlier trends (Sternitzke, 1965). Most of the cleared land is either in soybeans or improved pasture. Similar changes are under way elsewhere in the South (Sternitzke, 1974).

All but 13% of the forest-range land is privately owned. Of the 604,000 acres in public ownership, most is in the Kisatchie National Forest.

The bulk of the forest is in farms and miscellaneous private holdings whose owners represent a great variety of occupational groups. Wood-using industries alone hold in fee simple nearly 1.4 million acres, or more than one-third of the privately owned forest. Most of the industrially owned land is in large ownerships—that is, in excess of 50,000 acres each.

The forest-range environment of southwest Louisiana is made up of six ecosystems (Table 1). Most important to range managers are the longleaf-slash pine ecosystem, loblolly-shortleaf pine, oak-pine, and oak-hickory. All together, they make up more than 80% of the total forest area. In the view of most managers, nearly all of the oak-hickory acreage is better adapted to growing pine than industrial hardwood (Murphy and Knight, 1974).

Prior to the logging of the old-growth between 1890 and 1930, the forest range of southwest Louisiana was characterized by parklike stands of longleaf pine (*Pinus palustris* Mill.). In fact, it is estimated that the region encompassed two-thirds of the entire longleaf pine-bluestem range west of the Mississippi River. Today the overstory is mainly loblolly pine (*P. taeda* L.).

Table 1. Area (1,000 acres) of forest range by ecosystem and ownership class.

Ecosystem ¹	All ownerships	Public	Forest industry	Other private
Longleaf-slash pine	737.9	101.7	282.1	354.1
Loblolly-shortleaf pine	1,574.6	236.3	517.5	820.8
Oak-pine	815.7	124.0	241.3	450.4
Oak-hickory	588.9	25.7	190.4	372.8
Oak-gum-cypress	793.4	116.6	153.0	523.8
Elm-ash-cottonwood	27.9	—	5.5	22.4
All ecosystems	4,538.4	604.3	1,389.8	2,544.3

¹ Corresponds to the Forest Service forest-range environmental study (FRES) ecosystems. A complete description of the vegetation of each FRES ecosystem is contained in Forest Resource Report 19, issued in 1972 by the U.S. Department of Agriculture.

Its prevalence has been favored partly by successional changes resulting from exclusion of wildfire and partly by reforestation efforts (Campbell, 1955). The canopy has been further modified by large-scale industrial planting of slash pine (*P. elliottii* Engelm.), a species not indigenous to western Louisiana.

Botanical composition of the understory herbage is shown in Table 2. The most valuable native forage grasses are the bluestems (*Andropogon* spp.), primarily pinehill (*A. scoparius* var. *divergens* Anderss. ex Hack.), slender (*A. tener* (Nees) Kunth), and broomsedge (*A. virginicus* L.). Second only to the bluestems in abundance and desirability are the panicums (*Panicum* spp.). Except in the longleaf-slash pine ecosystem, uniolas (*Uniolas* spp.) also contribute significantly to the proportions of useful grasses. Within the total forest-range environment, bluestems and panicums jointly make up 34% of the herbage composition. Carpetgrass (*Axonopus affinis* Chase) and threeawn (*Aristida* spp.), both of which are symptomatic of heavy grazing, and cutover muhly

(*Muhlenbergia expansa* (DC.) Trin.), a weed on unburned range, together account for only about 10% of the understory in each ecosystem.

Livestock, mainly cattle, graze 2.4 million acres or 54% of the total range area. Grazing by other kinds of livestock, whether singly or in combination with cattle, is evident on only 13% of the range. Appropriately, grazing is concentrated on pine ranges, but each of the major ecosystems presently supports some livestock. The extent of grazing also varies by ownership. Perhaps as an indication of a new trend it is most widespread on forest industry lands. Certainly the increasing application of even-age forestry on industry-owned land is favorable to a coordinated management system of raising beef and growing timber.

Over-all, 24% of the grazed range shows some evidence of burning within the past 3 years, as contrasted with 7% of the ungrazed range. The use of fire has been the subject of intensive research by range scientists in the South and it is recommended under carefully prescribed conditions. Generally speaking, winter burning is prescribed at 3–5 year intervals on pine ranges. Especially when applied by a wide array of landowners, land-use policies that encourage dual beef-timber management strategies may pose some problems for organized fire-protection systems.

In terms of prevailing management strategies, perhaps the most encouraging discovery is that, irrespective of ecosystem or class of ownership, heavy or exploitive grazing is insignificant. For example, only 107,000 of the 2.4 million acres with livestock had more than 70% of the plants grazed. The great bulk of the range—nearly 80%—was lightly used with less than 35% of the plants

Table 2. Botanical composition (%) of understory herbage in selected ecosystems.

Understory herbage	Longleaf-slash pine	Loblolly-shortleaf pine	Oak-pine	Oak-hickory
Slender bluestem	9.4	3.3	2.8	4.8
Broomsedge bluestem	7.0	3.2	4.2	3.7
Other bluestems	14.0	15.7	7.2	8.0
Panicums	17.6	13.4	14.2	15.3
Uniolas	.4	8.0	11.6	11.4
Carpetgrass	4.2	4.8	7.6	4.5
Threeawn	2.7	2.4	1.9	2.3
Cutover muhly	3.8	2.0	.8	2.4
Other grass	10.3	12.4	12.2	9.8
Grasslike	8.0	8.0	14.2	13.3
Legumes	5.5	7.0	4.6	4.7
Other forbs	17.1	19.0	18.7	19.8
All herbage	100.0	100.0	100.0	100.0

Table 3. Herbage yield (tons/year) by ecosystem and ownership class.

Ecosystem	All ownerships	Public	Forest industry	Other private
Longleaf-slash pine	564,280	73,180	224,810	266,290
Loblolly-shortleaf pine	642,490	102,230	210,360	329,900
Oak-pine	334,590	39,350	103,700	191,540
Oak-hickory	259,140	14,050	69,560	175,530
Oak-gum-cypress	220,260	42,900	34,830	142,530
Elm-ash-cottonwood	9,860	—	1,360	8,500
All ecosystems	2,030,620	271,710	644,620	1,114,290

grazed.

Herbage condition was classified according to actual herbage composition compared to an expected potential botanical composition; browse species were not included in these classifications (Pearson and Sternitzke, 1974). On upland ranges, 22% rated good or better, 21% fair, and 57% poor. As indicated earlier, the high proportion of range in poor condition is not attributable to exploitive grazing; it relates largely to current overstory density and to past land use.

All together, herbage production from southwest Louisiana forest-range lands totals 2 million tons annually (Table 3). The longleaf-slash pine

ecosystem is by far the most productive, yielding 1,529 pounds per acre. The other ecosystems that characterize pine sites all average some 800 pounds per acre. The lowlands are the least productive.

The available herbage provides 1.8 million animal unit months (AUM's), assuming an 8-month grazing season, herbage production requirements of 2250 pounds per AUM or 75 pounds per animal day, and moderate, 45–50%, utilization. Longleaf-slash pine and loblolly-shortleaf pine forests account for 0.5 and 0.6 million AUM's respectively. Together, they make up nearly 60% of the available AUM total.

Under moderate seasonal grazing, the inventoried acreage averages 2.5

acres per AUM. The longleaf-slash pine community is the most productive (Fig. 2). It requires only 1.5 acres per AUM. By contrast, the widespread loblolly-shortleaf pine, which typically supports a heavier overstory, averages 2.8 acres per AUM. Similar averages prevail in other upland areas.

Acres per AUM do not vary greatly by ownership. Slightly fewer industry-owned acres are needed for one AUM than for other major ownership classes. This difference is attributable to the higher proportion of longleaf-slash pine on industrial holdings.

The present study—based upon the systematic inventory of several million acres—indicates that the potential of southwest Louisiana forest ranges is not being fully utilized. This is apparent both from the acreage grazed and from the prevailing light use. Moreover, little competition with wildlife populations is evident at current levels of forest understory utilization by livestock. The same is true for timber. The Forest Survey has determined, for example, that the volume of pine growing stock rose 40% in the past decade.

It is concluded that in southwest Louisiana—and perhaps the West Gulf Coastal Plain generally—larger herds of beef cattle can be sustained on properly managed pine-forest ranges without adversely affecting wildlife or timber conditions. The potential importance of the forest-range environment to Louisiana's economy provides a strong incentive for improving range productivity.

Literature Cited

- Campbell, R. S. 1955. Vegetational changes and management in the cutover longleaf-slash pine area of the Gulf Coast. *Ecology* 36:29-34.
- Murphy, P. A., and H. A. Knight. 1974. Hardwood resources on southern pine sites. *Forest Prod. J.* 24(7):13-16.
- Pearson, H. A., and H. S. Sternitzke. 1974. Forest-range inventory: a multiple-use survey. *J. Range Manage.* 27:404-407.
- Sternitzke, H. S. 1965. Forests of Louisiana. U.S. Dep. Agr., Forest Serv. Res. Bull. SO-7. 31 p. South. Forest Exp. Sta., New Orleans, La.
- Sternitzke, H. S. 1974. Eastern hardwood resources; trends and prospects. *Forest Prod. J.* 24(3):13-16.
- Sternitzke, H. S., and H. A. Pearson. 1974. Forest-range resource statistics for southwest Louisiana parishes. U.S. Dep. Agr., Forest Serv. Res. Bull. SO-50. 22 p. South. Forest Exp. Sta., New Orleans, La.



Fig. 2. Longleaf pine, forage, and cattle in southwest Louisiana.

