
A Plant Community Dominated by Vines

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In abandoned, but ungrazed, fields along the north shore of Lake Texoma plant succession has been very rapid (Fig. 1). These revegetating fields occur on river sand, which slopes from the access road into the University of Oklahoma Biological Station, to the lake shore about 40 feet lower in elevation. Since the water level in Lake Texoma has fluctuated widely over the period since impoundment in 1944, the vegetation near the lake may be alternately inundated or be several feet above the water table.

The herbaceous *Cynodon-Lippia* community near the lake comprised Bermuda grass (*Cynodon dactylon*), fog-fruit (*Lippia cuneifolia*), and lotus (*Lotus americanus*) as the dominant species. This herbaceous type was often invaded directly by black willow (*Salix nigra*). However, the *Cynodon-Lippia* associates was often displaced by an unusual aggregation of woody vines and a trailing shrub. Apparently peppervine (*Ampelopsis arborea*) was the first invader, but was followed shortly by spiny greenbrier (*Smilax bona-nox*) and trailing thimbleberry (*Rubus trivialis*). Stands of prairie dominated either by little bluestem (*Andropogon scoparius*) or Indian grass (*Sorghastrum nutans*) were also invaded by these woody vines and shrubs.

All communities were sampled by the short line method as described by Penfound et al. (1965). The results of the sampling indicated great variability in the populations, a relatively small number of species per sample, and very rapid succession from herbaceous to woody vegetation. Since the vine-dominated patches in the stands of prairie were too small to sample, the data on the vine-dominated communities were taken from vineland stands which had displaced the *Cynodon-Lippia* associates on moist sites near the lake. However, field observations in small patches of vine-land in the prairie, indicated that all three prairie dominants were quickly shaded out by the vineland dominants.

The data from the *Cynodon-Lippia* and *Smilax-Rubus* communities are directly comparable since the former had been displaced by the latter. The relative foliage frequency of all herbs was decreased by the invading woody plants as follows: *Cynodon dactylon* (24.7 to 0.6) and *Lotus americanus* (9.3 to 0.3). On the other hand the woody plants increased

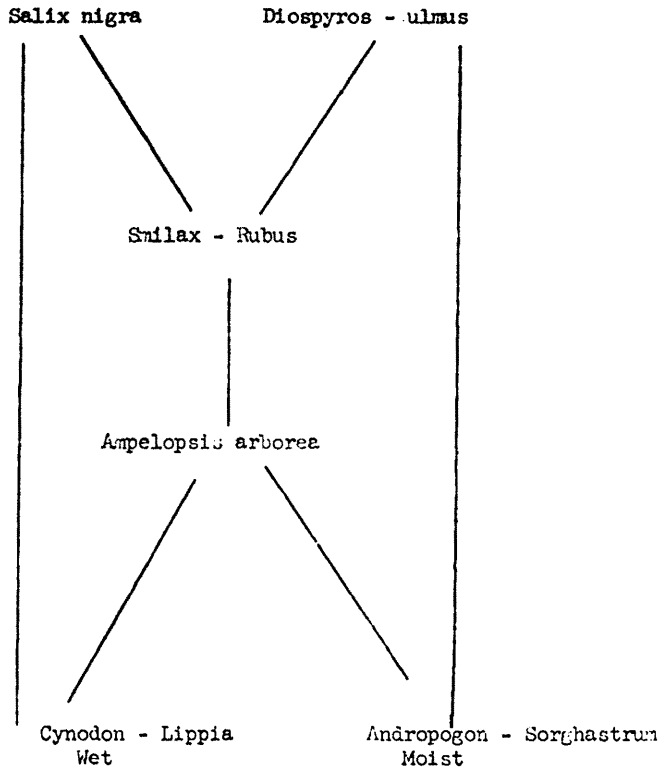


Figure 1. Succession from grassland through vineland to forest, Marshall Co., Oklahoma.

considerably in relative foliage frequency as indicated herein: *Smilax bona-nox* (0.5 to 25.1), *Rubus trivialis* (0 to 20.6) and *Ampelopsis arborea*, from 0.1 to 10.3. Observations suggest that *Smilax bona-nox* is the important dominant and that *Rubus trivialis* is the major secondary species underneath the canopy of *Smilax bona-nox*. (Table 1).

Table 1. Relative foliage frequency of herbs and vines in grassland and vineland, Marshall Co., Okla., 1964.

	Cynodon-Lippia	Smilax-Rubus
Cynodon dactylon	24.7	0.6
Lippia cuneifolia	17.5	0.5
Lotus americanus	9.3	0.3
Ampelopsis arborea	0.1	10.3
Smilax bona-nox	0.5	25.1
Rubus trivialis	0.6	20.6

The *Smilax-Rubus* associes is a vine-dominated community of long duration. It was first observed by Dr. E. L. Rice in 1952 (personal communication) and had increased to 9.4 acres in 1956 and to 14.2 acres in 1964. At present there are very few tree seedlings in any of the stands. This suggests that they should be available for study for one or more decades. However, the entire area is rapidly becoming forested. It seems probable, therefore, that the vineland stands near the lake will be displaced by a forest of black willow whereas those on the upper, drier sites will be eliminated by stands of trees comprising either persimmon (*Diospyros virginiana*) or winged elm (*Ulmus alata*) as the major dominants.

LITERATURE CITED

- Penfound, Wm. T., M. C. Jennison and J. S. Shed. 1965. Replacement of a population of Johnson grass by a vine-forb community. Proc. Oklahoma Acad. Sci. 45:40-43.
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