

Plant Succession on Burned Areas in Okefenokee Swamp Following the Fires of 1954 and 1955

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INTRODUCTION

IN 1954 and 1955, during an extreme drought, five major fires occurred in Okefenokee Swamp. These fires swept over approximately 318,000 acres of the swamp and 140,000 acres of the adjacent upland. In some areas in the swamp, the burning was severe enough to kill most of the timber and the understory vegetation and burn out pockets in the peat bed. Burns of this severity were usually small and spotty. Over most of the swamp, the burns were surface fires which generally killed most of the underbrush but rarely burned deep enough into the peat bed to kill the larger trees. In many places the swamp fires swept over lightly, burning surface duff and killing only the smaller underbrush. Some areas were missed entirely.

On the upland adjacent to the swamp, the fires were very destructive, killing most of the pine timber on the 140,000 acres burned over.

The destruction of pine forests on the upland and the severe

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burns in the swamp caused considerable concern among conservationists and neighboring land owners.

It was believed desirable to learn something of the succession of vegetation on some of the more severely burned areas. Such knowledge would add to an understanding of the ecology and history of the swamp and to an understanding of the relation that fires may have to swamp wildlife.

This study attempts to give an appraisal of the plant succession in some of the more severely burned spots in the swamp.

DESCRIPTION OF THE SWAMP

Okefenokee Swamp is a huge bog of approximately 412,000 acres in Ware, Charlton and Clinch Counties, Georgia and Baker County, Florida. About 90 percent of this swamp is included in Okefenokee National Wildlife Refuge.

The entire floor of the swamp, except the true islands and the lakes and ponds, is covered with a bed of peat ranging in depth from a shallow layer at the edge of the swamp to more than 20 feet in places in the interior. In most places this peat bed is between 5 and 10 feet thick. The surface of this peat bed is usually at about the average water level.

About 80 percent of the swamp is covered more or less densely with forests which are dominated either by pond cypress (Fig. 1) (*Taxodium distichum* var. *nutans*) or by swamp blackgum (Fig. 2) (*Nyssa sylvatica* var. *biflora*). The principal associates are white bay (*Magnolia virginiana*), loblolly bay (*Gordonia lasianthus*), sweet bay (*Persea borbonia*), red maple (*Acer rubrum*), cassena (*Ilex cassine*) and titi (*Cyrilla racemiflora*). Slash pine (*Pinus Elliottii*) occurs occasionally. The principal species of the understory of the forest are hurrah bush (*Lyonia lucida*), swamp fetterbush (*Leucothoe racemosa*), sweet spire (*Itea virginica*), poor-man's soap (*Clethra alnifolia*), bamboo vine (*Smilax laurifolia*) and coral greenbrier (*Smilax Walteri*).

Approximately 60,000 acres of the swamp are occupied by open marsh areas known locally as "prairies" (Fig. 3). There are 22 of these areas ranging in size from the 6,600 acre Chase Prairie to the



FIG. 1. A view of virgin cypress forest in Okefenokee Swamp untouched by the fires.

50 acre Cox Prairie and numerous smaller unnamed open marsh areas. Water-lily (*Nymphaea odorata*), spatterdock (*Nuphar advena*) beakrush (*Rhynchospora inundata*), neverwet (*Orontium aquaticum*), chain fern (*Woodwardia virginica*), paintroot (*Gyrotheca tinctoria*), maidencane (*Panicum hemitomom*), false maidencane (*Sacciolepis striata*), pipewort (*Eriocaulon compressum*), hard-head (*Xyris fimbriata*) and sedge (*Carex* spp) make up the principal cover of the prairies.

It has been shown that the prairies are the result of very severe fires which have killed the woody growth and burned away the upper part of the peat bed and that the prairie lakes and ponds are the result of pockets being burned out in the peat (Cypert 1961). We have records of droughts and accompanying fires occurring in 1844, 1860, 1910 and 1931 and there is evidence from borings in the peat bed of the occurrence of fires throughout the long history of the swamp (Hopkins, 1947 and Cypert, 1961). As far as can be

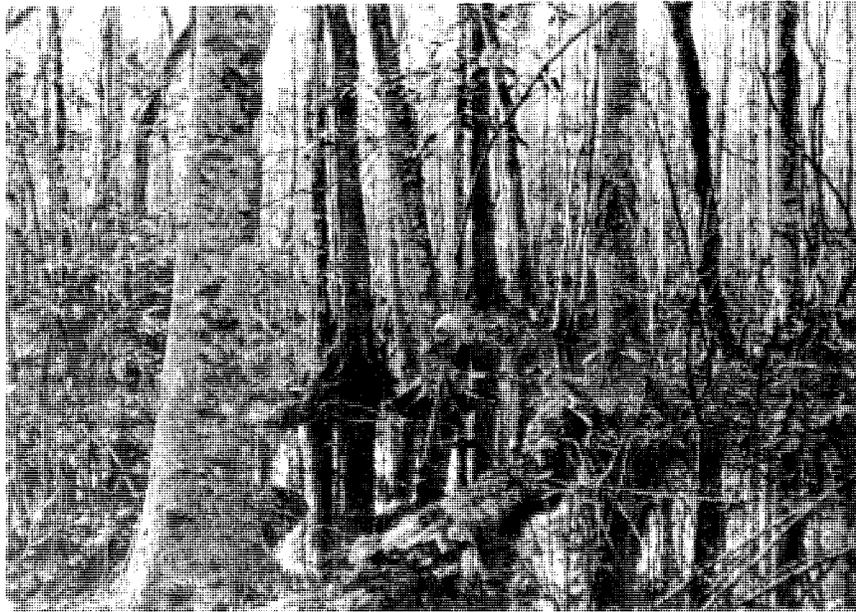


FIG. 2. A view of blackgum and bay forest in Okefenokee Swamp which was not affected by the fires.

determined, the 1844 fire was the last fire which was severe enough to have caused prairies. We know that there were prairies in Okefenokee Swamp prior to the 1844 fire because General Charles Floyd, who entered Okefenokee Swamp with a company of men in 1838 during the Seminole Wars, described the two open areas which were later named Floyd's Prairie and Chase Prairie (Hopkins 1947; Walker and King 1947).

The fires since 1844 have been sufficiently severe to kill timber in places, but in no case have they been hot enough or persistent enough to burn away the peat bed and kill out the woody growth so as to result in prairie.

Scattered throughout the prairies are clumps of trees and shrubs called "houses." These clumps vary in size from a few milacres to several acres. They are of various ages. Those recently formed are made of only shrubs and young trees and the older ones are dominated by various aged trees (Wright and Wright 1932). It is obvious that

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FIG. 3. A view in Grand Prairie. This is typical of Okefenokee prairies.

the prairies are gradually reverting to swamp forest through the formation and expansion of these tree clumps (Cypert 1972).

METHODS

In order to determine the plant succession following the fire, three of the more severely burned areas were selected for study. One of these was north of Suwannee Canal (Fig. 4) about a mile and a half west of Camp Cornelia. A second area was in the swamp edge along the southwest side of Soldier Camp Island. The third area was north of Billy's Lake (Fig. 5).

Sample one-acre plots were staked out in each of the three selected areas. Each plot was 1 chain wide and 10 chains long. All trees, both live and fire killed, were tallied according to species and diameter at breast height. The ground cover vegetation under 4½ feet high was mapped by species.

As a control an unburned area west of Minnie's Lake was selected.

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FIG. 4 Sparse recovery of woody growth in repeatedly burned area near Suwannee Canal. One more severe burn here within the next few years would probably result in prairie.

This area was covered principally by pond cypress timber. A 1-acre plot, 2 chains wide and 5 chains long was staked out. The trees were tallied according to species and DBH (diameter at breast height), and the ground cover was mapped as in the other plots.

Timber was tallied and ground cover was mapped on the Minnie's Lake control plot in 1957 and in 1970. Timber and ground cover on the Suwannee Canal plot were tallied and mapped in 1956, 1957, 1958, 1961, 1965, and 1970. Timber and ground cover on the Soldier Camp Island plot were tallied and mapped in 1956, 1958, 1965, and 1970. Timber and ground cover on the Billy's Lake area plot were tallied and mapped in 1957, 1962, 1966, and 1970.

The tallying and mapping job was done by two men. A 1-chain tape was stretched across the plot at 50 link intervals, and the coverage was mapped on graph paper. The boles of the trees were measured with a diameter tape at breast height, and they were tallied according to species and bole-diameter. At the initial recording of

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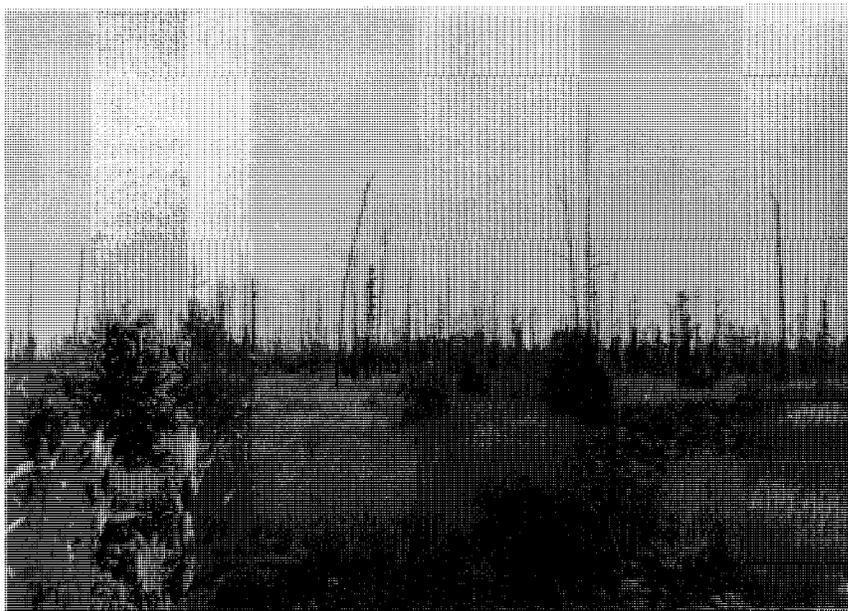


FIG. 5. Recovery of woody growth near Billy's Lake 3 years after the fire.

each plot, the fire-killed trees were tallied. Live trees were tallied at the initial recording and in the 1970 recording on all plots.

RESULTS AND DISCUSSION

SUWANNEE CANAL PLOT

Prior to 1932 the cover along the north side of the Suwannee Canal in the selected area had been principally pond cypress and slash pine. Most of this timber was killed by fire during a drought in 1932 and by 1954 the area had regrown in a dense thicket of pond cypress, white bay, sweet bay, swamp blackgum, hurrah, titi and bamboo vine. Fires in 1954 and 1955 burned away this thicket and killed most of the few surviving large trees. About 1 foot of the surface peat was burned away leaving a peat bed about 5 feet thick.

Table 1 shows the tally of trees which were killed by the 1954-55 fires. Except for one lone cypress, which died later, *no trees survived*. However, the root systems of some of them did survive and

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TABLE 1. FIRE-KILLED TREES ON SUWANNEE CANAL PLOT

Species	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"
<i>Taxodium</i>																
<i>distichum</i> *	6	13	4			1		1	1	1		1			1	1
<i>Pinus ellioti</i>	1	3											1	1		2
<i>Magnolia</i>																
<i>virginiana</i>	15	27				1										
<i>Ilex Cassine</i>		2	1													
<i>Ilex glabra</i>	2	2														
<i>Gordonia</i>																
<i>lasianthus</i>	1	2	9	3	2	2										
<i>Persea borbonia</i>	9	17	3													
<i>Nyssa sylvatica</i>	1															

*The 16-inch cypress was fire damaged in the 1954-55 fires, but it did not die until 1962. All the other trees were dead in 1956.

coppice growth succeeded as shown in Table 2. By 1970 there were a few small trees of measurable size. However, regrowth of woody vegetation has been slow. By 1970 only about 5 percent of the ground cover was woody growth (Table 3).

In the 1956 recording an estimated 56.8 percent of the area was open water. This was progressively occupied principally by herbaceous marsh vegetation. The sedge (*Carex hyalinolepis*) increased sharply over the 15 years following the fire and by 1970 accounted for about 83 percent of the ground cover. Some herbaceous species became established shortly after the fire and then declined in coverage down through the years. Hardhead declined from about 22 percent in 1956 to only a trace in 1970. Likewise paintroot dropped from an estimated 9.6 percent in 1957 to only a trace in 1970. These herbaceous plants were replaced by sedge, chain fern and woody growth.

While woody growth on this plot has been gradually increasing, it is still sparse and scattered. One more severe fire here within the next few years would doubtless convert this area into prairie.

TABLE 2. LIVE TREES ON SUWANNEE CANAL PLOT IN 1970

Species	1"	2"	3"	4"
<i>Taxodium distichum</i>	3	13	14	1
<i>Magnolia virginiana</i>	17	4		
<i>Nyssa sylvatica</i>	14	2		

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TABLE 3. GROUND COVER PLANTS BY SPECIES
AND PERCENTAGE ON SUWANNEE CANAL PLOT

Species	1956	1957	1958	1961	1965	1970
<i>Pinus eliottii</i>			t	t	t	
<i>Taxodium distichum</i>		.2	.2	.3	.1	.5
<i>Smilax laurifolia</i>	.1	.2	.2	.2	.3	.4
<i>Myrica cerifera</i>					t	.2
<i>Magnolia virginiana</i>	.1	.3	.9	.3	.3	.6
<i>Itea virginica</i>	.1	.4	.8	.7	.5	1.2
<i>Ilex glabra</i>	t	.1	.1	t	t	.2
<i>Ilex cassine</i>				t	t	t
<i>Persea borbonia</i>	.1	.3	.5	.1	t	.1
<i>Nyssa sylvatica</i>		t	.1	.1	.1	.2
<i>Leucothoe racemosa</i>	t	.1	.2	.4	.1	1.3
<i>Pieris phylllyreifolia</i>					t	t
<i>Vaccinium arkansanum</i>		t	t	t	t	.1
<i>Vaccinium ashei</i>						t
<i>Lyonia lucida</i>	.3	.7	.6	1.0	.7	1.1
<i>Lyonia ligustrina</i>			t	t	.1	t
<i>Woodwardia virginica</i>	3.8	9.6	9.8	6.8	5.1	5.8
<i>Dulichium arundinaceum</i>	.1	.4	t	t		
<i>Carex hyalinolepis</i>	16.2	46.1	52.5	66.4	86.2	83.0
<i>Peltandra spp.</i>	t	t	t	.1	.1	t
<i>Xyris fimbriata</i>	21.1	1.9	.5	t	t	t
<i>Pontederia cordata</i>						t
<i>Lachnanthes tinctoria</i>		9.6	t	t	.1	t
<i>Nymphaea odorata</i>					.5	3.5
<i>Ludwigia lanceolata</i>	1.3	18.6			t	
<i>Bidens mitis</i>				t		
Open water	56.8	11.5	33.6	23.6	5.8	1.8

BILLY'S LAKE PLOT

Most of the cypress trees were removed from the area north of Billy's Lake during the timber operations of the Hebard Cypress Company between 1909 and 1927. After this swamp hardwood timber was dominant, and prior to the 1954-55 fires the area was typically blackgum-bay swamp forest. The peat in this area was of an average depth of 8 feet. Nearly all the trees were killed by the 1954-55 fires, and in spots as much as 1 foot of peat was burned away. (Table 4)

As shown in Table 5 a few small trees survived the fires. The trees killed by the fires were principally blackgum, loblolly bay, white bay and small titi and sweet bay. There were only a few cypresses, and these were killed.

A rather sharp recovery of the hardwood tree species is indicated

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TABLE 5. LIVE TREES ON BILLY'S LAKE PLOT IN 1957

Species	1"	2"	3"	4"
<i>Taxodium distichum</i>	1			
<i>Magnolia virginiana</i>	5	2		
<i>Ilex cassine</i>	4			
<i>Persea borbonia</i>	7			
<i>Nyssa sylvatica</i>	5	4		

by the 1970 tally (Tables 6 and 7). Doubtless this is mostly coppice growth from root systems which survived the fire. It is obvious that the blackgum-bay type forest will replace the burned out forest. It is suggested that a deeper burning fire would be necessary to result in prairie.

SOLDIER CAMP ISLAND PLOT

Prior to 1954 the forest on the Soldier Camp Island area was principally pond cypress. The 1954-55 fires were of such an intensity here that nearly all the trees were killed (Tables 8 and 9). Since this plot is near the edge of the swamp, the peat bed was shallow, usually less than 2 feet thick, and it was entirely consumed by the fire. Since the peat bed had been shallow, the roots of most of the trees and shrubs extended into the underlying sand and were partially protected from the fire. Because of this, root survival was such as to result in a substantial regrowth of woody species (Tables 10 and 11).

The recovery of woody growth has been steady. Table 11 indicates a sharp decline in paintroot as was true in the Suwannee Canal

TABLE 6. LIVE TREES ON BILLY'S LAKE PLOT IN 1970

Species	1"	2"	3"	4"
<i>Taxodium distichum</i>		1	1	2
<i>Myrica cerifera</i>		1		
<i>Magnolia virginiana</i>	76	66	20	6
<i>Cyrilla racemiflora</i>	135	10		
<i>Ilex cassine</i>	34	36	1	
<i>Ilex vomitoria</i>	1			
<i>Acer rubrum</i>	8	3		1
<i>Gordonia lasianthus</i>	10	9	5	2
<i>Persea borbonia</i>	4	18	8	4
<i>Nyssa sylvatica</i>	127	129	46	7
<i>Lyonia lucida</i>	13			

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TABLE 7. GROUND COVER PLANTS BY SPECIES
AND PERCENTAGE ON BILLY'S LAKE PLOT

Species	1957	1962	1966	1970
<i>Taxodium distichum</i>	.1	.1	.1	t
<i>Smilax laurifolia</i>	.1	t	.8	.2
<i>Myrica cerifera</i>		t	.1	.1
<i>Magnolia virginiana</i>	2.6	3.1	4.2	.3
<i>Itea virginica</i>	1.1	1.3	4.4	.9
<i>Cyrilla racemiflora</i>	7.1	7.1	6.8	.5
<i>Ilex glabra</i>			.1	
<i>Ilex cassine</i>	.7	.6	.8	.1
<i>Acer rubrum</i>	.1	.1	.3	
<i>Hypericum sp.</i>			.1	
<i>Gordonia lasianthus</i>	4.3	.4	.2	.2
<i>Persea borbonia</i>	.7	.3	.2	t
<i>Decodon verticillatus</i>			.2	8.2
<i>Nyssa sylvatica</i>	2.0	3.9	5.4	.8
<i>Clethra alnifolia</i>	t	.1	.3	
<i>Leucothoe racemosa</i>		.2		.6
<i>Lyonia lucida</i>	.1	1.3	2.7	.9
<i>Pieris phyllireifolia</i>			.3	t
<i>Cephalanthus occidentalis</i>		.1	.1	
Thicket*				25.6
<i>Woodwardia virginica</i>	23.1	29.5	17.0	28.2
<i>Typha latifolia</i>		2.7		
<i>Andropogon virginicus</i>	t		.2	
<i>Panicum hemitomon</i>			.1	
<i>Scirpus eriophorum</i>	t		.4	
<i>Carex hyalinolepis</i>	.7	.9	.4	
<i>Xyris fimbriata</i>	t	t	2.7	t
<i>Iris caroliniana</i>			1.8	
<i>Lachnanthes tinctoria</i>			.2	
<i>Nymphaea odorata</i>			.3	.5
Open water & sphagnum	57.3	48.3	49.8	32.9

*Dense thicket of mixed woody species

plot. Probably this plant rapidly invades suitable habitat but is crowded out later by the invasion of other species. The item "open water" in Table 11 is really water with submerged aquatics, principally, sphagnum, and a sparse scattering of herbaceous marsh vegetation, the area of which could not be estimated.

MINNIE'S LAKE PLOT

An unburned area just west of Minnie's Lake was chosen as a control for this study. This area was covered principally by pond cypress timber. As shown in Tables 12 and 13, there was little

TABLE 8. DEAD TREES ON SOLDIER CAMP PLOT IN 1956

Species	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"
<i>Taxodium distichum</i>	340	147	66	10	4	1	7	7	13	19	10	17	3	5	1
<i>Pinus elliotii</i>	398	278	55	3	15	15	10	3	2	1	1	2			
<i>Magnolia virginiana</i>	28	18	3												
<i>Gordonia lasianthus</i>	11	8	3												
<i>Persea borbonia</i>	22	3	2												
<i>Nyssa sylvatica</i>	167	85	31												

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TABLE 9. LIVE TREES ON SOLDIER CAMP ISLAND PLOT IN 1956

Species	9"	10"	11"	12"
<i>Taxodium distichum</i>	1	2	1	1

TABLE 10. LIVE TREES ON SOLDIER CAMP ISLAND PLOT IN 1970

Species	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"
<i>Taxodium distichum</i>	30	35	30	6						1	1			1
<i>Pinus elliotii</i>	2	4	3	1										
<i>Myrica heterophylla</i>	3													
<i>Magnolia virginiana</i>	3	9	1											
<i>Ilex myrtifolia</i>	4													
<i>Persea borbonia</i>	11	3												
<i>Nyssa sylvatica</i>	32	40	14	2										

TABLE 11. GROUND COVER PLANTS BY SPECIES AND PERCENTAGE ON SOLDIER CAMP ISLAND PLOT

Species	1956	1958	1965	1970
<i>Pinus elliotii</i>		t	.1	.2
<i>Taxodium distichum</i>	t	.4	.5	1.9
<i>Smilax spp.</i>	t	.1	1.9	5.9
<i>Myrica spp.</i>		t	4.8	12.4
<i>Magnolia virginiana</i>	t	.1	.4	1.3
<i>Itea virginiana</i>		t	.2	.1
<i>Ilex glabra</i>	t	t	2.8	4.8
<i>Ilex coreacea</i>		t	t	.2
<i>Ilex cassine</i>			.3	.2
<i>Ilex myrtifolia</i>				.1
<i>Hypericum fasciculatum</i>		1.5	6.6	3.0
<i>Gordonia lasianthus</i>		t		
<i>Persea borbonia</i>	.1	.4	1.5	1.1
<i>Nyssa sylvatica</i>	t	.6	1.4	4.7
<i>Clethra alnifolia</i>		.2	1.1	.9
<i>Pieris phyllireifolia</i>	t	t	.8	.7
<i>Lyonia lucida</i>		.2	5.1	6.2
<i>Vaccinium sp.</i>		t	.1	.1
<i>Woodwardia virginiana</i>		10.9	6.2	7.9
<i>Pometideria cordata</i>	.1	.5	3.3	1.6
<i>Lachnanthes tinctoria</i>	50.8	7.3	.3	
Miscellaneous herbs	.2	24.9	5.5	
Open water	48.9	52.9	57.1	46.7

TABLE 12. TREES RECORDED ON MINNIE'S LAKE PLOT IN 1957

Species	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	24"	26"	34"	Basal Area
<i>Taxodium distichum</i>	33	97	76	60	45	35	49	33	28	21	23	16	22	19	9	11	11	4	8	1	1	2	1	1	1	230.55
<i>Magnolia virginiana</i>	1	9	2	5	2	5	4	4	1																	4.91
<i>Cyrilla racemiflora</i>	51	48	10	1	1																					2.05
<i>Ilex cassine</i>	20	31	23	12	13	6	4	3																		8.03
<i>Gordonia lasianthus</i>			2		1																					.30
<i>Persea borbonia</i>	15	22	13	6	4	1	3																			3.27
<i>Nyssa sylvatica</i>		14	11	10	6	2	3	1		1		1														5.42
<i>Lyonia lucida</i>	32	6																								.30
<i>Leucothoe racemosa</i>	1																									.01
<i>Clethra alnifolia</i>	2	1																								.03
Totals	155	228	137	94	71	50	63	41	25	22	23	16	22	19	9	11	11	4	8	1	1	2	1	1	1	254.85

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TABLE 13. TREES RECORDED ON MINNIE'S LAKE PLOT IN 1970

Species	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	26"	27"	34"	Basal Area
<i>Taxodium distichum</i>	28	63	73	35	44	24	38	35	24	24	14	26	20	22	11	17	14	10	5	2	3	3	2	1	1	1	262.57
<i>Magnolia virginiana</i>	4	10	6	3	3	6	1	6	4	3	2																9.47
<i>Cyrilla racemiflora</i>	70	25	5																								1.18
<i>Ilex cassine</i>	15	29	21	14	14	7	4	4	3	1																	10.54
<i>Gordonia lasianthus</i>			2				1																				.37
<i>Persea borbonia</i>	3	8	9	4	2	5	2	1																			3.11
<i>Nyssa sylvatica</i>		2	5	10	7	5	4	2																			5.04
<i>Lyonia lucida</i>	46	11																									.49
<i>Leucothoe racemosa</i>	1																										.01
<i>Clethra alnifolia</i>	2																										.01
Totals	169	148	121	66	70	47	50	46	33	28	16	26	20	22	11	17	14	10	5	2	3	3	2	1	1	1	292.79

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TABLE 14. PERCENTAGE OF GROUND COVER PLANTS UNDER 4½' BY SPECIES IN 1957 AND 1970 ON MINNIE'S LAKE PLOT

Species	1957	1970
<i>Lyonia lucida</i>	40.7	47.7
<i>Eleocharis sp.</i>	13.3	0.3
<i>Carex sp.</i>	4.5	0
<i>Cyrilla racemiflora</i>	0.1	0.2
<i>Nymphaea odorata</i>	0.7	0.3
Sparse mixture	1.4	10.2
Open water	39.3	41.3

change in the composition of the species of trees between 1957 and 1970. There was some growth among the larger trees accompanied by a general decline in the number of smaller trees. The basal area of the whole stand increased slightly over the intervening 13 years.

Total ground cover declined slightly, probably because of being shaded out by the overstory. However, hurrah bush showed a slight increase in coverage (Table 14).

CONCLUSIONS

It is evident from the accompanying data and from general observations of the effects of the fires which occurred in Okefenokee Swamp in 1954 and 1955 that either extremely severe fires or repeated fires would be required to cause prairies such as those in Okefenokee Swamp. The three areas chosen for this study were among the most severely burned areas in the swamp in the 1954-55 fires, yet all of these burned areas are reverting to swamp forest.

The area near the Suwannee Canal had been burned severely by two fires, one in 1932 and the other in 1954-55. Probably one more such fire here in the next 20 years would eliminate the few remaining patches of woody growth and the result would be a marsh, known locally as prairie.

While the fire at Billy's Lake was considered severe, having killed nearly all the trees, it did not burn deep enough to destroy the root systems of these plants and coppice growth is rapidly replacing the killed timber. Presumably, if prairie were to be caused

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in this place, fire would need to burn deeper into the peat than did the 1954-55 fires.

The peat bed at the Soldier Camp Island plot was shallow and was burned away entirely, clear down to the sand. Nearly all trees were killed. However, enough of the root systems survived in the underlying sand to insure a regrowth of trees. Recovery in this area is slow but a return of a forest, much similar to the one which was killed, is indicated.

It is concluded that fires of the severity of the 1932 or the 1954-55 fires may kill out stands of timber in places, but it can be expected that coppice will replace the timber unless there are more fires on the same areas. Probably three such fires on the same area within 60 or 70 years would result in prairie. A single fire which would burn deep enough into the peat bed to kill the root systems of the trees could also cause prairie.

It is difficult to appraise the importance of extreme droughts and the accompanying fires to Okefenokee Swamp. The aesthetic damage is incalculable. Doubtless the droughts and fires are damaging to most forms of swamp wildlife at the time of their occurrence. However, the prairies and the prairie lakes and ponds are a unique part of the swamp. It is obvious that they are now slowly but steadily reverting to swamp forest. If this trend should continue until the whole swamp is forested, most of the more important and interesting species of wildlife would be adversely affected. The sandhill crane, bitterns, rails, gallinules and the round-tail muskrat would disappear entirely from the swamp. There would be little use of the swamp by waterfowl. Alligators would probably survive but their required habitat would be drastically reduced. Herons, ibises, ospreys and probably other important kinds of wildlife would become rare or disappear from the swamp.

Serious consideration must be given as to what control measures should and should not be taken to prevent or to permit fires in Okefenokee Swamp during periods of extreme drought.

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