OKEFENOKEE NATIONAL WILDLIFE REFUGE

BIOLOGICAL REPORT

JULY - DECEMBER
1965

I. WILDLIFE POPULATIONS

Regular bi-weekly counts of waterfowl and wading birds were started in early October amd continued throughout this period. The prescribed census routes extend from the boat dock at Camp Cornelia to Buzzard Roost and Gannet Lakes, and from Billy's Lake to the patrol cabin in Big Water Lake.

Water levels in the swamp have dropped to normal during this reporting period after having been above normal for the past year. Fishing improved with the lower water conditions and concentrations of wading birds were observed more frequently.

A. Wading Birds

Common egrets. The population of common egrets increased steadily during late spring and early summer and the estimated peak population was 4000 birds. At the end of this period the population was estimated to be 1000 birds.

Snowy egrets. Only a few snowy egrets visited Okefenokee this year and these left early. The last observation reported was of a single bird on September 13.

Cattle egrets. A single cattle egret was observed on Okefenokee in 1960. This year there was an estimated population of 2000 during the summer. A large rookery was found in Chesser Prairie in May. All of the cattle egrets were gone by September 1.

Great blue herons. Great blue herons are well dispersed throughout the wetlands of the swamp. Peak population for this year was estimated at 800 birds.

Little blue herons. The peak population of little blue herons was estimated at 4000 birds during the summer. During this period large flocks of these birds were observed during mid December and the population was estimated to be 1600 birds at that time.

Green herons. Most of the green herons were gone by late September. The last observation reported was of one bird on November 9. Peak population during the period occurred in early September and was estimated at 400 birds.

Louisiana herons. No reports of these birds were received during this period.

White ibises. The fall population of white ibises reached a peak during mid November. The peak of an estimated 6000 birds is approximately double the estimated summer population. These birds can usually be seen in large flocks in Chesser and Grand Prairies, and at Big Water Lake.

Wood ibises. A peak population of an estimated 1500 birds occurred during late November and decreased rapidly thereafter. Only four were reported on December 20. The peak population during the fall was estimated to be three times as great as the summer peak.

Sandhill cranes. The following tabulation shows the number of cranes seen on regular trips across Chesser and Grand Prairies in the later summer and early winter for the past eight years.

	1958	1959	1960	1961	1962	1963	1964	1965
Early July	0	0	4	-	-	3	-	-
Late July	2	4	2	10	-	0	8	-
Early August	-	0	-	15	5	-	-	-
Late August	0	-	4	-	-	0	0	6
Early September	2	-	-	5	--	-	3	8
Late September	0	7	-	4	2	9	6	-
Early October	8	-	2	9	10	9	-	8
Late October	19	--	1	-	-	-	7	27
Early November	0	2	19	16	6	-	4	14
Late November	-	31	18	--	16	-	11	12
Early December	8	23	22	12	11	15	8	22
Late December	191	23	8	10	54	6	8	19

Miscellaneous Birds. Anhingas are commonly seen on trips along the swamp water courses and the boat trails through the prairies. The population of anhingas at Okefenokee reached a peak in early December and was estimated at 500 birds. One black tern was observed at Gannet Lake Prairie on September 13. An estimated 10,000 tree swallows were observed feeding on wax myrtle berries at Camp Cornelia on November 30. A single double-crested cormorant was observed at Billy's Lake on December 29. Black-crowned night herons have been seen in increasing numbers during the fall and early winter and the late December population was estimated at 250 birds. The ospreys and swallow-tailed kites were gone by September.

A single immature bald eagle was observed on Blackjack Island on December 7. This is the first observation of a bald eagle at Okefenokee since December 2, 1964.

B. Waterfowl. The peak population of waterfowl for the period was an estimated 7100 birds during late December. This is only one-half the estimated population one year ago. Lower populations this year are probably attributable to the mild weather and the lack of severe cold and freeze-ups farther north.

Blue-wing teal were first observed on September 16 but less than 200 birds were seen during the fall.

Wood duck populations increased gradually until late December when a decrease was noted. A rise in water levels in the refuge at this time probably dispersed the birds from their normal feeding areas which resulted in a lower count rather than an actual decline in numbers for the refuge.

Mallards increased to approximately 5000 birds in late December and became the most abundant species on the refuge at the end of this period.

Ringneck ducks, black ducks and hooded mergansers make up the remainder of the refuge waterfowl population. A more intensive survey during the Okefenokee Christmas Bird count conducted on January 1, 1966 added the following species and numbers to the waterfowl population: Lesser scaup, 21; shoveler 1; American widgeon 6; Blue goose 1; and Snow geese 2. These species were observed in Chase Prairie which is not part of the regular waterfowl census route.

C. Turkeys. Only one flock of turkeys was reported during this period. This was a flock of eight birds seen crossing the Camp Cornelia road near the east edge of the refuge boundary. No broods were reported this year.

D. Bears. Only two bears were seen during this period but signs of bear activity are still common in the shallow areas of the refuge wetlands and timberlands.

E. Deer. Deer are seen frequently and deer sign is quite common on the upland adjacent to the swamp. Deer populations in the Pocket and on Cowhouse Island remain high. On a helicopter flight over the southern part of the refuge on December 7, eleven deer were observed from the air. Six of the 11 deer were out in the wetlands of the swamp. Body size of the deer observed indicated good physical condition although antler development on the males was very poor. Honey, Blackjack and Mitchell Islands were visited during the flight and all were estimated to have good deer populations. The shallow marsh and swamp adjacent to Honey Island was laced with deer trails. All three of the islands visited were surprisingly clear of underbrush except for palmetto. The deer apparently depend on the shallow, brushy swamp and marsh for feeding areas.

F. Raccoons. Racoons are still increasing since the decline in 1964 due to an unidentified disease outbreak. Raccoons are frequently seen in and adjacent to the swamp and signs of their activity are abundant everywhere.

G. Otters. One large male otter was trapped and promptly shipped to Wheeler Refuge on December 10. The total transplant now stands at six males and three females. Otters are rarely seen at Okefenokee during the warmer months of the year but with the advent of cold weather these playful creatures are seen frequently along the water courses. On December 20, during a regular waterfowl census 9 otters were seen in one morning on the east side of the refuge.

H. Fishing. Fishing in the refuge waters was excellent during the past year. During periods of low water creel limits of bluegill, warmouth and chain pickerel were reported almost daily. Largemouth bass fishing was fair

to excellent during the cooler fall months. The concessioners at Camp Cornelia and Stephen Foster State Park reported a thriving business during the periods of good fishing conditions,

Fishery Biologist Edward Crittenden visited the refuge in July and made recommendations for applying lime and fertilizer to six borrow pits in the Pocket. These pits will be opened to the public in 1966.

I. Alligators. Alligators are numerous on the refuge and may be seen in considerable numbers on warm days. Alligator poachers continue to be a problem at Okefenokee. Twenty-nine known kills have occurred this year of which 21 were recovered. Most of the poaching attempts are at the Suwannee River Sill which is easily accessible to poachers. Almost constant patrolling is necessary during the warmer months to prevent wholesale depredations by poachers. The alligator population is high, and for the most part inaccessible, and the number taken by poachers has not significantly affected their status.

II. WEED CONTROL

The new growth of maidencane,(Panicum hemitomum, encroaching from the brushy edges of the Suwannee Canal was sprayed on May 4, 5 and 6 with dalapon at the rate of 10.1 pounds per acre of acid equivalent. The maidencane was in the early blooming stage when sprayed and the effects of the herbicide on the above water portions of the plant were apparent after six hours. By the third day the above water portions of the plant had turned brown. It is estimated that a 95% kill was accomplished.

On August 30, 1965 Mr. Ed Ball, Biologist from the Regional Office, inspected the Suwannee Canal relative to the regrowth of maidencane and suggested that two applications of dalapon be applied next year. The first application is to be applied as during the past year and the second application is to be applied during the summer to eradicate any new growth that develops.

It is also proposed that a small infestation of maidencane in the Suwannee River Sill Borrow Pit to be treated in the same manner. Other herbicide treatment proposals include the treatment of decadon, Decadon verticillatus, along the boat trail connecting Suwannee Canal and Billy's Lake with a mixture of 2,4-D and 2,4,5-T, and a small area of aquatic spikerush,(Eleocharis Baldwinii, in the boat run between Billy's Lake and Billy's Island is to be treated with Diquat on a trial basis.

Requests for approval of these four chemical control proposals have been applied for through regular channels.

III. ECOLOGICAL SUCCESSION FOLLOWING FLOODING BY THE SUWANNEE RIVER SILL

The stop logs were placed in the spillways of the Suwannee River Sill in the spring and early summer of 1962. The extra flooding resulting from the sill has extended through four growing seasons.

The original "marked tree transect"along the Suwannee River Sill Borrow Pit contained 250 trees. Only 198 were found in 1964, and 189 in 1965 when checked on July 28. It is assumed that the trees not found have fallen into the waters of the borrow pit. All of the oaks and pines have died. Most of the blackgum, ogechee tupelo, red maple and cassena are alive and about 50 per cent of the titi is alive. Of the 36 marked cypress living in 1963, 31 are still alive and thrifty. Table 1 shows the status of each species.

The Mack's island and Pocket transects were not tabulated this year. However, a visit to these transects revealed that some of the bay and slash pine trees are seriously affected by the higher water and probably will be dead by next summer. It is planned to check these transects during the summer of 1966.

IV. PLANT SUCDESSION ON PRAIRIE BATTERIES

The vegetation on the batteries in Chesser and Sapling Prairies were tallied again this year. The Chesser Prairie battery was checked on September 13, 1965 and the Sapling Prairie battery was checked on September 14, 1965. This istthe eighth successive year that data has been recorded for these two batteries.

The vegetative composition of the Chesser Prairie battery has changed only slightly during the past year. A slight increase in Orontium aquaticum and Utricularia, sp. and a slight decrease in Bidens coronata were the most notable changes and this is probably indicative of the high water that was prevalent throughout the past year. The eight years of data are presented in Table 2.

The vegetative composition of the Sapling Prairie battery has changed only slightly. Bidens coronata has decreased; Sarracenia minor and Erianthus giganteus has died and some of the dead plants are still standing; and Dulichium arundinacem was not found. The eight years of data are presented in Table 3.

Tables 3 and 4 show the estimated densities of the observed species of plants each year. The numerals used are: 1 - one or a very few; 2 - fairly common; 3 - very common; and 4 - abundant.

Some parts of the original batteries have sunk below the surface of the water but the study has been continued by using those portions of the batteries that remain.

Photographs of the Chesser Prairie and Sapling Prairie batteries are presented in Figures 1 and 2 respectively.

V. ECOLOGICAL SUCCESSION FOLLOWING THE 1954-1955 FIRES

A resurvey of the Suwannee Canal and Soldier Camp Island Burn Plots was made during August of this year.

The Suwannee Canal plot's most significant change was an increase in Carex hyalinolepis and a corresponding decrease in the open water areas. This plot is very shallow and the sedge is crowding out the other herbaceous plants. It is anticipated that the sedge will continue to increase until the woody plants develop crowns sufficient to reduce the amount of sunlight reaching the water and then the trend will reverse. Three new woody species were found this year. They were Pieris phyllreifolia, Myrica cerifera and Hypericum fasciculatum.

Table 4 shows the ground cover by species and percentage for the years 1956, 1957, 1958, 1961 and 1965. Percentage of cover is carried out to thousandths of one percent to show the amount of increase or decrease but this should not be construed as the degree of accuracy.

The most significant change in the Soldier Camp Island Plot is the increase in the woody shrub growth ranging from four to fifteen feet in height. This brushy vegetation and higher water levels during the past year has apparently caused a decrease in the amount of herbaceous vegetation in the plot. Seven species of herbaceous plants present in 1961 were not found this year.

Table 5 shows the ground cover by species and percentage for the years 1956, 1958, 1961 and 1965. Percentage of cover is carried out to the thousandths of one percent to show the amount of increase or decrease but this should not be construed as the degree of accuracy.

VI. SPECIAL ASSIGNMENTS

A request from the International Biological Program was received and complied with during late August and early September. The request was for the collection and reporting of selected environmental data from natural areas on National Wildlife Refuges. A stand of cypress timber along the Minnie's Lake boat run trail was selected as a natural "stand" and the requested data was compiled and reported on September 7.

During the week of November 14-20, 1965 I was assigned to the Pesticides Monitoring Program at Patuxent Research Center, Laurel, Maryland. The Pesticides Monitoring Program is being conducted concurrently with the Annual Waterfowl Wing Survey. A random sample of mallard and black duck wings from the Atlantic Flyway and mallard wings only from each of the other flyways will be analyzed for pesticide residues. Four additional weeks will be devoted to the assignment during January, February and March of 1966.

VII. PUBLIC RELATIONS

A group of 20 Forestry students from the University of Georgia visited the refuge on July 8, 1965. During the evening they were shown three wildlife films. The films were: THIS IS THE MALLARD, BEHIND THE FLYWAYS, and GEORGIA WHITETAILS.

Newspaper reporters Mike Davies and David Beatty were given a tour of the refuge which included staying overnight in the Big Water Patrol Cabin. A feature story with photographs of swamp scenery appeared in the August 15, Sunday edition of the Savannah Morning News.

On August 6, 1965, Professor W. Reid Goforth and ten zoology students from Iowa Wesleyan College were given a tour of the west side of the refuge.

A talk on birds illustrated with colored slides was presented before the Okefenokee Bird Club in Waycross on October 4, 1965. Fourteen members and guests were present.

On October 27, 1965, this refuge was honored by a visit from Mr. John S. Gottschalk, Director, Bureau of Sport Fisheries and Wildlife, and his wife. They were given a tour of the refuge and were guests of honor at a mid-day fish fry at Camp Cornelia which featured largemouth bass caught from the waters of Okefenokee.

On October 31, 1965, Okefenokee Refuge was honored by a visit from fourteen forestry officials from Brazil. They were given a tour of the Billy's Lake and Minnie's Lake areas.

On November 4, 1965, Assistant Refuge Manager Edward Collinsworth, Forester Marvin T. Hurdle and Biologist Walker were assigned as drivers to provide 4-wheel vehicle transportation for a tour of Cumberland Island by Secretary of the Interior Stewart L. Udall and party who were inspecting the island as a possible site for a national park.

Leonard O. Walker
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Wildlife Biologist

January 31, 1966

TABLE I. SURVIVAL OF MARKED TREES ALONG SUWANNEE RIVER SILL BORROW PIT - 1965

DBH (Inches)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Quercus laurifolia	a															1									1
	d	2	1	7	3	2	1	5	1	1	1														
Nyssa Ogeche	a			3	6	8	2																		
	d				2		1																		
Nyssa sylvatica	a			2	2				2		1														
	d								1																
Taxodium distichum	a			3	1	2	1	5	3	4	3	5	1	2		1									
	d						1	1																	
Acer rubrum	a			13	4	3																		1	
	d	1				1	2	1	1	1															
Pinus Elliottii	a														1	1									
	d			2	15	12	1		1																
Cyrilla racemiflora	a			5	2																				
	d			2	4	1																			
Ilex myrtifolia	a			8	6	1	1					1													
	d			3				1																	

TABLE 2 - BATTERY IN CHESSER PRAIRIE

Species	1958	1959	1960	1961	1962	1963	1964	1965	1967
Sphagnum sp.	1	2	2	2	1	1	1	1	
Woodwardia virginica	3	3	3	2	2	2	2	2	2
Taxodium distichum					1	1	1	1	1
Saggitaria graminea	3	3	1	1	1	2	2	2	2
Saggitaria longirostra	3	2	2	2	4	3	2	2	2
Erianthus gigantea			1	1			1		
Andropogon virginicus		2	2	4	3	2	1		1
Sacciolepis striata	2	3	2	2	3	2	2	1	2
Dulichium arundinaceum	2	2	3	2	2	2	1	1	1
Eleocharis baldwinii			3	3	3	4	4	4	3
Eleocharis elongata			2	2	2	2	2	2	1
Cyperus sp.									
Rhynchospora inundata	2	2	1	1	1	3	1	1	2
Rhynchospora sp.			1	1		1	1		
Peltandra virginica						1	1	1	
Orontium aquaticum				1	1	1	1	3	2
Xyris fimbriata	3	3	4	4	3	2	2	3	2
Eriocaulon compressum		2	3	2	1	1	1	1	1
Pontederia cordata	2	2	2	2	2	3	3	4	4
Gyrotheca tinctoria	4	4	4	4	4	4	4	3	3
Habeneria repens		2	1	1	1	1	1	1	1
Cyrilla racemiflora			1	1	1	1	1		
Hypericum virginicum	3	3	3	3	3	3	2	1	1
Decodon verticillata		1		1	1	1	1	1	1
Ludwigia lanceolata	4	2	2	3	2	2	2	1	1
Hydrocotyle umbellata		2	2		2	1	1	1	1
Girardia sp.	2	2	1	1	2	1			1
Utricularia sp.			3	3	2	1	1	3	3
Cephalanthus occidentalis			1	1	1	1	1	1	1
Bidens coronata	4	4	3	3	2	2	3	1	1
Limnobium spongia									1
Nymphoides aquatica									1

TABLE 3 - BATTERY IN SAPLING PRAIRIE

Species	1958	1959	1960	1961	1962	1963	1964	1965	1967
Sphagnum			1	4	2	2	2	2	2
Woodwardia virginica									
Lycopodium sp.						1	1	1	1
Taxodium distichum									
Saggitaria graminea	2	3	2	2	2	1		1	1
Saggitaria longirostra									
Erianthus giganteus				1	1		2		
Andropogon sp.	2	4	4	1	2		2	2	
Sacciolepis striata		2				2			
Panicum hemitomon	2	2	2	2	3	3	3	4	4
Dulichium arundinaceum	3	3	2	4	3	3	3		
Eleocharis baldwinii	4	4	4	4	4	4	4	4	
Cyperus sp.	3					1		1	
Rhynchospora inundata		2	1		1				
Rhynchospora sp.									
Orontium aquaticum						1	1	1	1
Xyris fimbriata	4	3	1	1	1	1	2	2	1
Ericaulon compressum							1	1	1
Pontederia cordata	3	2	2	2	1	2	1	1	3
Gyrotheca tinctoria	3	3	3	3	4	3	2	3	
Hybenaria repens	2	2	2			1	1	1	1
Cyrilla racemiflora									
Nuphar advena	3	3	2	2	2	2	1	1	2
Nymphaea odorata	2	2		1	1	1	1	1	1
Sarracenia minor							3		
Hypericum virginicum	3	4	3	3	2	2	1	2	1
Decodon verticillata						1	1	1	
Ludwigia lanceolata	3		1	1	2	1	2	2	1
Hydrocotyle umbellata	4	3	3	3	3	2		1	1
Girardia sp.									
Utricularia sp.								1	1
Leucothoe racemosa							1	1	
Cephalanthus occidentalis						1	1	1	
Bidens coronata	4	3	3	3	1	1	4	2	1
Eupatorium capillifolium						1			

TABLE 4.. GROUND COVER BY SPECIES AND PERCENTAGE ON THE SUWANNEE CANAL PLOT.

	% 1956	% 1957	% 1958	% 1961	% 1965
Water	56.81	11.47	33.55	23.65	5.840
Lyonia lucida	0.34	0.75	0.63	0.95	0.756
Itea virginiana	0.07	0.44	0.75	0.65	0.473
Smilax laurifolia	0.15	0.17	0.20	0.15	0.333
Magnolia virginiana	0.05	0.35	0.90	0.26	0.270
Lyonia ligustrinus	0	0	t	t	0.126
Taxodium distichum	0	0.24	0.23	0.31	0.062
Leucothoe racemosa	0.01	0.06	0.24	0.42	0.059
Nyssa sylvatica	0	0.04	0.05	0.14	0.048
Ilex glabra	0.01	0.08	0.09	0.03	0.032
Vaccinium arkansanum	0	0.02	0.01	0.01	0.013
Pieris phyllyreifolia	0	0	0	0	0.010
Ilex cassena	0	0	0	0.02	0.010
Persea borbonia	0.05	0.30	0.50	0.11	0.004
Myrica cerifera	0	0	0	0	0.004
Hypericum fasciculatum	0	0	0	0	0.003
Pinus elliottii	0	0	t	t	0.001
Carex hyalinolepis	16.25	46.07	52.46	66.38	86.168
Woodwardia virginica	3.83	9.57	9.82	6.75	5.076
Nymphaea odorata	?	?	?	?	0.538
Peltandra virginica	0.01	0.01	0.03	0.09	0.055
Gyrotheca tinctoria	0	9.57	0.03	t	0.059
Xyris fimbricata	21.07	1.86	0.51	0.02	0.036
Ludwigia lanceolata	1.28	18.57	0	0	0.007
Eleocharis baldwinii	?	?	?	?	0.004
Iris Caroliniana	0	0	0	0	0.003
Andropogon sp.	0	0	t	t	0
Dulichium arundinaceum	0.07	0.43	t	0.03	0
Bidens coronata	0	0	0	0.03	0
Rhynchospora fascicularis	0	0	0	t	0
Totals	100.00	100.00	100.00	100.00	100.00

t - trace. Less than 0.01%

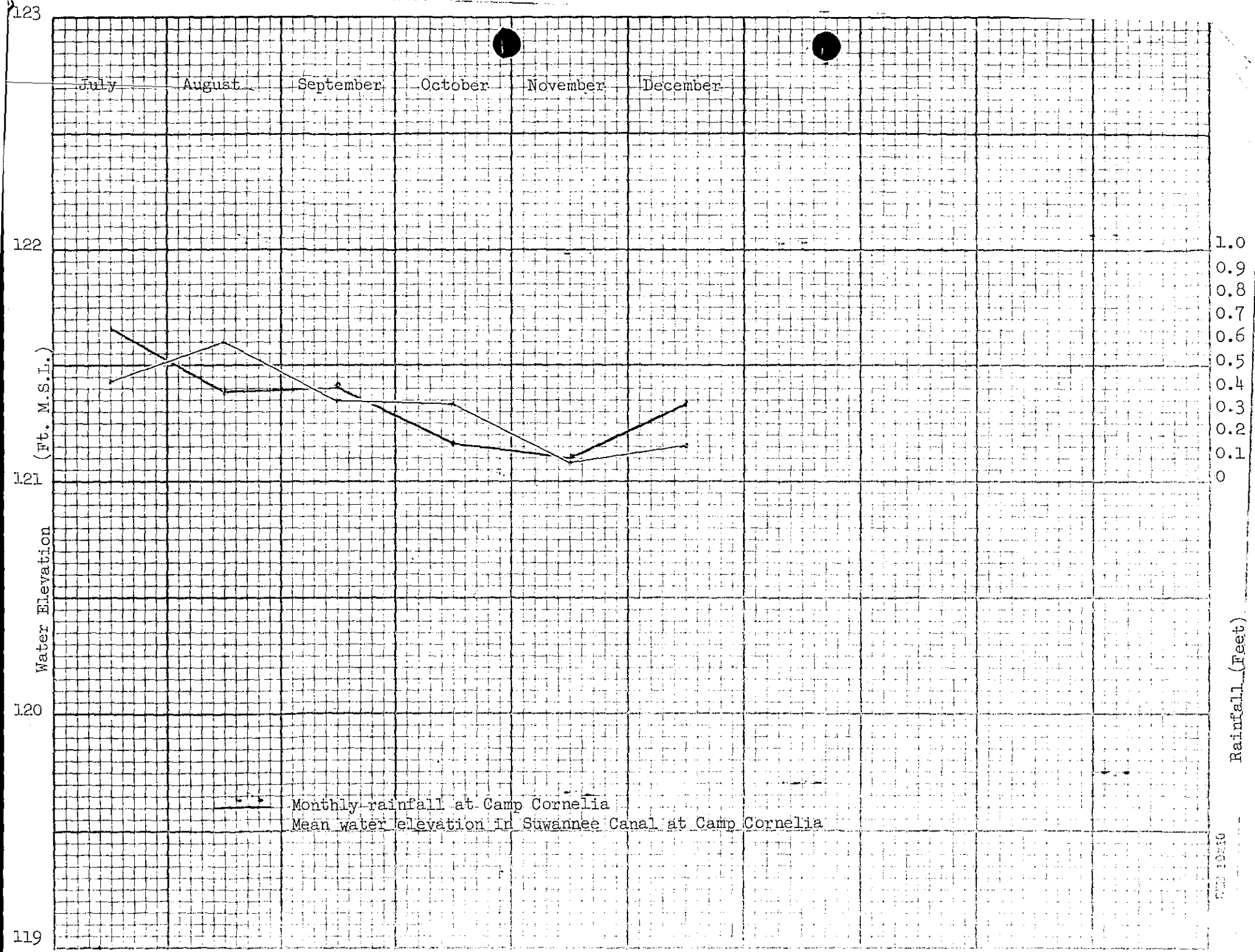
TABLE 5. GROUND COVER BY SPECIES AND PERCENTAGE ON THE SOLDIER CAMP ISLAND PLOT

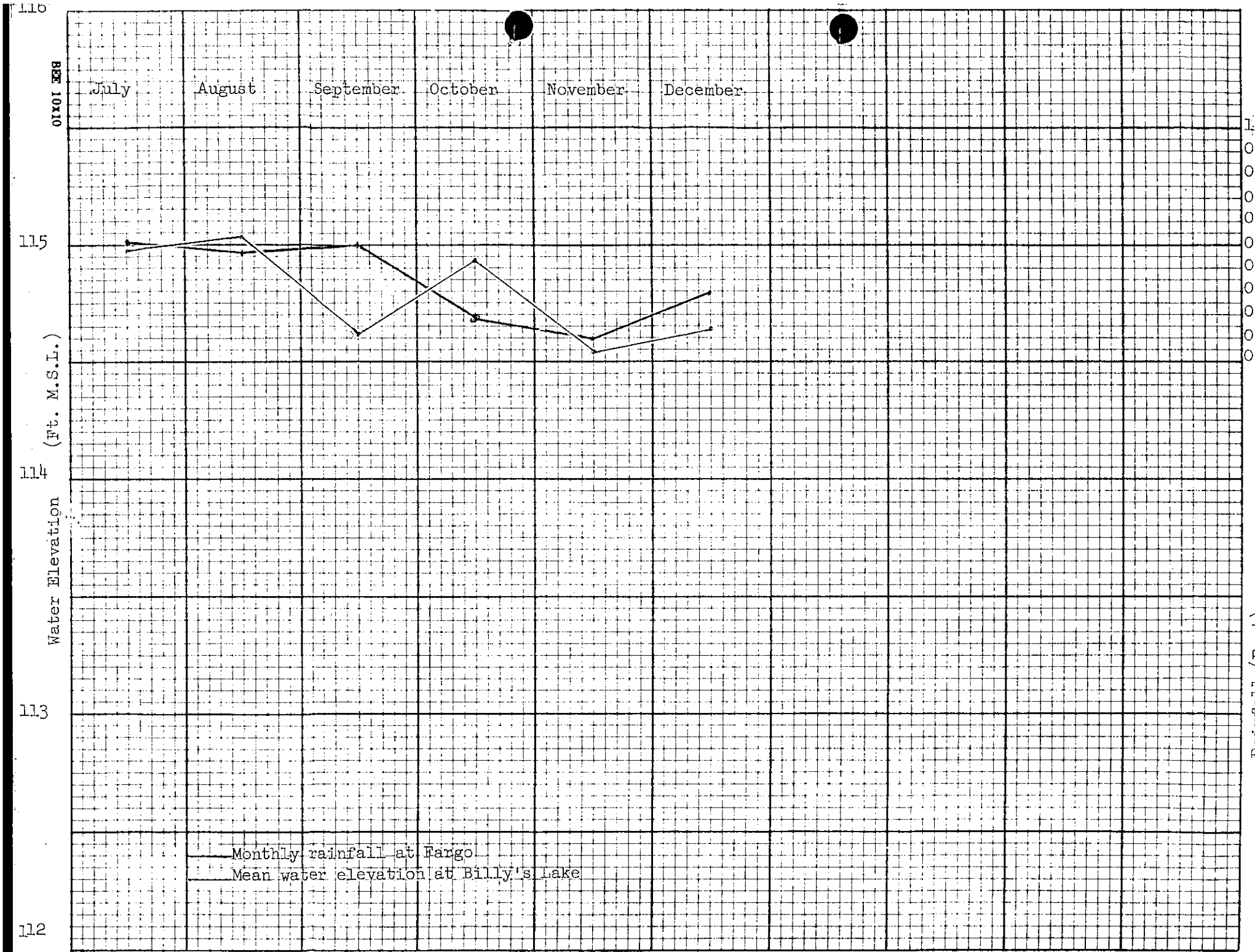
	% 1956	% 1958	% 1961	% 1965
Water	48.89	52.81	23.77	57.062
Hypericum fasciculatum	0	1.54	0.80 /M	6.605
Lyonia lucida	0	0.20	0.58	5.071
Myrica cerifera	0	t	0.20 /M	4,821
Ilex glabra	0.01	0.03	0.14	2.793
Smilax laurifolia	0.01	0.08	0.08 /M	1.936
Persea borbonia	0.05	0.41	0.53	1.504
Nyssa sylvatica	0.01	0.59	0.97	1.370
Clethra alnifolia	0	0.16	0.18	1.146
Pieris phillyreifoli	0	0	0.03	0.827
Taxodium distichum	0.03	0.37	1.36	0.549
Magnolia virginiana	0.01	0.12	0.54	0.424
Itea virginiana	0	t	t /M	0.248
Vaccinium arkansanum	0	t	.01	0.109
Pinus elliotti	0	t	0.02	0.093
Ilex cassena	0	0	0	0.034
Smilax Walteri	0	t	0.04 /M	0
Ilex coriacea	0	t	t	0
Ilex myrtifolia	0	0	t	0
Gordonia lasianthus	0	0.01	0.03	0
Woodwardia virginica	0*	10.93	0.04 /M	6.263
Pontederia cordata	0.06	0.50	1.41 /M	3.321
Xyris fimbriata	0	5.92	M	3.041
Andropogon sp.	0	t	M	2.282
Gyrotheca tinctoria	50.79	7.33	0.74 /M	0.277
Carex sp.	0.09	8.69	M	0.100
Rush	0	0	0	0.039
Ludwigia	0	0.79	M	0.030
Hypericum virginicum	0	0.78	M	0.026
Mint	0	0.79	M	0.021
Peltandra virginica	0	0	0	0.008
Saggitaria graminea	0	1.53	M	0
Panicum sp.	0.05	0.33	M	0
Unidentified grasses	0	0.11	M	0
Rhynchospora fascicularis	0	0.77	M	0
Rhexia virginica	0	0.77	M	0
Bidens coronata	0	2.89	M	0
Pluchea foetida	0	0.77	0	0
Solidago fistulosa	0	t	0	0
Eupatorium capillifolium	0	0.78	M	0
Mixture total			68.53	
Total	100.00	100.00	100.00	100.00

t - trace. Less than 0.01%

* - See the July-December 1961 Biological Report

/M - See the July-December 1961 Biological Report


123
122
121
120
119
July
August
September
October
November
December
Water Elevation (Ft. M.S.L.)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Rainfall (Feet)
Monthly rainfall at Camp Cornelia
Mean water elevation in Suwannee Canal at Camp Cornelia


116
115
114
113
112
Water Elevation (Ft. M.S.L.)
July
August
September
October
November
December
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Rainfall (Feet)
Monthly rainfall at Fargo
Mean water elevation at Billy's Lake