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A Survey and Baseline Analysis of Aspects of the Vegetation of Taylor Slough, Everglades National Park

NATIONAL PARK SERVICE
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INTRODUCTION

The Taylor Slough drainage, along with adjacent portions of eastern Everglades National Park, is at present the most vulnerable portion of the park to impacts resulting from human activity. A series of canals constructed near the park boundary during the past 15 years has accentuated the gradual drying which began when the earliest canals penetrated the Miami Rock Ridge prior to 1920. Canal 31-W was built along the park boundary in 1968-70, intersecting the main channel of Taylor Slough. Unfortunately, because baseline information documenting past conditions is sparse, it has been impossible to objectively assess the impact of drainage upon the slough ecosystem. Another unknown is the extent to which development of formerly wetter lands adjacent to the park boundary will be allowed to proliferate in future decades.

In spite of its past modifications and continuing vulnerability, the area presently remains a prime resource of Everglades National Park, with a substantial diversity of plant and animal life. In the southern (downstream) portion of Taylor Slough (south of Anhinga Trail), water levels are relatively high and ecosystems may be largely intact. The Anhinga Trail, substantially manipulated for years to maintain deep water areas even during the dry season, is the location of the park's most popular interpretive trail because of the concentrations of wildlife, particularly alligators and wading birds, occurring there during the dry season. Paradise Key (also known as Royal Palm Hammock), immediately adjacent to the slough at the Anhinga Trail, is the largest and richest in plant species of all tropical hardwood hammocks of Everglades National Park and (with Mahogany Hammock) is one of the best known to park visitors. Its diversity may be partly due to the protective buffer from fire provided by the adjacent slough.

The pinelands and hammocks adjacent to the slough are the locations of the greatest concentrations of endemic and rare plants in Everglades National Park. The hydroperiod-dependent Muhlenbergia prairies of the Taylor Slough area constitute the major remaining habitat of the endangered Cape Sable Sparrow. The majority of the remaining population of the endangered American crocodile is located at the extreme southern end of Taylor Slough and surrounding areas of northeastern Florida Bay.

In early 1979, as a result of establishment by the U.S. Congress in 1970 of a guaranteed minimum delivery schedule of surface water to Everglades National Park and a 1977 agreement between the Army Corps of Engineers and the National Park Service, construction was initiated on South Florida Water Management District Structure S-332, a pumping station at the intersection of the main channel of Taylor Slough and Canal 31-W, which is scheduled to deliver 37,000 acre-feet of water to Taylor Slough annually. Biological and hydrological investigations are being carried out by the South Florida Research Center of the National Park

Service which will allow monitoring of the effects of this water delivery. This report concerns work initiated in late 1977 examining the vegetation of Taylor Slough, with emphasis upon the area just downstream from the pumping station. Objectives of this work are as follows:

1) Inventory, in a broad fashion, the vegetation of Taylor Slough within Everglades National Park.

2) Obtain specific documentation of relationships between environmental factors, especially hydroperiod and soils, and the distribution of plant communities.

3) Develop a system for baseline documentation of present vegetation patterns to enable monitoring of changes which may occur following construction of the pumping station.

PREVIOUS BOTANICAL WORK

Safford (1919) gave a cursory sketch of the portion of Taylor Slough adjacent to Paradise Key in his "Natural History of Paradise Key," describing what he considered some of the more interesting plants and animals of the area. J. K. Small often referred to the area in his writings on the flora of the Everglades Keys region (e.g., Small, 1930), but gave little detail on the composition of the vegetation. Egler's (1952) treatise on the Southeast Saline Everglades touched upon the area of lower Taylor Slough, but was mainly concerned with the area to the southeast and east. Tabb, et al. (1967) reevaluated the term "Southeast Saline Everglades" and carried out a rather detailed study of the distribution of plants and aquatic invertebrates along salinity gradients in the essentially freshwater area south of C-111 canal, west of U.S. Highway #1, and just east of lower Taylor Slough.

Craighead (1971) felt that canals constructed through the Miami Rock Ridge "lowered the water table 4 to 5 feet around and west of Homestead, and the effects were extended several miles farther to lower the water table that maintained Taylor Slough and much of the pineland in the Everglades National Park."

The study of South Florida vegetation change by Alexander and Crook (1973; 1974; 1975) contains several 1-square mile quadrats within or near Taylor Slough, which were analyzed by comparing signatures of vegetation patterns on 1940 aerial photographs with recent photography, in combination with field observations.

Werner (1975) examined the status of the Cape Sable Sparrow in relation to vegetation and fire in Taylor Slough. He concluded that the sparrows require large uninterrupted expanses of Muhlenbergia prairie (devoid of invading Casuarina or other trees or shrubs). Optimal sparrow populations were reached three years following fire and sites not burned for five years or more had no sparrows. He also supplied lists of plants and animals he encountered in the Taylor Slough area.

Algal periphyton comprises a substantial portion of the biomass of the Taylor Slough ecosystem. Periphyton investigations have been carried out here by Van Meter (1965) and Wood and Maynard (1974). Browder (1978-1979) is currently conducting periphyton studies in Taylor Slough to document baseline conditions prior to operation of the pumping station.

GEOGRAPHY AND SOILS OF TAYLOR SLOUGH

Taylor Slough is the second largest drainage within Everglades National Park. It is a shallow trough that drains the slightly higher land through which it flows. Though its north to south extension, from the northeastern edge of the park near L-31W canal to Florida Bay is obvious, its eastern and western limits are vaguely defined. Hydrological investigations, currently in progress, may enable more precise definition of the slough.

For convenience, Taylor Slough can be subdivided into four segments as follows: (1) "Taylor Slough Headwaters," including an area of about 250 km^2 north of the intersection of the slough with canal-levee structure L-31W (located 3 km N of ENP Headquarters). This is a particularly difficult area to define precisely. It is at present primarily a ground water recharge area, with surface flow occurring only during the wettest parts of most years. Most of the area is outside Everglades National Park. The extent to which it will be developed in the near future is uncertain. (2) "Upper Taylor Slough," a 5.5 km segment between the slough-canal intersection and the Anhinga Trail (axis of Miami Rock Ridge-Long Pine Key), where the slough is narrow and relatively well-defined. A 100-300 m wide portion has a mean hydroperiod of over 5 months. (3) "Middle Taylor Slough," a 7 km segment extending from the Anhinga Trail to approximately where the Old Ingraham Highway bends sharply west. A large arm of the slough joins it from the east in Middle Taylor Slough. From here to Florida Bay the slough occupies a broad depression in the Miami oolite. The center of the depression varies from .2-2 m below the bedrock margins and is filled with marl and peat which are often interbedded. The hydroperiod here averages 6 months over an area several kilometers wide. (4) "Lower Taylor Slough" or "Madeira Slough," south of the bend in the Old Ingraham Highway, where peat substrate up to 2 m deep occupies the center of the slough. This peat area is covered by a distinctive complex of willow-sawgrass marshes, bayheads and sparsely vegetated (*Eleocharis*) open marshes. It is very similar to the vegetation complex of Shark Slough, 25-30 km to the northwest. This portion of the slough merges with a red mangrove (*Rhizophora*) zone (about 13 km south of the bend in Old Ingraham Highway), which occurs in a 3-8 km band inland from the "Buttonwood Embankment" (Craighead, 1971), a partial barrier between fresh and saline waters extending from Joe Bay to West Lake and beyond. If the slough is defined as the area with a hydroperiod of 4 months or longer (delineated roughly by the *Muhlenbergia* prairie/sawgrass marsh boundary), its area (within Upper, Middle, and Lower Taylor Slough) is approximately 125 km^2.

Data from transects show that Taylor Slough is broadly concave at bedrock with the central portions generally 90-120 cm lower than the margins. The bedrock, however, is overlain by either marl or peat so that the soil surface is much more level than the bedrock and seldom varies more than 50 cm in elevation across the entire slough. However, occasional alligator holes may be 120-200 cm deep.

Marl is the predominant soil in the slough and forms extensive flat expanses occupied by sparse sedge marshes and grass-dominated prairies. Marl soils are covered by a thick mat of periphyton. Peat occurs mainly in bedrock depressions in the lowest portion of the slough. Peat occurs in wide troughs south and east of Paradise Key and in smaller pockets within marl flats. Such areas of peat substrate--whether luxuriant sedge marshes, cypress strands or willow heads--generally lack periphyton.

A Dade County soil survey (Leighty and Henderson, 1958) mapped the area shown on the Taylor Slough Vegetation Map using the following units:

Perrine marl (dominant soil of marl glades of SE and S Dade County). Depth to bedrock is 24-72 inches (60-180 cm); occurs in central portion of Middle Taylor Slough.

Perrine marl, shallow phase. Depth to bedrock is 12-24 inches (30-60 cm); occurs in southern portion of Upper Taylor Slough and peripheral portions of Middle and Lower Taylor Slough.

Perrine marl, very shallow phase. Depth to bedrock is less than 12 inches (30 cm); occurs in northern portion of Upper Taylor Slough.

Perrine marl, peat substratum phase. Has a 12-48 inch (30-120 cm) layer of brown fibrous organic material between surface layer of marl (12-24 inches (30-60 cm) thick) and bedrock. Occurs on eastern peripheral portion of Lower Taylor Slough.

Mangrove Swamp. This term erroneously refers to the central portion of Lower Taylor Slough which consists of organic soils.

Rockdale fine sandy loam and Rockdale fine sand. The designation "fine sandy loam" refers to the "mixture of light-gray fine sand and brown clay limestone residuum" found in small cavities or solution holes of the limestone bedrock. Actually, soil is generally very sparse in these situations in the study area, and the substrate is virtually bare pitted limestone. These soil types are occupied by pinelands and hammocks. Where hammocks occur, a thin (5-15 cm) veneer of decomposing humus is present.

Rockland. Consists of extensive areas of Miami oolite that have a very thin covering of unconsolidated soil material in places. These are rocky glades areas, some of which correspond to *Muhlenbergia* prairie in the study area.

Gleason (1972) documented that the Perrine marl has been and is continuing to be precipitated by blue-green algae of the periphyton mat from $CaCO_3$ - rich fresh water. Calcitic mud deposition appears to require a relatively long dry period alternating with a wet period. In his stratigraphic work in Taylor Slough, Gleason found three types of peat: water lily (usually at the bottom of the deep central trough, indicating deeper levels of fresh water in the past), sawgrass, and *Rhizophora* (red mangrove) as well as transitional peats between these pure end members. Peat and fresh water marl were often found to be interbedded. He also found Rhizophora peat considerably further north of the present boundary of extensive red mangrove growth. The Taylor Slough soil cores were classified into six major groups, four of which showed marl at the surface and only two of them had peat as the top layer. Gleason decided from probings of sediment depth that the bedrock basin of Taylor Slough is an original depositional feature of the Miami oolite.

METHODS

Transect Surveys of Elevation and Soil Depths

Three transects were placed across Taylor Slough within 12 km of the pumping station. Two of the transects were placed between L-31W and Florida Route 27 (FL 27). The third transect was placed beginning at a point on Old Ingraham Highway (about 1.6 km south of the intersection of the Research Center Road and the Old Ingraham Highway) and extending eastward so that it traverses as many vegetation types as possible, including the cypress stand known as Buzzards' Roost. Numbered aluminum conduit poles were placed at plant community ecotones or at such intervals within extensive communities that poles were visible from each other. Transect #1 is numbered by poles T1-11, Transect #2 by poles TR1-27, and Transect #3 by poles TBR 1-47.

Elevations on the two northern transects were determined by surveys using a Dumpy level. Elevations on Transect #3 were estimated based on relative water level depths on January 26-28, 1978. Soil depths and types (marl or peat) were recorded at 10 m intervals. In addition to the three permanently marked transects, relative elevations and soil depths were measured on transects through individual cypress and bayhead communities.

Vegetation Map

Plant communities of Taylor Slough (Upper, Middle, and most of Lower Taylor Slough) were mapped using the best available aerial photography, a 1:20,000 enlargement of NASA flown U-2 infrared color photography taken in January, 1973. Plant communities delineated on the map are a compromise between communities recognized in the field on the basis of dominant species and those recognizable on the aerial photography. Extensive field checking of signatures on the aerial photography and of final mapping of units was carried out by helicopter and on foot from existing access points.

Patterns on the infrared photography were found to be related primarily to soil differences and/or cover of periphyton. Mapping was facilitated by and dependent upon establishment of soil/vegetation relationships.

Qualitative/Quantitative Vegetation Sampling

Qualitative descriptions of vegetation at transect poles, photopoints, and quantitative sampling of cover and density of vascular plant species were used to provide baseline data on current vegetation against which change can be measured.

Descriptions of plant communities at poles

A short description of vegetation at each transect pole has been given for four directions from the pole to a 10 m radius. The dominant plant species are indicated by cover and/or aspect. Aspect is the apparent (not necessarily actual) dominance of a species by visual inspection. The percentage of periphyton-covered ground is recorded. Any topographic or soil discontinuities are marked. Indicator species are noted. Initial descriptions were done during the 1979 dry season.

Photopoints

Photographs were taken at certain transect poles at plant community boundaries (pole numbers indicated in Appendix A (1)). The camera was placed on the pole and pictures taken of the area toward a meter stick placed 5 m from the pole. Two photographs were taken at each transect pole, along the axis of the transect in two directions. A Pentax Dial attachment was used to code the photos. The code is as follows:

		Transect Direction		
	Year	SE	NW	Pole No.
Transect #1	79	N	0	1-11
Transect #2	79	E	F	1-27
Transect #3	79	B	C	1-47

It should be noted that photopoints were taken only at certain poles. For Transect #2, poles 21-27 were not described, but photopoints taken only. Photopoints will be repeated at intervals. Slides are kept in the Plant Ecology files at the South Florida Research Center.

Permanent Plots

Permanent plots were established along each transect in the Muhlenbergia prairie and the sparse Cladium communities, since these two communities are believed to have the greatest potential for change when the pumping station starts operation. Each plot consists of 5 contiguous 1 m^2 quadrats. The plots were placed perpendicular to and about 5 m from the transect. They were placed on either the north or south side, depending on the availability of typical community representation. Figures 1, 2, and 3 indicate the position of all permanent plots along all three transects.

On Transects #1 and #2, the west side of the deep portion of the slough had been burned in the winter of 1978, and the east side of the slough had at least 5 years uninterrupted growth of Muhlenbergia. In order to better quantify the differences between burned and unburned Muhlenbergia prairie, five extra non-permanent plots each were analyzed on Transects #1 and #2. Ten permanent plots/plant community were analyzed, except for the additional ones on the burned and unburned sides on the first two transects. Transect #3 has 10 Muhlenbergia plots and 10 Cladium plots. In total, there are 80 plots (400 quadrats).

	Permanent			Non-Permanent	
	Muhlenbergia		Cladium	Muhlenbergia	
	unburned	burned		unburned	burned
Transect #1	5	5	10	5	5
Transect #2	6	4	10	4	6
Transect #3	10		10		

The plots were placed at 50 m intervals in the Muhlenbergia community and at 25 m intervals in the Cladium community. The intervals were changed and the distance of 5 m from the transect increased whenever it was necessary to find representative community samples or when solution holes had to be avoided. Each 5 m^2 was marked by one 150 cm long aluminum conduit pole that was tagged and by three 60 cm long poles at the remaining corners. The tags were stamped according to community and transect: Transect #1 - Muhlenbergia community - plot 1: tag "1M1," etc. The sawgrass plots were marked "1C1," etc.

In each 1 m^2 quadrat, the vegetation cover was estimated by species. Any species that occurred with less than 1% cover was indicated as "trace." The bare ground, periphyton-covered ground or detached litter on the ground were counted as non-living plant and therefore as "ground, litter." In the unburned Muhlenbergia plots, the percentage of dead Muhlenbergia still attached to the plant was estimated. The total Muhlenbergia percentage was noted and then the dead portion of that number indicated. Frequency was calculated as well.

At some transect poles on Transects #1 and #2, density plots were established to provide a second type of quantitative baseline. The 1 m^2 quadrats were placed consecutively on either side of the pole, 5 m in each direction. The number of individuals per species was noted. On Transect #1, the density plots are marked permanently with two 60 cm long poles on either end of the 10 m^2 plot.

The raw data are kept in the Plant Ecology files at the South Florida Research Center.

Hydroperiod Calculation

Since September 1978, hydrology personnel of the South Florida Research Center have monitored rainfall and water levels for a network of 52 gauges in Taylor Slough (Figure 5). Three recording gauges (P-116, NP-207 and NP-67) have been operated by the U.S. Geological Survey, Water Resources Division since 1960. With the data for September 1978-August 1979, preliminary correlation equations were developed (P. Rosendahl, personal communication) through regression analysis, allowing estimation of past water levels in the slough from the data since 1960 from the three recording gauges. Some of the equations (for gauges near transects) were used by the authors to calculate hydroperiods for known elevations in plant communities along the transects. Only equations with correlation coefficients exceeding .95 were used. Since water level data are available for Taylor Slough Bridge and NP-207 from 1960 to the present (see Figure 4) hydroperiods could be calculated over a 20 year period on the basis of the correlation equations. Gathering of additional hydrological data will enable refinement of the regression equations. The possibility exists that revisions will be required for hydroperiod calculations when these additional data are available.

The average water levels indicated on the transect profiles are based on the water level data for Taylor Slough Bridge for the period 1960-1977. The wet season was considered to be the period from June through November, and the dry season was taken to be from December through May.

For Transect #1 the above data were correlated with gauge E-112. For Transect #2 the Taylor Slough Bridge data were used directly, and for Transect #3, the correlation equation for gauge E-124 was used.

The October 1960 water level at Taylor Slough Bridge served as the high level and the May 1971 measurement as the low level.

RESULTS AND DISCUSSION

Transect Profiles

The transect profiles provide information on elevation, soil depth and average water levels during the dry and rainy seasons as well as the extreme low and high levels. Mean sea level is indicated, and bedrock surface shows the contour of the slough in different areas. The numbers along the surface denote transect poles. Plant communities are marked. The water levels are based on the 20 year record from the Taylor Slough Bridge.

Transect #1 (Figure 5), located 300-500 m SW of the junction of Taylor Slough with L-31W, is in the shallowest portion of the slough, varying less than 50 cm in elevation between the Muhlenbergia prairie and the deepest portion of the slough. The transect length is 520 m; the slough proper (as defined by plant communities wetter than Muhlenbergia prairie) is 300 m wide at this point. Marl soil occurs along the entire length of the transect. There is no peat accumulation in this area. Willowheads with peat substrate occur north and south of the transect. Periphyton occurs along the whole length of the transect.

Transect #2 (Figure 6) was placed about 300 m north of Florida State Route 27 (FL 27), passing through a willowhead from the edge of a hammock on the west almost to the pineland on the east.

The slough at this point has widened to about 600 m, and the transect is 2,050 m long. At the center of the trough, the bedrock is more than 1 m lower than the margins. At the deepest point, the bedrock surface is 30 cm below mean sea level. The east side of the transect is marked by numerous solution holes, some of which are a meter deep. Proceeding east from pole 23, the surface rises and is covered by very thin soil with rock outcrops. The plant cover is reduced in this area. Peat has accumulated under the willowhead and the maidencane, Phragmites, and spikerush communities. Marl is the substrate, east and west of the peat accumulation, along the remainder of the transect.

Transect #3 (Figure 7) is the longest (3900 m) and connects the Old Ingraham Highway with Pine Island, traversing Buzzards' Roost cypress strand. The mean surface elevation is about 30-50 cm lower than Transect #2. This transect crosses more vegetation types than the other two. The marl and peat deposits here are much deeper than on the other two transects, and the bedrock is often below mean sea level. The Muhlenbergia community here is quite sparse compared to that on the more northern portion. However, Muhlenbergia appears to be invading a sparse Cladium community. Since operation of the pumping station may increase hydroperiods in this part of the slough, this is a particularly good area for detecting the possible decline of Muhlenbergia.

A soil depth/relative elevation profile through a bayhead located 1/4 mile east of Old Ingraham Highway (Section 28 on Figure 15), is depicted on Figure 9. Two profiles, one through a mature Taxodium stand and one through a young stand are shown in Figure 8. Both Taxodium stands are located south of the bayhead in Figure 9 and east of Old Ingraham Highway (Section 32 on Figure 15).

Hydroperiod

Hydroperiods were calculated in two groups: 1) for plant communities along Transects #1-3 with known elevations from these transects, and 2) for plant communities in Middle and Lower Taylor Slough based on elevations at the staff gauges that correlated best with NP207 records. These hydroperiods are shown in Table 1. Figure 10 compares average number of days inundated per month for the 1960-1969 period vs. the 1970-1977 period at an elevation of 1.28 m on Transect #1 in Muhlenbergia prairie. Rainfall for the same periods is shown as well. Discussion of the hydroperiods follows under each plant community.

Vegetation Descriptions at Transect Poles

Appendix A (1-3) contains the descriptions of the vegetation at poles along Transects #1-3, of spring 1979.

Quantitative Analysis of Plant Communities

Cover/Frequency

Data from analysis of permanent plots for the three transects are represented in Table 2 with regard to number of species, overall plant cover, etc. in summary form. Tables 3a and 3b show the data analysis by individual species for the same transects.

Density Plots

At some poles along Transect #1 (indicated in Appendix A (1)), at which Muhlenbergia and Cladium as well as spikerush-dropwort and Muhlenbergia/sawgrass communities meet, plots were established in which numbers of individuals/species were counted and will be monitored in the future. On Transect #2, such plots were established at poles where sawgrass and spikerush marshes share a boundary as well as between Muhlenbergia and sawgrass communities.

Figures 11 and 12 show the species distributions on either side of 6 poles on Transect #1, and Figures 13 and 14 shows the same for 5 poles on Transect #2. Tables 5-8 give the summaries of all numbers of individuals/species for all series of ten 1 m^2 quadrats.

The data will be discussed under the applicable plant communities.

Vegetation Map and Discussion of Plant Communities

The vegetation map (Figure 15) differentiates ten vegetation types: six tree and four graminoid communities. These are broadly defined communities, several of which could be further divided upon analysis. Under the heading of each community subdivisions will be discussed. It should also be kept in mind that community boundaries are not always as distinct as indicated on the map.

It was difficult to differentiate between Muhlenbergia prairie and sparse sawgrass marsh at times, particularly since mosaic patterns are common and mixtures of the two communities are found. This overlapping is prevalent on either side of FL 27 just past the entrance to the park.

Because of the close successional relationship between bayheads and cypress forests, it is entirely possible to have reversed their designations or to have categorized them into one class when they were "hybrids" between the two. The resolution of the mapping did not allow for such precise determination.

The aerial photography also did not differentiate between the advance of tropical hardwoods into pineland and tropical hardwood hammocks. Therefore, an area of pineland, on the map designated as hammock on the north side of the entrance to the park, should be marked pineland.

Outside of the "striped" designation for former agricultural land, there is an area left in white which includes very recently (1973-75) abandoned agricultural land with various successional graminoid and shrub stages.

The hydroperiods indicated in the legend are preliminary. When a fairly wide range is indicated, those numbers include the variation along the elevational and geographical gradients of the community for the whole slough.

Table 8 is a compilation of plant species encountered by the authors in Taylor Slough communities. The list is not comprehensive, but includes more species than represented in Table 3a, b (Species Analysis). We followed the nomenclature of Long and Lakela (1971) as updated by Avery and Loope (1979). Appendix B lists the common names mentioned in the text. Identification of the species in question was facilitated by comparing field specimens with voucher collections in the Everglades National Park herbarium. In some cases, George Avery verified the specimens. Species for tropical hardwood hammocks, pinelands and former agricultural lands are not included since these vegetation types are mostly peripheral to the slough. If these community types were included, the species list would triple in length.

Discussion of individual vegetation types and the environmental factors determining their distribution follows.

Muhlenbergia Prairie

Muhlenbergia prairies are extensive communities in Taylor Slough, second only to the more widespread sawgrass-spikerush communities. The dominant grass, Muhlenbergia filipes, is a non-rhizomatous, clumped perennial. Long and Lakela (1971) mention two Muhlenbergia species for this area, M. filipes and M. capillaris. However, the differences are minor (awned vs. awnless glume) and relate to size, so that some authors (e.g., Godfrey and Wooten, 1979; Hitchcock and Chase, 1971) consider M. filipes a subspecies of M. capillaris. The Bahaman specimens of Muhlenbergia capillaris at Fairchild Tropical Garden do look much smaller and thinner than the taxon which we are calling M. filipes which occurs in the study area.

Of the graminoid communities, Muhlenbergia prairies occupy the highest elevations, mostly along the east and west margins of Taylor Slough as well as in the area north of the Anhinga Trail.

The Muhlenbergia prairie is probably a recent addition to the South Florida plant community nomenclature. The literature does not list this community. Davis (1943) does not mention such a prairie in his definitive early survey of South Florida plant communities. He designated areas currently dominated by Muhlenbergia as "marsh prairies" with "switch-grasses, poverty-grasses, beak rushes, needle-grass, black sedge and sawgrass." He included a photograph of Muhlenbergia filipes as occurring in "dry prairies and pine flatwoods" of the Big Cypress Swamp. Neither Egler (1952), nor Robertson (1955) nor Craighead (1971) mention Muhlenbergia.

Although Muhlenbergia prairie is presently one of the most extensive plant communities of Everglades National Park and occupies large areas in Big Cypress National Preserve, this may be the result of recent vegetation changes. Werner (1975) states that "some of the older South Florida naturalists claim that

Muhlenbergia was somewhat rare in the past (Craighead, pers. comm.) and that it is only the recent destruction by drought fires of the shallow organic soil which formerly overlaid the marl (Craighead, 1974) and the general drying of South Florida which has propagated the vast Muhlenbergia prairies of today." Two other factors should be noted: In the vegetative state, Muhlenbergia filipes and Schoenus nigricans look very much alike and are not distinguishable from afar. It is very possible that Muhlenbergia was mistaken for Schoenus in earlier days (Robertson, personal communication). The beakrush, Rhynchospora tracyi, also looks very similar to Muhlenbergia.

The typical Muhlenbergia prairie occurs on thin marl over limestone. Sawgrass is a constant associate of Muhlenbergia. In purest stands, Muhlenbergia contributes 90-95% of the biomass. The Muhlenbergia prairie is the driest graminoid community, with a hydroperiod of 2-4 months, and has the richest flora. Between 80 and 100 vascular plant species grow here (Table 8 and Werner, 1975), the majority of which are herbaceous rather than graminoid.

Where the marl soil is very thin (5 cm or less) and oolitic limestone outcrops at the surface, Muhlenbergia is replaced by or becomes codominant with the endemic grass Schizachyrium rhizomatum. Aristida purpurascens is frequent in this community as well. Since the soil layer is so thin or lacking and the hydroperiod is so short here, the area is being invaded by tree species from the pineland on the east. Woody species like Metopium toxiferum, Schinus terebinthifolius, Bursera simaruba, Bumelia reclinata, Randia aculeata, Coccoloba diversifolia, occasional invaders into prairies, are not included in the species list of the Muhlenbergia prairie (Table 8), since they do not normally grow in that vegetation type.

In some areas, particularly on the east and west margins of Middle and Lower Taylor Slough, Muhlenbergia is totally replaced by black sedge, Schoenus nigricans. Schoenus and Muhlenbergia are often co-dominant in adjacent areas as well.

Werner's (1975) data support observations that Muhlenbergia stands accumulate dead material rapidly and that the ratio of dead to live biomass increases rapidly after the first year following a fire, which cleanses the stand of dead material. Werner found that the weight of dead biomass typically exceeds that of live biomass by a factor of three to five in Muhlenbergia stands several years old. A similar relationship was found in live vs. dead estimated cover in this study (Table 3a). Muhlenbergia is extremely well-adapted to fire and begins elongation virtually immediately after being burned, and when soil moisture is adequate often puts on 5 cm or more of growth within a week after the fire. Muhlenbergia flowers in October and often puts on spectacular blooms after fires. Atwater (1954) described one such occurrence near the concrete bridge on Old Ingraham Highway.

The area mapped as Muhlenbergia prairie is by no means evenly dominated by Muhlenbergia filipes. The designation includes all the prairie communities mentioned. In some areas, especially along the main park road (FL 27), sawgrass may appear dominant, caused by local ponding of water due to construction of the road. In other areas, sawgrass and Muhlenbergia form community mosaics, especially in areas where there are a lot of solution holes with sawgrass concentrations. In some areas sawgrass is co-dominant with Muhlenbergia and is not classified as a different community from Muhlenbergia prairie.

On the east and west sides of the Madeira ditches in the Muhlenbergia prairie stunted pond cypress are abundant so that the whole complex could be called a cypress prairie.

Muhlenbergia is never found on peat. It always occurs on marl in association with an algal periphyton mat.

The hydroperiods for the different Muhlenbergia prairies along the three transects are slightly different from one another. The shortest ones are along the first and second transects. We do not know the exact minimum and maximum hydroperiod requirements of Muhlenbergia. Wherever it grows in the slough it occupies land with the shortest hydroperiod, and it is hydroperiod that separates the Muhlenbergia prairie from the sparse Cladium community.

Calculation of the hydroperiod for the Muhlenbergia prairie for the period 1960 to 1977 has been divided into two time spans: 1960-1969 and 1970-1977. The L-31W canal began operation in 1969, and this change of water regime had an effect on the inundation time in Taylor Slough. For Transect #1 and 2, the hydroperiods for the burned and unburned Muhlenbergia communities (Table 1) are very similar, ranging from a low of 5-10 days to a high of 3-3.4 months during the year. Whether the decrease of the inundation time of more than a month between the two time periods has resulted in an expansion of the Muhlenbergia prairie is not known. The average number of days of standing water on a monthly basis is compared in Figure 4 for the periods 1960-69 and 1970-77 for the Muhlenbergia prairie. This graph also shows the days of inundation during the "dry" season. The construction of the canal probably has a greater effect during the dry period than during the rainy season. It is also obvious from the rainfall graph that precipitation of 1-2"/month from November-April does not necessarily produce standing water. The average June rainfall of 13.79" for 1961-1969 was very definitely influenced by a rainfall of 25.49" in June of 1969, the greatest monthly amount recorded at Royal Palm between 1949 and 1978.

The area on Transect #3, where Muhlenbergia grows, is not comparable to the prairie on Transects #1 and 2. The plant cover is overall much less than in the other transects (20-30% cover vs. 50-60% cover), and Muhlenbergia is widely spaced. This seems to be an area of recent invasion by Muhlenbergia and may become Cladium-dominated again if the water supply increases. The longer hydroperiod here of 5 months must be almost at the limit of Muhlenbergia's tolerance. The mean hydroperiod for the time 1970-1977 is 4.3 months. It is possible that Muhlenbergia only got established during this time and not earlier when the hydroperiod was almost 6 months (1960-1969). The Muhlenbergia community on Transect #3 has a similar hydroperiod to the current Rhynchospora flats on Transect #1.

Of the 98 species listed for the Muhlenbergia prairie in Table 8, 75 were found in the permanent plots on transects (Table 2), which ranks the Muhlenbergia prairie as the most diverse community overall. However, the total number of species/community/transect is greatest for the sawgrass marsh on Transect #1 and 2.

Transect #3 is quite different. Transect #3 is reduced in total number of species. Both Muhlenbergia and Cladium plots have a similar total cover percentage (about 15%). This is in contrast to Transects #1 and 2 where the Muhlenbergia plots have a higher cover than sawgrass. The low Muhlenbergia cover on Transect #3 may indicate that it is an invading species as mentioned earlier.

The ratio of the number of graminoid to herbaceous species seems to be very similar in all communities on all transects (about 40:60). This ratio is reversed when the plant cover is considered. The fewer graminoid species occupy a larger area than do the large number of herbaceous species. However, the ratio varies according to the community and the fire history of that community. It should be noted that plant cover is not necessarily proportional to biomass. Comparing a sawgrass and a Muhlenbergia quadrat with the same cover, one would find the sawgrass quadrat to have the larger amount of biomass. The percentage of plant cover versus "litter, bare ground or periphyton" is generally low ranging from 15-44%, the highest being 66% plant cover in the unburned Muhlenbergia prairie on the first transect. The highest amounts of "bare ground" are, of course, in the burned Muhlenbergia prairie. Most of these plots were sampled on marl soils. The nutrient status of the soil and the elevation probably determine the potential amount of plant cover. The density, cover and biomass of plants over peat is much greater than over marl.

Of the 21-50 total number of species/community/transect, only 2-6 species on each transect had more than 1% cover (Table 2). A comparison of the average number of species/quadrat (m^2) and the average number of species/plot (5 m^2) suggests that the plot size is adequate for analysis. Even though the total number of species/community is twice or three times as large as the average number of species/5 m^2, a doubling of the plot size would not increase the number very much. The distribution of the herbaceous plants in the Muhlenbergia community is very irregular.

On the second transect Muhlenbergia prairie and sawgrass marsh share a greater number of species than on Transect #1 or 3. Sorensen's Index is a measure of similarity between communities based on species composition only. The indices reflect the mixture of species found on each transect. An index of 79 for the similarity on the second transect is high.

Tables 3a and 3b relate the individual species analysis with regard to percent cover and frequency, and in the case of sawgrass for density as well. More than half of the species in all communities occur with less than .1% cover. Only the two dominant species have any substantial cover. The estimated dead Muhlenbergia cover amounts to half on Transect #2 and two-thirds of the total on Transect #1. This estimate is very similar to that of Werner (1975). A consideration of the recently burned versus the 5-year-burn-free Muhlenbergia prairie with regard to plant cover may provide an understanding of the lack of Cape Sable Sparrows in the unburned area. The increase of litter may make the habitat unsuitable for nesting. The old culms of Muhlenbergia become decumbent and occupy otherwise free space. Werner suggested that sparrows did not nest in habitats which had not burned for 5 years or more.

The species distribution of Figure 11 combined with the density information of Table 4 show the variations of the Muhlenbergia to Cladium continuum. The species are distributed along a hydroperiod gradient. Muhlenbergia filipes, Rhynchospora microcarpa, Aristida purpurascens, Eragrostis elliottii are denser on the drier portion of the gradient, while Rhynchospora tracyi is denser towards the wetter end, in particular on the east side of pole 5 where it is dominant. Aristida purpurascens and Schizachyrium rhizomatum seem to be restricted to the Muhlenbergia habitat.

A comparison between the density summaries (Table 4-7) and Table 3a shows that herbaceous plants of fairly high density (50-100 individuals/species/10 m^2) hardly ever have more than .1-.5% cover.

These density plots provide good baseline data for future monitoring since they are located at community boundaries. Shift of community boundaries should be readily detectable.

It seems as though Muhlenbergia is invading areas along Transect #3 at the present time, while growth of that species on Transects #1 and #2 has gone on for a much longer period. Therefore, these three transects should be effective for showing species distribution changes or community shifts.

Sparse Sawgrass (Cladium) Marsh

This is the dominant plant community of Taylor Slough. It grows from almost pure stands to mixed stands with beakrushes, spikerushes, herbaceous and aquatic species. Sawgrass plants vary in height from 60 cm-150 cm and from plants with a few leaves to robust ones with ten leaves in this community. Sawgrass cover ranges from 10-60%. Most of the time these sparse sawgrass communities grow on marl, but in some cases they occur on peat. In areas of comparable hydroperiod, peat supports a much more luxuriant vegetation than does marl. Sawgrass and spikerush plants are normally twice as large on peat as they are on marl and occur with 2-3 times the density.

In areas where sawgrass marsh adjoins the Muhlenbergia prairie the two communities share many species (Table 2). Such a species composition suggests the similarity of hydroperiods as well. At the drier end of the gradient Muhlenbergia prairie species grow, while at the wetter end the proportion of sawgrass and aquatics increases. The sparse Cladium communities on Transect #1 and #2 have a mean hydroperiod slightly longer than the Muhlenbergia prairie, 2.7-4.4 months for 1961-1977. The sparse to medium density sawgrass community on the third transect has a much longer hydroperiod of 6-7.6 months. The calculations of hydroperiod for sparse sawgrass for areas south of Buzzards' Roost were done at four gauges from north to south (see Table 1). There is an increase of 1.3 months from north to south.

In the quantitative analysis (Tables 2, 3a, 3b), the most unexpected aspect of the total number of species was the fact that the sawgrass community on Transect #2 had the most species and not the Muhlenbergia community, which over all of Taylor

Slough has by far the larger species number. It can probably be assumed that the very slight differences in elevation and therefore in hydroperiod between the Muhlenbergia and sawgrass communities accounts for the similarity of the two on Transect #2. The sawgrass community is much reduced spatially in upper Taylor Slough and always in contact with the Muhlenbergia community. The data for sawgrass on Transect #3 are more typical of the sparse Cladium community than are the data for Transect #1 and #2. On the eastern portion of the deep slough on Transect #2 Muhlenbergia prairie and sawgrass marsh form a mosaic of communities. Four sawgrass plots are here located in an area classified as "Muhlenbergia-Cladium" on the profile (Figure 7). This area is higher and drier than the other Cladium plots and could more easily be invaded by prairie species.

The number of species found in this community according to Table 8 is 91, almost as high as that for the Muhlenbergia prairie. That number is misleading in that it reflects the species composition for the community in upper Taylor Slough, where it intergrades with Muhlenbergia prairie. However, in middle and lower Taylor Slough - by far the larger extent of the sawgrass community - the species number for the community would be 20-30. The sawgrass stands of Transect #3, where 21 species were encountered in the quantitative plots (Table 2), appear to be representative of much of this community type.

The sawgrass cover and density figures of Tables 3a and b are indicators of differences in the Cladium community on the three transects. On Transect #1, sawgrass grows with a density of 75/ 5 m^2, while there are only 45 individual plants/5 m^2 on Transect #2. Cover only varies by 1% so that one would have to explain the difference as resulting from smaller plants on Transect #1. However, in the unburned Muhlenbergia prairie, the densities are reversed: 28/5 m^2 on the second and 12/ 5 m^2 on the first transect. On Transect #3, the number of sawgrass plants is much larger than on either Transects #1 or 2. Even in the Muhlenbergia plots on Transect #3 the sawgrass density is as high as in the sawgrass plots on Transect #2.

Tables 4-7 and Figures 11-14 show distributions and densities across sawgrass communities and ecotones with Muhlenbergia prairie and spikerush marsh. Distribution is continuous only for a few dominant species (5-6) across all 10 quadrats. The species distributions indicated in these figures are reflected in number of species/m^2 and per 5 m^2 of Table 3. They are similar on both transects with regard to elevation and hydroperiod. The probably exotic species Centella asiatica, which reproduces vegetatively in a profuse manner, is the most consistent species in most of the community types. Centella asiatica apparently does not grow in very deep water or dense vegetation nor on peat as is evident from Table 7 and Figure 14, where this species does not appear in the spikerush-Phragmites marsh. Table 3a shows the cover differences of Centella between Muhlenbergia and Cladium communities. Next to sawgrass itself, Centella has the highest cover in the sawgrass community, while in the Muhlenbergia prairie only the burned community shows between 1 and 2% cover of the species. Since the sawgrass community has more open space, and the burned more than the unburned Muhlenbergia prairie, the light availability may determine the abundance of Centella. From observations in the southern portions of the slough, it appears that Centella is less abundant there than in upper Taylor Slough.

Piriqueta caroliniana, Aster tenuifolius and Phyla nodiflora, three herbaceous plants occurring in the Muhlenbergia prairie and the sparse sawgrass marsh are denser in the sawgrass community which has slightly longer hydroperiods. This observation holds for both Transects #1 and #2. Bacopa caroliniana and Proserpinaca palustris only occur in the sawgrass community.

Sawgrass marshes can burn extensively and lose their organic soil in which case spikerush often invades. The boundaries between the two communities are then very sharp. When spikerush is part of the sawgrass community, it is low in cover (Table 3a, b).

Spikerush Marsh

A typical spikerush marsh is often a pure stand of Eleocharis cellulosa. The substrate is usually marl. This community is often just a few inches lower in elevation than the sawgrass communities. In many cases, boundaries between Eleocharis marsh and sawgrass marsh are very sharp. Both communities share a periphyton layer. A reason for the absence of sawgrass is often the destruction by fire of the organic layer in a sawgrass community. Fairly often, bayheads and cypress heads have an "Eleocharis tail," the origin of which is not clear. The spikerush marsh has a low number of species (22, Table 8). Any analysis in typical areas would probably show 1-2 species/m^2 or even per 5 m^2. This community was not analyzed because we emphasized the dominant communities in upper Taylor Slough. However, the Eleocharis/Phragmites and Oxypolis/Eleocharis communities on Transect #2 were analyzed with regard to density at Pole 13 and 14 (Table 7 and Figure 14). The substrate changes from peat to marl.

In the northern portion of Taylor Slough, spikerush marshes are very limited in extent and often have Oxypolis filiformis associated with them. On Transect #2, spikerush grows with maidencane (Panicum hemitomon).

The hydroperiod (Table 1) varies from transect to transect: on Transect #1, Eleocharis occurs in areas of the same elevation as some beakrush flats and has a hydroperiod of only 3 months, quite in contrast to typical spikerush marsh. On Transect #2, spikerush grows in a narrow zone between two willowheads along with Phragmites and maidencane with a hydroperiod of 4-7.4 months. On Transect #3, the spikerush marshes are open-ponded with spider lilies and Sagittaria and are inundated 9.9-10.6 months. Extensive Eleocharis marshes exist in middle and lower Taylor Slough, where the hydroperiod is similar to that in Transect #3. Because of a greater tolerance to salinity (up to 15 ppt) (Tabb, et al. 1967), Eleocharis grows close to Florida Bay on marl, sometimes bordered on the north by freshwater sawgrass/spikerush.

Tall Sawgrass - Willow

This community type occupies the deepest portion of middle and lower Taylor Slough with a pure peat substrate (Gleason, 1972). The sawgrass is 1.5 m-2.5 m tall and grows so dense that passage through it is almost impossible. The most common associate is willow which in this community does not exceed the height of the sawgrass by more than 60-100 cm. The community has a very low diversity. Buttonbush occurs here sometimes, as does pond apple, as well as some vines. This community is also found directly adjacent to willow heads and cypress domes or strands.

Aerial photography from 1940, 1952, and 1973 shows up differences in the sawgrass/willow community directly south of the Anhinga Trail. In 1940 the area looked almost devoid of woody vegetation. In 1945 Royal Palm Hammock burned extensively, including much of the area south of the hammock in the slough. Photographs that have been taken since 1945 all show great willow invasion into the slough area. The hydroperiod of this community is one of the longest: on the Buzzards' Roost transect it is 9-10.3 months and in the lower slough it is about 10 months.

Willowheads

The willowhead distribution in Taylor Slough is limited to the deepest portion north of Buzzards' Roost and to the northern border of the park. South of this area, Taxodium forests dominate in similar topography. Willowheads may be round or elongate in shape, have peat of 1-2 m depth and often have a deep water hole or pond in the center. The central pools are kept deep by alligator activities; however, if alligators leave these pools, they may fill up and grow over with willows. They are nearly pure stands of willow. Thalia geniculata (alligator flag) and Phragmites australis are constant associates of the willow which supports several vines like Sarcostemma clausum, Mikania scandens and Ipomoea sagittata. Because of the long hydroperiod (5-11 months), more aquatic plants grow in willowheads than, for instance, in bayheads.

Fire is often responsible for willowhead changes. Willows invade burned cypress forests. They are intolerant of shade and therefore mostly successional or maintained by fire (Robertson 1955, Craighead, 1971, Alexander and Crook, 1971).

Bayheads

Bayheads are tree islands scattered throughout the slough in sawgrass and ponded areas. The bayhead forests are typically two-layered: the canopy is usually more or less closed at about 10 m; shrubs make up the second layer. The vegetation is often dense because of the shrub and ground layer. These forests are floristically poor. Persea borbonia (red bay) is the most common canopy species along with Magnolia virginiana (sweet bay), Ficus aurea (strangler fig), and Metopium toxiferum (poisonwood). Annona glabra (pond apple), Ilex cassine (dahoon holly), Chrysobalanus icaco (cocoplum); Myrica cerifera (wax myrtle) and Cephalanthus occidentalis (buttonbush) make up the shrub layer. Ferns are common in the ground layer, particularly Nephrolepis exaltata (Boston fern) and Blechnum serrulatum (swamp fern). Grape vines and Smilax are very common. Epiphytes include several Tillandsia species and Encyclia tampense. Apteria aphylla, a saprophyte, grows abundantly in moss on fallen logs.

The substrate is peat of 30-200 cm depth over limestone. The soil surface of bayheads is often very uneven in that accumulated soil and litter around fallen trees represent the high spots, 60-90 cm above the lower surface (Figure 9). The vegetation cover amounts to 80-100%. A "moat" often surrounds the bayhead.

Bayheads originate apparently on slightly higher bedrock as suggested by Spackman, et al. (1976). Because of the successional relationship between bayhead and cypress head, it is possible that a bayhead could have succeeded from a burned-out cypress head which more often develops from a trough. Disturbance occurs frequently in these forests.

The hydroperiods in bayheads probably vary from 1-4 months in the northern to middle slough. It is not known what the hydroperiods are in lower Taylor Slough. 6-9 mos. There are areas within a bayhead that are never under water because of the variable micro-topography.

Cypress Forest

Whether there are two distinct species of cypress in South Florida is not clear, but the morphologically different forms known as bald cypress and pond cypress both occur. Taxodium distichum ("bald cypress") grows very large (20-35 m) in the Fahkahatchee Strand and similar swamps. T. ascendens or T. distichum var. ascendens ("pond cypress") is smaller, often stunted, and grows throughout the Big Cypress Swamp and at the southern limit of cypress in Everglades National Park. Taylor Slough has pond cypress primarily. Only the cypress strand known as Buzzards' Roost has cypress which have some of the bald cypress characteristics. "Cypress forest," as designated on the accompanying vegetation map, includes diverse cypress vegetation which can be grouped as strands, domes and heads. The major distinction between a dome and a strand is shape. A dome is typically circular and has a tree height distribution that appears dome-like, with the shortest trees on the margins and the highest toward the center. A strand is elongate and generally occupies a drainage course. Both domes and strands occupy bedrock depressions. The elevation of the soil surface is normally lower in the center of domes and strands than at the margins. The substrate is peat or muck and sometimes peaty marls (Hilsenbeck, Hofstetter, and Alexander, 1979).

Another type of cypress community in Taylor Slough will be tentatively referred to here as "cypress head." This term is admittedly less than ideal since Davis (1943) used the term in a completely different sense - to refer to a dome connected to a strand. Nevertheless, we use the term to describe cypress communities which are circular in shape, but with a higher soil surface at the center than at the margins. Hydroperiods may be very short in these heads - perhaps no more than 1-2 months. Limited data from transects of bedrock elevation (such as given in Figure 8) suggest that they are associated with bedrock differences (perhaps highs or, at least, irregularities) compared to adjacent marsh communities.

Additional study will be necessary to clarify the successional relationships between cypress domes, cypress heads, and bayheads as well as environmental determinants of their distribution. Preliminary observations suggest that cypress heads may develop from cypress domes through accumulation of organic matter and resultant shortening of hydroperiod. Cypress domes typically have a somewhat open understory, although such species as Chrysobalanus icaco (cocoplum), Myrica cerifera (wax myrtle), and Persea borbonia (red bay) are present. Ferns often dominate the ground layer. In cypress heads, a dense growth of cocoplum and other "bayhead species" occurs in the understory. Conditions for cypress regeneration are poor, and it seems likely that, in the absence of fire, cypress may gradually be eliminated from the canopy to form a bayhead. However, the accumulation of organic matter and shortening hydroperiod predispose these cypress heads to fire. Extensive fire damage to cypress heads has occurred along the eastern margin of middle and lower Taylor Slough, resulting in removal of organic matter.

Because of the successional relationship between cypress heads and bayheads, it is sometimes difficult to tell whether an area should be called cypress or bayhead. At the present time, fire is the most common disturbance in cypress forests. Often willows will invade a burned cypress strand, and sometimes willowheads are precursors to cypress domes or strands.

The hydroperiods in cypress forests vary according to age, disturbance and geographic location. Incipient heads (Figure 8) may have longer inundation times than mature ones. The average hydroperiod ranges from that of the surrounding sawgrass community (6-8 months for sparse sawgrass, 8-10 months for tall sawgrass-willow) to that of a bayhead (1-4 months). Even though Buzzards' Roost, the largest cypress forest in Taylor Slough, is inundated 8-10 months, the highest places in cypress forests may not get inundated at all. Cypress regeneration is closely tied to water depth and hydroperiod. Young cypress seedlings cannot survive too long a hydroperiod nor too little soil moisture during the dry period. Gunderson (1977) found that lack of soil moisture was a greater cause of first year mortality than submergence in Corkscrew Swamp.

In mature cypress domes with total canopy closure, the understory is sparse and made up of shade-tolerant species. Shrub cover increases with the increase of broken canopy.

Pinelands

The Miami Rock Ridge, the southwestern extension of which (Long Pine Key) is located just west of upper Taylor Slough, is the sole area of pure pine stands in Everglades National Park. *Pinus elliottii* var. *densa* is the only pine. The pine understory is typically very rich in species of the tropical hardwood hammocks. *Serenoa repens*, *Myrica cerifera*, *Ilex cassine*, *Persea borbonia*, *Dodonea viscosa*, *Guettarda elliptica* are abundant in the pinelands. Many herbaceous species are endemic (i.e., geographically restricted) to this vegetation type. Pinelands are perpetuated by periodic fire. Tropical hardwood hammock species become dominant in the absence of fire. The substrate is oolitic limestone with numerous solution holes and relatively little soil development. The pineland is higher than adjacent prairies and sometimes higher than hardwood hammocks as well. The water level hardly ever reaches the surface.

Directly east of the longest Madeira ditch in the *Muhlenbergia*/cypress prairie is an area of widely spaced pines, but the area is small and analysis has not been undertaken there.

Tropical Hardwood Hammocks

Tropical hardwood forests occur to a very limited extent on the borders of Taylor Slough in the pineland and in the *Muhlenbergia*/cypress prairie on the east side of middle Taylor Slough. This vegetation type is not extensive but confined to small areas of 5-100 ha. Dense stands of mostly tropical hardwoods make up a closed canopy up to 10 m tall. Quercus virginiana is an abundant temperate species. Common species of West Indian origin are Lysiloma latisiliquum, Bursera simaruba, Nectandra coriacea, Coccoloba diversifolia, Myrsine floridana, Ardisia escallonioides, Eugenia axillaris and other trees and shrubs. Epiphytic orchids and bromeliads are frequent. Eroded limestone is the substrate which is covered with a shallow layer of organic soil (5-15 cm). Solution holes abound. These forests occupy the highest elevations in the park and are therefore hardly ever inundated.

Former Agricultural Lands

Bordering Taylor Slough to the east and particularly to the west are lands which are currently successional following agricultural use and abandonment. Originally prairie and marsh, these areas were farmed between 1930 and the 1950's and then left. The present weedy vegetation consists mostly of Ilex cassine, Persea borbonia, Myrica cerifera, and the exotics Schinus terebinthifolius and Psidium guajava.

SUMMARY AND CONCLUSIONS

This study was undertaken to provide basic information concerning vegetation-environment relationships in Taylor Slough and to document baseline conditions in order to allow prediction and assessment of changes resulting from hydrological manipulation.

The vegetation map (Figure 15) delineates the distribution of major plant communities of Taylor Slough. Concise community descriptions and vegetation/soil/hydroperiod relationships are given in the legend to the vegetation map, with more detailed information given in the text. Vegetation/soil/water level relationships were determined in detail along three transects located in northern Taylor Slough. Hydroperiods were determined for selected sites for major plant communities along these transects.

A permanently marked and relocatable network of quantitative sampling plots, photopoints and sites for qualitative descriptions was used to document baseline vegetation conditions. Emphasis in quantitative sampling was placed within Muhlenbergia and Cladium-dominated communities since these are most likely to be influenced by increased flow from a pumping station (structure S-332) which will begin operation in 1980. Muhlenbergia prairie has received special attention also because it provides prime habitat for the Cape Sable Sparrow (Ammospiza maritima mirabilis), an officially endangered taxon. Some quantitative data were also gathered for Eleocharis-dominated communities.

Techniques used in vegetation sampling are described in detail and are easily repeatable. Species richness was found to increase along a wet to dry gradient, with more species present in Muhlenbergia and Cladium communities than in the Eleocharis community. Cladium generally provides 80-90% of the cover in Cladium prairie. Muhlenbergia typically provides 70-95% of the cover in the community with a shorter hydroperiod. Over 70 species of vascular plants are found in Muhlenbergia prairies, with 6-13 species occurring in a 1 m^2 plot and 10-22 species occurring in a 5 m^2 plot. Most of the species are herbaceous rather than graminoid, but they provide a relatively small contribution to the area covered by vascular plants.

Some shifts in community boundaries and changes in the nature of communities may have occurred in Taylor Slough in past decades due to alteration of the original hydrological and fire regime, but no documentation of this phenomenon appears possible at present. Although a Muhlenbergia community was not noted by early plant ecologists in the area, it is now the most extensive community in upper Taylor Slough.

If hydroperiods increase substantially as a result of operation of the pumping station, community boundaries will be shifted. We expect that Muhlenbergia prairie will decrease in area. Muhlenbergia appears to thrive best where hydroperiods of 2-4 months occur. Muhlenbergia may marginally tolerate hydroperiods of 4-5 months, as it is doing on Transect #3, but this hydroperiod normally favors Cladium. With hydroperiods of six months or longer, Muhlenbergia might be eliminated.

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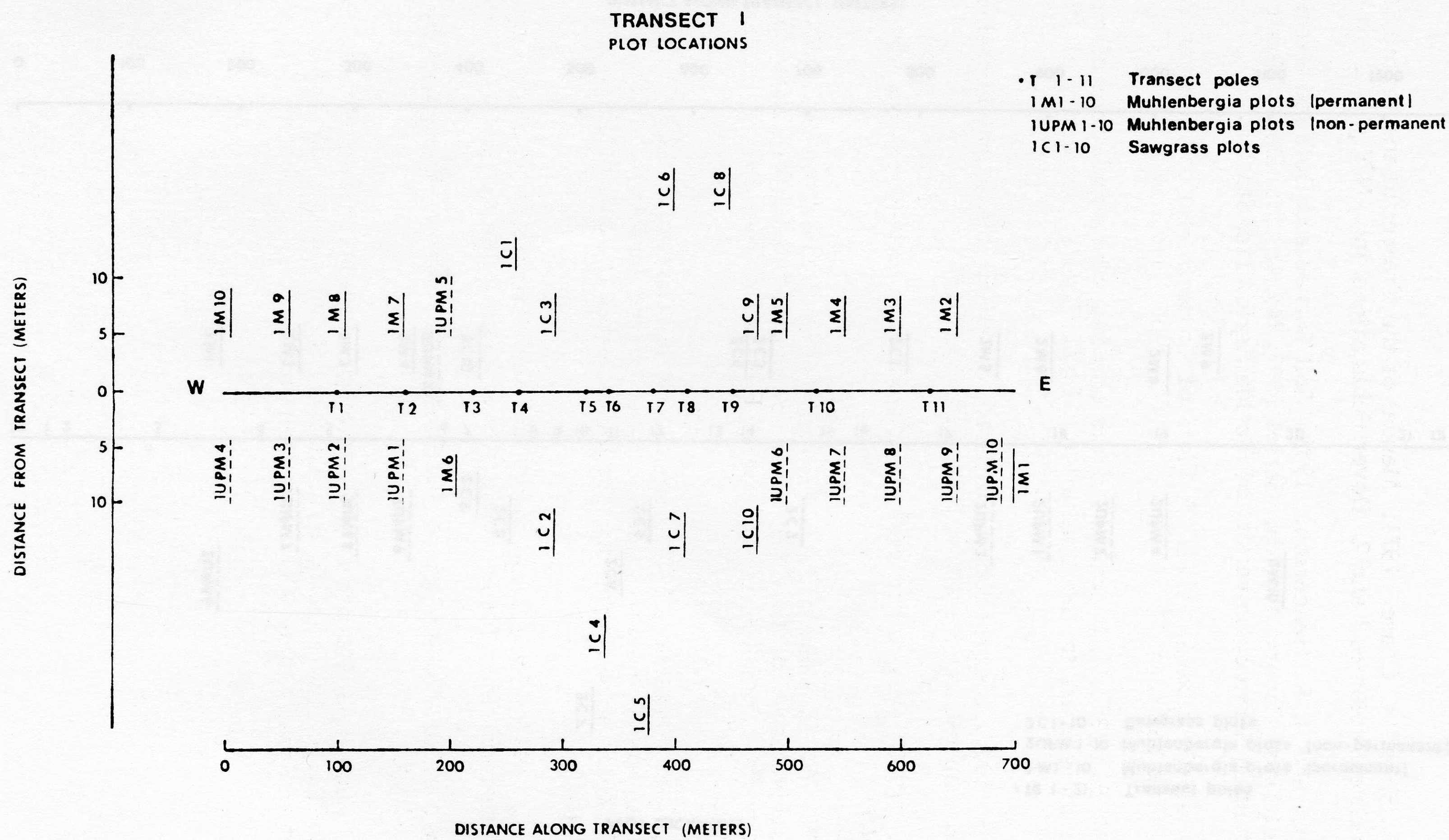


Figure 1. Transect # 1 - Permanent Plot Locations

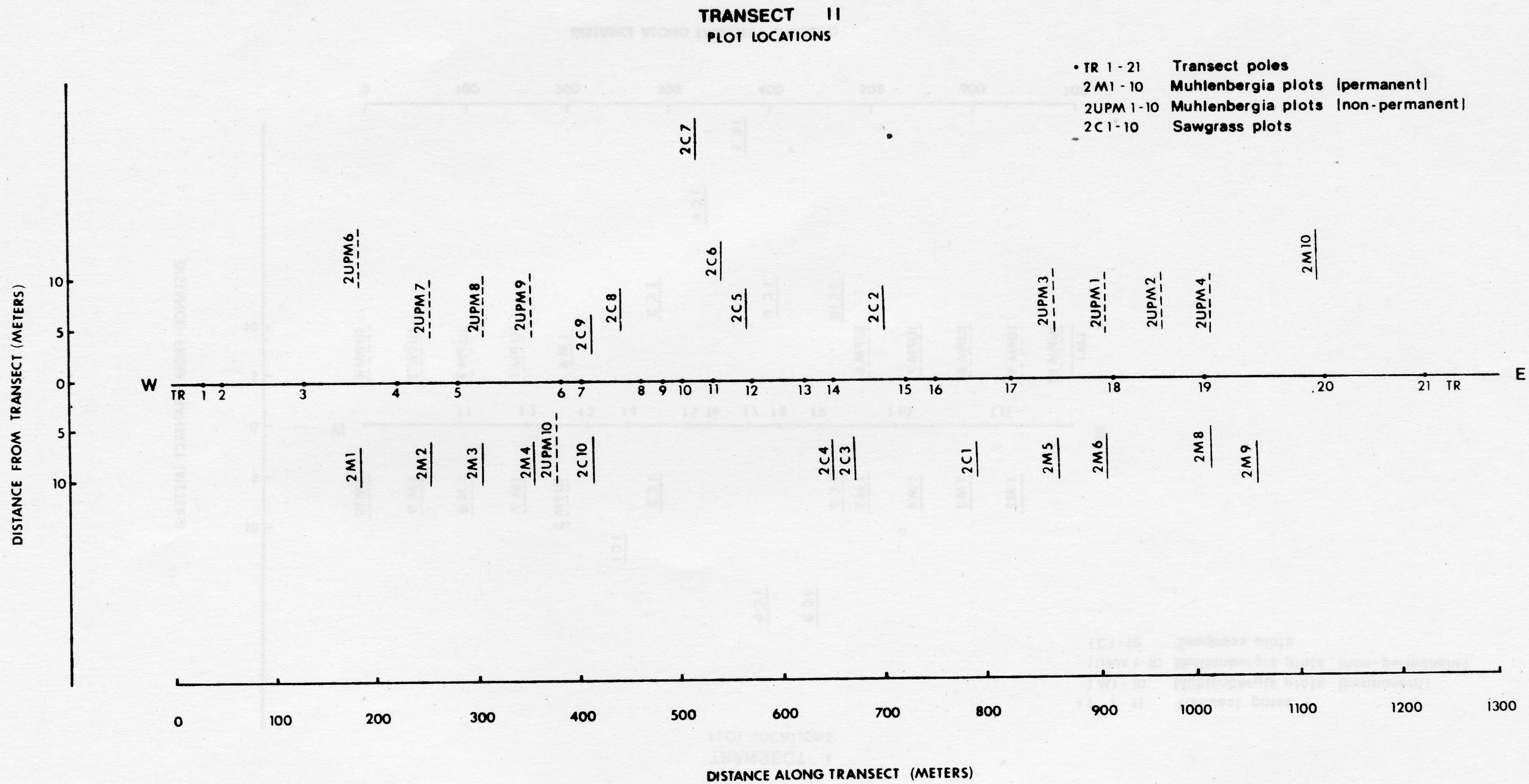


Figure 2. Transect # 2 - Permanent Plot Locations

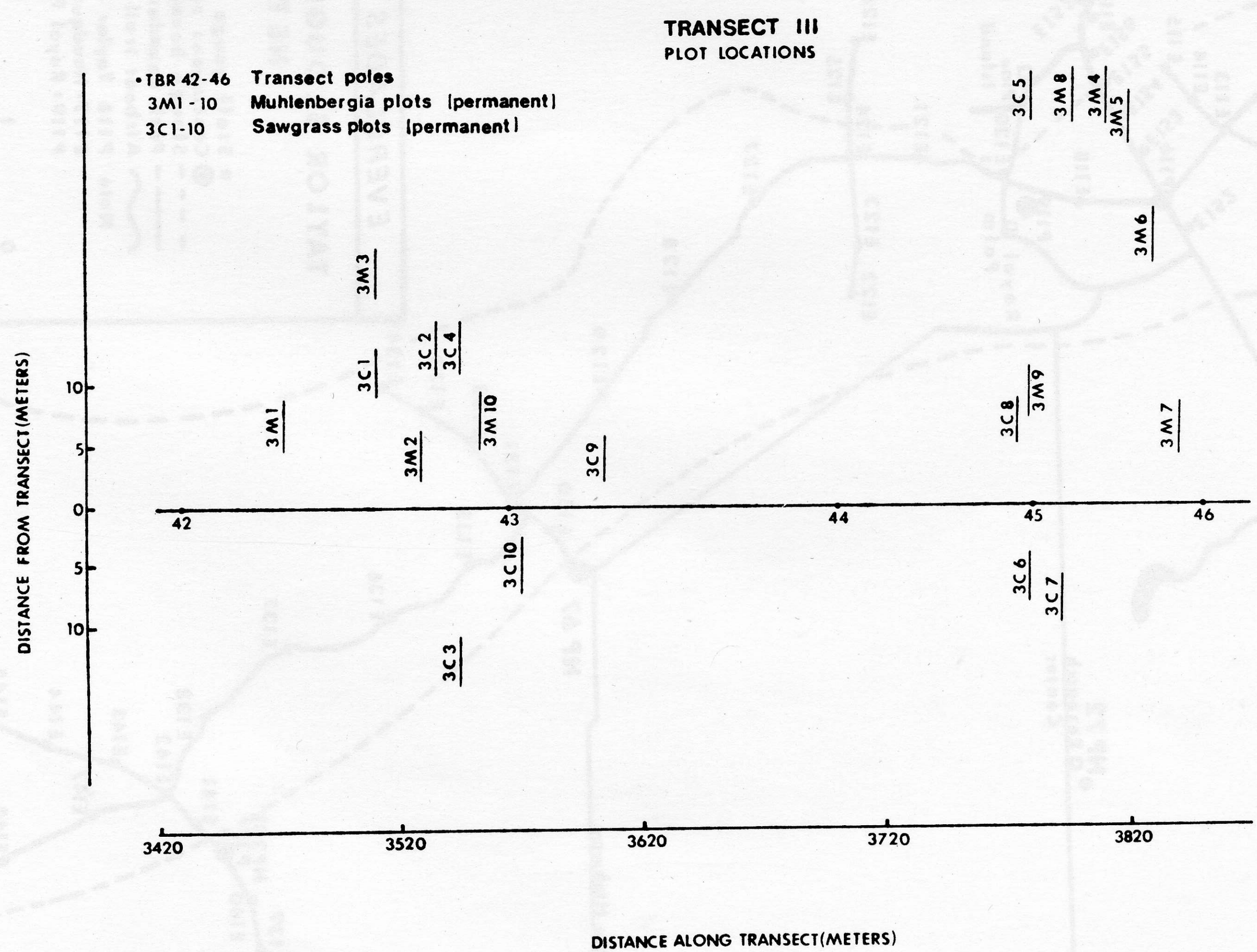
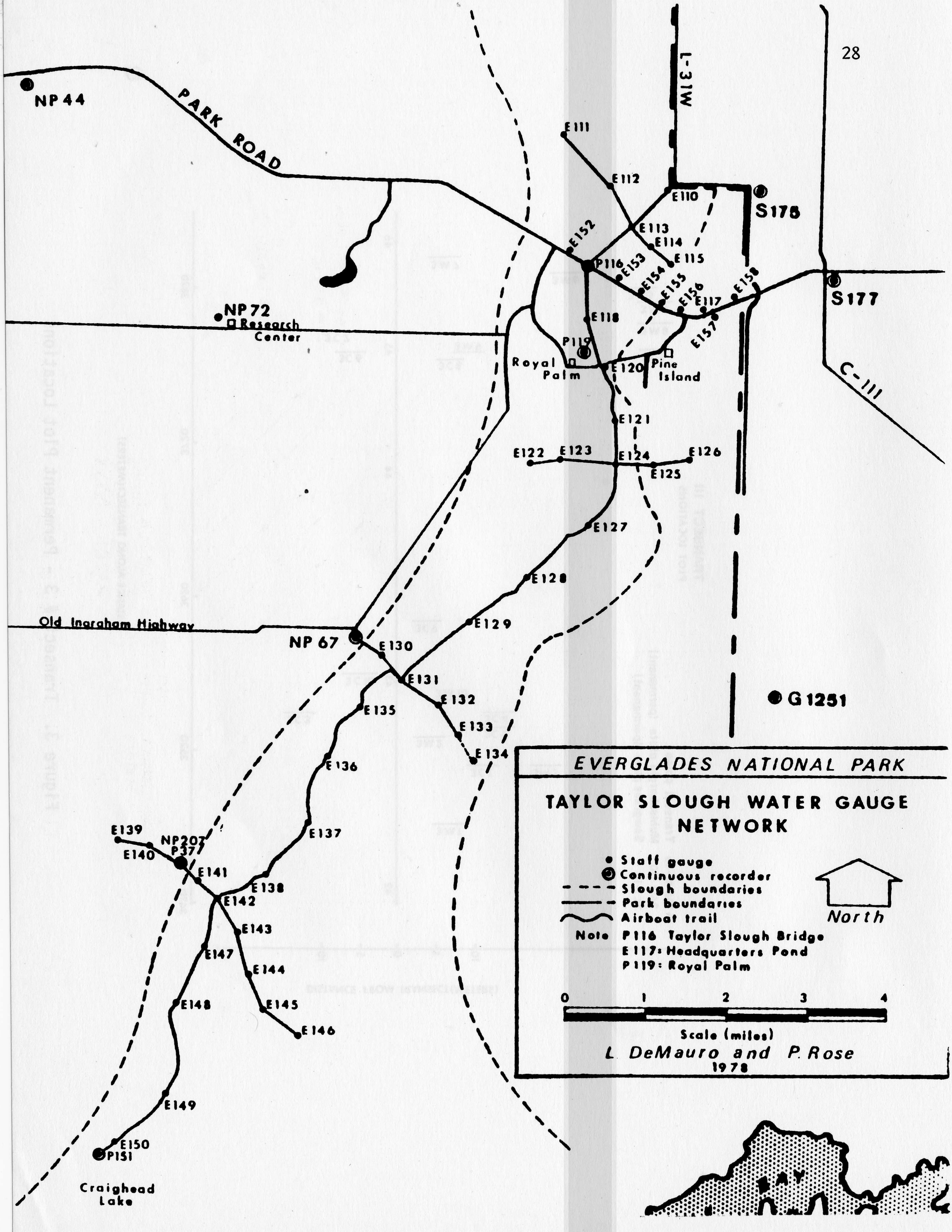


Figure 3. Transect # 3 - Permanent Plot Locations

Figure 4. Taylor Slough - Hydrologic Gauge Network



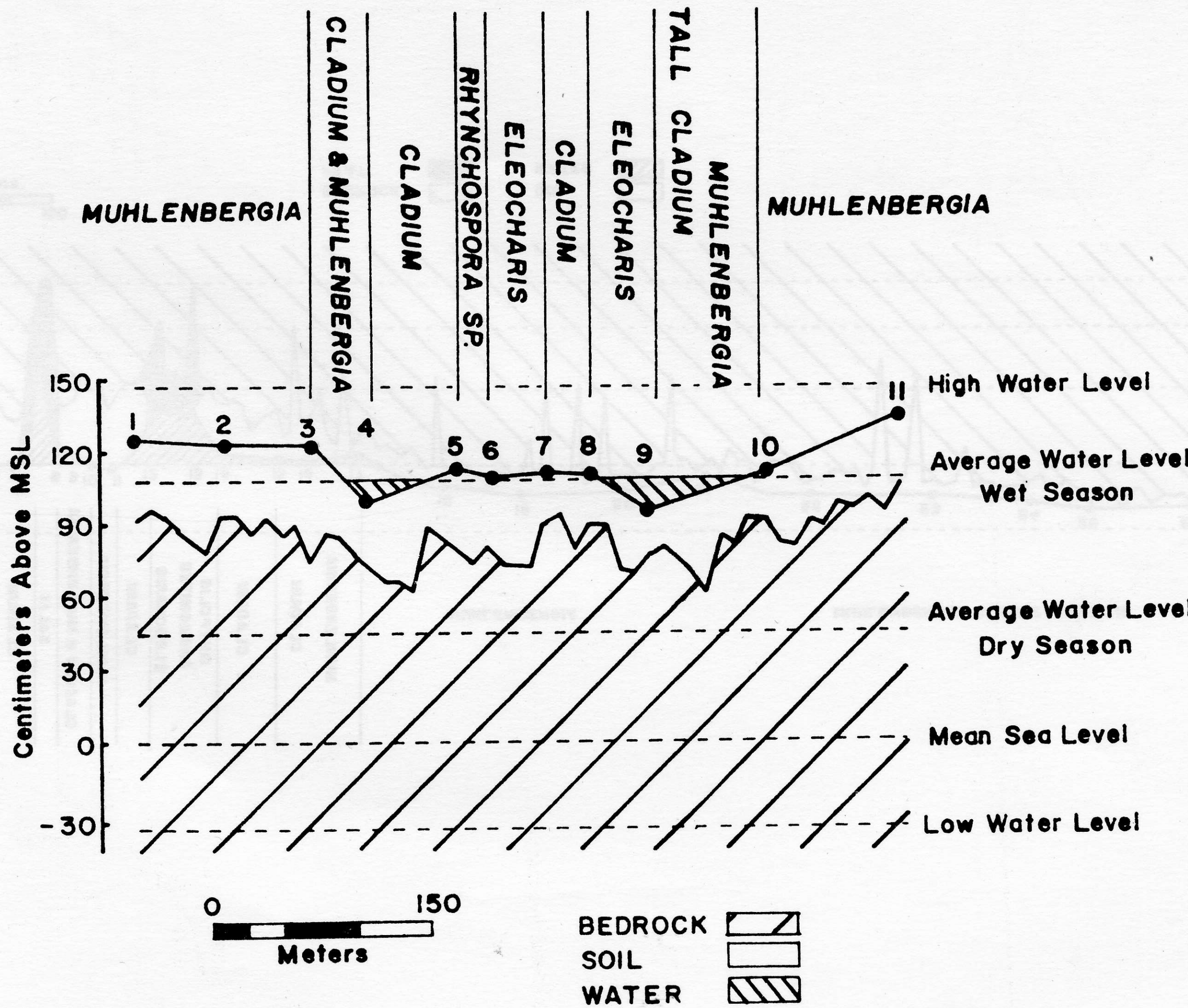


Figure 5. Profile - Transect # 1

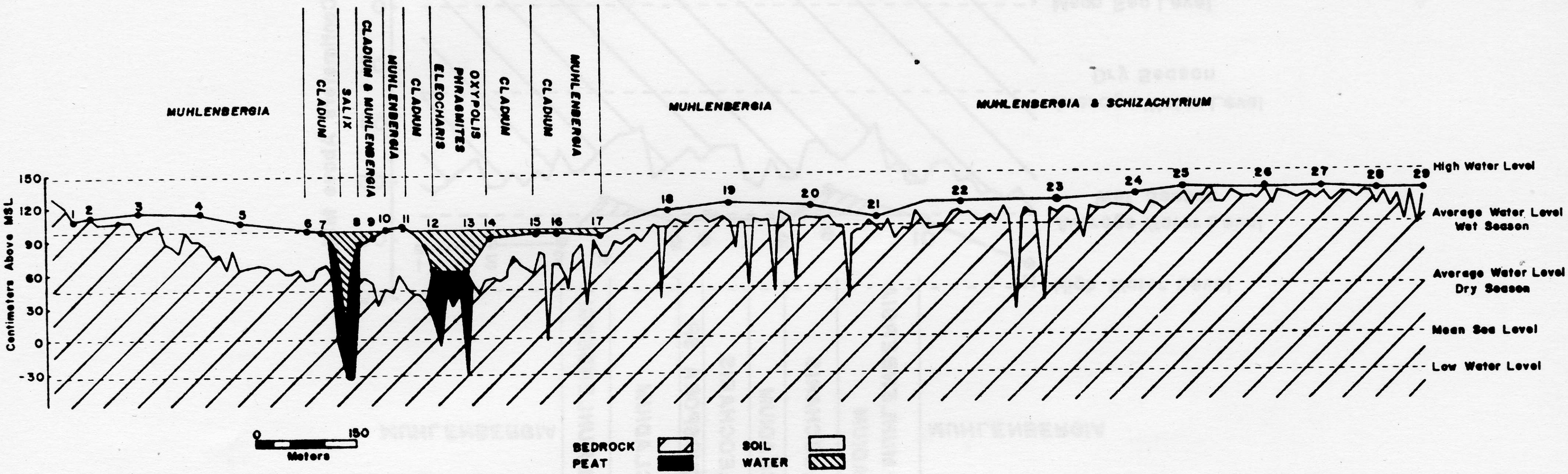


Figure 6. Profile - Transect # 2

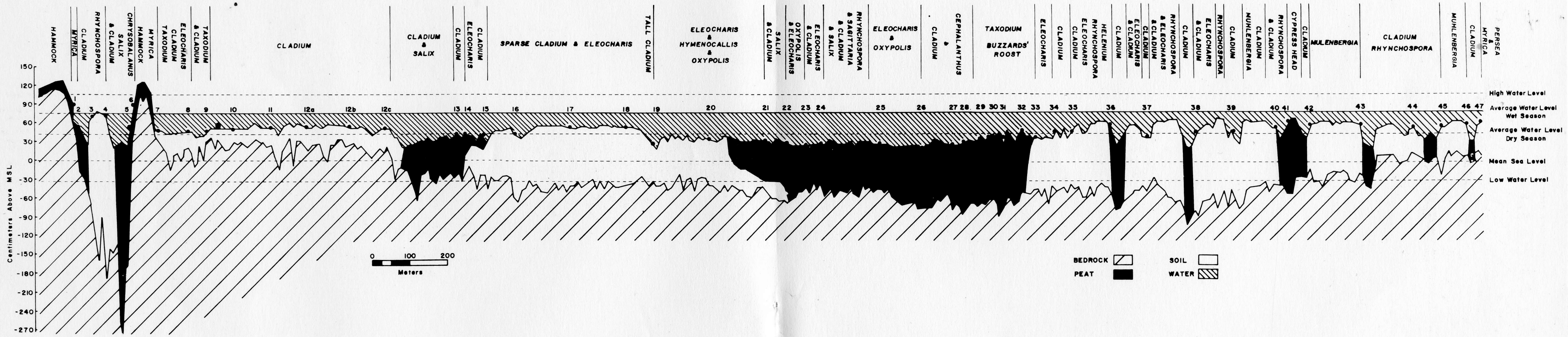


Figure 7. Profile - Transect # 3

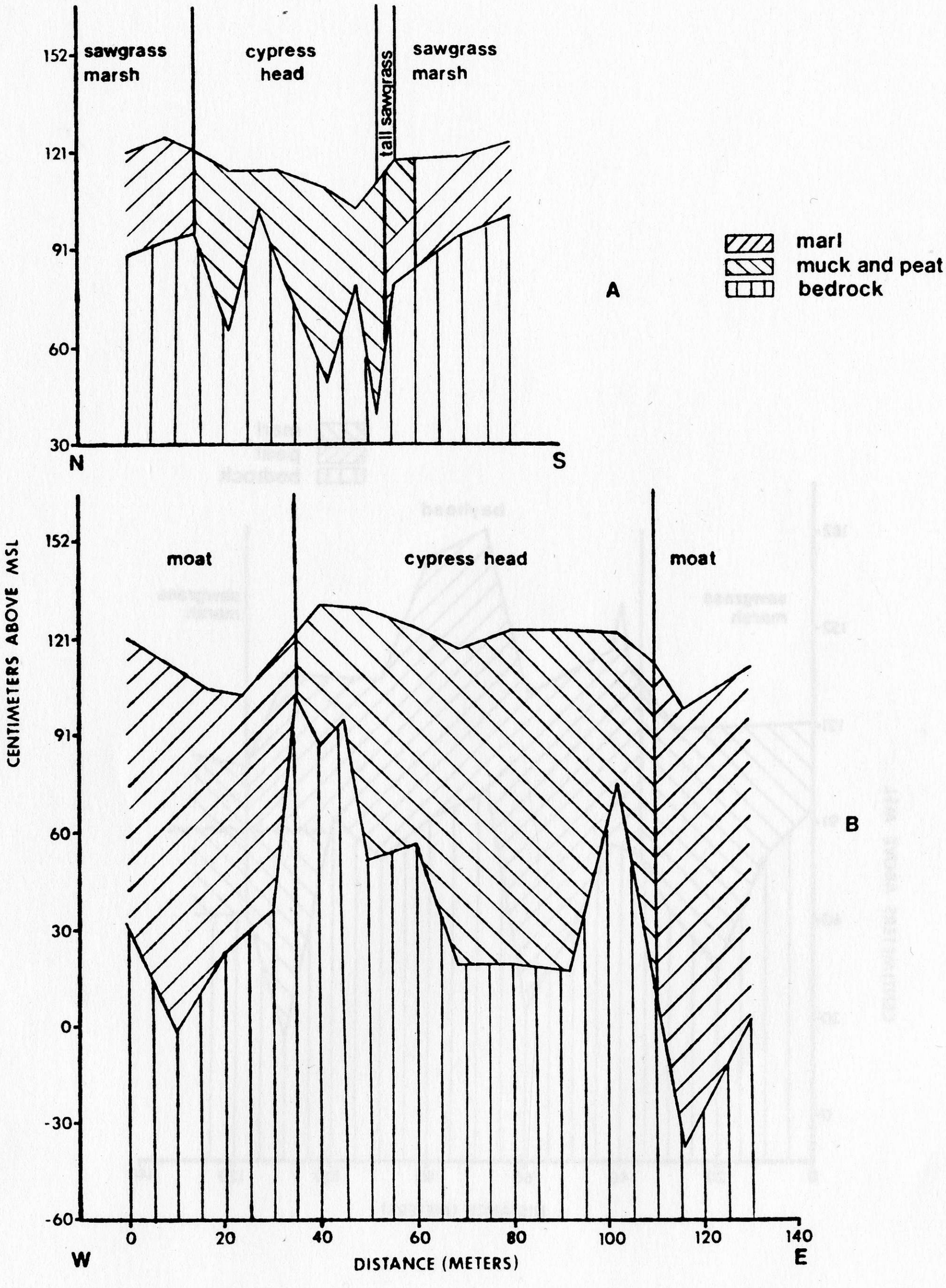


Figure 8. Profile - Taxodium Heads

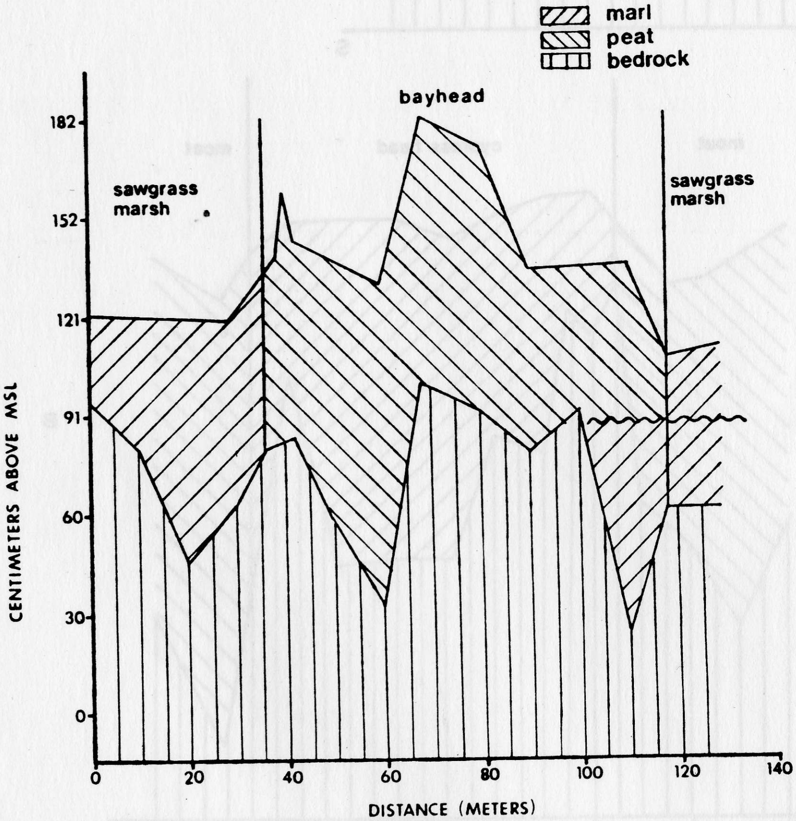


Figure 9. Profile - Bayhead

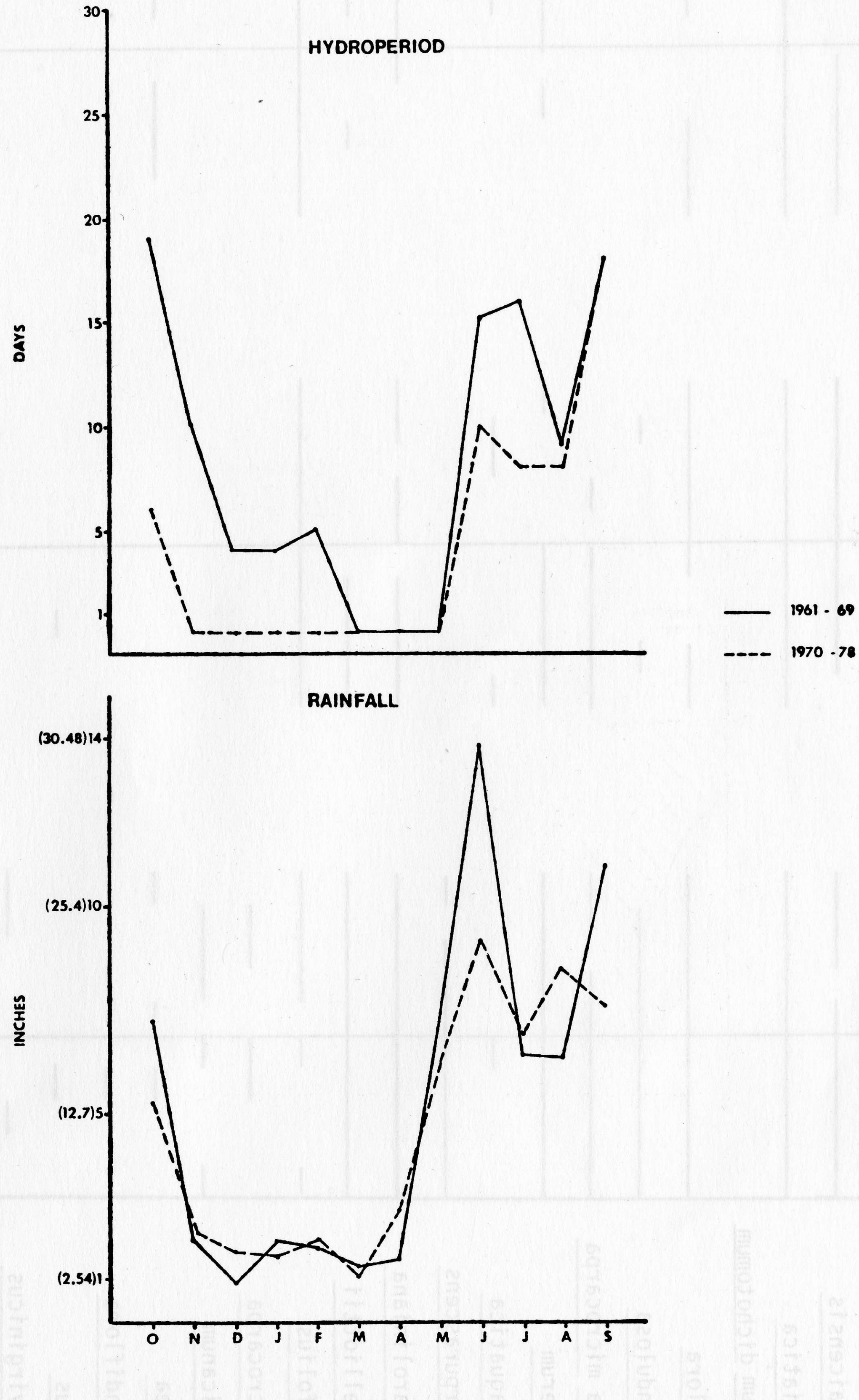


Figure 10. 1961-1969 vs. 1970-1977 Comparison of Average Number of Days Inundated/Month in Muhlenbergia Prairie on Transect # 1 (near E-112) at Elevation 1.28 m (4.2ft) MSL and of Rainfall at Royal Palm Ranger Station

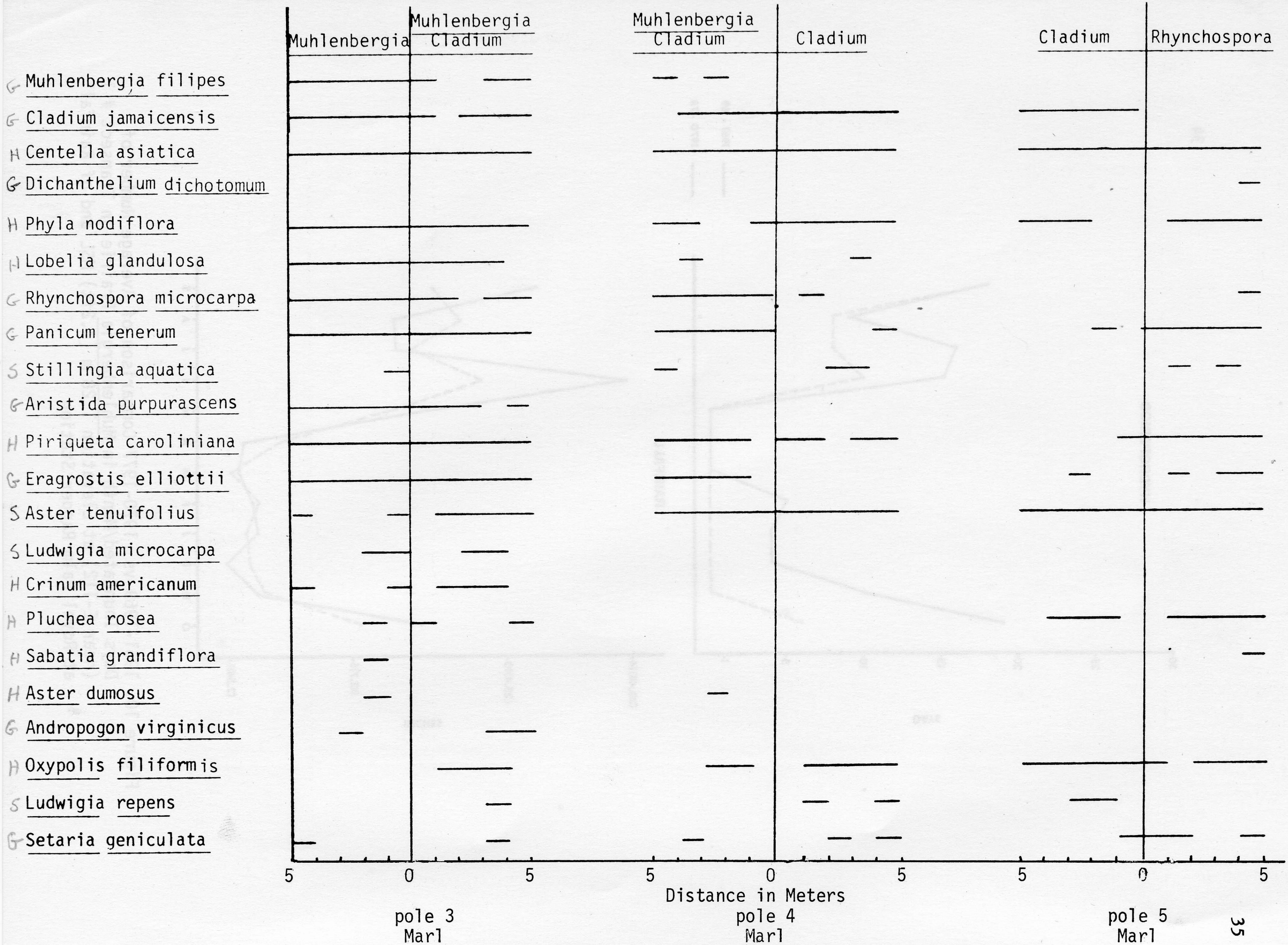


Figure 11. Plant Distribution at Poles 3, 4, and 5 on Transect #1

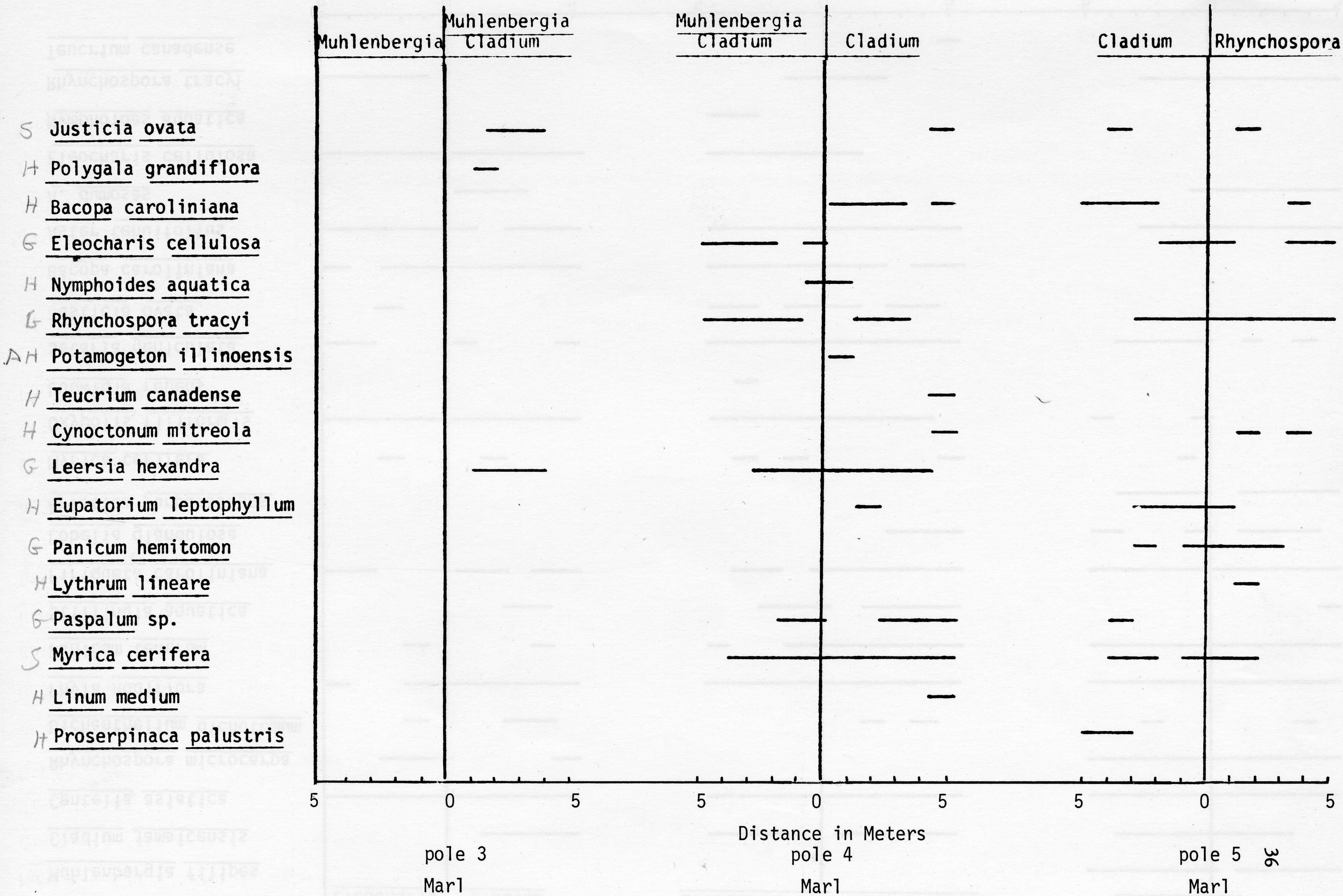


Figure 11. continued.

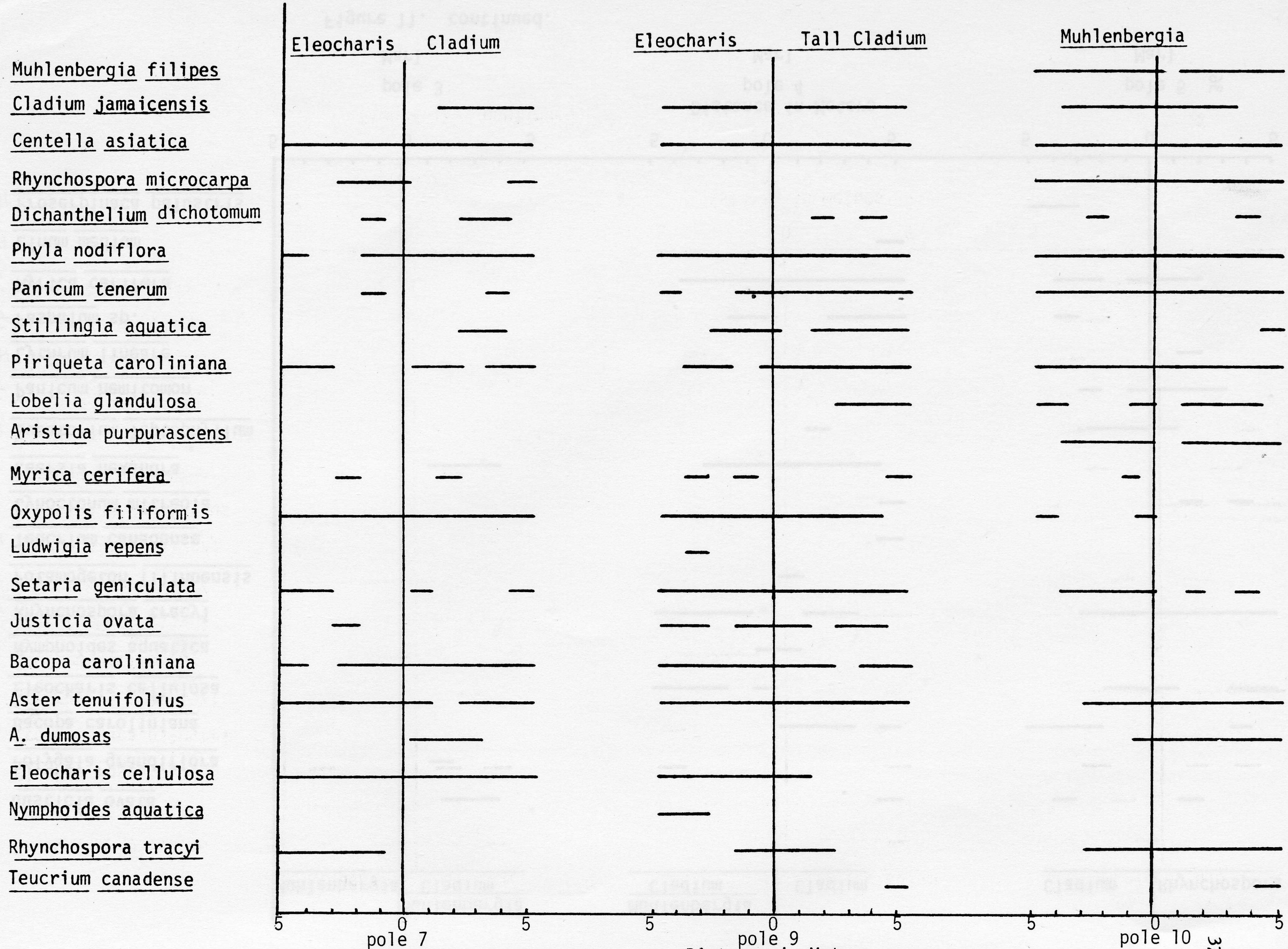


Figure 12. Plant Distribution at Poles 7, 9, and 10 on Transect #1

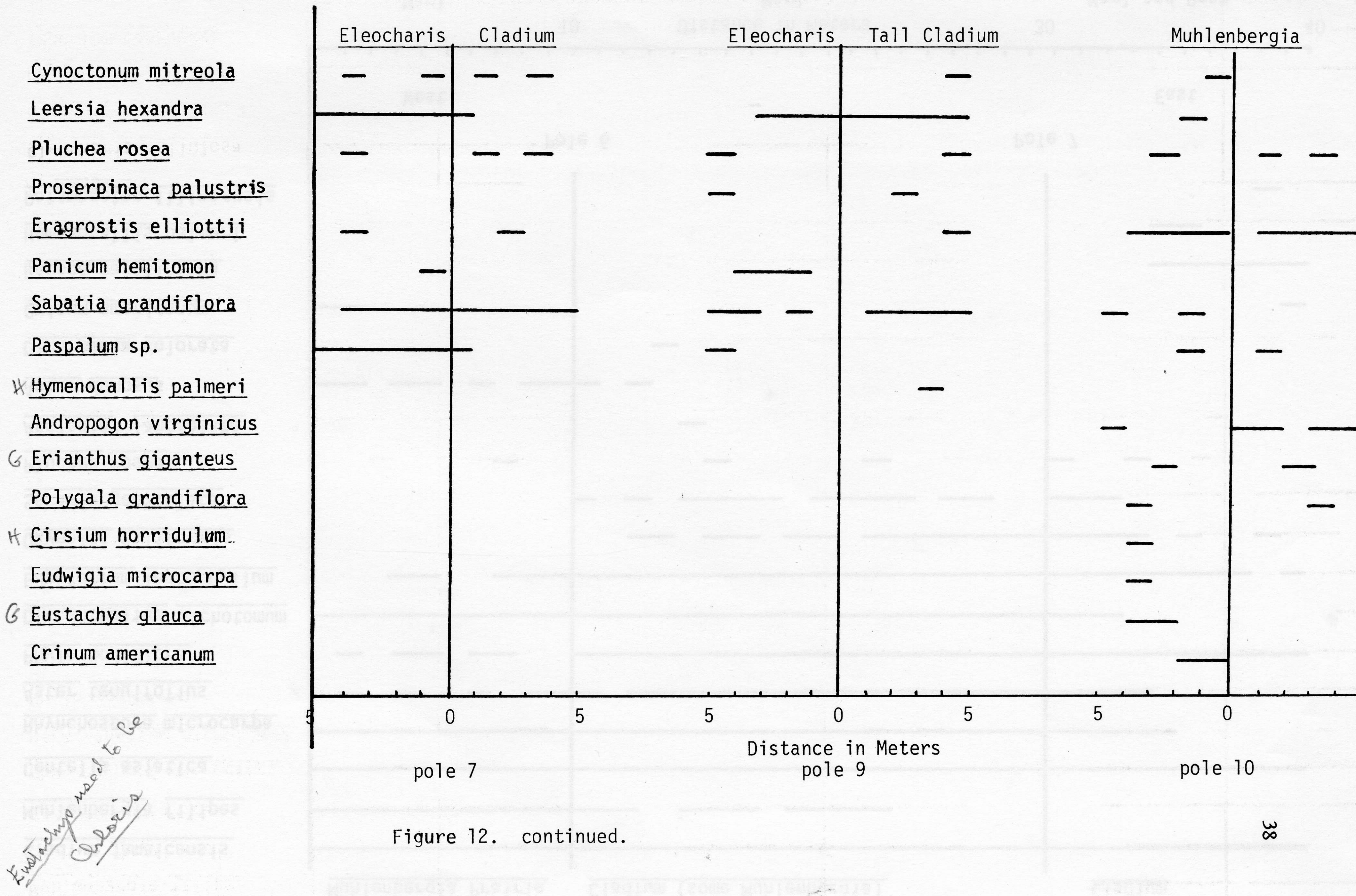


Figure 12. continued.

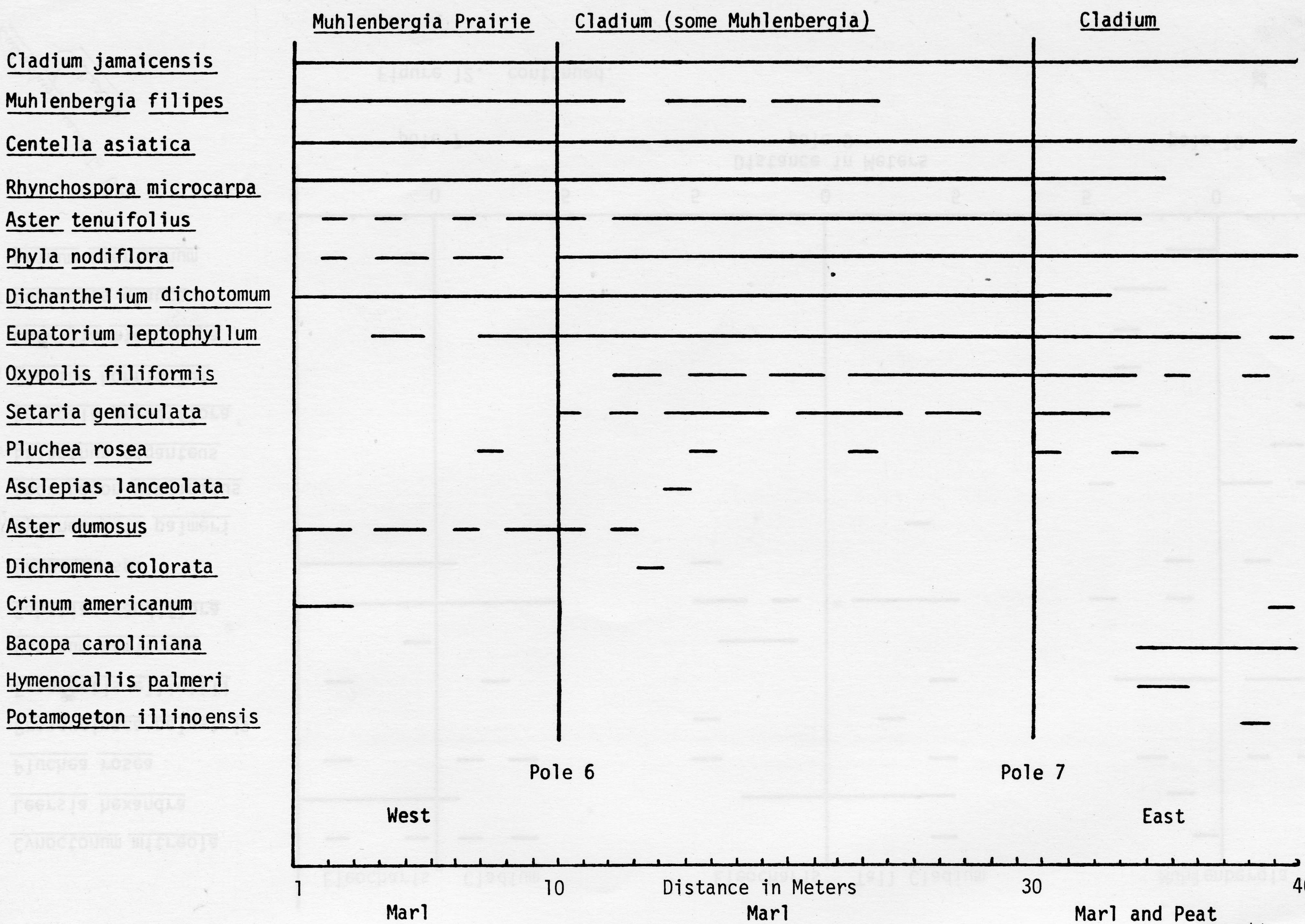


Figure 13. Plant distribution at poles 6 and 7 on Transect #2

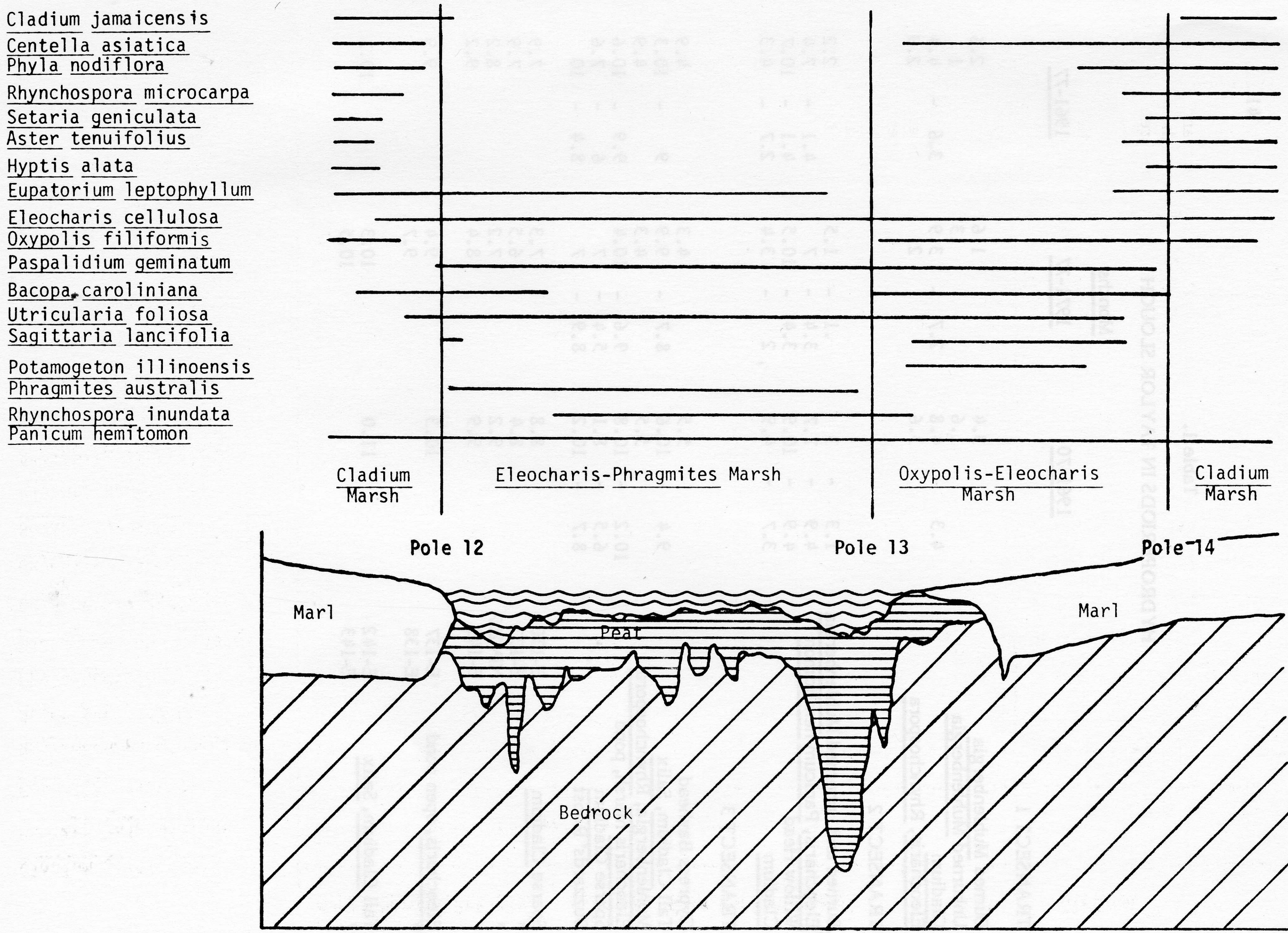


Figure 14. Plant distribution at poles 12, 13, and 14 on Transect #2

Table 1.

HYDROPERIODS IN TAYLOR SLOUGH

		Months 1961-70	Months 1971-77	Months 1961-77
TRANSECT 1				
Burned Muhlenbergia		3.4	1.6	2.6
Unburned Muhlenbergia		1.6	.3	1
Cladium		4.3 - 4.8	2.7 - 3.9	3.6 - 4.4
Eleocharis, Rhynchospora		3.6	2	2.9
TRANSECT 2				
Burned and unburned Muhlenbergia		1.3 - 3	.1 - 1.5	2.2
Eleocharis, Panicum hemitomon		4.9 - 7.7	3.4 - 7	4.1 - 7.4
Willow Head		4.9 - 10.9	3.4 - 10.5	4.1 - 10.7
Cladium		3.7 - 4.9	2 - 3.4	2.7 - 4.3
TRANSECT 3				
Cypress Bayhead		5.5	4.3	4.9
Tall Cladium, Salix		9.4 - 10.6	8.7 - 9.9	9 - 10.3
Muhlenbergia, Rhynchospora		5.5	4.3	4.9
Eleocharis marsh, pond		10.2 - 10.8	9.6 - 10.4	9.9 - 10.6
Sparse Cladium		6.5 - 8.1	5.4 - 7	6 - 7.6
Buzzards' Roost		8.7 - 10.2	8.9 - 7	8.4 - 10
Sparse Cladium	E-130	8.8	7.3	7.9
"	E-133	8.4	6.5	7.9
"	NP-207	9.2	7.2	8.2
"	E-143	9.9	8.4	9.2
Eleocharis, open pond	E-137	10.3	9.4	9.9
"	E-138		9.7	
Tall Cladium, Salix	E-142	11.0	10.3	10.7
"	E-143		10.5	

Table 2

TRANSECT DATA SUMMARIES

	Transect 1			Transect 2			Transect 3	
	Burned Muhlenbergia	Unburned Muhlenbergia	Sawgrass	Burned Muhlenbergia	Unburned Muhlenbergia	Sawgrass	Muhlenbergia	Sawgrass
# of plots	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total # of species in plots	38.0	42.0	45.0	41.0	43.0	50.0	30.0	21.0
Of those species:								
graminoid	14.0 (37.0%)	14.0 (33.0%)	17.0 (37.8%)	15.0 (37.0%)	17.0 (40.0%)	21.0 (42.0%)	12.0 (40.0%)	9.0 (43.0%)
herbaceous	24.0 (63.0%)	28.0 (67.0%)	28.0 (62.2%)	26.0 (63.0%)	26.0 (60.0%)	29.0 (58.0%)	18.0 (60.0%)	12.0 (57.0%)
Total plant cover in plots	16.7%	66.0%	32.6%	13.2%	44.7%	26.3%	14.4	15.5
Litter, ground (water)	83.3%	34.0%	67.4%	86.8%	55.3%	73.7%	85.6	84.5
Of total plant cover:								
graminoid	67.0%	95.0%	44.0%	68.3%	91.6%	60.0%	92.3	94.5
herbaceous	33.0%	5.0%	56.0%	31.7%	8.4%	40.0%	7.7	5.5
# of species with 1% plant cover or more	4.0	2.0	6.0	2.0	2.0	5.0	3.0	2.0
# of species/m^2 (quadrat)	12.0	9.0	11.0	13.0	9.0	12.0	6.0	3.0

	Transect 1			Transect 2			Transect 3	
	Burned *Muhlenbergia*	Unburned *Muhlenbergia*	Sawgrass	Burned *Muhlenbergia*	Unburned *Muhlenbergia*	Sawgrass	*Muhlenbergia*	Sawgrass
# of species/5 m^2 (plot)	18.0	17.0	20.0	22.0	18.0	20.0	10.0	5.0
# of species in common between *Muhlenbergia* and *Cladium* plots		26.0			37.0		16.0	
Sorensen's similarity Index between the two communities		59.0			79.0		63.0	
Total # of species in all plots, all transects		75.0						
Of which: in *Muhlenbergia* prairie		66.0						
in sawgrass		53.0						

Table 3a

SPECIES ANALYSIS

	Transect 1						Transect 2					
	Burned Muhlenbergia		Unburned Muhlenbergia		Cladium		Burned Muhlenbergia		Unburned Muhlenbergia		Cladium	
	% Cover	Frequency (%)	% Cover	Frequency (%)	% Cover	Frequency (%)	% Cover	Frequency (%)	% Cover	Frequency (%)	% Cover	Frequency (%)
Graminoids												
<u>Muhlenbergia filipes</u>	7.00	100	60.60 (40%)	100	-	-	6.24	100	34.80 (19%)	100	-	-
<u>Cladium jamaicensis</u>	.46 (13)	76	1.46 (12)	90	11.20 (75)	100	.60 (10)	78	2.58 (28)	96	12.62 (42)	100
<u>Andropogon glomeratus</u>	-	-	.14	10	-	-	*	10	.12	8	*	4
<u>A. virginicus</u>	.28	28	*	10	-	-	.28	28	*	8	*	6
<u>Aristida purpurascens</u>	.44	78	.80	68	-	-	*	18	.92	74	-	-
<u>Coelorachis rugosa</u>	*	2	-	-	-	-	-	-	-	-	*	8
<u>Dichanthelium dichotomum</u>	*	24	.10	20	*	4	.41	94	.42	46	.80	60
<u>Dichromena colorata</u>	-	-	-	-	-	-	.18	36	-	-	*	10
<u>Eleocharis cellulosa</u>	-	-	-	-	.60	56	-	-	-	-	-	-
<u>Eragrostis elliottii</u>	.50	38	*	16	.18	18	*	12	.32	24	.10	12
<u>Erianthus giganteus</u>	*	4	*	8	-	-	*	18	.10	10	*	6
<u>Eustachys glauca</u>	-	-	-	-	-	-	-	-	-	-	*	14
<u>Leersia hexandra</u>	-	-	-	-	.36	34	-	-	*	2	.15	30
<u>Panicum dichotomiflorum</u>	*	2	-	-	-	-	-	-	-	-	*	6
<u>P. hemitomon</u>	-	-	-	-	.20	16	-	-	*	2	*	2
<u>P. rigidulum</u>	-	-	-	-	.10	2	-	-	-	-	-	-
<u>P. tenerum</u>	.14	24	.12	22	1.00	40	.17	40	.16	20	1.50	76
<u>P. virgatum</u>	*	2	-	-	*	2	*	6	-	-	*	4
<u>Paspalidium geminatum</u>	-	-	-	-	.10	6	-	-	-	-	*	8
<u>Paspalum sp.</u>	-	-	-	-	.36	26	*	2	-	-	.30	44
<u>Rhynchospora divergens</u>	*	16	.15	14	.16	22	.17	44	-	-	*	6

	Transect 1						Transect 2					
	Burned Muhlenbergia		Unburned Muhlenbergia		Cladium		Burned Muhlenbergia		Unburned Muhlenbergia		Cladium	
	% Cover	Frequency (%)	% Cover	Frequency (%)	% Cover	Frequency (%)	% Cover	Frequency (%)	% Cover	Frequency (%)	% Cover	Frequency (%)
R. inundata	-	-	-	-	*	2	-	-	*	2	-	-
R. microcarpa	1.12	90	.14	32	.44	40	.63	94	.32	40	.50	54
R. tracyi	1.20	70	*	14	*	6	*	8	.16	20	.20	14
Schizachyrium rhizomatum	*	4	*	6	-	-	-	-	.30	20	-	-
Setaria geniculata	-	-	-	-	.36	30	.12	24	-	-	.70	54
Spartina bakeri	-	-	-	-	-	-	-	-	.60	2	-	-
Herbs												
Aletris bracteata	*	16	*	4	-	-	-	-	*	2	-	-
Asclepias lanceolata	-	-	-	-	*	2	-	-	*	2	*	2
Aster dumosas	-	-	*	2	*	2	*	24	*	10	*	30
A. tenuifolius	*	50	*	8	1.06	74	*	10	*	2	*	54
Bacopa caroliniana	-	-	-	-	1.10	80	-	-	-	-	*	36
Centella asiatica	1.80	98	*	96	9.00	100	1.96	100	*	78	6.50	100
Cirsium horridulum	*	24	*	4	-	-	-	-	*	2	-	-
Crinum americanum	-	-	*	10	-	-	*	18	*	6	-	-
Cynoctonum mitreola	*	14	*	4	*	2	*	6	-	-	*	2
Erigeron quercifolius	*	4	*	10	*	4	*	10	*	10	*	2
Eupatorium leptophyllum	-	-	-	-	*	6	*	46	*	2	1.26	84
E. mikanioides	-	-	*	10	-	-	-	-	*	12	-	-
Gerardia harperi	*	22	*	4	*	6	*	40	*	22	*	6
Heliotropium polyphyllum	*	40	*	4	-	-	-	-	-	-	-	-
Hymenocallis palmeri	*	32	*	6	*	12	*	6	*	42	*	2
Hypericum brachyphyllum	-	-	-	-	-	-	*	18	-	-	-	-
Ipomoea sagittata	*	2	*	16	-	-	*	2	*	12	*	6
Justicia ovata	-	-	-	-	*	8	-	-	-	-	-	-
Linum medium	*	6	*	8	-	-	*	8	-	16	-	-
Lobelia glandulosa	*	38	*	4	*	6	*	8	-	-	*	2

	Transect 1						Transect 2					
	Burned Muhlenbergia		Unburned Muhlenbergia		Cladium		Burned Muhlenbergia		Unburned Muhlenbergia		Cladium	
	% Cover	Frequency (%)	% Cover	Frequency (%)	% Cover	Frequency (%)	% Cover	Frequency (%)	% Cover	Frequency (%)	% Cover	Frequency (%)
Ludwigia microcarpa	*	22	-	-	*	16	*	8	-	-	*	32
L. repens	-	-	-	-	*	10	-	-	-	-	-	-
Lythrum lineare	-	-	-	-	*	20	-	-	-	-	*	2
Melanthera sp.	*	16	*	12	-	-	*	8	-	-	-	-
Mikania scandens	-	-	*	2	*	10	*	6	*	20	*	8
Nymphoides aquatica	-	-	-	-	*	6	-	-	-	-	-	-
Oxypolis filiformis	*	8	-	-	*	42	-	-	-	-	*	38
Phyla nodiflora	*	92	*	88	1.30	94	*	84	*	74	1.28	96
P. stoechadifolia	-	-	-	-	-	-	-	2	*	2	*	2
Piriqueta caroliniana	*	20	*	10	*	38	-	-	-	-	-	-
Pluchea rosea	*	26	*	44	*	30	*	42	*	30	*	36
Polygala grandiflora	*	54	*	14	-	-	*	30	*	18	*	12
Potamogeton illinoensis	-	-	-	-	*	6	-	-	-	-	*	4
Proserpinaca palustris	-	-	-	-	*	26	-	-	-	-	*	6
Sabatia grandiflora	*	18	*	16	*	20	*	38	*	4	*	32
Sagittaria lanceolata	-	-	-	-	-	-	-	-	-	-	*	2
Samolus ebracteatus	*	22	*	6	-	-	-	-	*	10	-	-
Solidago stricta	*	28	*	18	-	-	*	36	*	14	*	4
Teucrium canadense	*	2	*	42	*	12	*	56	*	28	*	52
Trees/Shrubs												
Acacia farnesiana	-	-	-	2	-	-	-	-	-	-	-	-
Bumelia reclinata	-	-	-	-	-	-	-	-	*	4	-	-
Myrica cerifera	-	-	-	2	*	6	*	20	*	12	-	-
Stillingia aquatica	-	-	-	2	-	-	-	-	-	-	-	-
Cephalanthus occidentalis	-	-	-	-	-	-	-	-	-	-	*	4
Litter, bare ground	83.30	100	34.10	100	67.40	100	86.76	100	55.30	100	73.70	100

*Indicates less than .1% cover.

( ) after Muhlenbergia cover means % dead Muhlenbergia of total Muhlenbergia

( ) after Cladium cover is density/plot (5 m^2)

Table 3b

SPECIES ANALYSIS

Transect 3

	Muhlenbergia Cover %	Muhlenbergia Density	Muhlenbergia Frequency %	Cladium Cover %	Cladium Density	Cladium Frequency %
Graminoids						
Muhlenbergia filipes	8.6 (3.8% dead)		100	1		16
Cladium jamaicense	3.2	$43.5/5\ m^2$	100	13.3	$121.8/5\ m^2$	100
Andropogon glomeratus	*		2			4
Aristida purpurascens	.16		48	*		6
Dichanthelium dichotomum	*		18			
Eleocharis cellulosa				.1		28
Eragrostis elliottii	*		8			
Panicum tenerum	.1		24	*		6
Paspalum sp.	*		2			
Rhynchospora divergens	.1		20	*		4
R. microcarpa	1		76	.14		22
R. tracyi	.13		50	.12		26
Setaria geniculata	*		6	*		2
Herbs						
Asclepias lanceolata	*		2			
Aster tenuifolius	*		10	*		
Bacopa caroliniana				*		6
Centella asiatica	.23		50	*		10
Crinum americanum				*		2
Eupatorium leptophyllum	*		6	*		6
Gerardia harperi	*		8			
Ilex cassine	*		4			
Justicia ovata				*		6

	Muhlenbergia			Cladium		
	Cover %	Density	Frequency %	Cover %	Density	Frequency %
Ludwigia microcarpa	8		10	*		4
L. repens	*		2			
Myrica cerifera	*		4	*		2
Persea borbonia	*		2			
Phyla nodiflora	*		14	.1		10
Pluchea rosea	*		14	*		4
Polygala grandiflora	*		4			
Potamogeton illinoensis	*		2			
Proserpinaca palustris				*		2
Teucrium canadense	*		4			
Utricularia resupinata	*		2			
U. subulata	.16		32	.2		20
"Litter, ground"	85.6			84.5		

*Indicates less than .1% cover

Table 4

SUMMARY - DENSITY
(Number of Individuals 10 m^2)
Poles 3, 4, 5

Transect 1

	Pole 3		Pole 4		Pole 5	
	West	East	West	East	West	East
Andropogon virginicus	1	3	-	-	-	-
Aristida purpurascens	26	15	-	-	-	-
Aster dumosus	3	-	1	-	-	-
Aster tenuifolius	2	10	22	30	16	42
Bacopa caroliniana	-	-	-	17	68	27
Centella asiatica	215	2342	400	360	357	685
Cladium jamaicensis	15	21	23	91	58	-
Crinum americanum	2	9	-	-	-	-
Cynoctonum mitreola	-	-	-	1	-	3
Dichanthelium dichotomum	-	-	-	-	-	1
Eleocharis cellulosa	-	-	7	-	12	8
Eragrostis elliottii	27	22	19	-	1	3
Eupatorium leptophyllum	-	-	-	6	5	1
Justicia ovata	-	3	-	1	1	1
Leersia hexandra	-	25	21	66	-	-
Linum medium	-	-	-	1	-	-
Lobelia glandulosa	9	12	1	2	-	-
Ludwigia microcarpa	2	2	-	-	-	-
L. repens	-	1	-	4	2	-
Lythrum lineare	-	-	-	-	-	1
Muhlenbergia filipes	26	10	2	-	-	-
Murica cerifera	-	-	5	7	4	2
Nymphoides aquatica	-	-	4	5	-	-
Oxypolis filiformis	-	5	2	12	31	13
Panicum hemitomon	-	-	-	-	2	6
P. tenerum	33	33	62	3	1	44
Paspalum sp.	-	-	3	6	1	-
Phyla nodiflora	25	30	15	31	33	9
Piriqueta caroliniana	16	23	68	7	1	62
Pluchea rosea	1	3	-	-	6	10
Polygala grandiflora	-	1	-	-	-	-
Potamogeton illinoensis	-	-	-	1	-	-
Proserpinaca palustris	-	-	-	-	8	-
Rhynchospora microcarpa	70	26	44	2	-	1
R. tracyi	-	-	42	9	79	214
Sabatia grandiflora	1	-	-	-	-	2
Setaria geniculata	3	1	1	3	2	4
Stillingia aquatica	1	-	-	-	-	-
Teucrium canadense	-	-	-	1	-	-

Table 5

SUMMARY - DENSITY
(Number of Individuals 10 m^2)
Poles 7, 9, 10

Transect 1

	Pole 7		Pole 9		Pole 10	
	West	East	West	East	West	East
Andropogon virginicus	-	-	-	-	6	8
Aristida purpurascens	-	-	-	-	22	30
Aster dumosas	-	24	-	-	1	3
A. tenuifolius	28	7	61	54	9	8
Bacopa caroliniana	37	93	14	12	-	-
Centella asiatica	700	600	845	850	575	475
Cirsium horridulum	-	-	-	-	1	-
Cladium jamaicensis	-	30	22	22	11	7
Crinum americanum	-	-	-	-	2	-
Cynoctonum mitreola	3	6	-	2	-	2
Dichanthelium dichotomum	2	2	-	3	2	3
Eleocharis cellulosa	205	79	129	3	-	-
Eragrostis elliottii	1	1	-	1	9	12
Erianthus giganteus	-	-	-	-	1	1
Eustachys glauca	-	-	-	-	2	-
Leersia hexandra	6	14	21	17	1	-
Lobelia glandulosa	-	-	-	6	3	4
Ludwigia microcarpa	-	-	-	-	1	-
L. repens	-	-	1	-	2	-
Muhlenbergia filipes	-	-	-	-	39	39
Myrica cerifera	1	3	4	1	3	-
Nymphoides aquatica	-	-	4	-	-	-
Oxypolis filiformis	194	62	21	9	2	-
Panicum hemitomon	1	-	5	-	-	-
P. tenerum	2	1	9	51	33	45
Paspalum sp.	7	1	2	-	1	2
Phyla nodiflora	13	46	52	119	50	54
Piriqueta caroliniana	2	5	3	217	56	24
Pluchea rosea	4	3	1	1	9	5
Polygala htsmfog;pts	-	-	-	-	3	1
Proserpinaca palustris	-	-	7	1	-	-
Rhynchospora microcarpa	7	1	-	-	15	29
R. tracyi	61	-	73	62	33	93
Sabatia grandiflora	10	5	7	6	2	-
Setaria geniculata	3	3	27	24	7	3
Stillingia aquatica	-	2	3	8	-	1
Teucrium canadense	-	-	-	1	-	2

Table 6

SUMMARY - DENSITY
(Number of Individuals)
Poles 6, 7

Transect 2

	Pole 6		Pole 7	
	West	East	West	East
Asclepias lanceolata	-	1	-	-
Aster domosas	62	4		-
A. tenuifolius	7	15	29	12
Bacopa caroliniana	-	-	-	256
Centella asiatica	144	675	1124	460
Cladium jamaicensis	37	21	124	34
Crinum americanum	2	-		1
Dichanthelium dichotomum	46	44	89	19
Dichromena colorata	-	9	-	-
Eupatorium leptophyllum	7	51	113	86
Hymenocallis palmeri	-	-	-	2
Muhlenbergia filipes	62	8	7	-
Oxypolis filiformis	-	7	22	15
Phyla nodiflora	19	65	105	171
Pluchea rosea	1	1	4	5
Potamogeton illinoensis	-	-	-	4
Rhynchospora microcarpa	56	34	43	24
Setaria geniculata	-	10	24	7

Table 7

SUMMARY - DENSITY
(Number of Individuals 10 m^2)
Poles 12, 13, 14

Transect 2

	Pole 12		Pole 13		Pole 14	
	West	East	West	East	West	East
Aeschynomene pratensis	-	4	-	-	-	-
Aster dumosas	-	-	-	-	11	1
A. tenuifolius	5	-	-	-	10	34
Bacopa caroliniana	86	25	2	265	87	-
Centella asiatica	319	-	-	234	994	835
Cladium jamaicensis	67	10	-	-	-	30
Coelorachis rugosa	-	-	-	-	5	5
Crinum americanum	3	8	-	1	-	1
Dichanthelium dichotomum	-	-	-	-	1	32
Dichromena colorata	8	-	-	-	-	-
Eleocharis cellulosa	17	368	329	344	149	56
Eupatorium leptophyllum	75	23	48	-	217	249
Hyptis alata	4	-	-	-	24	28
Nymphoides aquatica	-	-	-	4	3	-
Oxypolis filiformis	2	-	-	20	42	13
Panicum hemitomon	106	266	52	62	150	61
Paspalidium geminatum	-	97	27	12	10	-
Phragmites australis	-	10	29	-	-	-
Phyla nodiflora	195	-	3	13	819	397
Pluchea rosea	12	-	-	-	-	-
Polygonum hydropiperoides	7	15	-	-	-	-
Pontederia lanceolata	-	30	-	-	-	-
Potamogeton illinoensis	3	-	-	44	5	-
Rhynchospora inundata	-	16	43	41	-	-
R. microcarpa	24	-	-	-	22	22
Sagittaria lancifolia	-	13	47	38	-	-
Setaria geniculata	15	-	-	-	16	16
Teucrium canadense	-	-	-	-	-	3
Utricularia biflora	3	5	5	8	-	-

Table 8

VASCULAR PLANTS OF TAYLOR SLOUGH (partial list)

WH - Willow Head		SC - Sparse Cladium	
BH - Bayhead		SP - Spikerush	
CF - Cypress Forest		S/W - Sawgrass/Willow	
MP - Muhlenbergia Prairie		OP - Open Pond	

	WH	BH	CF	MP	SC	SP	S/W	OP
Psilotaceae								
Psilotum nudum		x	x					
Aspidiaceae								
Thelypteris interrupta		x	x					
T. kunthii		x	x					
Blechnaceae								
Blechnum serrulatum		x	x					
Davalliaceae								
Nephrolepis exaltata		x	x					
Osmundaceae								
Osmunda regalis	x	x	x					
Polypodiaceae								
Polypodium polypodioides		x	x					
Pteridaceae								
Acrostichum danaeifolium		x	x					
Pteridium aquilinum var. caudatum		x	x					
Taxodiaceae								
Taxodium ascendens			x					
T. distichum			x					
MONOCOTS								
Alismataceae								
Sagittaria lancifolia						x	x	x

	WH	BH	CF	MP	SC	SP	S/W	OP
Amaryllidaceae								
Crinum americanum	x			x	x	x		
Hymenocallis palmeri	x			x	x	x		
Araceae								
Peltandra virginica	x	x	x			x	x	x
Arecaceae								
Sabal palmetto				x				
Serenoa repens				x				
Bromeliaceae								
Tillandsia balbisiana		x	x					
T. circinnata		x	x					
T. fasciculata		x	x					
T. usneoides		x	x					
Burmanniaceae								
Apteria aphylla		x	x					
Cyperaceae								
Cladium jamaicense			x	x	x	x	x	
Cyperus articulatus				x	x			
Cyperus haspan				x	x			
Dichromena colorata				x	x			
Eleocharis cellulosa					x	x		
Fuirena breviseta				x	x		x	
Rhynchospora divergens				x	x			
R. inundata					x	x		
R. microcarpa				x	x	x		
R. tracyi				x	x	x		
Schoenus nigricans				x				
Scirpus validus				x	x			
Iridaceae								
Sisyrinchium miamiense				x	x			
Liliaceae								
Aletris bracteata				x	x			

	WH	BH	CF	MP	SC	SP	S/W	OP
Marantaceae								
Thalia geniculata	x						x	x
Orchidaceae								
Calopogon tuberosus				x				
Encyclia tampensis		x	x					
Spiranthes cernua var. odorata				x	x			
S. vernalis				x	x			
Poaceae								
Andropogon glomeratus				x	x			
A. virginicus				x	x			
Aristida purpurascens				x	x			
Brachiaria mutica				x	x			
Coelorachis rugosa				x	x			
Dichanthelium dichotomum				x	x			
Echinochloa crusgalli				x	x			
Eragrostis elliottii				x	x			
Erianthus giganteus				x	x			
Eustachys glauca				x	x			
E. petraea				x	x			
Leersia hexandra				x	x			
Leptochloa fascicularis				x	x			
Muhlenbergia filipes				x				
Panicum dichotomiflorum				x	x	x		
P. hemitomon				x	x	x		
P. rigidulum				x	x			
P. tenerum				x	x	x		
P. virgatum				x	x			
Paspalidium geminatum				x	x			
Paspalum monostachyum				x	x			
Phragmites australis					x	x		
Schizachyrium rhizomatum				x				
Setaria geniculata				x	x			
Spartina bakeri				x	x			
Pontederiaceae								
Pontederia lanceolata					x	x	x	
Potamogetonaceae								
Potamogeton illinoensis					x			

	WH	BH	CF	MP	SC	SP	S/W	OP
Smilacaceae								
Smilax auriculata		x	x					
S. laurifolia		x	x					
Typhaceae								
Typha domingensis							x	
Xyridaceae								
Xyris jupicai				x				
DICOTS								
Acanthaceae								
Ruellia caroliniensis				x				
Justicia ovata var. angustifolia					x	x		
Anacardiaceae								
Metopium toxiferum		x	x					
Schinus terebinthifolius		x	x					
Toxicodendron radicans		x	x					
Annonaceae								
Annona glabra		x	x					
Apiaceae								
Centella asiatica				x	x			
Hydrocotyle umbellata				x	x			
Oxypolis filiformis				x	x	x		
Aquifoliaceae								
Ilex cassine		x		x				
Asclepiadaceae								
Asclepias lanceolata				x	x			
A. longifolia				x				
Cynanchum blodgettii				x	x			
Sarcostemma clausum	x	x	x	x	x			

	WH	BH	CF	MP	SC	SP	S/W	OP
Asteraceae								
Aster caroliniensis				x				
A. dumosas				x	x			
A. tenuifolius				x	x			
Baccharis glomeruliflora		x						
Cirsium horridulum				x				
Erigeron quercifolius				x				
Eupatorium coelestinum				x	x			
E. leptophyllum				x	x			
E. mikanioides					x	x		
Flaveria linearis				x	x			
Helenium vernale				x	x			
Melanthera angustifolia				x	x			
Mikania scandens	x	x		x	x			
Pluchea rosea				x	x			
Solidago stricta				x	x			
Boraginaceae								
Heliotropium polyphyllum				x	x			
Campanulaceae								
Lobelia glandulosa				x	x			
Caprifoliaceae								
Sambucus simpsonii		x	x					
Chrysobalanaceae								
Chrysobalanus icaco		x	x					
Combretaceae								
Conocarpus erectus		x	x		x			
Convolvulaceae								
Ipomoea sagittata	x	x	x	x	x			
Euphorbiaceae								
Phyllanthus caroliniensis				x				
Stillingia aquatica				x	x			

	WH	BH	CF	MP	SC	SP	S/W	OP
Fabaceae								
Aeschynomone pratensis				x	x			
Acacia pinetorum				x				
Sesbania exaltata				x	x			
Vicia acutifolia				x	x			
Vigna luteola				x	x			
Haloragaceae								
Proserpinaca palustris			x		x		x	x
Gentianaceae								
Nymphoides aquatica					x	x		x
Sabatia grandiflora				x	x			
S. stellaris				x				
Hypericaceae								
Hypericum brachyphyllum				x				
H. hypericoides				x				
Lamiaceae								
Hyptis alata				x	x			
Teucrium canadense				x	x			
Lauraceae								
Cassytha filiformis				x	x			
Persea borbonia		x	x					
Lentibulariaceae								
Utricularia biflora					x			
U. foliosa					x			
U. resupinata				x				
U. subulata				x	x			
Linaceae								
Linum medium				x				
Loganiaceae								
Cynoctonum mitreola				x	x			

	WH	BH	CF	MP	SC	SP	S/W	OP
Lythraceae								
Lythrum lineare					x	x		
Magnoliaceae								
Magnolia virginiana		x	x					
Malvaceae								
Hibiscus grandiflorus				x				
Kosteletzkya virginica					x			
Sida acuta				x				
Melastomataceae								
Tetrazygia bicolor		x	x					
Moraceae								
Ficus aurea		x	x					
F. citrifolia		x	x					
Myricaceae								
Myrica cerifera		x	x					
Myrsinaceae								
Myrsine floridana		x	x					
Nymphaeaceae								
Nuphar luteum								x
Nymphaea odorata								x
Onagraceae								
Ludwigia alata				x	x			
L. microcarpa				x	x			
L. repens				x	x			
L. octovalvis		x						
L. spathulifolia				x	x			
Passifloraceae								
Passiflora suberosa		x	x					

	WH	BH	CF	MP	SC	SP	S/W	OP
Polygalaceae								
Polygala balduinii				x				
P. grandiflora				x				
Polygonaceae								
Coccoloba diversifolia		x						
Polygonum hydropiperoides	x		x			x		x
P. punctatum	x							
Primulaceae								
Samolus ebracteatus				x				
Rhizophoraceae								
Rhizophora mangle		x	x		x			
Rubiaceae								
Cephalanthus occidentalis	x	x	x				x	
Diodia virginiana					x			
Psychotria nervosa		x	x					
Salicaceae								
Salix caroliniana	x	x	x				x	
Sapotaceae								
Bumelia salicifolia		x						
Scrophulariaceae								
Bacopa caroliniana					x			
B. monnieri					x			
Buchnera floridana				x				
Gerardia harperi				x				
G. linifolia				x				
Solanaceae								
Solanum donianum				x				
Turneraceae								
Piriqueta caroliniana				x	x			

	WH	BH	CF	MP	SC	SP	S/W	OP
Urticaceae								
Boehmeria cylindrica		x	x					
Parietaria floridana			x					
Verbenaceae								
Phyla nodiflora					x	x		
P. stoechadifolia					x	x		
Vitaceae								
Ampelopsis arborea		x	x					
Parthenocissus quinquefolia		x	x					
Vitis munsoniana		x	x					
V. shuttleworthii		x	x					

Appendix A (1). Vegetation Description at Transect Poles (3/9/79)

Transect 1

Pole T1 #
Uniform, recently burned Muhlenbergia community; young, small bunches same aspect all directions. Some Rhynchospora microcarpa, very sparse Cladium, 20-30% tall graminoid cover, Centella low cover, uniform elevation, Gerardia in bloom.

Pole T2
Burned Muhlenbergia, directly SE at pole a slight depression with some Cladium, 20% plant cover of graminoid, Muhlenbergia dominant.

Pole T3 * #
SE - Low Cladium and Muhlenbergia (10-70% plant cover)
SW - Muhlenbergia with some Cladium, 10-30% plant cover, little Centella
NW - Burned Muhlenbergia, Rhynchospora microcarpa, 10% plant cover
NE - Cladium depression, 15% plant cover

Pole T4 *
SE - 4 Ft. Cladium, low frequency Centella 10% plant cover
SW - Same
NW - Low Muhlenbergia, 15% plant cover, some Cladium at pole
NE - Very sparse Cladium, Stillingia, 5% plant cover

Pole T5 * #
SE - Rhynchospora microcarpa, 70% plant cover, directly at pole less cover, Stillingia
SW - Matted Rhynchospora, some Cladium, 20% plant cover
NW - Open "ground" with a few Cladium, lots of Centella
NE - Like NW near pole, then increasing density of Cladium

Pole T6 #
SE - Matted Rhynchospora with some Cladium in back, lots of Centella
SW - Andropogon, Rhynchospora erect, 20% plant cover
NW - Same, lots Centella
NE - Same as NW and some matted Rhynchospora

Pole T7 * #
SE - Sparse Cladium, lots of graminoids and Centella, 50% plant cover
SW - Same
NW - Open ground, lots of Centella, few Cladium
NE - Sparse Cladium, few graminoids, lots of Centella, Bacopa, Proserpinaca

Pole T8 #
SE - Open ground Centella, then 4 ft. Cladium
SW - Open ground Centella, matted Rhynchospora, then some Cladium
NW - Open Centella first, then Andropogon, Cladium and Rhynchospora

Pole T9
Ecotone between spikerush and tall sawgrass

* #
NW - Centella, Eleocharis (young), Oxypolis
SE - Intermittent tall sawgrass
NE - SW - Like NW

Pole T10 * # SE - Muhlenbergia dense, 30% ground, few Cladium
SW - Muhlenbergia 30% plant cover
NW - Muhlenbergia, 20% plant cover, some Cladium
NE - Muhlenbergia like SE, near pole 95% ground

Pole T11 Uniform, unburned Muhlenbergia in all directions, approx. 5% ground, very little Cladium in cover, but frequent, very few herbs, lots of wilted Muhlenbergia bent over.

* - Density plots located at these poles

- Photopoints taken at these poles

Appendix A (2). Vegetation Description at Transect Poles (3/17/79)

Transect 2

Pole TR1 E - Pinnacle rock with lots of solution holes, predominantly Cladium, Phyla stoechadifolia, Hypericum, aspect to TR2 is Cladium.

W - Hammock: Metopium, Persea, Myrica, Cephalanthus, Myrsine, Salix.

Pole TR2 W - Aspect Cladium-Muhlenbergia, pinnacle rock with solution holes, Cladium dominant, some Muhlenbergia, Rhynchospora microcarpa, Phyla spp., Dichanthelium dichotomum

ENS - Muhlenbergia predominant, some Cladium, a tall Panicum sp., other graminoids in low number, solution holes.

Pole TR3 - Aspect in all directions in 10 m radius is Muhlenbergia with some Cladium. Muhlenbergia dominant, Centella infrequent, Dichanthelium dichotomum frequent, S of TR3 a depression with woody stems of Phyla stoechadifolia, some tall Panicum, Dichromena, some Gerardia.

Pole TR4 W - Depression with few tall graminoids, mostly low stature.

ENS - Predominantly Muhlenbergia

- 10 m N - Solid Spartina community
- Short red bay in SW direction
- Some Andropogon virginicus, some Rhynchospora microcarpa, very little Cladium
- Aspect is totally Muhlenbergia (post-burn), low frequency Centella

Pole TR5 #

- Aspect post-burn Muhlenbergia, Periphyton plot NE of pole
- Cladium very infrequent, low density Muhlenbergia
- 40% - 50% graminoids, 50% - 60% ground
- 50 m N of TR5 - Cladium community

Pole TR6 * #

- Aspect W, NW, S is Muhlenbergia with some Cladium, not burned

W - Dense Muhlenbergia dominant, a few Cladium, 10-20% ground, few Centella

E - Aspect Cladium, Cladium-Muhlenbergia codominant, 20% tall graminoid cover

- Muhlenbergia bunches small in extent, abundant Centella, some R. microcarpa

Pole TR7 * #

- Ecotone Cladium to Cladium/Muhlenbergia
- Aspect in all directions is Cladium

W - Like E under TR6, Cladium/Muhlenbergia

E - Aspect Cladium, no more Muhlenbergia, some R. microcarpa, dense Centella, some open spaces free of Cladium in denser Cladium 30-40% tall graminoids, some Oxypolis, some Pluchea, Potamogeton, Bacopa, Sagittaria

Pole TR8 - 5 m E from willow head
W - Tall (4-5 ft.) Cladium next to willow dense herbs (Centella, Bacopa), some Oxypolis
E - Muhlenbergia-Cladium aspect, dense herbaceous, not burned Muhlenbergia dominant, frequent: Cladium, Panicum tenerum, Andropogon virginicus, Panicum virgatum

Pole TR9 # W - Like TR8 E
N - Muhlenbergia-Cladium aspect, not burned
- Muhlenbergia dominant, Cladium codominant, in aspect not in cover

Pole TR10 # - In Muhlenbergia all around, but at ecotone of Muhlenbergia/Cladium, Cynoctonum, aspect Muhlenbergia/Cladium, codominant
N - Cladium aspect dominant
S - Muhlenbergia aspect dominant
Muhlenbergia in small bunches, lots of matted plants.

Between TR9 and TR10 - Coelorachris in depression as well as Proserpinaca

Pole TR11 # W - Aspect Muhlenbergia - Cladium, Muhlenbergia dominant, lots of matted graminoids and mixed herbs
N - Aspect is Cladium, also dominant, red bay 15 m N, medium Centella
E - Cladium aspect, Panicum sp. medium frequency
S - Cladium aspect, but low density, mostly matted Dichanthelium dichotomum and R. microcarpa

Pole TR12 * # W - Tall Cladium
S - Tall Cladium
E - Eleocharis, Phragmites, Sagittaria
N - Eleocharis, Phragmites lots of Panicum hemitomon, Bacopa, Hymenocallis, Crinum, Potamogeton

Pole TR13 * W - Tall Phragmites, Eleocharis
N - Mostly live Eleocharis with lots of dead on ground
E - Low, young Eleocharis with Oxypolis, some bare ground, Thalia, Nymphoides, Aeschynomene

Pole TR14 * # W - Same as E TR13, dense Centella
N - Cladium aspect - dominant, Muhlenbergia subdominant, dense herbaceous cover
E - Cladium aspect with Muhlenbergia subdominant, R. tracyi
S - Cladium with little Muhlenbergia, Lythrum at poles
E - Along transect, Cladium increasing with Panicum tenerum, R. microcarpa

Pole TR15 # W - Cladium aspect
S - Cladium aspect
E - Muhlenbergia aspect, with Cladium in it, Stillingia
N - Muhlenbergia aspect, with Cladium, R. tracyi, dense Centella, Peltandra near willow

Pole	TR16	W	- Cladium and Muhlenbergia in separate patches
#		S	- Cladium, about 50% ground
		N	- Muhlenbergia with some Cladium, low density
		E	- Muhlenbergia with Cladium dense ground cover
Pole	TR17	W	- Intermittent Muhlenbergia and Cladium with Phyla, Eragrostis and Eustachys, depression next to pole NW
		N	- Muhlenbergia aspect, dense, old, some Cladium
		E	- Cladium aspect with Muhlenbergia
		S	- Cladium aspect, very little Muhlenbergia
Pole	TR18	W	- Muhlenbergia aspect - no Cladium, dense old Muhlenbergia
		N	- Muhlenbergia aspect, little Cladium
		E	- Cladium aspect, Muhlenbergia subdominant
		S	- Cladium/Muhlenbergia aspect, very few herbs, Samolus more frequent here, Lobelia
Pole	TR19	W	- Mostly Muhlenbergia aspect, dense Aristida sp., very little Centella
		N	- Muhlenbergia for 5 m, then Spartina island
		E	- Intermittant Muhlenbergia and Cladium
		S	- Muhlenbergia aspect, with Cladium island, Piriqueta
Pole	TR20	W	- Unburned Muhlenbergia aspect with little Cladium, dense
		N	- Muhlenbergia aspect, little short Cladium, dense, very low frequency Centella
		E	- Muhlenbergia aspect, very little Cladium, dense, old
		S	- Same as east

* - Density plots located at these poles

- Photopoints taken at these poles

Appendix A (3). Vegetation Description at Transect Poles (4/13/79)

Transect 3

Pole			Description
Pole TBR7		-	In sawgrass, low density, herbaceous plants plenty, 50 - 100 cm - next to hammock on west side, some Taxodium around
Pole TBR8 #		-	Eleocharis, sawgrass, Crinum, patches of Eleocharis, 1 m sawgrass in patches, young Taxodium scattered, Justicia
	E	-	1-1.25 m sawgrass
	W		.75-1 m sawgrass, both same density
Pole TBR9	E	-	Medium density sawgrass (30 percent cover), open patches, 1 m
	W	-	Still some Taxodium, sawgrass, same density as east, but shorter
Pole TBR10		-	Low density sawgrass, some Centella, one patch of Eleocharis on west, 10% cover overall, 50-75 cm sawgrass on east side, getting to 1 m, Ludwigia
Pole TBR11		-	Low density sawgrass, low Centella, 50-75 mm tall, young Taxodium, Ludwigia
Pole TBR12a #		-	Same type of sawgrass as pole 11
Pole TBR12b #		-	Sawgrass with periphyton, 50-75 cm, medium density, no herbs, except some Centella
Pole TBR12c #		-	Next to tall Taxodium, sparse sawgrass with lots of Taxodium saplings in east direction
	W	-	75 cm sawgrass, small sedge or Xyris, from 12 east Typha on outside of Salix/tall Cladium
Pole TBR13		-	Tall Cladium, 1.7 m and on west side also willow, dense, 100%
Pole TBR14		-	Cladium, 1-1.3 m, patch with Pluchea, Proserpinaca
	W	-	Tall Cladium
Pole TBR15	SE	-	Cladium, 1 m tall little Eleocharis, Bacopa, lots of dead leaves, about 50% cover
	NW	-	Eleocharis with sawgrass patches, a few young Taxodium
Pole TBR16		-	Patchy sawgrass and Eleocharis - 50-60% cover, patchyness through bare ground
Pole TBR17 #	E	-	Eleocharis, sparse Cladium, Aeschynomene, 25% cover
	W	-	Gerardia, sparse Cladium, Eleocharis, R. microcarpa 30% cover

Pole TBR18		- Eleocharis - Cladium in all directions, about 20% cover Cladium dominant, 50 - 75 cm
Pole TBR19	E	- Sparse Eleocharis, Hymenocallis, Panicum sp.
#	W	- Dense Cladium 1 m tall
Pole TBR20 #		- In sparse Eleocharis, Hymenocallis, Bacopa, 10% vegetation cover
Pole TBR21	E	- Tall Cladium, 6-7 ft tall and willow 100%
	W	- Dense Eleocharis, Oxypolis, Sagittaria, young Taxodium scattered
Pole TBR22	E	- Eleocharis, Sagittaria, Oxypolis, Rhynchospora inundata
Pole TBR23	E	- 1.5m Cladium 100%
	W	- Eleocharis and Oxypolis 80% cover
Pole TBR24	E	- 1.5 m Cladium, with young 6 ft. willow
#	W	- Eleocharis, Sagittaria, Cladium
Pole TBR25	E	- Eleocharis, Oxypolis, Hymenocallis
#	W	- R. inundata, Hymenocallis, 50% cover
Pole 26TBR	E	- 6-7 ft sawgrass, 100% cover
#	W	- Dense Eleocharis with Oxypolis, Hymenocallis, Panicum, 80% cover with dead material
Pole TBR27		- Next to gage E-124 on airboat trail, tall sawgrass, 1.5-1.75 m to W Potamogeton
Pole TBR28 #		- In all directions tall sawgrass, 1.5-1.75 m tall, Sagittaria, young buttonbush
Pole TBR29		- Ground cover mostly Ludwigia repens, Peltandra, tall Panicum, vines, dense groundcover, on edge of Buzzards' Roost younger Taxodium, buttonbush, elderberry and Salix
Pole TBR30		- Still in Buzzards' Roost, Panicum sp., otherwise bare ground with young Annona and tall Taxodium, buttonbush saplings
Pole TBR31		- All around common groundcover in large patches next to large Taxodium (Boehmeria or Parietaria), one pickerelweed, large open ground areas, Ludwigia repens
Pole TBR32		- Buttonbush, tall mature Taxodium, young Annona, a few sawgrass Proserpinaca, Hydrocotyle, Dichromena, Sagittaria, dense Panicum sp. on west
Pole TBR33 #	E	- Dense Eleocharis, matted, with young Taxodium, Sagittaria, Hymenocallis, Dichromena
	W	- Taxodium in Buzzards' Roost, Annona, buttonbush

Pole TBR34 # SE - Tall sawgrass with some Eleocharis close to pole, Hymenocallis
NW - Dense Eleocharis with Hymenocallis, about 100%, but mostly dead, with some Cladium islands, Eleocharis also south, some young Taxodium, Bacopa, Eupatorium leptophyllum, Sagittaria

Pole TBR35 # SE - Eleocharis and sawgrass, about 80% cover, lots of mostly dead Eleocharis
NW - Some Eleocharis - sawgrass, then tall 1.5 m Cladium towards Buzzards' Roost, Lythrum, some Panicum virgatum

Pole TBR36 # SE - Sawgrass, Eleocharis bordered on deep, tall sawgrass, 1-1.5 m
NW - Sawgrass/Eleocharis, lots of dead Eleocharis, 80% cover with dead leaves,'some Pluchea, some Taxodium saplings, lots of Helenium between 36 and 35.

Pole TBR37 - Same all around: low density Cladium, 50-75 cm tall with bare ground areas.

Pole TBR38 - Medium density Cladium, 75-100 cm tall, about 20-30% cover only, Cladium all around

Between poles 39 and 38 some Taxodium seedlings, and R. tracyi and R. microcarpa islands

Pole TBR39 SE - Low density sawgrass, 75 m tall
NW - Lower density Cladium than SE, 50-75 cm with R. microcarpa, Muhlenbergia in distance (10-15 m) on N-S axis

Pole TBR40 SE - Sawgrass, lots of dead leaves, 1 m tall, Potamogeton
NW - Low density sawgrass with lots of dead leaves around live clumps, R. microcarpa, few herbaceous species

Between poles 39 and 40 some Muhlenbergia, low density

Pole TBR41 - Inside Taxodium/Bayhead, Boston fern, three main species: Taxodium, Persea and Chrysobalanus

Pole TBR42 # SE - Same as pole 43 NW
NW - Medium density sawgrass, .75-1 m tall, adjacent to Taxodium/Bayhead - lots of dead cocoplum on outside

Pole TBR43 # SE - Low density Cladium, about 15-20 % cover, of vegetation, some R. microcarpa
NW - Low density Muhlenbergia/Cladium, 20-30% cover, Muhlenbergia dominant

Pole TBR44 # SE - Low density Cladium, little Centella, .75-1 m tall
NW - Medium density sawgrass, 1 m tall, around this pole lots of totally bare ground, some Rhynchospora microcarpa coming in, one red mangrove between poles 44 and 43

Pole TBR45 SE - Muhlenbergia - sawgrass 50/50, 80% cover
NW - Sawgrass only, 1-1.3 m tall, very little Centella, 50% cover Cladium included dead leaves

Pole TBR46 SE - Solid sawgrass, 1 m tall
NW - Small Muhlenbergia island with Rhynchospora microcarpa, Centella about 45% cover of vegetation, sawgrass emergent

Pole TBR47 SE - Persea and Myrica with tall sawgrass
NW - 100% sawgrass with dead leaves, 1.3 m tall young woody plants

- Photopoints taken at these poles

Appendix B. Common names of plant species mentioned in text.

Latin	Common
Andropogon spp.	broom sedge
Annona glabra	pond apple
Aristida purpurascens	three-awn
Asclepias lanceolata	milkweed
Blechnum serrulatum	swamp fern
Cephalanthus occidentalis	buttonbush
Chrysobalanus icaco	cocoplum
Cladium jamaicense	sawgrass
Coccoloba diversifolia	pigeon plum
Conocarpus erectus	buttonwood
Crinum americanum	swamp lily
Dichromena colorata	white top sedge
Eleocharis cellulosa	spikerush
Eragrostis elliottii	lovegrass
Ficus citrifolia	shortleaf fig
Hymenocallis palmeri	spider lily
Ilex cassine	dahoon
Magnolia virginiana	sweet bay
Metopium toxiferum	poisonwood
Mikania scandens	hemp-vine
Muhlenbergia filipes	hairgrass
Myrica cerifera	wax myrtle
Myrsine floridana	Myrsine
Oxypolis filiformis	water dropwort
Panicum hemitomon	maidencane
P. virgatum	switchgrass
Persea borbonia	red bay
Phragmites australis	reed
Phyla nodiflora	creeping Charlie
Proserpinaca palustris	mermaid-weed
Rhynchospora tracyi	beakrush
Sabatia grandiflora	marsh pink
Sagittaria lancifolia	arrowhead
Salix virginiana	willow
Solidago stricta	goldenrod
Taxodium distichum	bald cypress
T. ascendens	pond cypress
Thalia geniculata	alligator flag
Typha latifolia	cattail