An Initial Assessment Of The Impacts To Vegetation Resulting From The Alafia River Acid Spill

* Some figures are *
omitted for
logistical reasons!

by

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INTRODUCTION

On December 7, 1997, an estimated 50 million gallons of acidic process water entered the North Prong of the Alafia River via one of the headwater tributaries. The spill was a result of a phosphogypsum impoundment failure at Mulberry Phosphates, Inc. (MPI) in Polk County, Florida, approximately a quarter mile east of the town of Mulberry. On December 12, the Florida Department of Environmental Protection (FDEP) Phosphate Management Division requested assistance from the biologists of the FDEP Bureau Of Mine Reclamation's (BOMR) Bartow field office in assessing the damage.

The BOMR biologists inspected the accident site at Mulberry Phosphates on December 15, 1997. It was apparent that the breach in the impoundment system occurred at the top of the phosphogypsum stack at a site where a decant pipe had recently been relocated. The water flowed down the south wall and overflowed the return ditch and seepage ditch system at the base of the stack, as well as the south seepage sump. The water from these two release sites subsequently flowed into Skinned Sapling Creek, a tributary of the North Prong of the Alafia River, before entering the North Prong proper. Ground reconnaissance along Skinned Sapling Creek and the North Prong revealed that the acidic water (approximate pH between 1.8 and 2 standard units) had killed all plant biomass in the water column, and that the damage extended downstream at least as far as the bridge on State Road 37 in Mulberry.

On December 17, 1997, the BOMR was assigned the task of conducting a vegetation damage assessment of the impacted segments of the Alafia River. BOMR biologists conducted further ground reconnaissance downstream from the spill site at Lithia Springs and Alderman Ford Park in Hillsborough County on December 19. Although there was siltation from receding high water as a result of recent heavy rainfall, there wasn't any evidence to indicate that the vegetation was impacted by the acidic water at these sites.

The river was further investigated by proceeding upstream and observing the vegetation near the bridges located on State Road 39, County Road 640 (South Prong), Keysville Road, and Nichols Road. Vegetation damage was not observed until we reached the bridge on Nichols Road which indicated that the downstream extent of the damage might be as far as 10 miles from the spill site - somewhere between the Nichols bridge and the Keysville bridge. Ground reconnaissance was also conducted below the bridges on Thirty Mile Creek (Keysville Road) and at English Creek (U.S. Highway 60). Vegetation was normal at these sites which seemed to indicate that the spill had not entered any downstream tributaries or the South Prong.

A helicopter flight over of the Alafia River was conducted on December 23, 1997. Reconnaissance from the air further confirmed that the damage did not extend beyond the bridge on Keysville Road. The exact endpoint could not be determined due to the dense tree canopy that begins to obscure the riverbed at this point. It was also evident from the air that the spill had not been confined to the main river channel(s), but had in fact, spread out over broad floodplains at several locations. In addition, the flight

confirmed that the acidic water apparently had not entered any tributaries or the South Prong.

After reviewing the information gathered to date, it was decided that the main thrust of the study would be limited to the segment of the North Prong of the Alafia River between the spill site at MPI (including Skinned Sapling Creek) and the Keysville bridge. Since readings of pH 3.53 had been recorded at the U.S. Highway 41 Bridge more than 20 miles downstream from the spill site, Alderman Ford and Lithia Springs would continue to be monitored. However, an intense sampling regime downstream from the Keysville bridge was not planned unless future conditions warranted it. The objectives of the assessment would be to estimate an acreage figure for the impacted areas, determine the botanical composition of the impacted plant communities, and monitor the status of those communities over time.

STUDY AREA

The Alafia River drains approximately 460 square miles of land in Hillsborough and Polk Counties. The main river channel is fed by its two headwater tributaries, the North and South prongs, about twenty five miles upstream from the Alafia River's mouth in Hillsborough Bay. The North Prong originates in a freshwater swamp south of Mulberry in Polk County and flows westerly into Hillsborough County. The headwaters of the South Prong originate in the wetlands of Hookers Prairie in western Polk County, and the stream flows southwesterly before bending northward to join the North Prong near Alderman Ford Park. The entire length of the river is approximately 64 river miles long (FLORIDA DEPARTMENT OF NATURAL RESOURCES 1989).

Plant communities along the North Prong include a mix of freshwater swamp, hardwoods, and hydric hammocks. Much of the North Prong has been reclaimed naturally from past mining activities. Although phosphate mining and reclamation activities occur along both headwater tributaries, most of the phosphate processors are located along the North Prong (FLORIDA DEPARTMENT OF NATURAL RESOURCES 1989).

The North Prong of the Alafia River presents a logistical problem in that it is not easy to gain access to this particular segment of the river. Much of the surrounding area adjacent to the river corridor is in the process of being mined or is in various stages of reclamation.

This segment is rarely used for recreation, and public boat ramps upstream from Alderman Ford are lacking. Once access to the North Prong is accomplished, many areas are unnavigable due to the dense growth of vegetation, and the numerous bridges and train trestles that craft such as airboats would have to circumvent. The overstory in the Mulberry area was completely removed during past mining operations and presently appears as a dense, impenetrable thicket near State Road 37 (FLORIDA DEPARTMENT OF NATURAL RESOURCES 1980). In some areas it is easier to gain access by land rather than try to navigate the entire course of this segment of the river.

Skinned Sapling Creek apparently was altered from its original course during past mining activities The majority of the area south of the MPI stack and near the confluence of the North Prong was mined in the 1950's. Vegetation grows on isolated spoil ridges and islands scattered throughout the area. Clay slimes were introduced at some point in the past, and the substrate is very unstable in some regions.

METHODS

There were two main methodologies utilized in this study: remote sensing and systematic field sampling. Remote sensing consisted of interpreting infrared and true color photography, and using planimetry to derive a total acreage figure for the impacted vegetative communities. The second method was a systematic sampling design comprised of a series of permanent ground field stations established approximately equidistant along the impacted segment of the river. The botanical species composition was recorded at each station in addition to an estimate of cover and relative abundance. This was done in order to gather information about the types of plant communities affected, aid in the ground truthing of the infrareds, and monitor the recovery of plants in these areas. These methods are described in greater detail below.

Remote Sensing

It was originally thought that an acreage figure of the impacted area might be determined by utilizing a series of transects established at equidistant points along the impacted segment of the river. The extent of the upland vegetation browning could be measured along a perpendicular transect and averaged. Acreage could be estimated if the downstream length and mean width of the impacted segments were known. However, as was noted from the air, the acid plume was not confined to the main river channel and had spread out over broad floodplains. It was felt that the transect data alone would be too variable to be representative of the area, and that the browned band of vegetation was too wide to sample in this manner.

Photographs taken on the helicopter flight December 23 showed an obvious pattern in the damaged vegetation as evidenced by the brown signatures. It was felt that photointerpretation and planimetry was more efficient and would compliment any transect classification. This technique would also provide the most accurate documentation of the impacted acreage. Photointerpretation currently provides the most accurate classification (90% or higher) of temporal landscape changes (TURNER & GARDNER 1991).

An aerial photography survey of the Alafia River covering the area between State Road 37 and Hillsborough Bay was conducted by Pickett & Associates, Inc. on January 31, 1998. Skinned Sapling Creek was flown on February 17, 1998. Both true color and infrared false color 10" x 10" prints (scale 1" = 400') overlaid with transparencies were used to delineate the impacted areas. These areas were determined by tracing the distinctive green or gray - white signatures typical of unhealthy vegetation (U.S. DEPARTMENT OF THE INTERIOR 1996). Plant signatures on the infrareds were cross-checked with the true color prints. A digital planimeter was used to calculate the area of the traced signatures. The average of 3 planimeter tracings per delineated print were used to derive an acre estimate.

Healthy vegetation growing on spoil ridges near the confluence of the North Prong and Skinned Sapling Creek in addition to other higher elevations along the North Prong were excluded. The lakes connected to Skinned Sapling Creek, and the narrow channelized segment of the North Prong (between Kidschool Road and the Nichols bridge) also was excluded due to minimal damage.

Systematic Sampling

True random sampling or stratified random sampling of the various plant communities was impractical due to time constraints, since many portions of the river are practically impenetrable and can not be accessed efficiently. There was a need to move quickly, and time spent trailblazing on the river needed to be kept to a minimum. A systematic sampling design was more applicable in that the sampling stations could be placed approximately equidistant apart with access gained via the bridge locations, or over land through permission of the various property owners adjacent to the river.

Twelve permanent sampling stations were established along the North Prong between the Keysville bridge and Skinned Sapling Creek (Fig. 1). These sites were accessed by either canoe or over land mainly by porting the equipment on foot. Since one of the first priorities was to pinpoint the downstream extent of the damage, Station 1 was placed as close to the Keysville bridge as access would allow. Although it was known that vegetation damage may not be evident at some downstream stations, it was felt that these sites still needed to be monitored in order to spot any plant stress that may not be readily apparent, but could still possibly manifest over time. All subsequent North Prong stations were placed upstream proceeding toward the bridge at State Road 37 in Mulberry. Field stations were numbered consecutively as they were put in place.

Stations 1 and 2 are located on the North Prong in eastern Hillsborough County not far from the county line. Stations 3 through 12 were placed along the segment of the North Prong between the county line to just east of the State Road 37 bridge in Polk County. Stations 13 and 14 are established on Skinned Sapling Creek upstream from the

North Prong confluence where there is safe access. The substrate in many portions of Skinned Sapling Creek was too unstable to sample without specialized equipment. It was felt that aerial photography and ground truthing would be sufficient to sample these almost monotypic marsh areas.

Three additional stations were established on unimpacted portions of the river to serve as control or reference sites. Station 15 is located on English Creek - a tributary of the North Prong in Hillsborough County. Station 16 was placed on the North Prong upstream from Skinned Sapling Creek and south of the confluence. Station 17 is on the South Prong and is the most distant ground station (Table 1).

Plant cover was estimated on two permanent belt transects at each of the field stations. The transects were established perpendicular to the river channel - one on either bank - and extended across the environmental gradient into the upland zone where possible. At many points along the North Prong, the main river channel was hard to discern. The river branches into several side channels at many sites. Stations were established on channels where there was significant flowing water. At some stations it was impractical to extend a transect into the upland zones particularly in the broad marshy areas where the damaged wetland vegetation stretched for hundreds of meters. For the sake of expediency, the transects were limited to a length of 50 meters on either side of the river channel. In the narrow channelized segments of the North Prong between Kidschool Road and the Nichols bridge, some transects did not exceed 12 m before crossing into uplands.

Table 1. The approximate distance of the Alafia River damage assessment field stations from the MPI phosphogypsum stack in Mulberry, Florida.

Station	Location	Distance kilometers	Distance miles
17	South Prong	29.2	18.1
15	English Creek	15.3	9.5
1	North Prong	14.2	8.8
2	North Prong	12.1	7.5
3	North Prong	11.2	6.9
4	North Prong	10.0	6.2
5	North Prong	9.3	5.8
6	North Prong	8.4	5.2
7	North Prong	7.4	4.6
8	North Prong	5.7	3.6
9	North Prong	4.5	2.8
10	North Prong	3.5	2.2
11	North Prong	2.9	1.8
12	North Prong	2.4	1.5
13	Skinned Sapling Creek	0.06	0.04
14	Skinned Sapling Creek	0.06	0.04
16	North Prong	2.2	1.4

Sampling began on January 26, 1998, and was completed March 5, 1998. A total of 34 transects were established in the field. Each transect origin and endpoint was marked with PVC and surveyors flagging. Coordinates and compass bearing were recorded at the transect origin, and the entire length was mapped with GPS to ensure that the transects could be reestablished. A permanent photostation was also established on the riverbank at each transect origin.

Plant cover was estimated by stratifying the vegetation into various layers or cover classifications. These cover classes are ground cover, shrubs (small shrubs or trees <1"dbh), subcanopy (1"≤ large shrubs or small trees ≤ 4" dbh), canopy (large trees or shrubs > 4" dbh), and vines. The ground cover of aquatic and emergent vegetation was estimated visually as a percentage of a $1m^2$ quadrat area occupied by the live and/or dead biomass of each species. Permanent $1m^2$ quadrats were positioned at 3 m intervals along the transect. A series of 25^2 m permanent plots located at 6 m intervals were used to visually estimate the cover of shrubs (crown diameter), trees (basal area), and woody vines. The parameters of water depth and soil pH were recorded within each quadrat across the environmental gradient. These methods are modified from transect work done by others and summarized in Kent & Coker (1992).

The spill in early December occurred at a time when many plants senesce and go into a dormant stage. Carolina willow (*Salix caroliniana)* for example is deciduous and drops its leaves during the winter. Although Dog-fennel (*Eupatorium sp.*) is a perennial, the above ground portions of the plant die back in the fall before generating new shoots

from the basal crown (GODFREY & WOOTEN 1981). The winter of '97 - '98 was unseasonably wet and mild. When field sampling was initiated on January 26, the growing season was already underway with many species - including Carolina willows - beginning to bud and leaf out. However, care was taken to inspect suspect plants for new buds and growth. Woody stems were scraped in some instances in order to inspect the cambium and ensure that dormant plants were not mistaken for dead. Since sampling was done early in the growing season, some plants lacked mature flower parts necessary to identify some genera to species. Nomenclature follows that of Wunderlin (1986).

The transect data from each station was combined and treated as one transect for the purpose of analysis. Several statistics were calculated for all species within each cover class including the mean cover, relative abundance (the proportion of each species expressed as a percentage of the total cover), and the frequency (the percentage of quadrats or plots in which a species occurred). In addition, Shannon-Wiener diversity indices were calculated for each cover class. This data is summarized in the Appendices.

RESULTS

Infrared Photointerpretation

The total acreage of the impacted area is estimated at 377 acres, and the signatures of the affected vegetation extend approximately 10.6 km (6.58 miles) downstream from the MPI phosphogypsum stack. All of the unhealthy plant signatures appear in Polk County, and are not observed along any segments downstream for the entire course of the river. Two major pockets or expanses of impacted vegetation were noted. The first is located between the spill release sites on Skinned Sapling Creek and the western edge of

the Mulberry city limits near Kidschool Road. Approximately 227 acres of vegetation appears affected which represents over half (60.2%) of the total estimated damaged acreage along the entire Alafia River.

The point where the North Prong first becomes constricted and channelized is to the east and just upstream from Kidshool Road (Fig. 2). This constriction of flow may have created a bottleneck forcing the acidic water to be retained and back up out of the main channel into the floodplain. This probably prolonged plant exposure to the acidic water, and may account for the mortality observed at the ground stations along this segment.

The North Prong is very channelized between the Nichols bridge and Kidschool Road and the acidic water was confined to the canal or "chute" (Fig. 3). Some plants such as paragrass (*Brachiaria mutica*), shield ferns (*Thelypteris sp.*), and *Peltandra sp.* may be found growing on the steep banks or eroded washouts. However, the scouring effect of the swift current and the fact that this segment basically lacks a good littoral zone contributes to the lack of emergent species. Although some plants along the very edges of the channel were killed, overall damage to vegetation in this segment was minimal.

The second expanse of affected vegetation signatures appears downstream of the Nichols bridge where the water exits the "chute" (Fig. 4). An additional estimated 150 acres of vegetation exhibit unhealthy or dormant signatures. This segment of the river is similar to the upstream damage site in that apparently the water at times is not confined to the main stream channel(s), but sheet flows through broad, relatively shallow floodplains and marshes. The prevalent canopy of hardwoods evident on downstream

photos drops out along this segment, and is generally replaced by Carolina willow and a few scattered cabbage palms (*Sabal palmetto*). Unhealthy signatures become diffuse at about the point where the tree canopy begins to close back over the riverbed. Trees in this area exhibit healthy signatures with the exception of the Carolina willows which may be dormant.

The vegetation of both of these impacted sites is more characteristic of marsh systems rather than of a typical riverine bottomland forest. The ground vegetation signatures form a patchwork of primrose willow (*Ludwigia peruviana*), cattail (*Typha sp.*) , elderberry (*Sambucus canadensis*), and dog-fennel.

For example, the total impacted acreage upstream from State Road 37 is estimated at 160 acres. Of this total, approximately 61 acres (38%) are dominated by cattail, 45.7 acres (28%) exhibit primrose willow signatures, and the remaining area a mix of primrose willow, elderberry, and Carolina willow (Fig. 5).

Vegetation growing on spoils especially near the North Prong- Skinned Sapling Creek confluence were not affected as were other points of higher elevation scattered within the impacted region.

Field Sampling and Ground Truthing

Generally species diversity and species richness on the transects declined across all vegetation classes as the stations proceed upstream (Fig. 6). Although total mean cover for the ground cover and shrub classes increased at upstream stations, these particular vegetative strata tend be comprised of fewer species. As in the photointerpretation, the most noticeable characteristic of the transect data is the decline in both species richness

and species diversity in the subcanopy and canopy classes as one proceeds upriver toward Mulberry. For example, the number of species observed in the subcanopy and canopy class at Station 1 transects (14.2 km downstream) were 14 and 10 species respectively. At Station 6 (8.4 km) this number had fallen to 3 species in the subcanopy class and 6 canopy species, while at Station 12 (2.4 km) species richness in the subcanopy and canopy was 3 and 2 species respectively with only one hardwood species observed on the transects.

Submersed or aquatic vegetation in the riverbed itself was rarely observed. The Alafia River is tannic and tea colored, and therefore light penetration through the water column is low. Water levels also tend to be variable in the upper reaches of the river (Johnny Majors, per.comm). These factors in addition to the scouring action of swift currents moving through the channelized segments of the upper North Prong may limit suitable habitat for these species.

Abnormal browning of vegetation was first observed at Station 5 approximately 9.3 km downstream from the gypstack (Fig. 7). This pinpointed the downstream extent of plant damage observed in the field as lying between Station 5 and Station 4 (10 km) which corresponds with signatures observed on the infrareds. A further discussion of the observations recorded at the field stations is provided below.

Station 1 - 4. Vegetation damage was not observed at the first 4 downstream North Prong sampling stations. Plants appeared normal in all vegetative classes. While ground cover vegetation at Stations 1- 4 was diverse (mean of 30 species), it also tended to be sparse with many species occurring only as a trace (cover <1%) and at low frequencies.

This might be attributed to sampling early in the growing season. The majority of ground cover estimated was comprised of bare ground or leaf litter (Fig. 8). These stations had a well developed overstory dominated by cabbage palm in the canopy class (mean cover = 26%, 14%, 23%, & 16% for Stations 1 - 4 respectively) (Fig. 9). The number of plants in the subcanopy and canopy class averaged 11 and 8 species respectively.

Station 5 - 7. Ground cover species, shrubs, and the subcanopy were mostly affected at Station 5. Canopy class trees appeared healthy and normal. Overall species richness and diversity on the transects have declined from that recorded at the first 4 downstream stations. At Station 5 for example, primrose willow and elderberry represented 50 % and 34 % respectively of the total shrub cover estimated, and 51 % and 30 % respectively of the subcanopy cover estimated in the sample plots - the majority of which was dead (Fig. 10 & 11).

Signs of stress in the canopy were first noted at Station 6 approximately 8.4 km downstream from ground zero. This was observed mainly in Carolina willow, the most common species averaging 15 % cover across the transect, in which almost half the basal area was estimated as dead. Other species such as cabbage palms, red maple (*Acer rubrum*), and American elm (*Ulmus americana*) appeared vigorous.

At Station 7, approximately 7.4 km downstream from the gypstack, there was apparent injury to plants in all cover classes. The tree canopy has continued to drop out along this segment of the river. For species recorded in the canopy class, cabbage palm averaged only 8 % of the plot area , while water oak (*Quercus nigra*), and sweetgum (*Liquidambar styraciflua*) occurred in only one plot on the Station 7 transects. Dog-

fennel was common in the shrub and subcanopy classes averaging 16 % and 5 % respectively of plot area as dead cover, and relative abundance of 80 % and 48 % respectively of the total cover estimated. However, the above ground portions of these plants had probably senecensced prior to the spill, and the roots and basal portions probably were not harmed. In fact, new growth was already observed from basal shoots of both dog-fennel and elderberry.

Stations 5, 6, and 7 lie within the second pocket of impacted vegetation observed on the infrareds and occurring downstream from the Nichols bridge. It appears from observations in the field that damage in this area was limited to mostly herbaceous plants and woody species of less than 4" dbh. Canopy class trees appear vigorous with the exception of a few cabbage palms and Carolina willows. New growth was observed along transects and many species were observed germinating from the seed bank and were recorded as traces. Shrub and subcanopy layer damage was limited to the most common species - primarily primrose willow and elderberry. However, live cover was also estimated for both these species, and new leaves were noted budding on some otherwise browned stems.

Station 8 - 9. Both Station 8 and Station 9 at 5.7 km and 4.5 km respectively, lie within the segment of the North Prong that is channelized between the Nichols bridge and Mulberry. The transition zone between uplands is abrupt, and originates at the cut bank. Damage to plants on these station transects was limited to herbaceous plants growing along the bank or drooping into the water column such as paragrass (mean cover = 14% dead at Station 8). Plants on the upland side of the transect were not affected. The

canopy strata contained mostly laurel oak (mean cover = 56%) which grew to the channel edge. This species accounted for the increase in total mean cover of the canopy class observed at this station. However, species richness and diversity is still low (3 species, Shannon-Wiener Diversity Index = 0.3).

Station 10 - 12. Stations 10, 11, and 12 lie within the first pocket of damaged vegetation upstream from Kidschool Road in Mulberry. Station 10 was established upstream from the bottleneck, about midway between Kidschool Road and State Road 37. Station 11 and 12 are located about a 100 m to the west and east respectively of the State Road 37 bridge. At these sites vegetation in all cover classes was killed with the majority of cover estimated as dead. Although there was major plant mortality in this region, species richness and diversity was the lowest recorded on any of the survey transects. The number of species recorded in the vegetative strata averaged 10 ground cover species, 5 shrubs, 4 subcanopy, 2 canopy, and 3 vines at these stations. The ground cover and shrub layers were higher in mean total cover than other strata, although dominated by only a few species. Paragrass was the most common ground cover species on Station 10 transects with a average cover of 39% dead material and a relative abundance of 66%. The dominant ground cover species at Station 11 and 12 was primrose willow with a mean cover of 19% and 34% dead material respectively, and comprising 30% and 53% respectively of the total ground cover estimated on the transescts. Shield fern was also common with means of 18% dead and 16% dead cover at Station 11 and 12 respectively, and occurred in 63% and 64% respectively of the quadrats sampled.

The dominant species in the shrub class at Stations 10 - 12 was primrose willow with a relative abundance of 41%, 73%, and 100% respectively in which all cover was estimated as dead. Three species in the subcanopy, primrose willow, elderberry, and Carolina willow, accounted for 90%, 83%, and 100% of the total cover estimated at Stations 10, 11, and 12 respectively - the majority of which was estimated as dead. Trees in the canopy class were mainly Carolina willows in which the mean dead cover estimated at these stations was 22%, 13%, and 9% respectively of the sample plot area.

Although there were live trees observed in both the subcanopy and canopy class, the majority of hardwoods in this segment of river are believed to be dead or stressed to the point of nonrecovery. In addition to Carolina willow, a few dead laurel oaks, cabbage palms, and swamp dogwoods (*Cornus foemina*) were observed on some transects. More damaged hardwoods were observed closer to the upland transition zone where the floodplain lies adjacent to private property. The bottleneck may have caused water to back up into these areas, and the high water mark appears to be close to what looks like private property. Furthermore, acidic water may have settled in some depressions as the high water receded, and generally this whole area looks bad.

Along with the few Carolina willows that survived in this segment there were also signs of new growth. Wild taro (*Colocasia esculenta*) was recorded as a trace on Station 10 transects. *Peltandra sp.* averaged 14% live cover in Station 11 quadrats, and have been observed growing next to the State Road 37 Bridge since the spill occurred. Live elderberry was observed in 18 % of the quadrats sampled at Station 11. However at Station 12, upstream from State Road 37, very little live vegetation was recorded.

Station 13 - 14. These Skinned Sapling Creek stations are located southeast of the phosphogypsum stack near the point where acid water from the south seepage sump entered the creek. These sites are different from the segment of creek near the North Prong confluence in that the substrate here is more stable. Station 13 transects were established on high ground above the elevation of the creek channel . The south bank transect extended part way up a 40' high spoil ridge covered in Boston fern (*Nephrolepsis sp.*) (mean cover = 13% live, 5% dead). The north bank transect extended through dense brambles comprised of southern fox grape (*Vitis munsoniana*) (mean cover = 35% live, 11% dead), and catbriers (*Smilax sp.)* (mean cover = 7% live, 9% dead) (Fig. 12). Damage here resulted from the water released from the south seepage sump which killed plants as it flowed down the elevational gradient to the creek channel. Other than damage to the ground cover vegetation including prostrate vines, dead vegetation was limited to mainly elderberry (mean dead cover = 10%, 8%, & 5% for the shrub, subcanopy, and canopy strata respectively). Live growth was observed on the transects and this site should recover.

Station 14 was placed upstream from the "waterfall" approximately 46 m from the previous station. Vegetation here appeared to be normal and there seems to be no further damage on Skinned Sapling Creek upstream from this point.

Station 15 - 17. The transects at Station 15 (English Creek) and Station 17 (South Prong) were similar to the downstream North Prong stations in that with the exception of the subcanopy and vine stratas, species richness and diversity was the highest recorded

during the survey. Fifty two species in the ground cover class and 19 shrub species were recorded on the Station 17 transects.

Station 16 (North Prong) being approximately 2.2 km from MPI, upstream from the North Prong - Skinned Sapling Creek confluence, is similar to the North Prong stations in Mulberry. Ground cover class vegetation is mainly primrose willow, cattail, and elderberry which averaged 29%, 15%, and 10% live cover respectively across the transects. Primrose willow was also common in the shrub and subcanopy layers with a mean live cover of 31% and 12% respectively.

Vegetation at these 3 control stations appeared vigorous in all strata, and abnormal browning of the plant life was not observed. In all likelihood, the stressed or dead vegetation observed at other stations on the North Prong is probably a result of exposure to the acidic water and not some other environmental factor.

CONCLUSIONS

The total acreage of impacted plant communities is estimated at 377 acres, all of which occurred in Polk County. The downstream extent of the damage is believed to be about 10.6 km (6.58 miles) from the gypstack. The more pristine segments of the Alafia River downstream were not affected, and the significant rainfall that occurred post spill throughout the winter probably helped flush out the system. Two major expanses of impacted vegetation were noted, and are similar in that along these segments of the North Prong and Skinned Sapling Creek, the water apparently is not confined to the main river channel(s) but sheet flows through broad, relatively shallow floodplains and marshes.

Soils in this region were generally of mucky texture and the plant communities were low in diversity - the forested canopy having dropped out by the time one reaches this portion of the river.

The first impacted area is located between the spill site at Skinned Sapling Creek and the western edge of the Mulberry city limits near Kidschool Road. Approximately 227 acres of vegetation were affected in this segment of the river which represents over half (60.2%) of the total impacted area. The majority of plant cover estimated in this region was dead including some desirable hardwoods. Mortality was high in primarily primrose willow, cattail, elderberry, and Carolina willow which are the dominant species in the upper North Prong and Skinned Sapling Creek.

In life, the growth habits of these plants typically form dense thickets which shades the underlying substrate. With the reduction in canopy cover as dead leaves drop off, more light is able to reach the substrate. Seedlings of some species were seen germinating from the substrate, and in some cases trying to grow on dead racks of vegetation. This is an indication that the seed bank was not harmed, and that many species are taking advantage of improved light conditions and reduced competition. However it is felt that this is the major area of concern. New growth from buds or basal shoots was rarely observed in the browned standing stock biomass.

The second region of impacted vegetation is located adjacent to Agrifos property downstream from the Nichols Bridge where an additional estimated 150 acres of vegetation damage occurred. This area does not appear to be as heavily impacted as the upstream expanses. Perhaps plants were not exposed to the acid plume for as long a

period of time as the plants closer to ground zero and the bottleneck. It is anticipated that this site will quickly recover to its former state. Species diversity and richness tends to be low, and the canopy sparse until just about the point where the infrared signatures become difficult to discern. At this point, the canopy begins to close back over the riverbed. However, most of the hardwood species of greater than 4" diameter at breast height appear to have survived. New growth was observed as new buds or basal shoots on primrose willow and elderberry as well as germinating seedlings. Dog-fennel is commonly found along this segment of river, and the above ground portions of this species may have already senesced prior to the spill. Both dormant and dead vegetation may appear as the same signature on infrareds which makes this expanse difficult to interpret in some areas (U. S. DEPARTMENT OF THE INTERIOR 1996).

RECOMMENDATIONS

The observations in this report are preliminary and based on one sampling session in the field. Also, sampling was done during a time of unseasonably high water levels. It is recommended that further sampling be conducted. The effect the exposure to the acidic water had on the vegetation is not fully understood. During the time of sampling, it was as if the growing season had been delayed the further upstream one progressed. Some species appearing vigorous at the time of sampling may now be under stress or vice-versa. Also is it not known how quickly the plant communities will recover, or if only particular species are germinating from the seed bank.

The current plan is to monitor the field stations on a quarterly basis for 1 year. Sampling may not have to be as intense at downstream stations. A quick inspection of the

transects along with photo documentation may be sufficient. The area of particular concern is the segment of the North Prong between (and including) Skinned Sapling Creek and the "bottleneck" just upstream from Kidschool Road. The acidic water may have been deposited in depressional areas as it backed up into the floodplain. The extent of the damage into private property should be investigated. Some desirable hardwoods were killed or appeared under stress at the time of sampling. Additional transects are planned for this site. Although soil pH was normal along the transect gradient at all stations, the soil chemistry in depressions where acid water may have settled should be further investigated.

A second aerial survey with infrared should be conducted at least six months after the first flight. This survey can be limited to the segment of river between Skinned Sapling Creek and the Polk - Hillsborough County line. Plants dormant during the first flight may now register a different signature on the infrareds which would aid in the photointerpretation of some plant communities while documenting the recovery of others.

ACKNOWLEDGMENTS

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access to Skinned Sapling Creek and the North Prong Alafia River. Lt. Greg Love and the Polk County Sheriff's Office for the helicopter flight over affected parts of the river. Dave Demmi, Matt Phillips, and the Bureau of Aquatic Plant Management for loaning the canoe. Dr. Richard Cantrell and the FDEP Wetland Evaluation and Delineation Section for assistance in verifying plant specimens and ground truthing. Peter Rossie and Hillsborough Community College English Creek Environmental Study Center for access to English Creek. Lou Bush and Pickett & Associates, Inc. for providing the aerial photography.

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Figure 1. The location of the 17 field stations (orange dots) established during the vegetation damage assessment. Also note the location of the bridges referred to in the text.

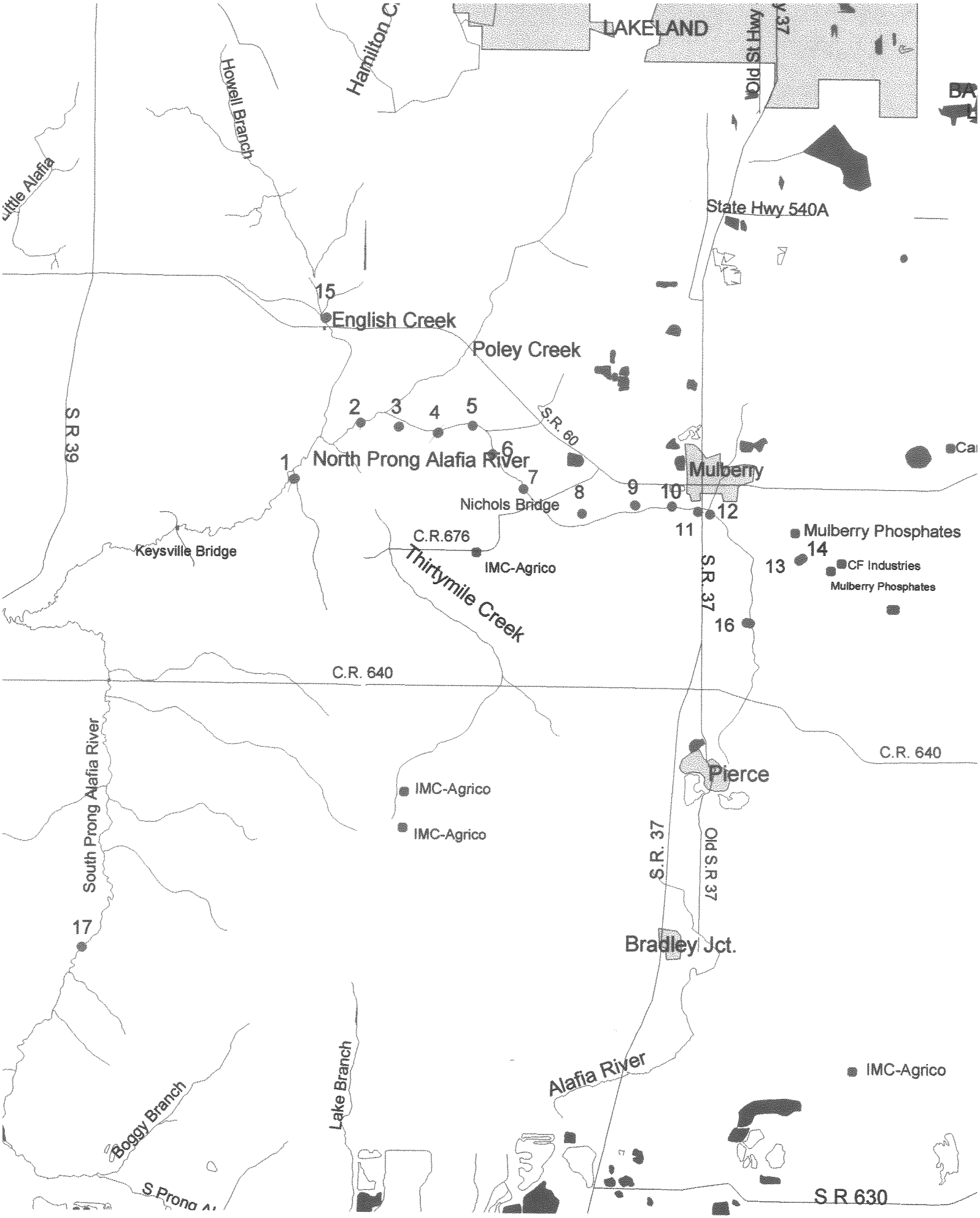
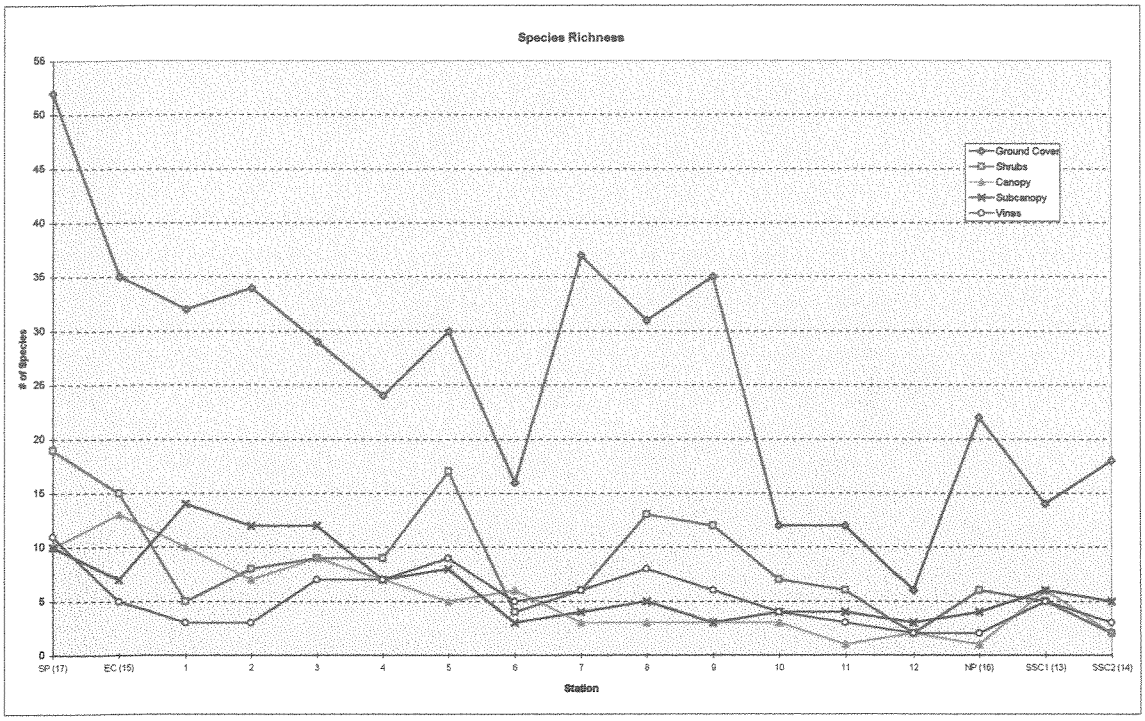

LAKELAND
Hamilton C
Howell Branch
Little Alafia
Old Hwy 37
State Hwy 540A
15
English Creek
Poley Creek
S.R. 60
2
3
4
5
6
1
North Prong Alafia River
7
Nichols Bridge
8
9
10
11
12
Mulberry
S.R. 39
Keysville Bridge
C.R.676
IMC-Agrico
Thirtymile Creek
Mulberry Phosphates
14
13
CF Industries
Mulberry Phosphates
S.R. 37
16
C.R. 640
C.R. 640
Pierce
IMC-Agrico
IMC-Agrico
South Prong Alafia River
S.R. 37
Old S.R 37
17
Bradley Jct.
Lake Branch
Alafia River
IMC-Agrico
Boggy Branch
S Prong Al
S.R 630

Figure 6. Species richness and species diversity (Shannon-Wiener index) recorded at the 17 damage assessment field stations



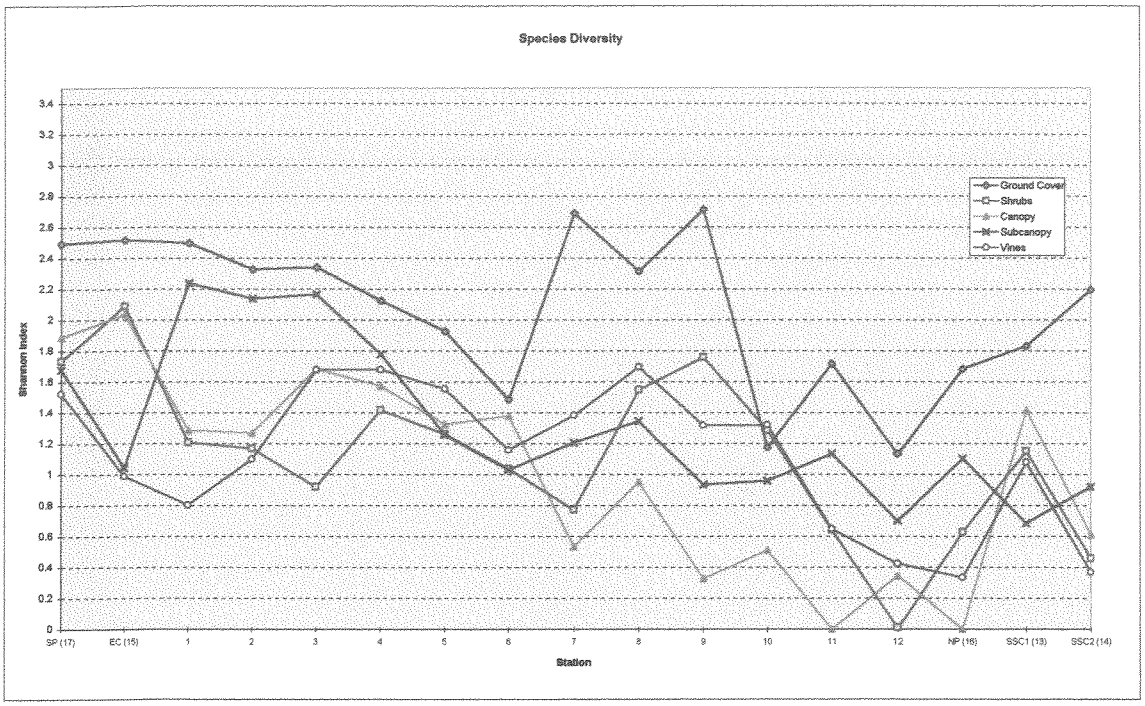
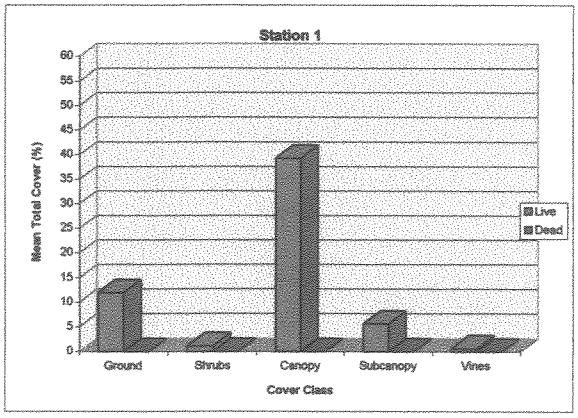
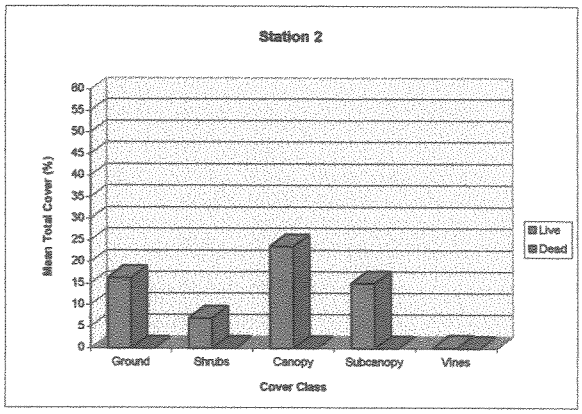
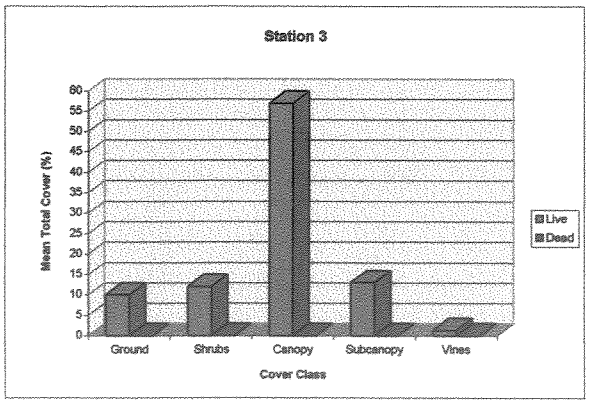
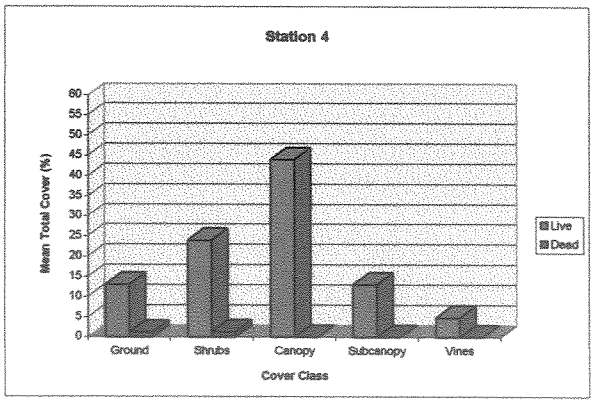


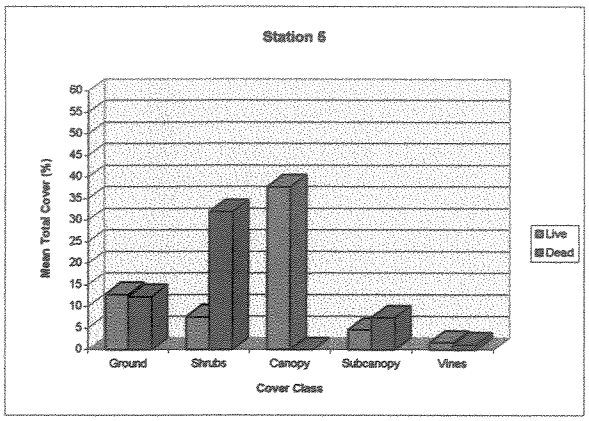
Figure 7. Mean total cover (all species combined) recorded at the 17 damage assessment field stations and expressed as a percentage of sample area ($1m^2$ for ground cover; $25m^2$ for all other classes) covered by plant material in each cover strata.

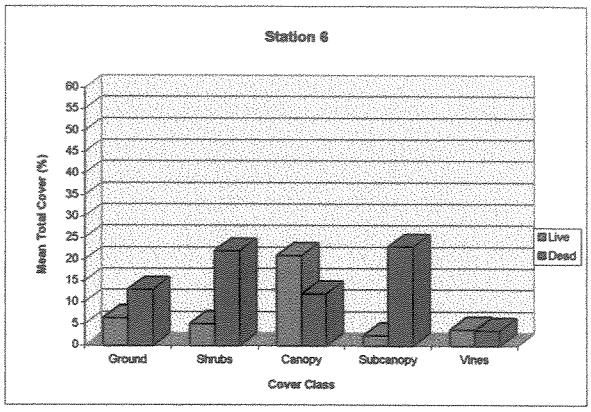












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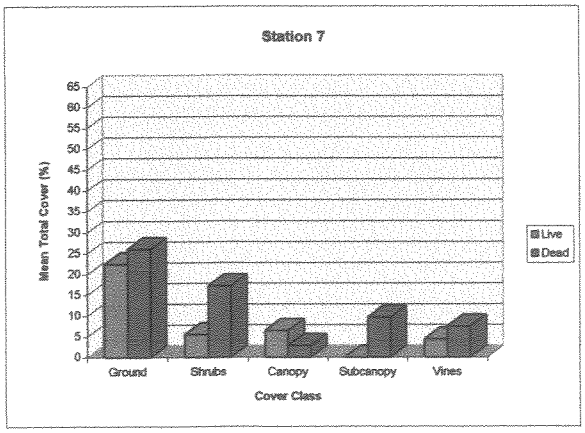

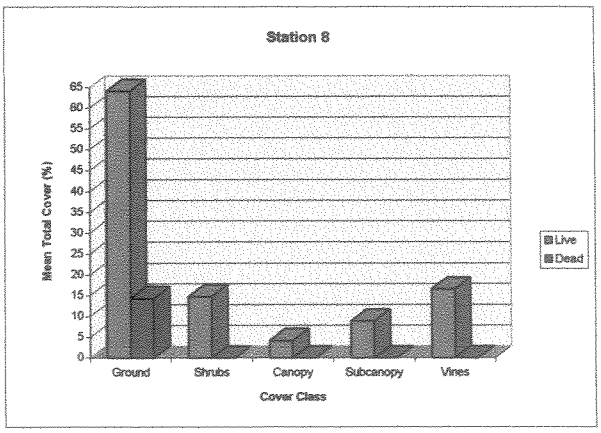

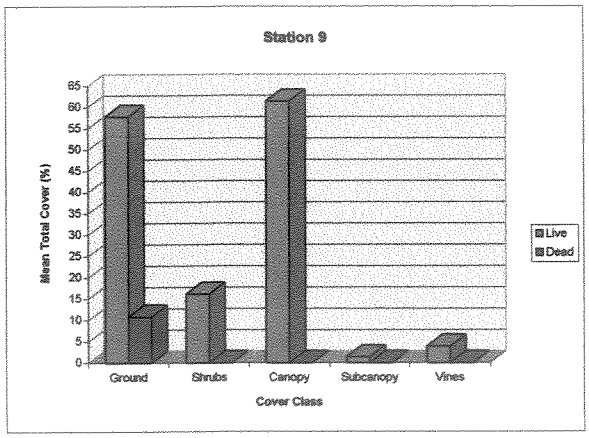

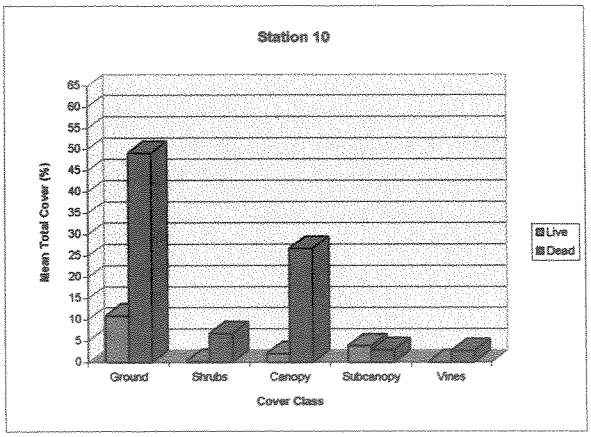

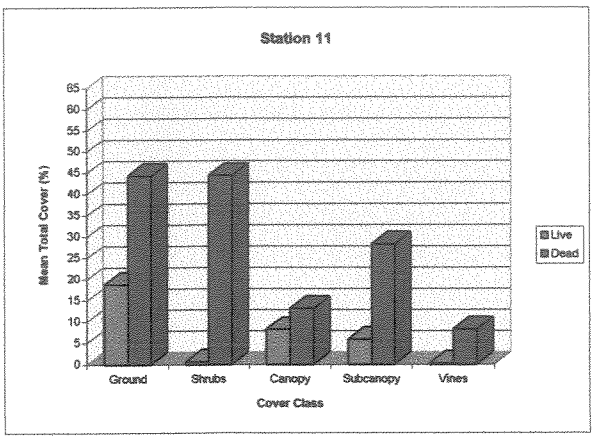

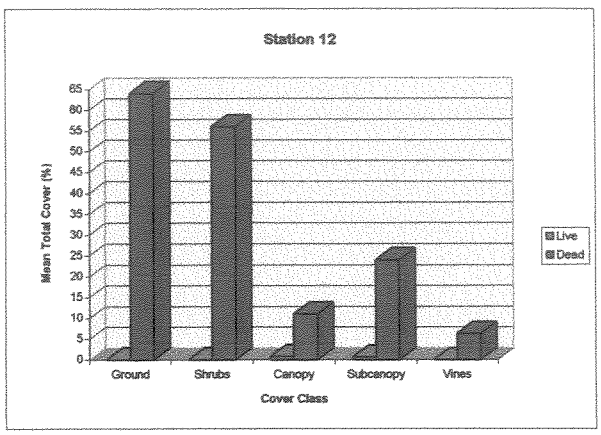

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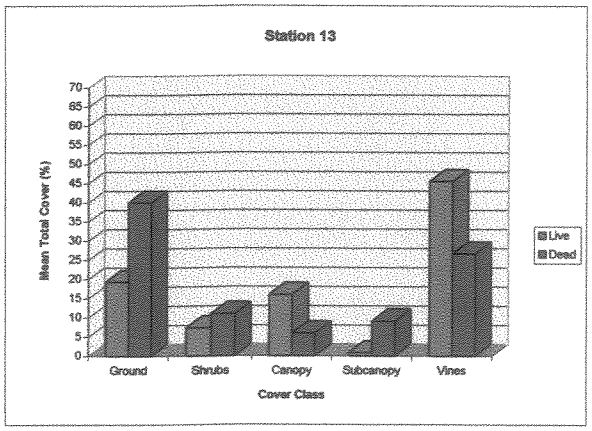
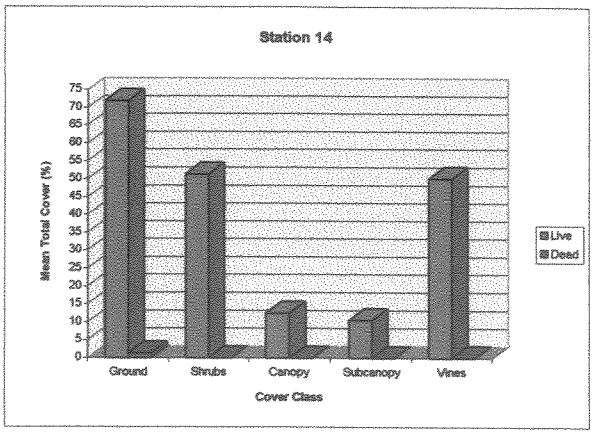
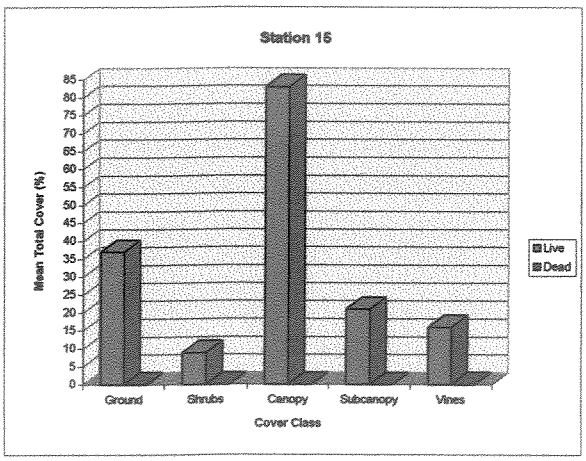
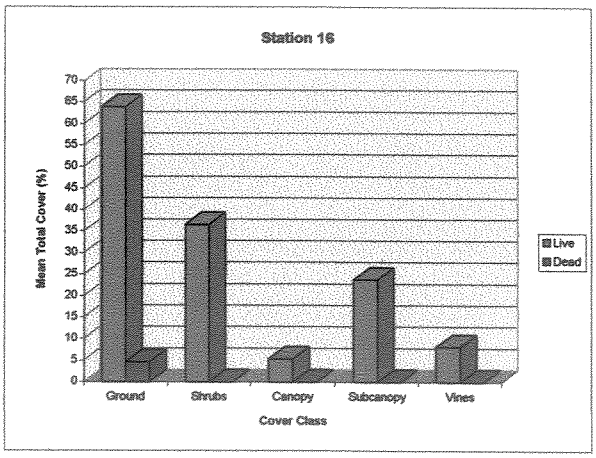








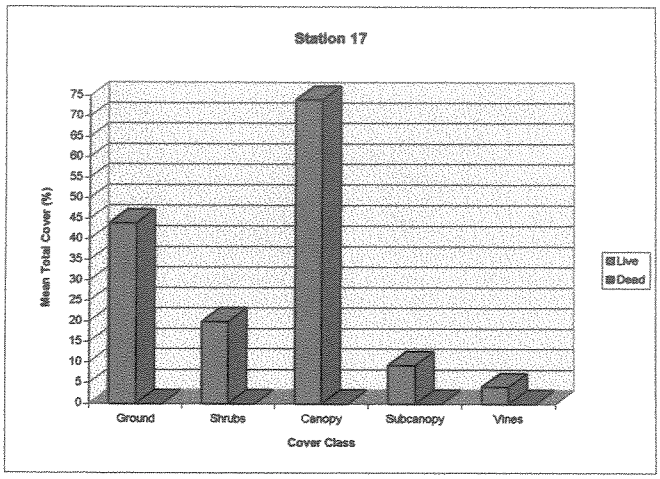
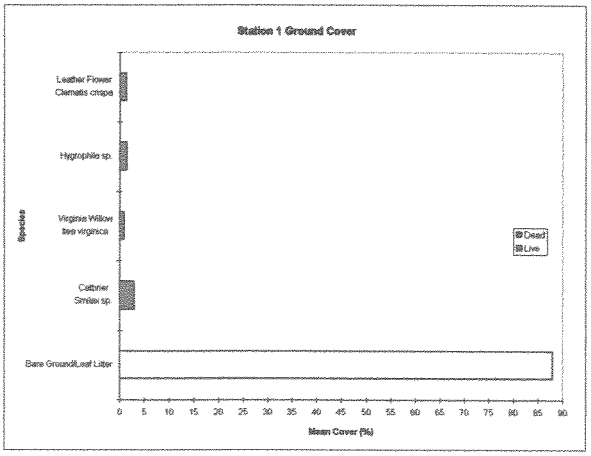
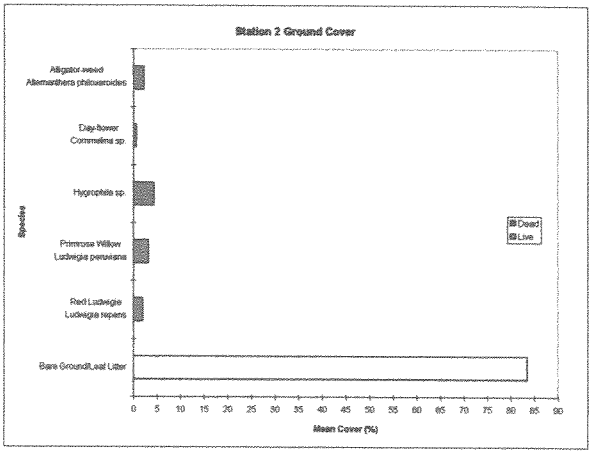
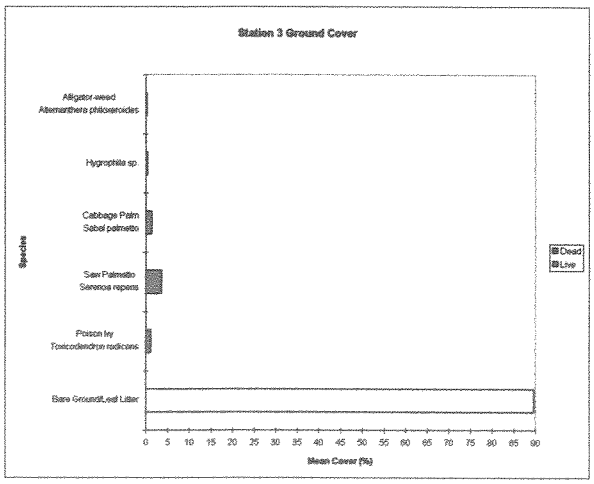
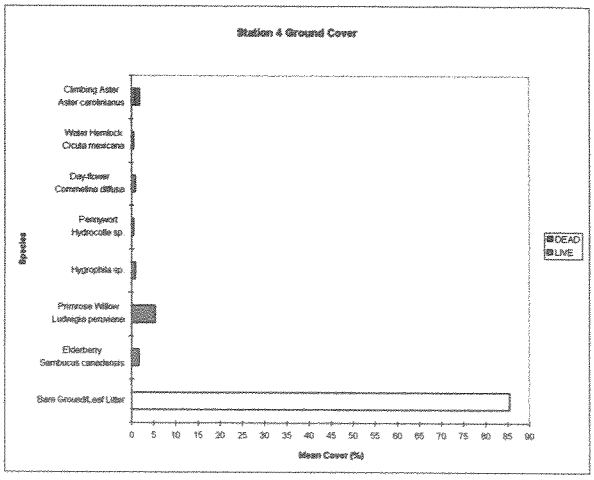


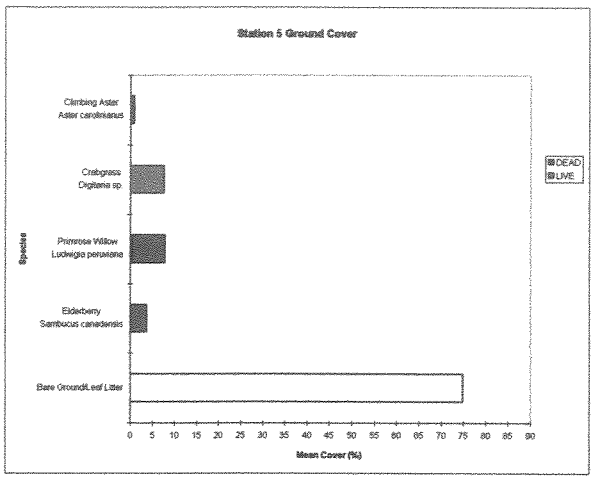
Figure 8. Mean cover (percentage of a $1m^2$ sample area covered by plant material) of selected species in the ground cover strata at the 17 damage assessment field stations.

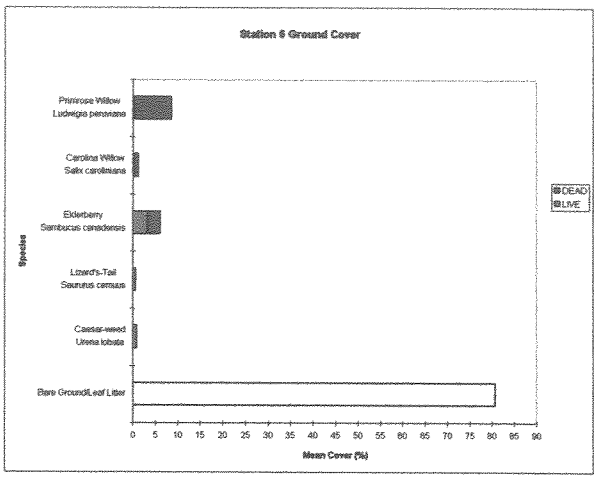












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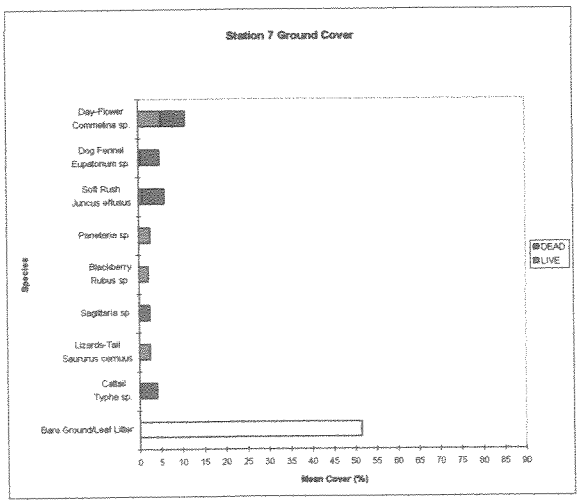

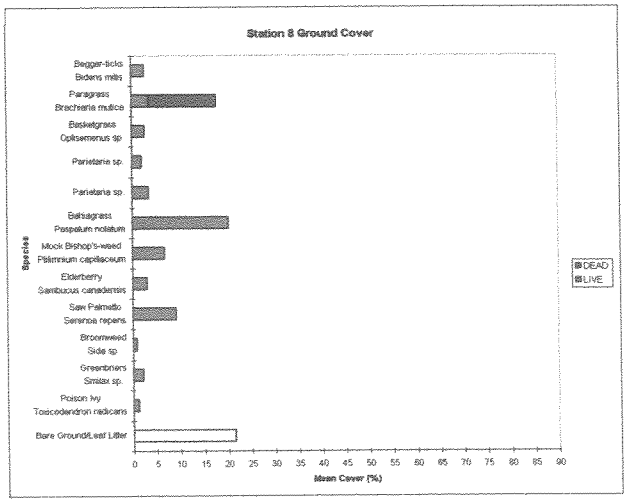

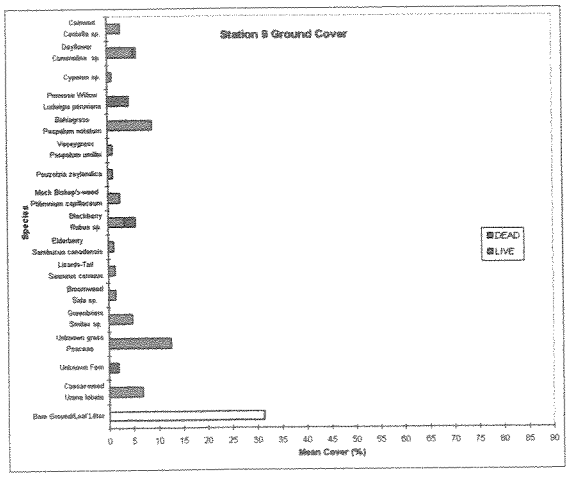

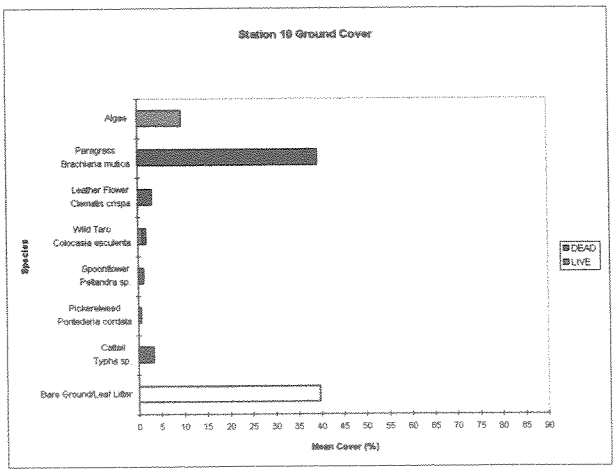

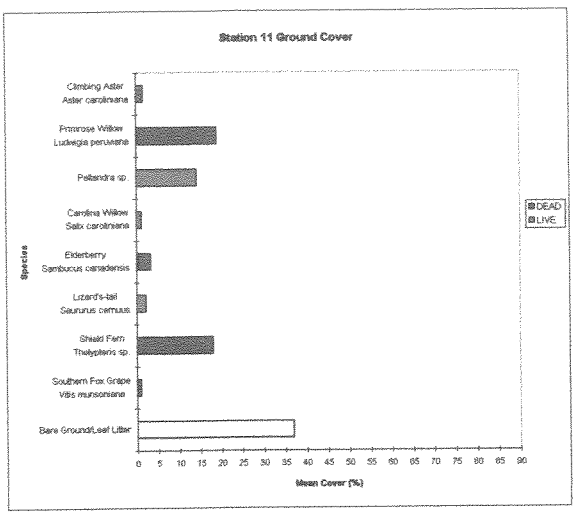

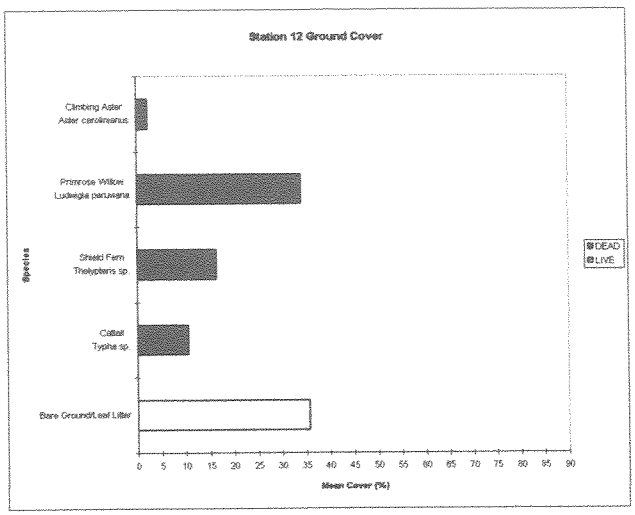

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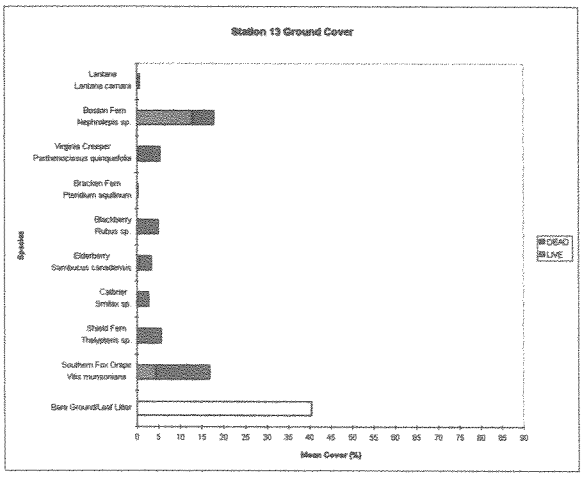
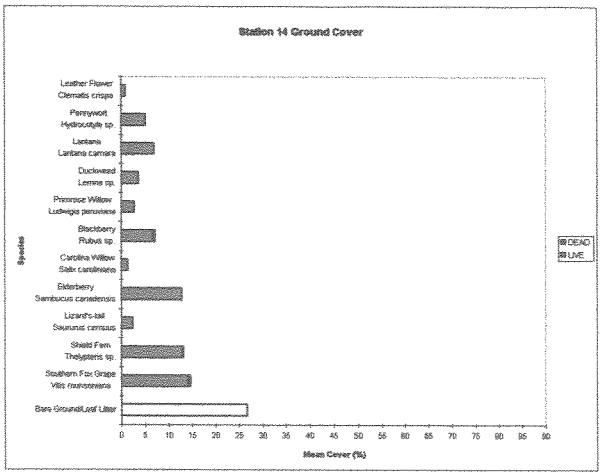
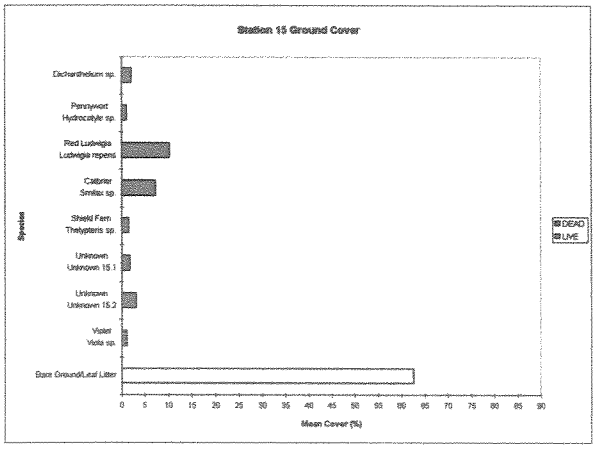
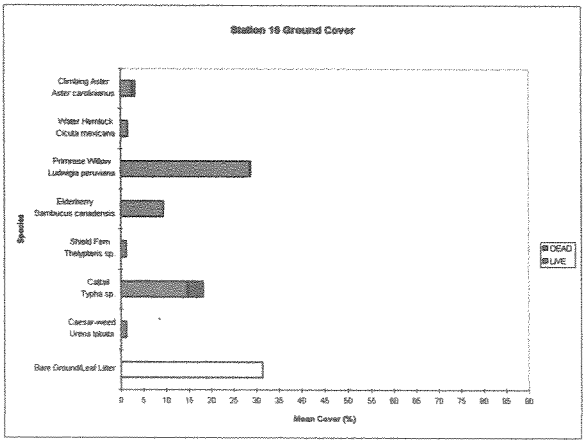








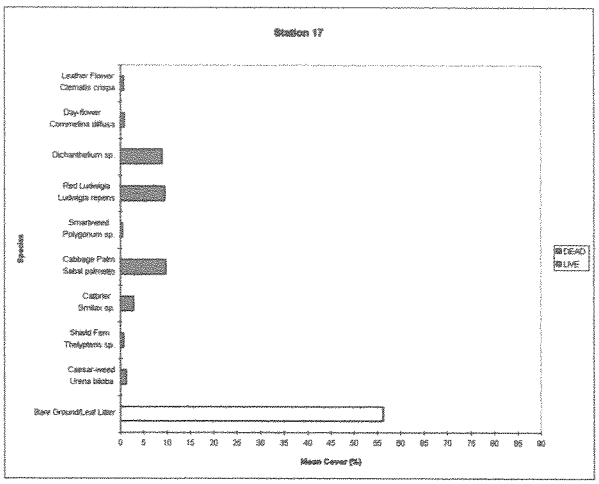
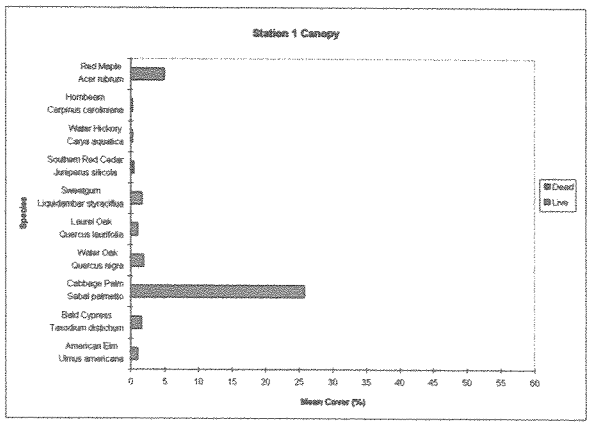
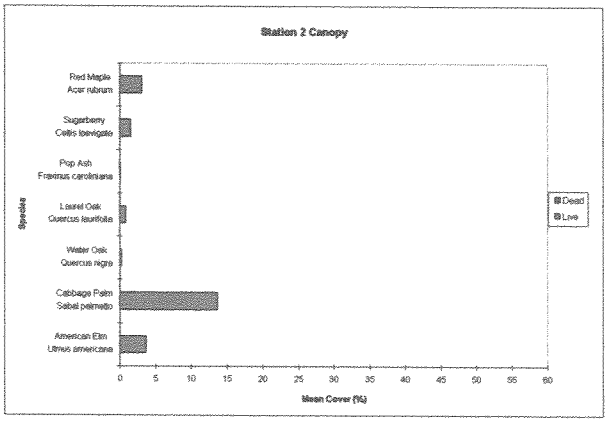
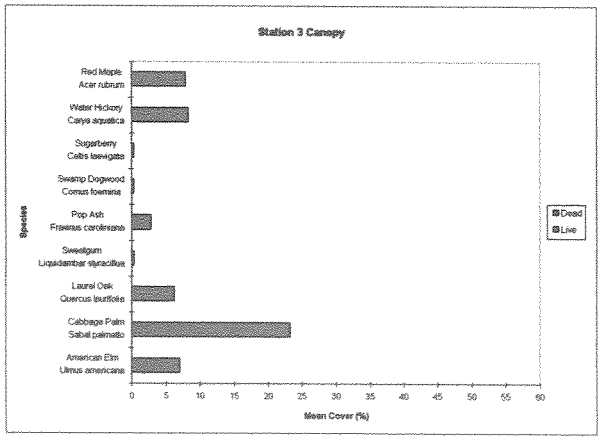
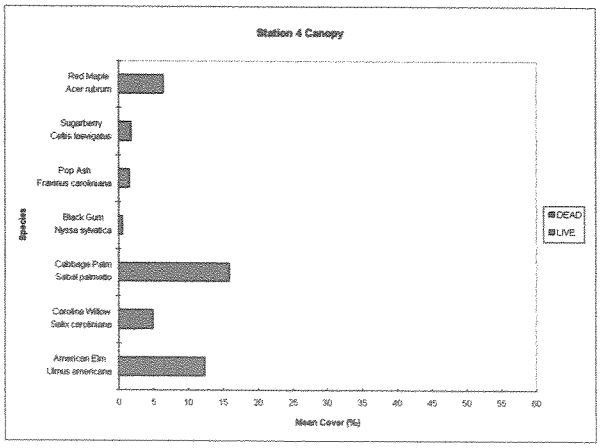


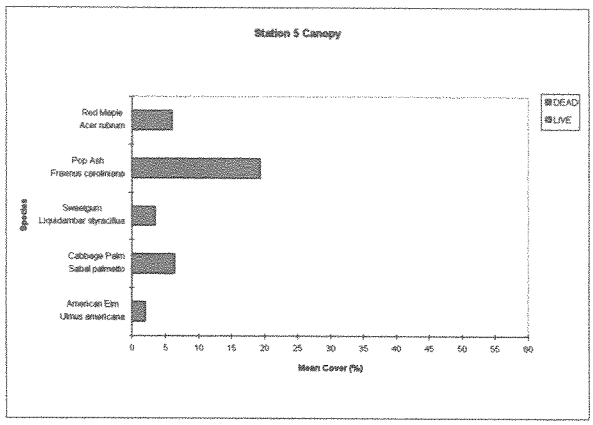
Figure 9. Mean cover (percentage of a 25m^2 sample area covered by basal area) of selected species in the canopy strata at the 17 damage assessment field stations.

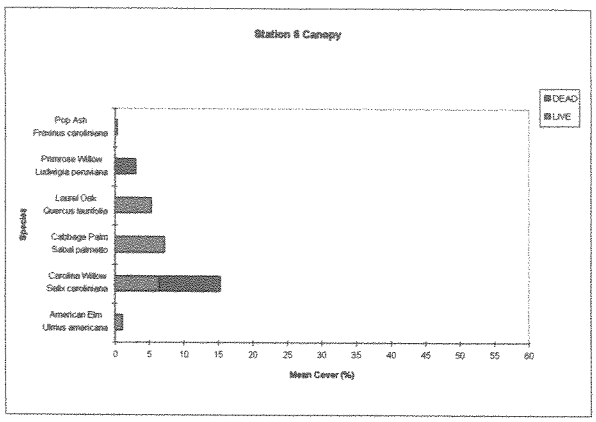












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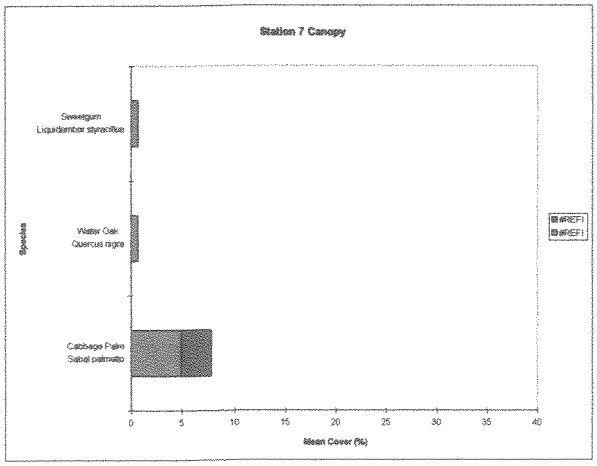

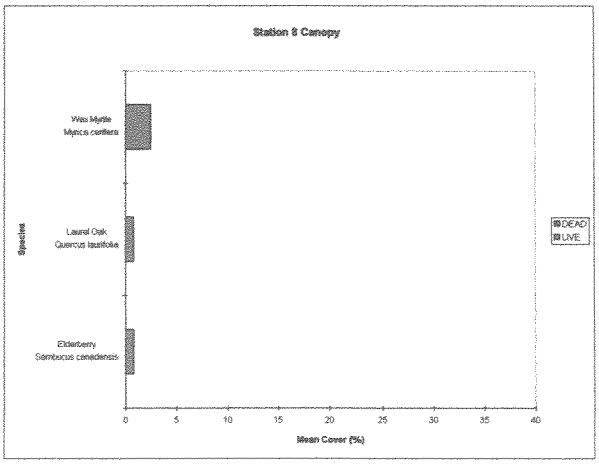

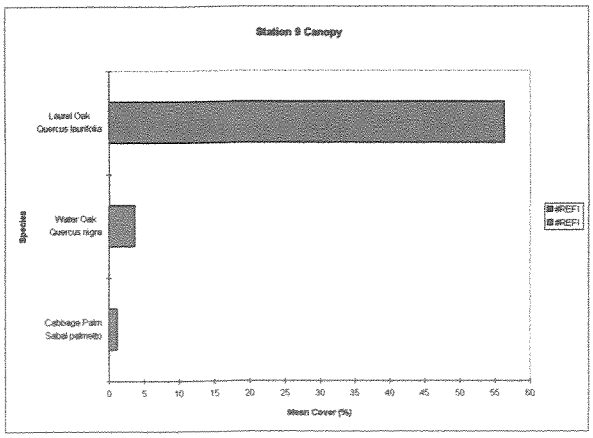

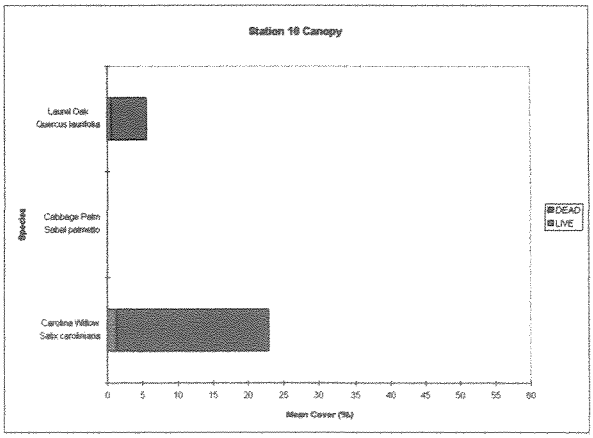

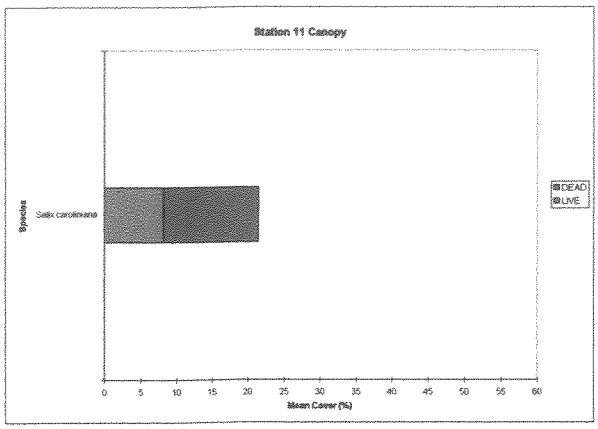

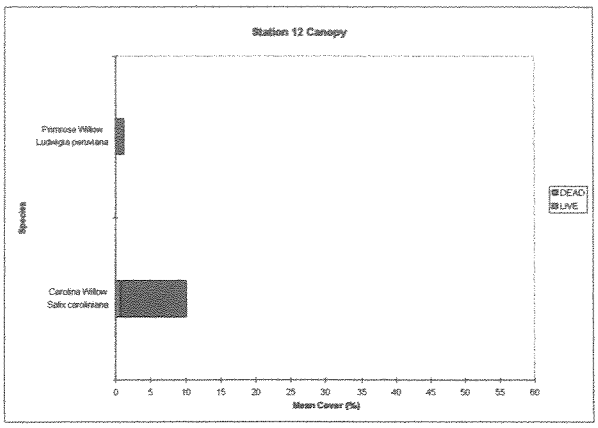

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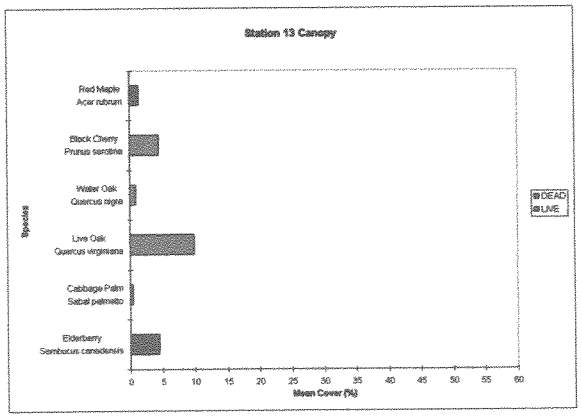
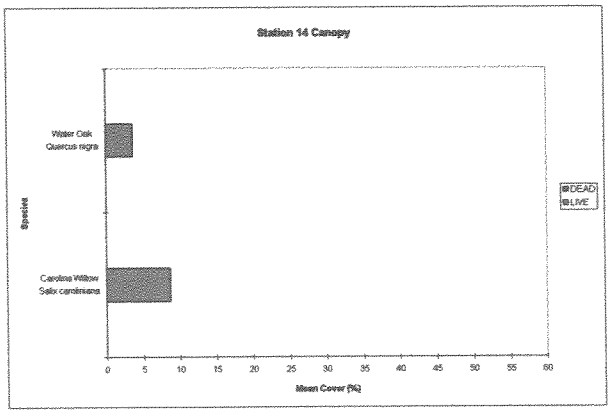
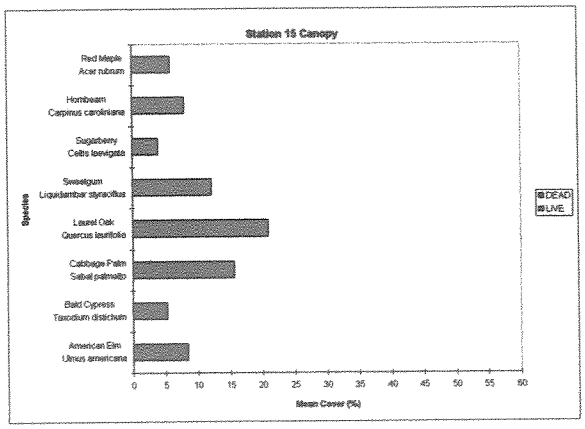
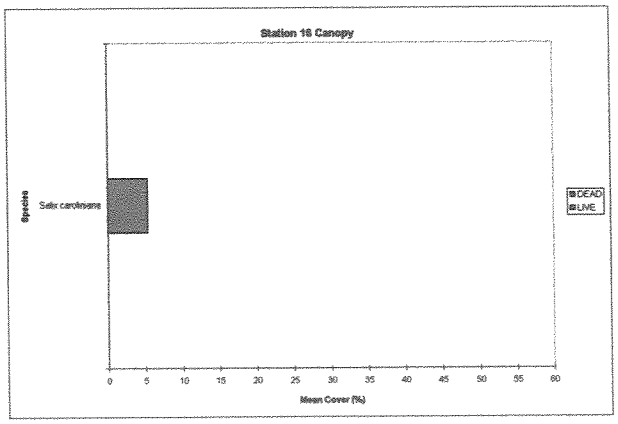








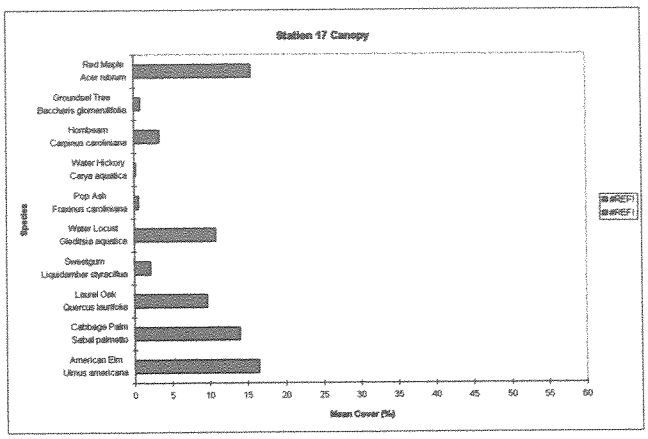
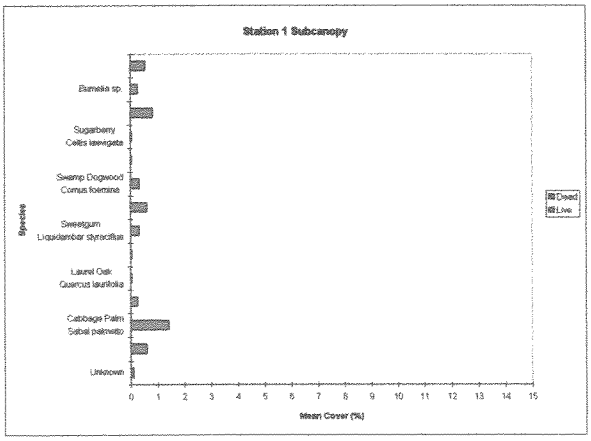
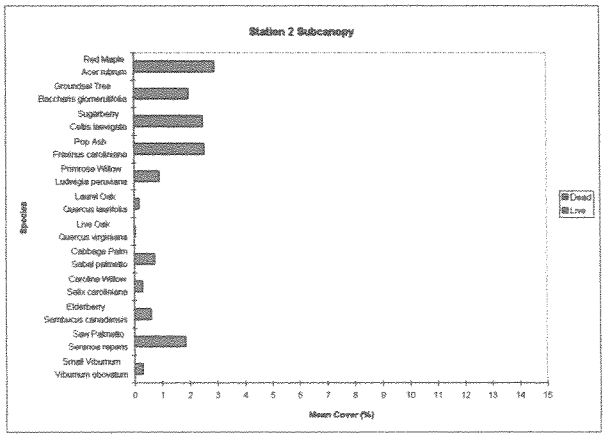
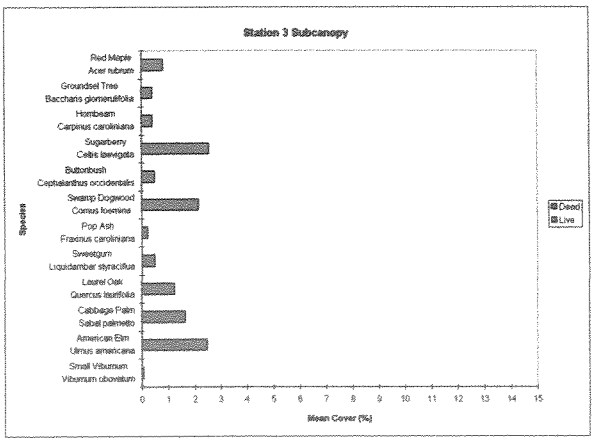
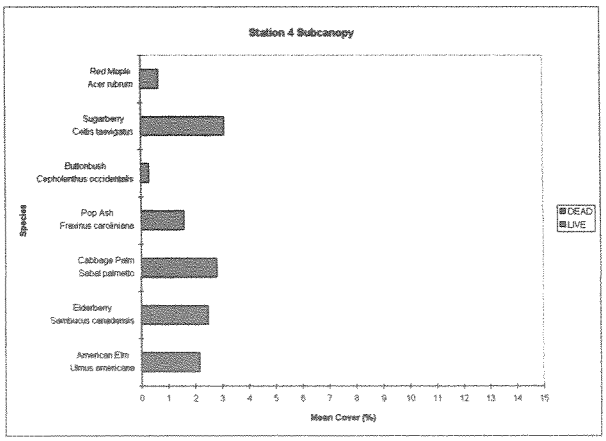


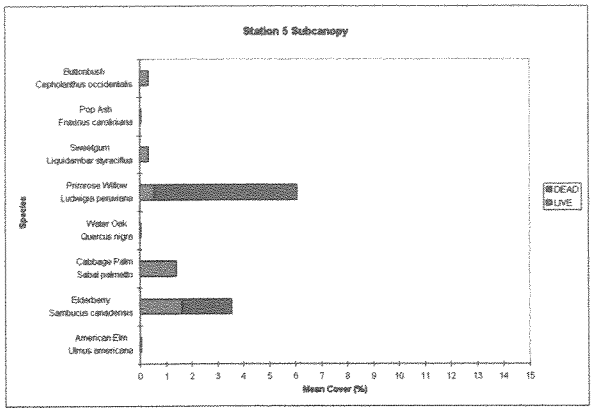
Figure 10. Mean cover (percentage of a 25m^2 sample area covered by basal area) of selected species in the subcanopy strata at the 17 damage assessment field stations.

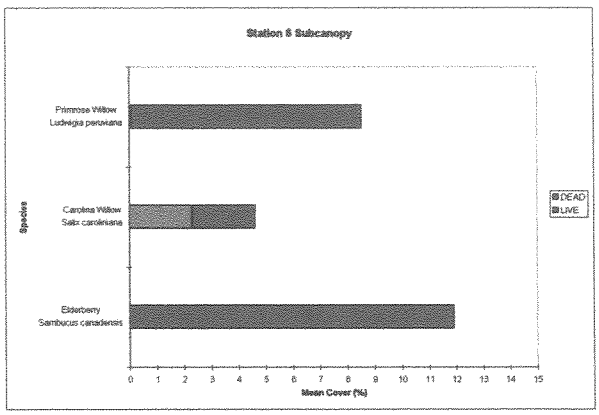












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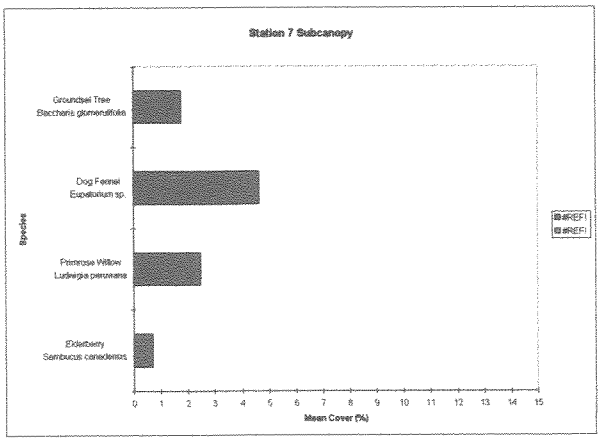
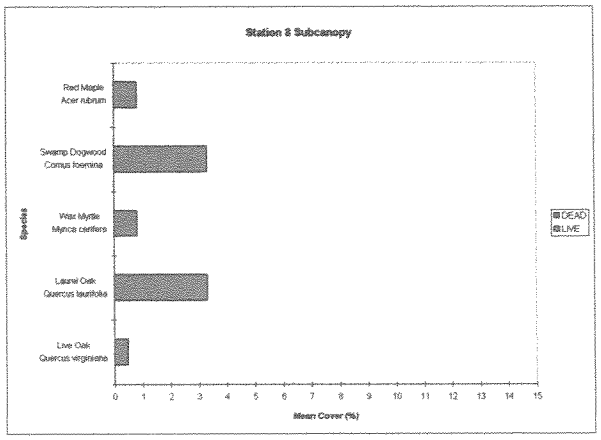
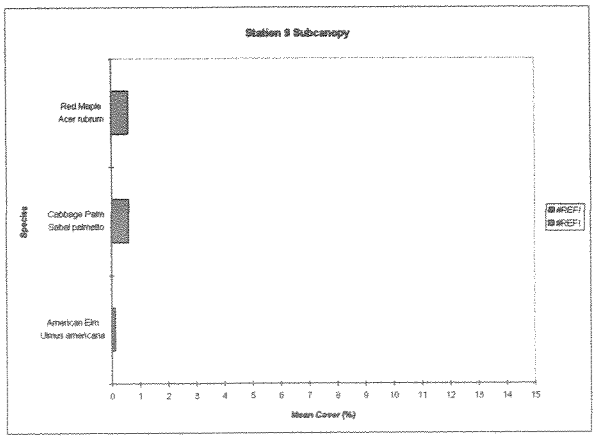
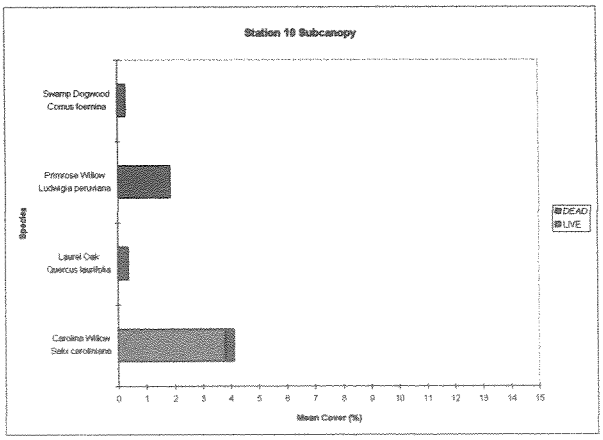
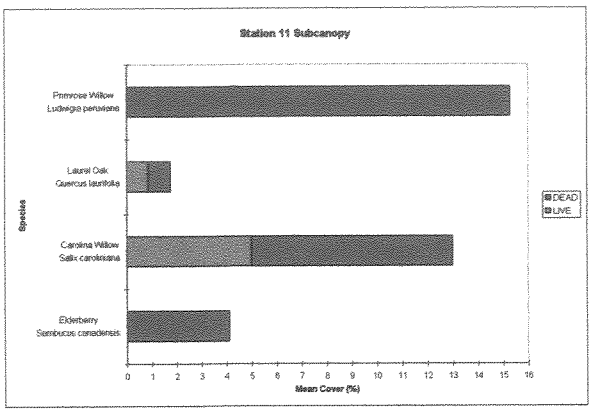










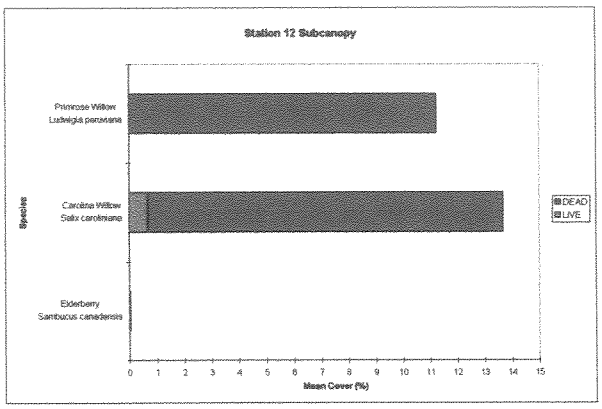
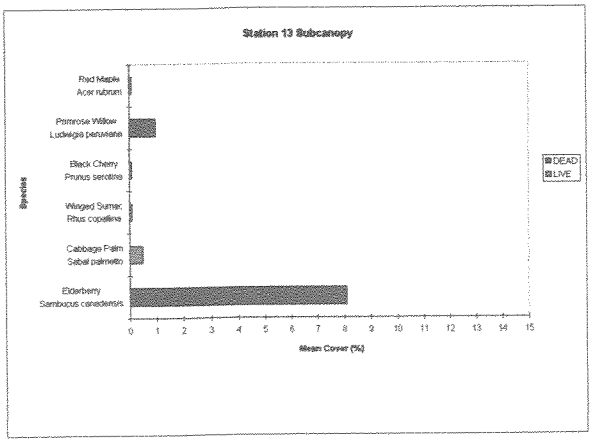
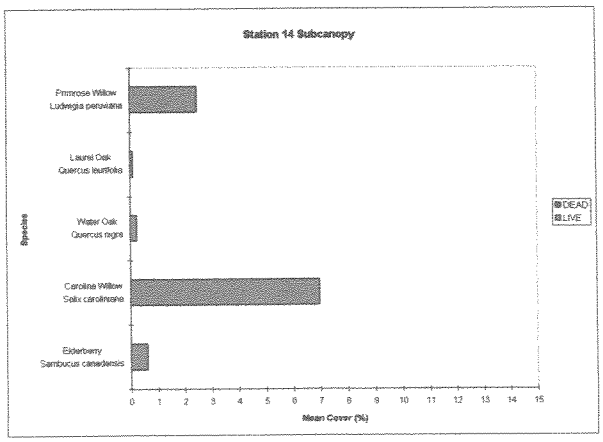
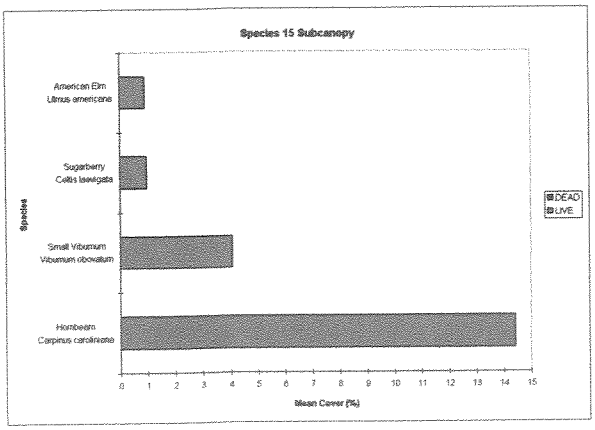
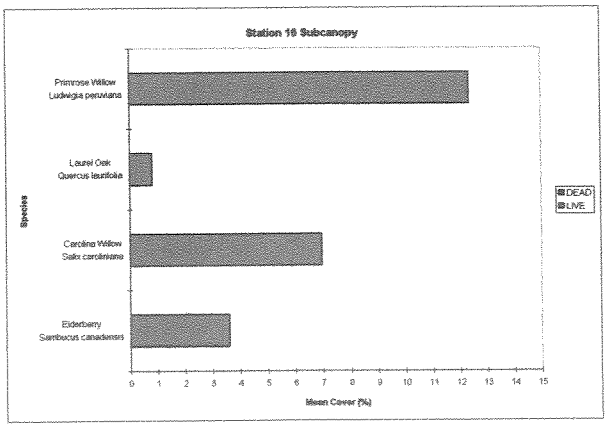


Figure 10. (cont.)









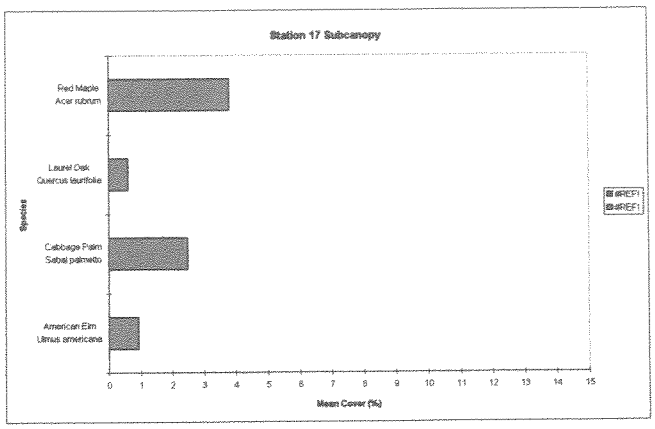
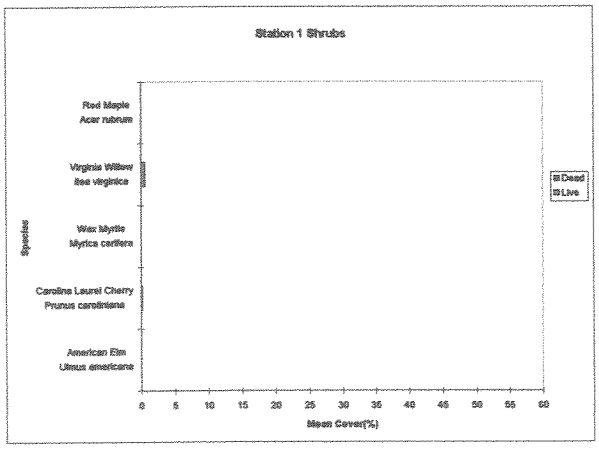
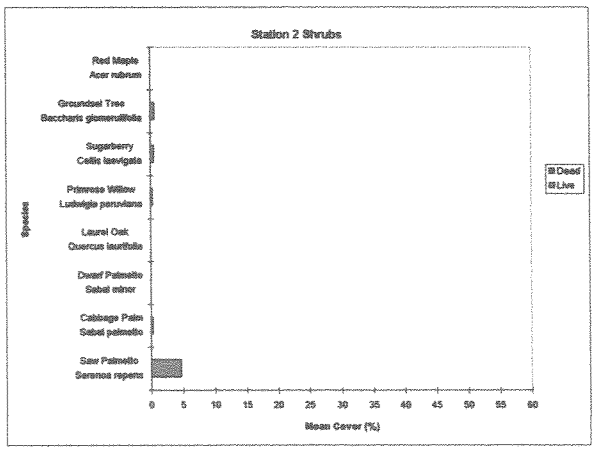
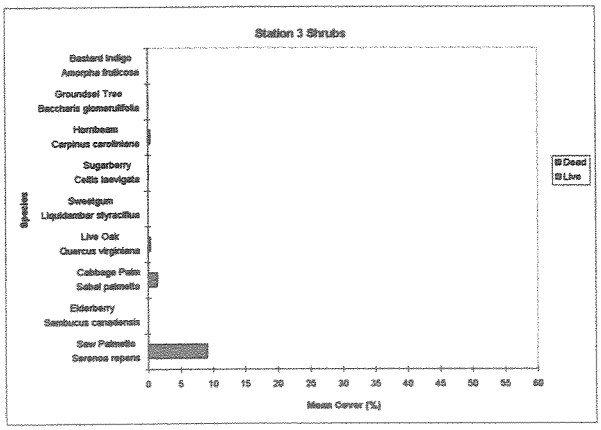
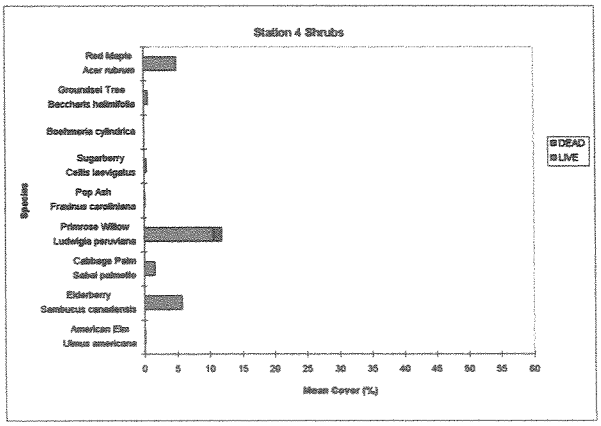


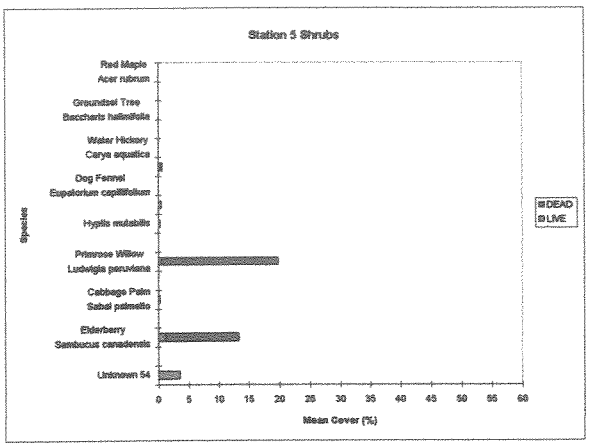
Figure 11. Mean cover (percentage of a 25m^2 sample area covered by crown diameter) of selected species in the shrub strata at the 17 damage assessment field stations.











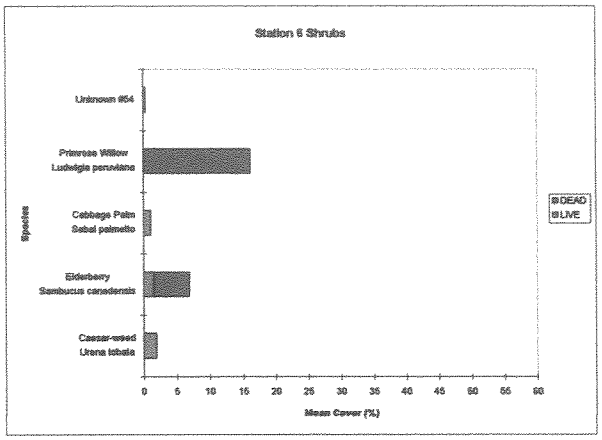
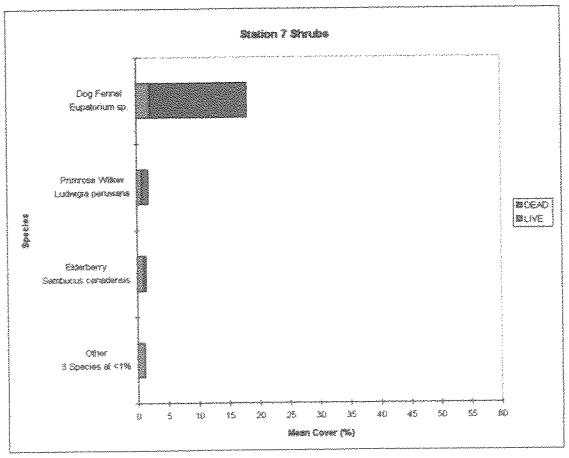
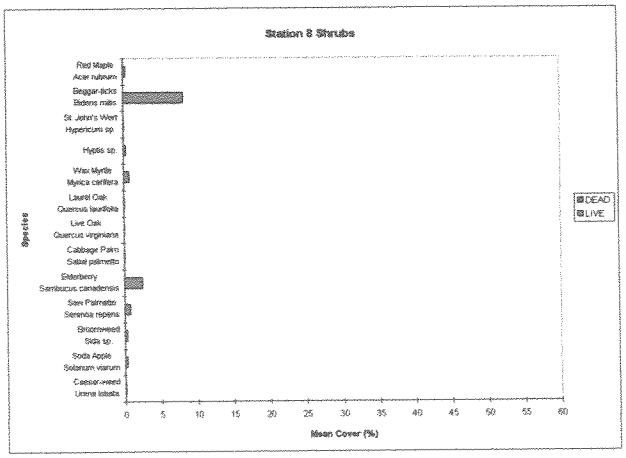
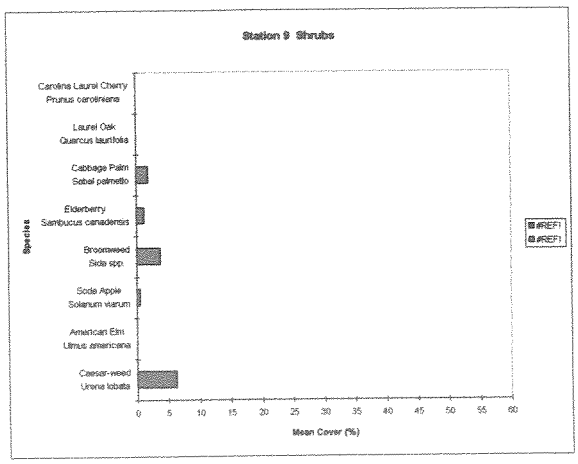
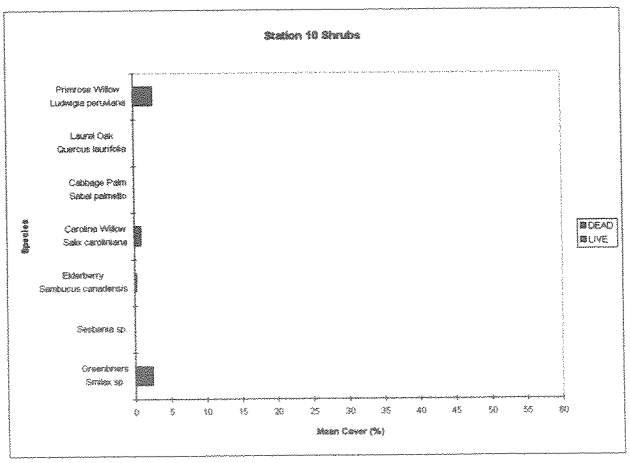


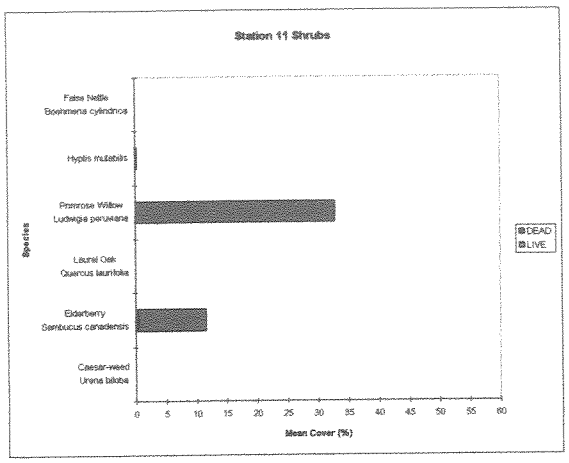
Figure 11. (cont.)











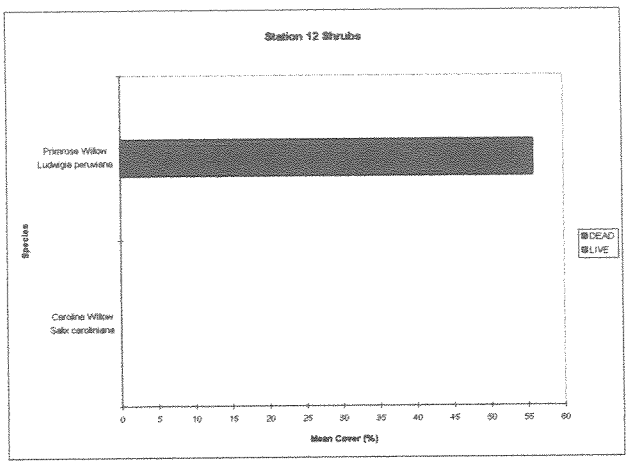
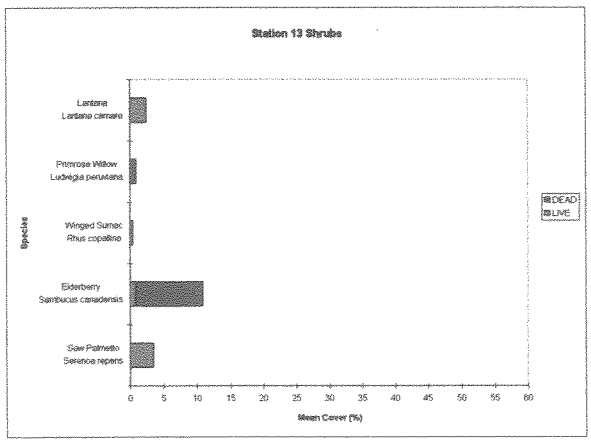
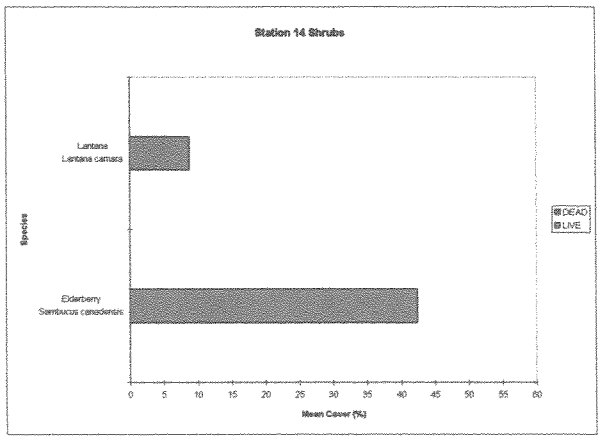
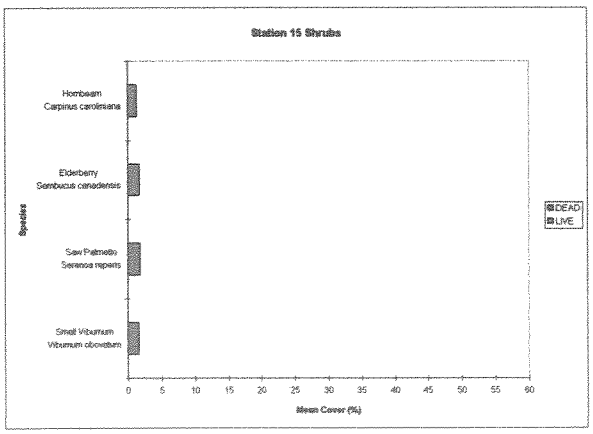
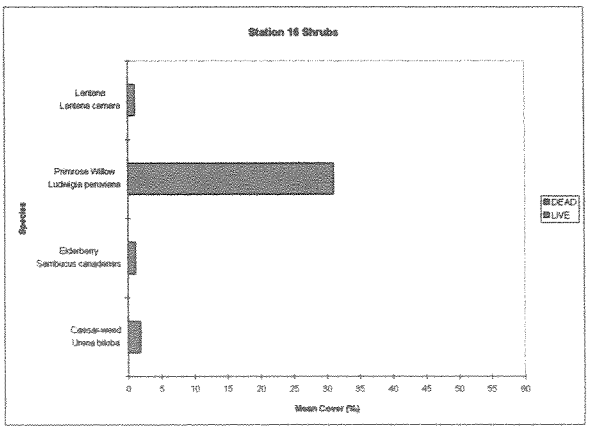


Figure 11. (cont.)









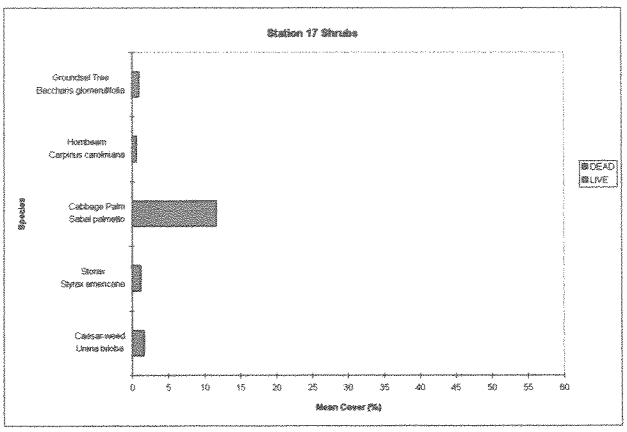


Figure 12. Mean cover (percentage of a 25m^2 sample area covered by plant material) of selected species in the vine strata at the 17 damage assessment field stations.

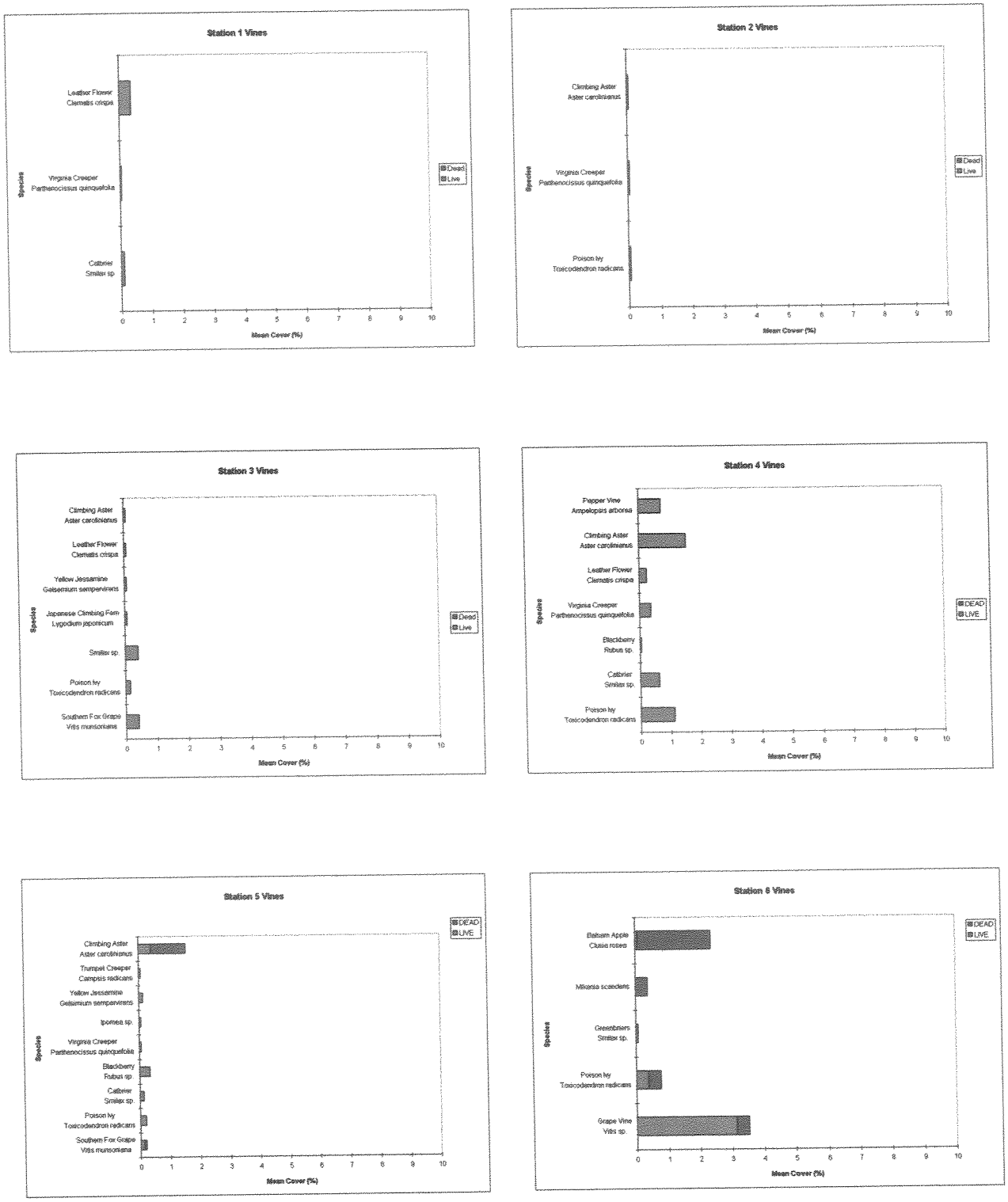
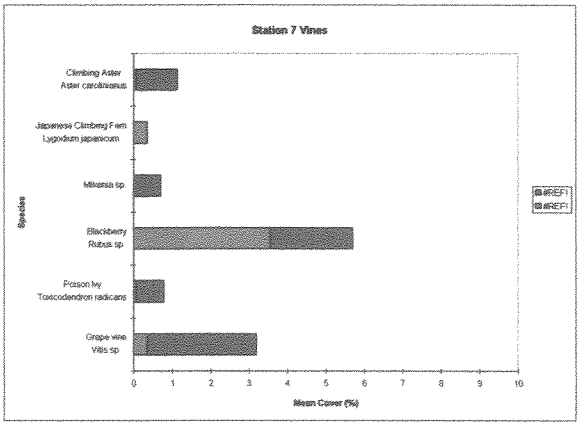
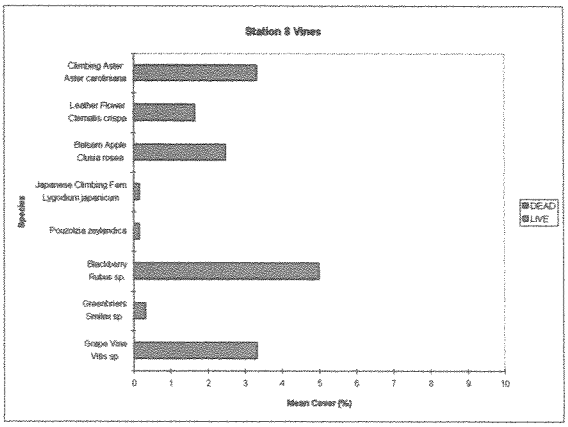
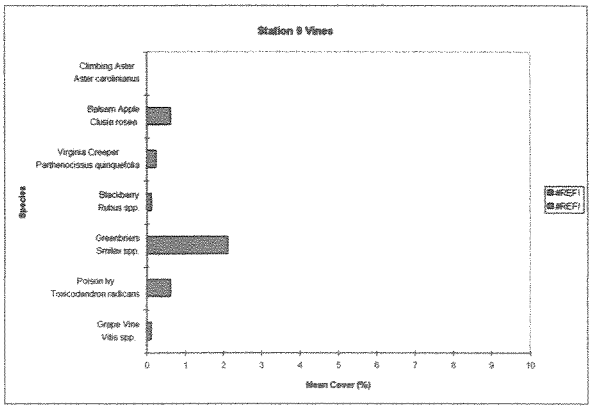
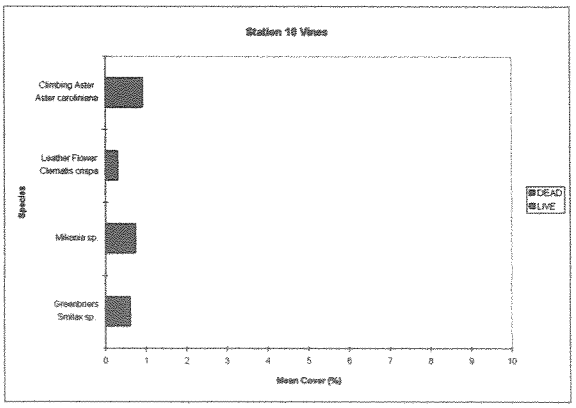


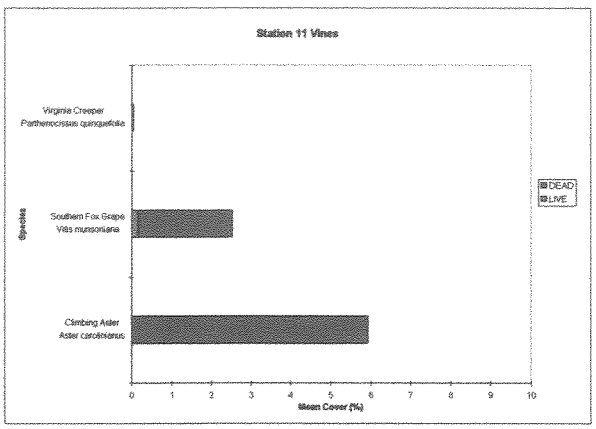
Figure 12. (cont.)











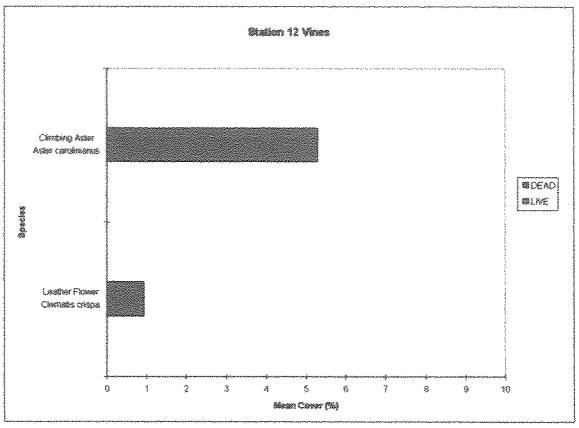
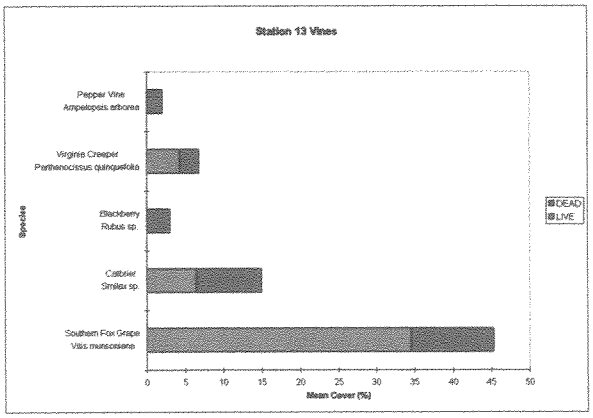
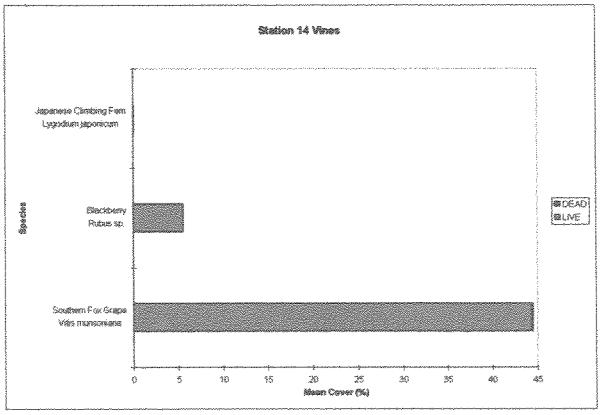
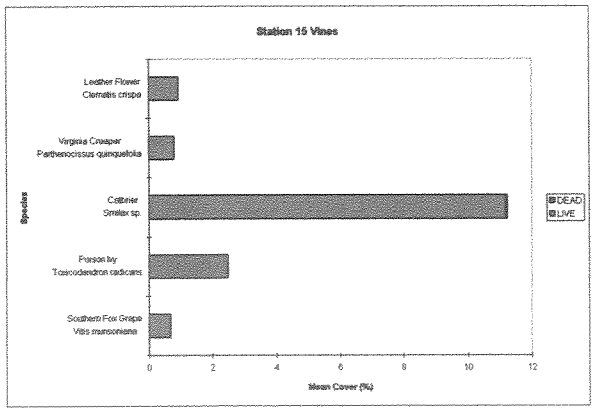
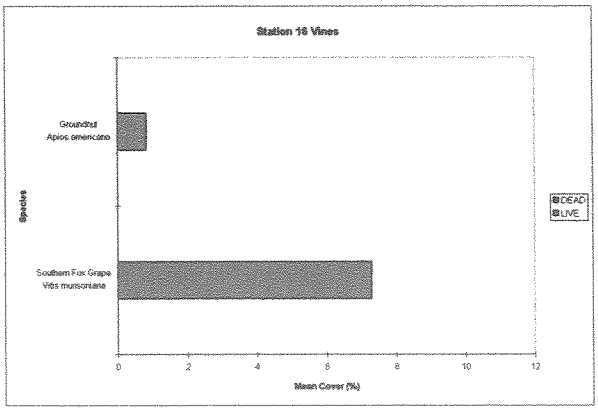


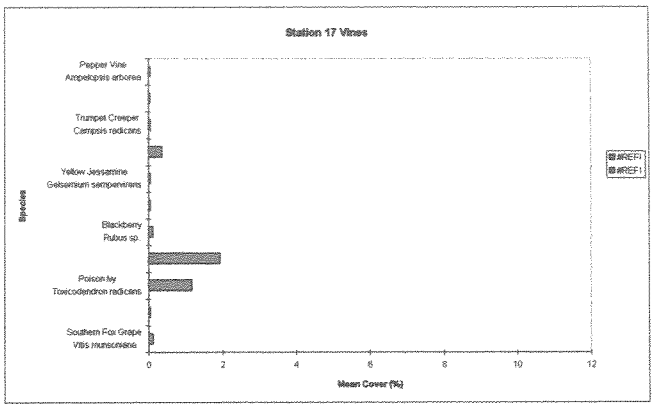
Figure 12. (cont.)











Appendix I. Coordinates for the 17 field stations established as part of the Alafia River vegetation damage assessment.

Station	Location	Transect	Coordinates
1	North Prong Alafia River	1	27 ° 53' 40. 703" N 82 ° 04' 18. 581" W
		2	27 ° 53' 40. 289" N 82 ° 04' 19. 767" W
2	North Prong Alafia River	3	27 ° 54' 24. 560" N 82 ° 03' 22. 148" W
		4	27 ° 54' 24. 995" N 82 ° 03' 22. 003" W
3	North Prong Alafia River	5	27 ° 54' 22. 308" N 82 ° 02' 48. 261" W
		6	27 ° 54 ' 22. 231" N 82 ° 02' 48. 911" W
4	North Prong Alafia River	7	27 ° 54' 17. 875" N 82 ° 02' 15. 104" W
		8	27 ° 54' 18. 355" N 82 ° 02' 14. 313" W
5	North Prong Alafia River	9	27 ° 54' 23. 880" N 82 ° 01' 44. 712" W
		10	27 ° 54' 24.157" N 82 ° 01' 44. 724" W
6	North Prong Alafia River	11	27 ° 54' 02. 192" N 82 ° 01' 27. 221" W
		12	27 ° 54' 02. 423" N 82 ° 01' 26. 960" W
7	North Prong Alafia River	13	27 ° 53' 35. 557" N 82 ° 01' 00. 044" W
		14	27 ° 53' 35. 782" N 82 ° 01' 00. 176" W
8	North Prong Alafia River	15	27 ° 53' 17. 491" N 82 ° 00' 08. 821" W
		16	27 ° 53' 17. 360" N 82 ° 00' 08. 938" W
9	North Prong Alafia River	17	27 ° 53' 24. 589" N 81 ° 59' 23. 415" W
		18	27 ° 53' 24. 462" N 81 ° 59' 22. 866" W
10	North Prong Alafia River	19	27 ° 53' 23. 990" N 81 ° 58' 51. 244" W
		20	27 ° 53' 24. 535" N 81 ° 58' 51. 021" W
11	North Prong Alafia River	21	27 ° 53' 20. 180" N 81 ° 58' 28. 494" W
		22	27 ° 53' 20. 443" N 81 ° 58' 28. 454" W
12	North Prong Alafia River	23	27 ° 53' 18. 287" N 81 ° 58' 18. 121" W
		24	27 ° 53' 18. 593" N 81 ° 58' 17. 903" W
13	Skinned Sapling Creek	25	27 ° 52' 43. 881" N 81 ° 57' 00. 406" W
		26	27 ° 52' 43. 892" N 81 ° 57' 00. 121" W
14	Skinned Sapling Creek	27	27 ° 52' 45. 870" N 81 ° 56' 57. 434" W
		28	27 ° 52' 45. 885" N 81 ° 56' 57. 248" W
15	English Creek	29	27 ° 55' 45. 738" N 82 ° 03' 53. 028" W
		30	27 ° 55' 44. 990" N 82 ° 03' 54. 224" W
16	North Prong Alafia River	31	27 ° 51' 54. 704" N 81 ° 57' 42. 362" W
		32	27 ° 51' 55. 112" N 81 ° 57' 45. 510" W
17	South Prong Alafia River	33	27 ° 47' 35. 830" N 82 ° 07' 17. 618" W
		34	27 ° 47' 35. 560" N 82 ° 07' 17. 172" W

Appendix II. Mean cover (% of sample area), relative abundance (RD, expressed as a percentage of the total cover), and frequency (FREQ, the percentage of quadrats/plots in which a species occurred) for all species within each cover class recorded at Station 1.

SPECIES		Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name	MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Ground Cover									
Smilax sp.	Catbrier	3.08	25.7	41	0	0	0	3.08	25.7
Hygrophila sp.		1.49	12.4	23.1	0	0	0	1.49	12.4
Clematis crispa	Leather Flower	1.46	12.2	25.6	0	0	0	1.46	12.2
Itea virginica	Virginia Willow	1.03	8.57	2.56	0	0	0	1.03	8.57
Dichanthelium sp.		0.92	7.71	30.8	0	0	0	0.92	7.71
Parthenocissus quinquefolia	Virginia Creeper	0.77	6.42	28.2	0	0	0	0.77	6.42
Toxicodendron radicans	Poison Ivy	0.69	5.78	10.3	0	0	0	0.69	5.78
Rhynchospora sp.		0.51	4.28	2.56	0	0	0	0.51	4.28
Ludwigia repens	Red Ludwigia	0.33	2.78	12.8	0	0	0	0.33	2.78
Sabal minor	Dwarf Palmetto	0.33	2.78	12.8	0	0	0	0.33	2.78
	Unknown #7	0.28	2.36	5.13	0	0	0	0.28	2.36
Saururus cernuus	Lizard's-tail	0.18	1.5	7.69	0	0	0	0.18	1.5
Cyperus sp.	Unknown Sedge	0.18	1.5	7.69	0	0	0	0.18	1.5
Hydrocotyle sp.	Pennywort	0.15	1.28	15.4	0	0	0	0.15	1.28
Viola affinis		0.08	0.64	7.69	0	0	0	0.08	0.64
Liquidambar styraciflua	Sweetgum	0.05	0.43	5.13	0	0	0	0.05	0.43
Polygonum sp.		0.05	0.43	5.13	0	0	0	0.05	0.43
Vallisneria americana	Tape-grass	0.03	0.21	2.56	0	0	0	0.03	0.21
Potamogeton sp.		0.03	0.21	2.56	0	0	0	0.03	0.21
Woodwardia sp.		0.03	0.21	2.56	0	0	0	0.03	0.21
Baccharis glomerulifolia	Groundsel Tree	0.03	0.21	2.56	0	0	0	0.03	0.21
Urtica chamaedryoides	Nettle	0.03	0.21	2.56	0	0	0	0.03	0.21
Viburnum obovatum	Small Viburnum	0.03	0.21	2.56	0	0	0	0.03	0.21
Crinum americanum	String-Lily	0.03	0.21	2.56	0	0	0	0.03	0.21
Gelsemium sempervirens	Yellow Jessamine	0.03	0.21	2.56	0	0	0	0.03	0.21
Dryopteris ludoviciana	Florida Shield Fern	0.03	0.21	2.56	0	0	0	0.03	0.21
Celtis laevigata	Sugarberry	0.03	0.21	2.56	0	0	0	0.03	0.21
Elephantopus sp.		0.03	0.21	2.56	0	0	0	0.03	0.21
Sanicula canadensis	Snakeroot	0.03	0.21	2.56	0	0	0	0.03	0.21
Pontederia cordata	Pickerelweed	0.03	0.21	2.56	0	0	0	0.03	0.21
Commelina sp.	Day-flower	0.03	0.21	2.56	0	0	0	0.03	0.21
Acer rubrum	Red Maple	0.03	0.21	2.56	0	0	0	0.03	0.21
TOTAL COVER		**12**			**0**			**12**	
Bare Ground/Leaf Litter								**88**	
Species Richness		**32**							
Shannon-Wiener Diversity Index		**2.4952**							
Shrubs (Woody Plants <1 dbh)									
Itea virginica	Virginia Willow	0.61	55	11.1	0	0	0	0.61	55
Prunus caroliniana	Carolina Laurel Cherry	0.28	25	5.56	0	0	0	0.28	25
Ulmus americana	American Elm	0.11	10	11.1	0	0	0	0.11	10
Acer rubrum	Red Maple	0.06	5	5.56	0	0	0	0.06	5
Myrica cerifera	Wax Myrtle	0.06	5	5.56	0	0	0	0.06	5
TOTAL COVER		**1.11**			**0**			**1.11**	
Species Richness		**5**							
Shannon-Wiener Diversity Index		**1.2052**							
Canopy Trees (>4 dbh)									
Sabal palmetto	Cabbage Palm	25.9	65.9	72.2	0	0	0	25.9	65.4
Acer rubrum	Red Maple	5	12.7	27.8	0	0	0	5	12.6
Quercus nigra	Water Oak	1.94	4.95	11.1	0	0	0	1.94	4.92

Appendix II. (cont.)

SPECIES			Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name		MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Canopy Trees (>4 dbh)										
Liquidambar styraciflua	Sweetgum		1.72	4.38	11.1	0	0	0	1.72	4.35
Ulmus americana	American Elm		1.11	2.83	5.56	0	0	0	1.11	2.81
Taxodium distichum	Bald Cypress		1.67	4.24	11.1	0	0	0	1.67	4.21
Quercus laurifolia	Laurel Oak		1.11	2.83	5.56	0	0	0	1.11	2.81
Carya aquatica	Water Hickory		0.28	0.71	5.56	0	0	0	0.28	0.7
Carpinus caroliniana	Hornbeam		0.28	0.71	5.56	0	0	0	0.28	0.7
Juniperus silicola	Southern Red Cedar		0.28	0.71	5.56	0	100	5.56	0.56	1.4
TOTAL COVER			**39.3**			**0**			**39.6**	
Species Richness		**10**								
Shannon-Wiener Diversity Index		**1.2871**								
Subcanopy Trees (<4 dbh)										
Sabal palmetto	Cabbage Palm		1.44	25.7	11.1	0	0	0	1.44	25.7
Carpinus caroliniana	Hornbeam		0.83	14.9	16.7	0	0	0	0.83	14.9
Fraxinus caroliniana	Pop Ash		0.61	10.9	16.7	0	0	0	0.61	10.9
Ulmus americana	American Elm		0.61	10.9	11.1	0	0	0	0.61	10.9
Acer rubrum	Red Maple		0.56	9.9	11.1	0	0	0	0.56	9.9
Cornus foemina	Swamp Dogwood		0.33	5.94	11.1	0	0	0	0.33	5.94
Liquidambar styraciflua	Sweetgum		0.33	5.94	11.1	0	0	0	0.33	5.94
Quercus nigra	Water Oak		0.28	4.95	5.56	0	0	0	0.28	4.95
Bumelia sp.			0.28	4.95	5.56	0	0	0	0.28	4.95
Unknown			0.11	1.98	11.1	0	0	0	0.11	1.98
Citrus sp.			0.06	0.99	5.56	0	0	0	0.06	0.99
Quercus laurifolia	Laurel Oak		0.06	0.99	5.56	0	0	0	0.06	0.99
Celtis laevigata	Sugarberry		0.06	0.99	5.56	0	0	0	0.06	0.99
Prunus caroliniana	Carolina Laurel Cherry		0.06	0.99	5.56	0	0	0	0.06	0.99
TOTAL COVER			**5.61**			**0**			**5.61**	
Species Richness		**14**								
Shannon-Wiener Diversity Index		**2.238**								
Woody Vines										
Clematis crispa	Leather Flower		0.39	70	16.7	0	0	0	0.39	70
Smilax sp.	Catbrier		0.11	20	11.1	0	0	0	0.11	20
Parthenocissus quinquefolia	Virginia Creeper		0.06	10	5.56	0	0	0	0.06	10
TOTAL COVER			**0.56**			**0**			**0.56**	
Species Richness		**3**								
Shannon-Wiener Diversity Index		**0.8018**								

Appendix III. Mean cover (% of sample area), relative abundance (RD, expressed as a percentage of the total cover), and frequency (FREQ, the percentage of quadrats/plots in which a species occurred) for all species within each cover class recorded at Station 2.

SPECIES		Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name	MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Ground Cover									
Hygrophila sp.		4.4	26.8	48.6	0	0	0	4.4	26.8
Ludwigia peruviana	Primrose Willow	3.29	20	11.4	0	0	0	3.29	20
Alternanthera philoxeroides	Alligator-weed	2.31	14.1	37.1	0	0	0	2.31	14.1
Ludwigia repens	Red Ludwigia	2.03	12.4	5.71	0	0	0	2.03	12.4
Commelina sp.	Day-flower	0.66	4.01	20	0	0	0	0.66	4.01
Serenoa repens	Saw Palmetto	0.6	3.66	5.71	0	0	0	0.6	3.66
Dichanthelium sp.		0.4	2.44	14.3	0	0	0	0.4	2.44
Senecio glabellus	Butterweed	0.31	1.92	5.71	0	0	0	0.31	1.92
Aster carolinianus	Climbing Aster	0.31	1.92	8.57	0	0	0	0.31	1.92
Baccharis glomerulifolia	Groundsel Tree	0.31	1.92	5.71	0	0	0	0.31	1.92
Toxicodendron radicans	Poison Ivy	0.29	1.74	17.1	0	0	0	0.29	1.74
Panicum anceps	Beaked Panicum	0.26	1.57	14.3	0	0	0	0.26	1.57
Centella asiatica	Coinwort	0.14	0.87	2.86	0	0	0	0.14	0.87
Unknown		0.11	0.7	11.4	0	0	0	0.11	0.7
Parthenocissus quinquefolia	Virginia Creeper	0.09	0.52	8.57	0	0	0	0.09	0.52
Hydrocotyle sp.	Pennywort	0.09	0.52	8.57	0	0	0	0.09	0.52
Cyperus sp.	Unknown Sedge	0.09	0.52	8.57	0	0	0	0.09	0.52
Oxalis sp.		0.09	0.52	8.57	0	0	0	0.09	0.52
Sabal minor	Dwarf Palmetto	0.06	0.35	5.71	0	0	0	0.06	0.35
Celtis laevigata	Sugarberry	0.06	0.35	5.71	0	0	0	0.06	0.35
Galium tinctorium		0.06	0.35	5.71	0	0	0	0.06	0.35
Cicuta mexicana	Water Hemlock	0.06	0.35	5.71	0	0	0	0.06	0.35
Iris hexagona	Prairie Iris	0.06	0.35	5.71	0	0	0	0.06	0.35
Cynodon dactylon	Bermudagrass	0.06	0.35	5.71	0	0	0	0.06	0.35
Potamogeton sp.		0.03	0.17	2.86	0	0	0	0.03	0.17
Crinum americanum	String-Lily	0.03	0.17	2.86	0	0	0	0.03	0.17
Unknown forb		0.03	0.17	2.86	0	0	0	0.03	0.17
Hyptis alata	Musky Mint	0.03	0.17	2.86	0	0	0	0.03	0.17
Acer rubrum	Red Maple	0.03	0.17	2.86	0	0	0	0.03	0.17
Celtis laevigata	Sugarberry	0.03	0.17	2.86	0	0	0	0.03	0.17
Sabal palmetto	Cabbage Palm	0.03	0.17	2.86	0	0	0	0.03	0.17
Unknown Legume		0.03	0.17	2.86	0	0	0	0.03	0.17
Polygonum sp.		0.03	0.17	2.86	0	0	0	0.03	0.17
Fraxinus caroliniana	Pop Ash	0.03	0.17	2.86	0	0	0	0.03	0.17
TOTAL COVER		**16.4**			**0**			**16.4**	
Bare Ground/Leaf Litter								**83.6**	
Species Richness		**34**							
Shannon-Wiener Diversity Index		**2.328**							
Shrubs (Woody Plants <1 dbh)									
Serenoa repens	Saw Palmetto	4.75	67.9	25	0	0	0	4.75	67.9
Baccharis glomerulifolia	Groundsel Tree	0.69	9.82	12.5	0	0	0	0.69	9.82
Celtis laevigata	Sugarberry	0.63	8.93	6.25	0	0	0	0.63	8.93
Ludwigia peruviana	Primrose Willow	0.31	4.46	6.25	0	0	0	0.31	4.46
Sabal palmetto	Cabbage Palm	0.31	4.46	6.25	0	0	0	0.31	4.46
Acer rubrum	Red Maple	0.13	1.79	12.5	0	0	0	0.13	1.79
Sabal minor	Dwarf Palmetto	0.13	1.79	12.5	0	0	0	0.13	1.79
Quercus laurifolia	Laurel Oak	0.06	0.89	6.25	0	0	0	0.06	0.89
TOTAL COVER		**7**			**0**			**7**	
Species Richness		**8**							
Shannon-Wiener Diversity Index		**1.170**							

Appendix III. (cont.)

SPECIES			Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name		MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Canopy Trees (>4 dbh)										
Sabal palmetto	Cabbage Palm		13.8	58.4	62.5	0	0	0	13.8	58.4
Ulmus americana	American Elm		3.75	15.9	6.25	0	0	0	3.75	15.9
Acer rubrum	Red Maple		3.13	13.3	6.25	0	0	0	3.13	13.3
Celtis laevigata	Sugarberry		1.56	6.63	12.5	0	0	0	1.56	6.63
Quercus laurifolia	Laurel Oak		0.94	3.98	12.5	0	0	0	0.94	3.98
Quercus nigra	Water Oak		0.31	1.33	6.25	0	0	0	0.31	1.33
Fraxinus caroliniana	Pop Ash		0.13	0.53	12.5	0	0	0	0.13	0.53
TOTAL COVER			**23.6**			**0**			**23.6**	
Species Richness		**7**								
Shannon-Wiener Diversity Index		**1.2681**								
Subcanopy Trees (<4 dbh)										
Acer rubrum	Red Maple		2.94	19.5	43.8	0	0	0	2.94	19.5
Fraxinus caroliniana	Pop Ash		2.56	17	37.5	0	0	0	2.56	17
Celtis laevigata	Sugarberry		2.5	16.6	18.8	0	0	0	2.5	16.6
Baccharis glomerulifolia	Groundsel Tree		2	13.3	37.5	0	0	0	2	13.3
Serenoa repens	Saw Palmetto		1.88	12.4	6.25	0	0	0	1.88	12.4
Ludwigia peruviana	Primrose Willow		0.94	6.22	12.5	0	0	0	0.94	6.22
Sabal palmetto	Cabbage Palm		0.75	4.98	18.8	0	0	0	0.75	4.98
Sambucus canadensis	Elderberry		0.63	4.15	12.5	0	0	0	0.63	4.15
Viburnum obovatum	Small Viburnum		0.31	2.07	6.25	0	0	0	0.31	2.07
Salix caroliniana	Carolina Willow		0.31	2.07	6.25	0	0	0	0.31	2.07
Quercus laurifolia	Laurel Oak		0.19	1.24	18.8	0	0	0	0.19	1.24
Quercus virginiana	Live Oak		0.06	0.41	6.25	0	0	0	0.06	0.41
TOTAL COVER			**15.1**			**0**			**15.1**	
Species Richness		**12**								
Shannon-Wiener Diversity Index		**2.1381**								
Woody Vines										
Aster carolinianus	Climbing Aster		0.06	33.3	6.25	0	0	0	0.06	33.3
Parthenocissus quinquefolia	Virginia Creeper		0.06	33.3	6.25	0	0	0	0.06	33.3
Toxicodendron radicans	Poison Ivy		0.06	33.3	6.25	0	0	0	0.06	33.3
TOTAL COVER			**0.19**			**0**			**0.19**	
Species Richness		**3**								
Shannon-Wiener Diversity Index		**1.0986**								

Appendix IV. Mean cover (% of sample area), relative abundance (RD, expressed as a percentage of the total cover), and frequency (FREQ, the percentage of quadrats/plots in which a species occurred) for all species within each cover class recorded at Station 3.

SPECIES		Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name	MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Ground Cover									
Serenoa repens	Saw Palmetto	3.74	36.9	18.5	0	0	0	3.74	36.7
Sabal palmetto	Cabbage Palm	1.48	14.6	11.1	0	0	0	1.48	14.5
Toxicodendron radicans	Poison Ivy	1.19	11.7	37	0	0	0	1.19	11.6
Hygrophila sp.		0.44	4.38	11.1	0	0	0	0.44	4.36
Alternanthera philoxeroides	Alligator-weed	0.41	4.01	7.41	0	0	0	0.41	4
Quercus virginiana	Live Oak	0.41	4.01	7.41	0	0	0	0.41	4
Sabal minor	Dwarf Palmetto	0.37	3.65	7.41	0	0	0	0.37	3.64
Unknown forb		0.3	2.92	29.6	0	0	0	0.3	2.91
Thelypteris sp.	Shield Fern	0.22	2.19	7.41	0	0	0	0.22	2.18
Woodwardia sp.		0.19	1.82	3.7	0	0	0	0.19	1.82
Dichanthelium sp.		0.15	1.46	14.8	0	100	3.7	0.19	1.82
Cornus foemina	Swamp Dogwood	0.19	1.82	3.7	0	0	0	0.19	1.82
Commelina sp.	Day-flower	0.11	1.09	11.1	0	0	0	0.11	1.09
Galium tinctorium	Bedstraw	0.11	1.09	11.1	0	0	0	0.11	1.09
Ampelopsis arborea	Pepper Vine	0.11	1.09	11.1	0	0	0	0.11	1.09
Acer rubrum	Red Maple	0.11	1.09	11.1	0	0	0	0.11	1.09
Smilax sp.		0.07	0.73	7.41	0	0	0	0.07	0.73
Hydrocotyle sp.	Pennywort	0.07	0.73	7.41	0	0	0	0.07	0.73
Celtis laevigata	Sugarberry	0.07	0.73	7.41	0	0	0	0.07	0.73
Lemna sp.	Duckweed	0.07	0.73	7.41	0	0	0	0.07	0.73
Clematis crispa	Leather Flower	0.04	0.36	3.7	0	0	0	0.04	0.36
Gelsemium sempervirens	Yellow Jessamine	0.04	0.36	3.7	0	0	0	0.04	0.36
Celtis laevigata	Sugarberry	0.04	0.36	3.7	0	0	0	0.04	0.36
Oxalis sp.		0.04	0.36	3.7	0	0	0	0.04	0.36
Rubus sp.	Blackberry	0.04	0.36	3.7	0	0	0	0.04	0.36
Carpinus caroliniana	Hornbeam	0.04	0.36	3.7	0	0	0	0.04	0.36
Sambucus canadensis	Elderberry	0.04	0.36	3.7	0	0	0	0.04	0.36
Cicuta mexicana	Water Hemlock	0.04	0.36	3.7	0	0	0	0.04	0.36
Vaccinium sp.		0.04	0.36	3.7	0	0	0	0.04	0.36
TOTAL COVER		**10.1**			**0**			**10.2**	
Bare Ground/Leaf Litter								**89.8**	
Species Richness		**29**							
Shannon-Wiener Diversity Index		**2.342**							
Shrubs (Woody Plants <1 dbh)									
Serenoa repens	Saw Palmetto	9.17	75.9	33.3	0	0	0	9.17	75.9
Sabal palmetto	Cabbage Palm	1.5	12.4	41.7	0	0	0	1.5	12.4
Carpinus caroliniana	Hornbeam	0.42	3.45	8.33	0	0	0	0.42	3.45
Quercus virginiana	Live Oak	0.42	3.45	8.33	0	0	0	0.42	3.45
Baccharis glomerulifolia	Groundsel Tree	0.17	1.38	16.7	0	0	0	0.17	1.38
Celtis laevigata	Sugarberry	0.17	1.38	16.7	0	0	0	0.17	1.38
Sambucus canadensis	Elderberry	0.08	0.69	8.33	0	0	0	0.08	0.69
Liquidambar styraciflua	Sweetgum	0.08	0.69	8.33	0	0	0	0.08	0.69
Amorpha fruticosa	Bastard Indigo	0.08	0.69	8.33	0	0	0	0.08	0.69
TOTAL COVER		**12.1**			**0**			**12.1**	
Species Richness		**9**							
Shannon-Wiener Diversity Index		**0.922**							
Canopy Trees (>4 dbh)									
Sabal palmetto	Cabbage Palm	23.3	40.9	66.7	0	0	0	23.3	40.9
Carya aquatica	Water Hickory	8.33	14.6	16.7	0	0	0	8.33	14.6

Appendix IV. (cont.)

SPECIES		Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name	MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Canopy Trees (>4 dbh)									
Acer rubrum	Red Maple	7.92	13.9	50	0	0	0	7.92	13.9
Ulmus americana	American Elm	7.08	12.4	25	0	0	0	7.08	12.4
Quercus laurifolia	Laurel Oak	6.25	10.9	16.7	0	0	0	6.25	10.9
Fraxinus caroliniana	Pop Ash	2.92	5.11	16.7	0	0	0	2.92	5.11
Liquidambar styraciflua	Sweetgum	0.42	0.73	8.33	0	0	0	0.42	0.73
Cornus foemina	Swamp Dogwood	0.42	0.73	8.33	0	0	0	0.42	0.73
Celtis laevigata	Sugarberry	0.42	0.73	8.33	0	0	0	0.42	0.73
TOTAL COVER		**57.1**			**0**			**57.1**	
Species Richness		**9**							
Shannon-Wiener Diversity Index		**1.681**							
Subcanopy Trees (<4 dbh)									
Celtis laevigata	Sugarberry	2.58	19.6	33.3	0	0	0	2.58	19.6
Ulmus americana	American Elm	2.5	19	25	0	0	0	2.5	19
Cornus foemina	Swamp Dogwood	2.17	16.5	33.3	0	0	0	2.17	16.5
Sabal palmetto	Cabbage Palm	1.67	12.7	16.7	0	0	0	1.67	12.7
Quercus laurifolia	Laurel Oak	1.25	9.49	16.7	0	0	0	1.25	9.49
Acer rubrum	Red Maple	0.83	6.33	16.7	0	0	0	0.83	6.33
Liquidambar styraciflua	Sweetgum	0.5	3.8	16.7	0	0	0	0.5	3.8
Cephalanthus occidentalis	Buttonbush	0.5	3.8	16.7	0	0	0	0.5	3.8
Carpinus caroliniana	Hornbeam	0.42	3.16	8.33	0	0	0	0.42	3.16
Baccharis glomerulifolia	Groundsel Tree	0.42	3.16	8.33	0	0	0	0.42	3.16
Fraxinus caroliniana	Pop Ash	0.25	1.9	25	0	0	0	0.25	1.9
Viburnum obovatum	Small Viburnum	0.08	0.63	8.33	0	0	0	0.08	0.63
TOTAL COVER		**13.2**			**0**			**13.2**	
Species Richness		**12**							
Shannon-Wiener Diversity Index		**2.166**							
Woody Vines									
Smilax sp.		0.42	31.3	8.33	0	0	0	0.42	31.3
Vitis munsoniana	Southern Fox Grape	0.42	31.3	8.33	0	0	0	0.42	31.3
Toxicodendron radicans	Poison Ivy	0.17	12.5	16.7	0	0	0	0.17	12.5
Clematis crispa	Leather Flower	0.08	6.25	8.33	0	0	0	0.08	6.25
Lygodium japonicum	Japanese Climbing Fern	0.08	6.25	8.33	0	0	0	0.08	6.25
Aster carolinianus	Climbing Aster	0.08	6.25	8.33	0	0	0	0.08	6.25
Gelsemium sempervirens	Yellow Jessamine	0.08	6.25	8.33	0	0	0	0.08	6.25
TOTAL COVER		**1.33**			**0**			**1.33**	
Species Richness		**7**							
Shannon-Wiener Diversity Index		**1.680**							

Appendix V. Mean cover (% of sample area), relative abundance (RD, expressed as a percentage of the total cover), and frequency (FREQ, the percentage of quadrats/plots in which a species occurred) for all species within each cover class recorded at Station 4.

SPECIES		Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name	MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Ground Cover									
Ludwigia peruviana	Primrose Willow	5.47	41.6	20.6	0	0	0	5.47	38.1
Aster carolinianus	Climbing Aster	0.82	6.26	14.7	1.18	97.6	2.94	2	13.9
Sambucus canadensis	Elderberry	1.82	13.9	38.2	0	0	0	1.82	12.7
Commelina diffusa	Day-flower	0.97	7.38	35.3	0	0	0	0.97	6.76
Hygrophila sp.		0.94	7.16	11.8	0	0	0	0.94	6.56
Hydrocotle sp.	Pennywort	0.65	4.92	11.8	0	0	0	0.65	4.51
Cicuta mexicana	Water Hemlock	0.62	4.7	11.8	0	0	0	0.62	4.3
Sabal palmetto	Cabbage Palm	0.41	3.13	14.7	0	0	0	0.41	2.87
Toxicodendron radicans	Poison Ivy	0.29	2.24	17.6	0	0	0	0.29	2.05
Rhyncospora sp.		0.29	2.24	2.94	0	0	0	0.29	2.05
Sabal minor	Dwarf Palmetto	0.15	1.12	2.94	0	0	0	0.15	1.02
Unknown 40		0.12	0.89	11.8	0	0	0	0.12	0.82
Acer rubrum	Red Maple	0.12	0.89	11.8	0	0	0	0.12	0.82
Unknown Forb		0.09	0.67	8.82	0	0	0	0.09	0.61
Clematis crispa	Leather Flower	0.09	0.67	8.82	0	0	0	0.09	0.61
Parthenocissus quinquefolia	Virginia Creeper	0.06	0.45	5.88	0	0	0	0.06	0.41
Crinum americanum	String-lily	0.06	0.45	5.88	0	0	0	0.06	0.41
Thelypteris sp.	Shield Fern	0.03	0.22	2.94	0	0	0	0.03	0.2
Boehmeria cylindrica	False Nettle	0.03	0.22	2.94	0	0	0	0.03	0.2
Polygonum sp.	Knotweed	0.03	0.22	2.94	0	0	0	0.03	0.2
Quercus laurifolia	Laurel Oak	0.03	0.22	2.94	0	0	0	0.03	0.2
Cyperus sp.	Sedge	0.03	0.22	2.94	0	0	0	0.03	0.2
Panicum sp.		0	0	0	0.03	2.44	2.94	0.03	0.2
Alternanthera philoxeroides	Alligator-weed	0.03	0.22	2.94	0	0	0	0.03	0.2
TOTAL COVER		**13.1**			**1.21**			**14.4**	
Bare Ground/Leaf Litter								**85.6**	
Species Richness		**24**							
Shannon-Wiener Diversity Index		**2.124**							
Shrub Layer (Woody Plants <1" dbh)									
Ludwigia peruviana	Primrose Willow	10.6	43.5	31.3	1.25	100	6.25	11.9	46.2
Sambucus canadensis	Elderberry	5.75	23.5	75	0	0	0	5.75	22.4
Acer rubrum	Red Maple	5	20.5	6.25	0	0	0	5	19.5
Sabal palmetto	Cabbage Palm	1.69	6.91	37.5	0	0	0	1.69	6.57
Baccharis halimifolia	Groundsel Tree	0.63	2.56	6.25	0	0	0	0.63	2.43
Celtis laevigatus	Sugarberry	0.38	1.53	12.5	0	0	0	0.38	1.46
Fraxinus caroliniana	Pop Ash	0.19	0.77	18.8	0	0	0	0.19	0.73
Ulmus americana	American Elm	0.13	0.51	12.5	0	0	0	0.13	0.49
Boehmeria cylindrica		0.06	0.26	6.25	0	0	0	0.06	0.24
TOTAL COVER		**24.4**			**1.25**			**25.7**	
Species Richness		**9**							
Shannon-Wiener Diversity Index		**1.418**							
Canopy Trees (>4 dbh)									
Sabal palmetto	Cabbage Palm	15.9	36.1	43.8	0	0	0	15.9	36.1
Ulmus americana	American Elm	12.5	28.3	43.8	0	0	0	12.5	28.3
Acer rubrum	Red Maple	6.56	14.9	18.8	0	0	0	6.56	14.9
Salix caroliniana	Carolina Willow	5	11.3	6.25	0	0	0	5	11.3
Celtis laevigatus	Sugarberry	1.88	4.25	6.25	0	0	0	1.88	4.25
Fraxinus caroliniana	Pop Ash	1.63	3.68	18.8	0	0	0	1.63	3.68

Appendix V. (cont.)

SPECIES			Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name		MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Canopy Trees (>4 dbh)										
Nyssa sylvatica	Black Gum		0.63	1.42	6.25	0	0	0	0.63	1.42
TOTAL COVER			**44.1**			**0**			**44.1**	
Species Richness		**7**								
Shannon-Wiener Diversity Index		**1.571**								
Subcanopy Trees (<4 dbh)										
Celtis laevigatus	Sugarberry		3.13	23.6	6.25	0	0	0	3.13	23.6
Sabal palmetto	Cabbage Palm		2.81	21.2	31.3	0	0	0	2.81	21.2
Sambucus canadensis	Elderberry		2.5	18.9	25	0	0	0	2.5	18.9
Ulmus americana	American Elm		2.19	16.5	12.5	0	0	0	2.19	16.5
Fraxinus caroliniana	Pop Ash		1.63	12.3	25	0	0	0	1.63	12.3
Acer rubrum	Red Maple		0.69	5.19	12.5	0	0	0	0.69	5.19
Cepholanthus occidentalis	Buttonbush		0.31	2.36	6.25	0	0	0	0.31	2.36
TOTAL COVER			**13.3**			**0**			**13.3**	
Species Richness		**7**								
Shannon-Wiener Diversity Index		**1.781**								
Woody Vines										
Aster carolinianus	Climbing Aster		1.56	32.9	43.8	0	0	0	1.56	32.9
Toxicodendron radicans	Poison Ivy		1.13	23.7	37.5	0	0	0	1.13	23.7
Ampelopsis arborea	Pepper Vine		0.75	15.8	18.8	0	0	0	0.75	15.8
Smilax sp.	Catbrier		0.63	13.2	12.5	0	0	0	0.63	13.2
Parthenocissus quinquefolia	Virginia Creeper		0.38	7.89	12.5	0	0	0	0.38	7.89
Clematis crispa	Leather Flower		0.25	5.26	25	0	0	0	0.25	5.26
Rubus sp.	Blackberry		0.06	1.32	6.25	0	0	0	0.06	1.32
TOTAL COVER			**4.75**			**0**			**4.75**	
Species Richness		**7**								
Shannon-Wiener Diversity Index		**1.678**								

Appendix VI. Mean cover (% of sample area), relative abundance (RD, expressed as a percentage of the total cover), and frequency (FREQ, the percentage of quadrats/plots in which a species occurred) for all species within each cover class recorded at Station 5.

SPECIES		Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name	MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Ground Cover									
Ludwigia peruviana	Primrose Willow	0.44	3.41	18.8	7.5	61.2	15.6	7.94	31.7
Digitaria sp.	Crabgrass	7.66	59.8	9.38	0	0	0	7.66	30.5
Sambucus canadensis	Elderberry	0.13	0.98	12.5	3.75	30.6	9.38	3.88	15.5
Aster carolinianus	Climbing Aster	0	0	0	0.97	7.91	9.38	0.97	3.87
Unknown 54	Unknown	0.94	7.32	6.25	0	0	0	0.94	3.74
Urena biloba	Caesar-weed	0.81	6.34	9.38	0	0	0	0.81	3.24
Sambucus canadensis	Elderberry	0.56	4.39	15.6	0.03	0.26	3.13	0.59	2.37
Smilax sp.	Catbrier	0.34	2.68	9.38	0	0	0	0.34	1.37
Dichanthelium sp.		0.31	2.44	6.25	0	0	0	0.31	1.25
Quercus laurifolia	Laurel Oak	0.31	2.44	3.13	0	0	0	0.31	1.25
Drymaria cordata	West Indian Chickweed	0.25	1.95	12.5	0	0	0	0.25	1
Rhyncospora sp.		0.19	1.46	6.25	0	0	0	0.19	0.75
Lygodium japonicum	Japanese Climbing Fern	0.16	1.22	3.13	0	0	0	0.16	0.62
Unknown 50		0.09	0.73	9.38	0	0	0	0.09	0.37
Toxicodendron radicans	Poison Ivy	0.09	0.73	9.38	0	0	0	0.09	0.37
Sida sp.		0.06	0.49	6.25	0	0	0	0.06	0.25
Gelsimium sempervirens	Yellow Jessamine	0.06	0.49	6.25	0	0	0	0.06	0.25
Alternanthera philoxeroides	Alligator-weed	0.03	0.24	3.13	0	0	0	0.03	0.12
Boehmeria cylindrica	False Nettle	0.03	0.24	3.13	0	0	0	0.03	0.12
Cyperus sp.		0.03	0.24	3.13	0	0	0	0.03	0.12
Baccharis halimifolia	Groundsel Tree	0.03	0.24	3.13	0	0	0	0.03	0.12
Iris hexagona	Prairie Iris	0.03	0.24	3.13	0	0	0	0.03	0.12
Liquidambar styraciflua	Laurel Oak	0.03	0.24	3.13	0	0	0	0.03	0.12
Rubus sp.	Blackberry	0.03	0.24	3.13	0	0	0	0.03	0.12
Vicia sp.		0.03	0.24	3.13	0	0	0	0.03	0.12
Oxalis sp.		0.03	0.24	3.13	0	0	0	0.03	0.12
Ludwigia repens	Red Ludwigia	0.03	0.24	3.13	0	0	0	0.03	0.12
Ulmus americana	American Elm	0.03	0.24	3.13	0	0	0	0.03	0.12
Campsis radicans	Trumpet Creeper	0.03	0.24	3.13	0	0	0	0.03	0.12
Apios americana	Groundnut	0.03	0.24	3.13	0	0	0	0.03	0.12
TOTAL COVER		**12.8**			**12.3**			**25.1**	
Bare Ground/Leaf Litter								**74.9**	
Species Richness		**30**							
Shannon-Wiener Diversity Index		**1.926**							
Shrub Layer (Woody Plants <1" dbh)									
Ludwigia peruviana	Primrose Willow	0.57	7.48	28.6	19.3	60.5	42.9	19.9	50.3
Sambucus canadensis	Elderberry	1.21	15.9	64.3	12.1	38.1	35.7	13.4	33.8
Unknown 54		3.57	46.7	7.14	0	0	0	3.57	9.04
Cepholanthus occidentalis	Buttonbush	0.36	4.67	7.14	0.36	1.12	7.14	0.71	1.81
Fraxinus caroliniana	Pop Ash	0.57	7.48	28.6	0	0	0	0.57	1.45
Hyptis mutabilis		0.36	4.67	7.14	0	0	0	0.36	0.9
Sabal palmetto	Cabbage Palm	0.36	4.67	7.14	0	0	0	0.36	0.9
Callicarpa americana	Beautybush	0.07	0.93	7.14	0	0	0	0.07	0.18
Carya aquatica	Water Hickory	0.07	0.93	7.14	0	0	0	0.07	0.18
Amorph fruticosa	Lead Tree	0.07	0.93	7.14	0	0	0	0.07	0.18
Eupatorium capillifolium	Dog Fennel	0	0	0	0.07	0.22	7.14	0.07	0.18
Baccharis halimifolia	Groundsel Tree	0.07	0.93	7.14	0	0	0	0.07	0.18
Ulmus americana	American Elm	0.07	0.93	7.14	0	0	0	0.07	0.18
Acer rubrum	Red Maple	0.07	0.93	7.14	0	0	0	0.07	0.18
Salix caroliniana	Carolina Willow	0.07	0.93	7.14	0	0	0	0.07	0.18

Appendix VI. (cont.)

SPECIES			Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name		MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Shrub Layer (Woody Plants <1" dbh)										
Quercus nigra	Water Oak		0.07	0.93	7.14	0	0	0	0.07	0.18
Liquidambar styraciflua	Sweetgum		0.07	0.93	7.14	0	0	0	0.07	0.18
TOTAL COVER			**7.64**			**31.9**			**39.5**	
Species Richness		**17**								
Shannon-Wiener Diversity Index		**1.263**								
Canopy Trees (>4 dbh)										
Fraxinus caroliniana	Pop Ash		19.4	51.5	50	0	0	0	19.4	51.5
Sabal palmetto	Cabbage Palm		6.5	17.2	28.6	0	0	0	6.5	17.2
Acer rubrum	Red Maple		6.07	16.1	35.7	0	0	0	6.07	16.1
Liquidambar styraciflua	Sweetgum		3.57	9.47	7.14	0	0	0	3.57	9.47
Ulmus americana	American Elm		2.14	5.68	14.3	0	0	0	2.14	5.68
TOTAL COVER			**37.7**			**0**			**37.7**	
Species Richness		**5**								
Shannon-Wiener Diversity Index		**1.325**								
Subcanopy Trees (<4 dbh)										
Ludwigia peruviana	Primrose Willow		0.57	12.5	14.3	5.5	74	21.4	6.07	50.6
Sambucus canadensis	Elderberry		1.64	35.9	14.3	1.93	26	7.14	3.57	29.8
Sabal palmetto	Cabbage Palm		1.43	31.3	7.14	0	0	0	1.43	11.9
Cepholanthus occidentalis	Buttonbush		0.36	7.81	7.14	0	0	0	0.36	2.98
Liquidambar styraciflua	Sweetgum		0.36	7.81	7.14	0	0	0	0.36	2.98
Ulmus americana	American Elm		0.07	1.56	7.14	0	0	0	0.07	0.6
Fraxinus caroliniana	Pop Ash		0.07	1.56	7.14	0	0	0	0.07	0.6
Quercus nigra	Water Oak		0.07	1.56	7.14	0	0	0	0.07	0.6
TOTAL COVER			**4.57**			**7.43**			**12**	
Species Richness		**8**								
Shannon-Wiener Diversity Index		**1.259**								
Woody Vines										
Aster carolinianus	Climbing Aster		0.43	26.1	7.14	1.14	55.2	21.4	1.57	55
Rubus sp.	Blackberry		0.36	21.7	0	0	0	0	0.36	12.5
Toxicodendron radicans	Poison Ivy		0.21	13	7.14	0	0	0	0.21	7.5
Vitis munsoniana	Southern Fox Grape		0.14	8.7	0	0.07	3.45	7.14	0.21	7.5
Smilax sp.	Catbrier		0.14	8.7	0	0	0	0	0.14	5
Gelsimium sempervirens	Yellow Jessamine		0.14	8.7	0	0	0	0	0.14	5
Campsis radicans	Trumpet Creeper		0.07	4.35	0	0	0	0	0.07	2.5
Parthenocissus quinquefolia	Virginia Creeper		0.07	4.35	0	0	0	0	0.07	2.5
Ipomea sp.			0.07	4.35	0	0	0	0	0.07	2.5
TOTAL COVER			**1.64**			**1.21**			**2.86**	
Species Richness		**9**								
Shannon-Wiener Diversity Index		**1.554**								

Appendix VII. Mean cover (% of sample area), relative abundance (RD, expressed as a percentage of the total cover), and frequency (FREQ, the percentage of quadrats/plots in which a species occurred) for all species within each cover class recorded at Station 6.

SPECIES			Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name		MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Ground Cover										
Ludwigia peruviana	Primrose Willow		0.37	5.73	10	8.33	64.8	23.3	8.7	45.2
Sambucus canadensis	Elderberry		3.37	52.6	13.3	2.83	22	16.7	6.2	32.2
Salix caroliniana	Carolina Willow		0.37	5.73	6.67	1	7.77	6.67	1.37	7.09
Urena lobata	Caesar-weed		0.9	14.1	13.3	0	0	0	0.9	4.67
Saururus cernuus	Lizard's-Tail		0.7	10.9	10	0	0	0	0.7	3.63
Aster carolinianus	Climbing Aster		0	0	0	0.7	5.44	6.67	0.7	3.63
Smilax sp.	Greenbriers		0.23	3.65	10	0	0	0	0.23	1.21
Thelypteris sp.	Shield Fern		0.17	2.6	3.33	0	0	0	0.17	0.87
Unknown Forb.			0.07	1.04	6.67	0	0	0	0.07	0.35
Polygonum sp.	Smartweed		0.03	0.52	3.33	0	0	0	0.03	0.17
Vitis sp.	Grape Vine		0.03	0.52	3.33	0	0	0	0.03	0.17
Ilex cassine	Dahoon Holly		0.03	0.52	3.33	0	0	0	0.03	0.17
Sabal minor	Dwarf Palmetto		0.03	0.52	3.33	0	0	0	0.03	0.17
Parthenocissus quinquefolia	Virginia Creeper		0.03	0.52	3.33	0	0	0	0.03	0.17
Pilea sp.	Clearweed		0.03	0.52	3.33	0	0	0	0.03	0.17
Ludwigia repens	Red Ludwigia		0.03	0.52	3.33	0	0	0	0.03	0.17
TOTAL COVER			**6.4**			**12.9**			**19.3**	
Bare Ground/Leaf Litter									**80.7**	
Species Richness		**16**								
Shannon-Wiener Diversity Index		**1.487**								
Shrubs (Woody Plants <1 dbh)										
Ludwigia peruviana	Primrose Willow		0.08	1.52	7.69	16.2	75	23.1	16.2	61
Sambucus canadensis	Elderberry		1.54	30.3	15.4	5.38	25	15.4	6.92	26
Urena lobata	Caesar-weed		1.92	37.9	15.4	0	0	0	1.92	7.23
Sabal palmetto	Cabbage Palm		1.15	22.7	15.4	0	0	0	1.15	4.34
	Unknown #54		0.38	7.58	7.69	0	0	0	0.38	1.45
TOTAL COVER			**5.08**			**21.5**			**26.6**	
Species Richness		**4**								
Shannon-Wiener Diversity Index		**1.039**								
Canopy Trees (>4 dbh)										
Salix caroliniana	Carolina Willow		6.54	31.5	30.8	8.85	74.2	23.1	15.4	47.1
Sabal palmetto	Cabbage Palm		7.31	35.2	23.1	0	0	0	7.31	22.4
Quercus laurifolia	Laurel Oak		5.38	25.9	7.69	0	0	0	5.38	16.5
Ludwigia peruviana	Primrose Willow		0	0	0	3.08	25.8	7.69	3.08	9.41
Ulmus americana	American Elm		1.15	5.56	7.69	0	0	0	1.15	3.53
Fraxinus caroliniana	Pop Ash		0.38	1.85	7.69	0	0	0	0.38	1.18
TOTAL COVER			**20.8**			**11.9**			**32.7**	
Species Richness		**6**								
Shannon-Wiener Diversity Index		**1.379**								
Subcanopy Trees (<4 dbh)										
Sambucus canadensis	Elderberry		0	0	0	11.9	52.5	46.2	11.9	47.5
Ludwigia peruviana	Primrose Willow		0.08	3.23	7.69	8.46	37.3	30.8	8.54	34
Salix caroliniana	Carolina Willow		2.31	96.8	15.4	2.31	10.2	15.4	4.62	18.4
TOTAL COVER			**2.38**			**22.7**			**25.1**	
Species Richness		**3**								
Shannon-Wiener Diversity Index		**1.032**								

Appendix VII. (cont.)

SPECIES			Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name		MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Woody Vines										
Vitis sp.	Grape Vine		3.15	85.4	15.4	0.38	11.1	0	3.54	49.5
Clusia rosea	Balsam Apple		0.08	2.08	7.69	2.31	66.7	0	2.38	33.3
Toxicodendron radicans	Poison Ivy		0.38	10.4	7.69	0.38	11.1	7.69	0.77	10.8
Mikania scandens			0	0	0	0.38	11.1	0	0.38	5.38
Smilax sp.	Greenbriers		0.08	2.08	7.69	0	0	0	0.08	1.08
TOTAL COVER			**3.69**			**3.46**			**7.15**	
Species Richness		**5**								
Shannon-Wiener Diversity Index		**1.160**								

Appendix VIII. Mean cover (% of sample area), relative abundance (RD, expressed as a percentage of the total cover), and frequency (FREQ, the percentage of quadrats/plots in which a species occurred) for all species within each cover class recorded at Station 7.

SPECIES		Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name	MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Ground Cover									
Commelina sp.	Day-Flower	5.34	23.8	59.4	5.66	21.8	15.6	11	22.7
Juncus effusus	Soft Rush	0.84	3.76	12.5	5.22	20.1	28.1	6.06	12.5
Eupatorium sp.	Dog Fennel	0.5	2.23	21.9	4.53	17.4	28.1	5.03	10.4
Typha sp.	Cattail	0.19	0.84	6.25	4.06	15.6	9.38	4.25	8.78
Parietaria sp.		2.78	12.4	28.1	0	0	0	2.78	5.75
Saururus cernuus	Lizards-Tail	2.66	11.8	12.5	0	0	0	2.66	5.49
Sagittaria sp.		0.03	0.14	3.13	2.53	9.75	12.5	2.56	5.29
Rubus sp.	Blackberry	2.22	9.89	9.38	0	0	0	2.22	4.58
Iris hexagona	Prairie Iris	1.56	6.96	3.13	0	0	0	1.56	3.23
Setaria magna	Giant Bristlegrass	0	0	0	1.41	5.42	12.5	1.41	2.91
Alternanthera philoxeroides	Alligator-weed	0.09	0.42	9.38	1.25	4.81	3.13	1.34	2.78
Cyperus sp.		1	4.46	12.5	0.03	0.12	3.13	1.03	2.13
Hyptis sp.		0.94	4.18	9.38	0	0	0	0.94	1.94
Sporobolus indicus	Smutgrass	0.94	4.18	6.25	0	0	0	0.94	1.94
Pontederia cordata	Pickerelweed	0.03	0.14	3.13	0.63	2.41	3.13	0.66	1.36
Ludwigia peruviana	Primrose Willow	0.03	0.14	3.13	0.63	2.41	3.13	0.66	1.36
Aster carolinianus	Climbing Aster	0.5	2.23	6.25	0.03	0.12	3.13	0.53	1.1
Sambucus canadensis	Elderberry	0.47	2.09	9.38	0	0	0	0.47	0.97
Thelypteris sp.	Shield Fern	0.47	2.09	6.25	0	0	0	0.47	0.97
Baccharis glomerulifolia	Groundsel Tree	0.31	1.39	6.25	0	0	0	0.31	0.65
Hydrocotyle sp.	Pennywort	0.31	1.39	3.13	0	0	0	0.31	0.65
Lygodium japanicum	Japanese Climbing Fern	0.19	0.84	6.25	0	0	0	0.19	0.39
Dichanthelium sp.		0.19	0.84	6.25	0	0	0	0.19	0.39
	unknown #76	0.16	0.7	3.13	0	0	0	0.16	0.32
Polygonum sp.	Smartweed	0.16	0.7	15.6	0	0	0	0.16	0.32
Mikania sp.		0.09	0.42	9.38	0	0	0	0.09	0.19
Galium sp.	Bedstraw	0.06	0.28	6.25	0	0	0	0.06	0.13
Oxalis sp.		0.06	0.28	6.25	0	0	0	0.06	0.13
Colocasia esculentum	Wild Taro	0.06	0.28	6.25	0	0	0	0.06	0.13
Salvinia sp.	Water Spangles	0.03	0.14	3.13	0	0	0	0.03	0.06
Ariethria sp. ?		0.03	0.14	3.13	0	0	0	0.03	0.06
Pilea sp.	Clearweed	0.03	0.14	3.13	0	0	0	0.03	0.06
Phytolacca americana	Poke weed	0.03	0.14	3.13	0	0	0	0.03	0.06
Parthenocissus quinquefolia	Virginia Creeper	0.03	0.14	3.13	0	0	0	0.03	0.06
Sida sp.	Broomweed	0.03	0.14	3.13	0	0	0	0.03	0.06
Ludwigia repens	Red Ludwigia	0.03	0.14	3.13	0	0	0	0.03	0.06
Rhynchospora sp.		0.03	0.14	3.13	0	0	0	0.03	0.06
TOTAL COVER		**22.4**			**26**			**48.4**	
Bare Ground/Leaf Litter								**51.6**	
Species Richness	**37**								
Shannon-Wiener Diversity Index	**2.691**								
Shrubs (Woody Plants <1 dbh)									
Eupatorium sp.	Dog Fennel	2.29	41.6	42.9	15.8	91.7	64.3	18.1	79.6
Ludwigia peruviana	Primrose Willow	0.86	15.6	28.6	1.07	6.22	14.3	1.93	8.49
Sambucus canadensis	Elderberry	1.14	20.8	21.4	0.36	2.07	7.14	1.5	6.6
Hyptis sp.		0.71	13	7.14	0	0	0	0.71	3.14
Sabal palmetto	Cabbage Palm	0.43	7.79	14.3	0	0	0	0.43	1.89
Asclepias perennis		0.07	1.3	7.14	0	0	0	0.07	0.31
TOTAL COVER		**5.5**			**17.2**			**22.7**	
Species Richness	**6**								
Shannon-Wiener Diversity Index	**0.773**								

Appendix VIII. (cont.)

SPECIES			Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name		MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Canopy Trees (>4 dbh)										
Sabal palmetto	Cabbage Palm		5	77.8	14.3	2.86	100	7.14	7.86	84.6
Quercus nigra	Water Oak		0.71	11.1	7.14	0	0	0	0.71	7.69
Liquidambar styraciflua	Sweetgum		0.71	11.1	7.14	0	0	0	0.71	7.69
TOTAL COVER			**6.43**			**2.86**			**9.29**	
Species Richness		**3**								
Shannon-Wiener Diversity Index		**0.536**								
Subcanopy Trees (<4 dbh)										
Eupatorium sp.	Dog Fennel		0	0	0	4.64	48.1	28.6	4.64	48.1
Ludwigia peruviana	Primrose Willow		0	0	0	2.5	25.9	28.6	2.5	25.9
Baccharis glomerulifolia	Groundsel Tree		0	0	0	1.79	18.5	21.4	1.79	18.5
Sambucus canadensis	Elderberry		0	0	0	0.71	7.41	7.14	0.71	7.41
TOTAL COVER			**0**			**9.64**			**9.64**	
Species Richness		**4**								
Shannon-Wiener Diversity Index		**1.207**								
Woody Vines										
Rubus sp.	Blackberry		3.57	80.6	0	2.14	22.2	7.14	5.71	47.9
Vitis sp.	Grape vine		0.36	8.06	0	2.86	29.6	14.3	3.21	26.9
Aster carolinianus	Climbing Aster		0.07	1.61	0	1.07	11.1	7.14	1.14	9.58
Toxicodendron radicans	Poison Ivy		0.07	1.61	0	0.71	7.41	7.14	0.79	6.59
Mikania sp.			0	0	0	0.71	7.41	7.14	0.71	5.99
Lygodium japanicum	Japanese Climbing Fern		0.36	8.06	0	0	0	0	0.36	2.99
TOTAL COVER			**4.43**			**7.5**			**11.9**	
Species Richness		**6**								
Shannon-Wiener Diversity Index		**1.383**								

Appendix IX. Mean cover (% of sample area), relative abundance (RD, expressed as a percentage of the total cover), and frequency (FREQ, the percentage of quadrats/plots in which a species occurred) for all species within each cover class recorded at Station 8.

SPECIES		Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name	MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Ground Cover									
Paspalum notatum	Bahiagrass	20.4	31.7	42.9	0	0	0	20.4	26
Brachiaria mutica	Paragrass	3.71	5.79	28.6	14.3	100	21.4	18	23
Serenoa repens	Saw Palmetto	9.29	14.5	14.3	0	0	0	9.29	11.8
Ptilimnium capillaceum	Mock Bishop's-weed	6.86	10.7	28.6	0	0	0	6.86	8.74
Parietaria sp.		3.57	5.57	21.4	0	0	0	3.57	4.55
Sambucus canadensis	Elderberry	3.21	5.01	21.4	0	0	0	3.21	4.1
Oplismenus sp.	Basketgrass	2.86	4.45	14.3	0	0	0	2.86	3.64
Bidens mitis	Beggar-ticks	2.86	4.45	7.14	0	0	0	2.86	3.64
Smilax sp.	Greenbriers	2.21	3.45	14.3	0	0	0	2.21	2.82
Parietaria sp.		2.14	3.34	7.14	0	0	0	2.14	2.73
Toxicodendron radicans	Poison Ivy	1.21	1.89	28.6	0	0	0	1.21	1.55
Sida sp.	Broomweed	0.86	1.34	28.6	0	0	0	0.86	1.09
Cyperus sp.		0.79	1.22	14.3	0	0	0	0.79	1
Oxalis sp.		0.79	1.22	21.4	0	0	0	0.79	1
Myrica cerifera	Wax Myrtle	0.79	1.22	14.3	0	0	0	0.79	1
Galium sp.	Bedstraw	0.5	0.78	21.4	0	0	0	0.5	0.64
Hyptis sp.		0.5	0.78	21.4	0	0	0	0.5	0.64
Ambrosia artemisiifolia	Common Ragweed	0.43	0.67	14.3	0	0	0	0.43	0.55
Geranium carolinianum	Cranesbill	0.29	0.45	28.6	0	0	0	0.29	0.36
Parthenocissus quinquefolia	Virginia Creeper	0.14	0.22	14.3	0	0	0	0.14	0.18
Pouzolzia zeylandica		0.07	0.11	7.14	0	0	0	0.07	0.09
Eupatorium sp.	Dog Fennel	0.07	0.11	7.14	0	0	0	0.07	0.09
Quercus virginiana	Live Oak	0.07	0.11	7.14	0	0	0	0.07	0.09
Quercus nigra	Water Oak	0.07	0.11	7.14	0	0	0	0.07	0.09
Alternanthera philoxeroides	Alligator-weed	0.07	0.11	7.14	0	0	0	0.07	0.09
Aster caroliniana	Climbing Aster	0.07	0.11	7.14	0	0	0	0.07	0.09
Solanum americanum	Common Nightshade	0.07	0.11	7.14	0	0	0	0.07	0.09
Clematis crispa	Leather Flower	0.07	0.11	7.14	0	0	0	0.07	0.09
Commelina sp.	Dayflower	0.07	0.11	7.14	0	0	0	0.07	0.09
Andropogon sp.	Bluestem	0.07	0.11	7.14	0	0	0	0.07	0.09
Acer rubrum	Red Maple	0.07	0.11	7.14	0	0	0	0.07	0.09
TOTAL COVER		**64.1**			**14.3**			**78.4**	
Bare Ground/Leaf Litter								**21.6**	
Species Richness		**31**							
Shannon-Wiener Diversity Index		**2.313**							
Shrubs (Woody Plants <1 dbh)									
Bidens mitis	Beggar-ticks	8.33	56.8	16.7	0	0	0	8.33	56.8
Sambucus canadensis	Elderberry	2.5	17	33.3	0	0	0	2.5	17
Myrica cerifera	Wax Myrtle	0.83	5.68	16.7	0	0	0	0.83	5.68
Serenoa repens	Saw Palmetto	0.83	5.68	16.7	0	0	0	0.83	5.68
Acer rubrum	Red Maple	0.33	2.27	33.3	0	0	0	0.33	2.27
Solanum viarum	Soda Apple	0.33	2.27	33.3	0	0	0	0.33	2.27
Hyptis sp.		0.33	2.27	33.3	0	0	0	0.33	2.27
Sida sp.	Broomweed	0.33	2.27	33.3	0	0	0	0.33	2.27
Sabal palmetto	Cabbage Palm	0.17	1.14	16.7	0	0	0	0.17	1.14
Quercus virginiana	Live Oak	0.17	1.14	16.7	0	0	0	0.17	1.14
Quercus laurifolia	Laurel Oak	0.17	1.14	16.7	0	0	0	0.17	1.14
Urena lobata	Caesar-weed	0.17	1.14	16.7	0	0	0	0.17	1.14

Appendix IX. (cont.)

SPECIES			Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name		MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Shrubs (Woody Plants <1 dbh)										
Hypericum sp.	St. John's Wort		0.17	1.14	16.7	0	0	0	0.17	1.14
TOTAL COVER			**14.7**			**0**			**14.7**	
Species Richness		**13**								
Shannon-Wiener Diversity Index		**1.547**								
Canopy Trees (>4 dbh)										
Myrica cerifera	Wax Myrtle		2.5	60	16.7	0	0	0	2.5	60
Quercus laurifolia	Laurel Oak		0.83	20	16.7	0	0	0	0.83	20
Sambucus canadensis	Elderberry		0.83	20	16.7	0	0	0	0.83	20
TOTAL COVER			**4.17**			**0**			**4.17**	
Species Richness		**3**								
Shannon-Wiener Diversity Index		**0.950**								
Subcanopy Trees (<4 dbh)										
Cornus foemina	Swamp Dogwood		3.33	37.7	33.3	0	0	0	3.33	37.7
Quercus laurifolia	Laurel Oak		3.33	37.7	16.7	0	0	0	3.33	37.7
Myrica cerifera	Wax Myrtle		0.83	9.43	16.7	0	0	0	0.83	9.43
Acer rubrum	Red Maple		0.83	9.43	16.7	0	0	0	0.83	9.43
Quercus virginiana	Live Oak		0.5	5.66	50	0	0	0	0.5	5.66
TOTAL COVER			**8.83**			**0**			**8.83**	
Species Richness		**5**								
Shannon-Wiener Diversity Index		**1.344**								
Woody Vines										
Rubus sp.	Blackberry		5	30.3	33.3	0	0	0	5	30.3
Vitis sp.	Grape Vine		3.33	20.2	16.7	0	0	0	3.33	20.2
Aster caroliniana	Climbing Aster		3.33	20.2	33.3	0	0	0	3.33	20.2
Clusia rosea	Balsam Apple		2.5	15.2	16.7	0	0	0	2.5	15.2
Clematis crispa	Leather Flower		1.67	10.1	33.3	0	0	0	1.67	10.1
Smilax sp.	Greenbriers		0.33	2.02	33.3	0	0	0	0.33	2.02
Lygodium japanicum	Japanese Climbing Fern		0.17	1.01	16.7	0	0	0	0.17	1.01
Pouzolzia zeylandica			0.17	1.01	16.7	0	0	0	0.17	1.01
TOTAL COVER			**16.5**			**0**			**16.5**	
Species Richness		**8**								
Shannon-Wiener Diversity Index		**1.697**								

Appendix X. Mean cover (% of sample area), relative abundance (RD, expressed as a percentage of the total cover), and frequency (FREQ, the percentage of quadrats/plots in which a species occurred) for all species within each cover class recorded at Station 9.

SPECIES		Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name	MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Ground Cover									
Poaceae	Unknown grass*	12.7	21.9	55.6	0	0	0	12.7	18.5
Paspalum notatum	Bahiagrass	9.06	15.7	38.9	0	0	0	9.06	13.2
Urena lobata	Caesar-weed	6.94	12	33.3	0.06	0.52	5.56	7	10.2
Commelina sp.	Dayflower	5.33	9.23	61.1	0.56	5.15	5.56	5.89	8.59
Rubus sp.	Blackberry	3.33	5.77	27.8	2.28	21.1	16.7	5.61	8.18
Smilax sp.	Greenbriers	4.89	8.46	27.8	0	0	0	4.89	7.13
Ludwigia peruviana	Primrose Willow	0	0	0	4.44	41.2	5.56	4.44	6.48
Centella sp.	Coinwort	2.83	4.9	16.7	0	0	0	2.83	4.13
Ptilimnium capillaceum	Mock Bishop's-weed	2.5	4.33	22.2	0	0	0	2.5	3.65
Unknown Fern		0.06	0.1	5.56	1.94	18	11.1	2	2.92
Sida sp.	Broomweed	1.5	2.6	33.3	0	0	0	1.5	2.19
Saururus cernuus	Lizards-Tail	1.44	2.5	11.1	0	0	0	1.44	2.11
Sambucus canadensis	Elderberry	1.17	2.02	11.1	0	0	0	1.17	1.7
Pouzolzia zeylandica		1.11	1.92	11.1	0	0	0	1.11	1.62
Paspalum urvillei	Vaseygrass	1.11	1.92	5.56	0	0	0	1.11	1.62
Cyperus sp.		0.94	1.63	22.2	0	0	0	0.94	1.38
Brachiaria mutica	Paragrass	0	0	0	0.89	8.25	11.1	0.89	1.3
Alternanthera philoxeroides	Alligator-weed	0.61	1.06	16.7	0	0	0	0.61	0.89
Thelypteris sp.	Shield Fern	0	0	0	0.56	5.15	5.56	0.56	0.81
Oxalis sp.		0.5	0.87	27.8	0	0	0	0.5	0.73
Sagittaria sp.		0.28	0.48	5.56	0	0	0	0.28	0.41
Bidens mitis	Beggar-ticks	0.28	0.48	5.56	0	0	0	0.28	0.41
Galium sp.	Bedstraw	0.22	0.38	22.2	0	0	0	0.22	0.32
Desmodium sp.		0.17	0.29	16.7	0	0	0	0.17	0.24
Quercus laurifolia	Laurel Oak	0.17	0.29	16.7	0	0	0	0.17	0.24
Toxicodendron radicans	Poison Ivy	0.17	0.29	16.7	0	0	0	0.17	0.24
Acer rubrum	Red Maple	0.11	0.19	11.1	0	0	0	0.11	0.16
Colocasia esculenta	Wild Taro	0.06	0.1	5.56	0	0	0	0.06	0.08
Boehmeria sp.	False Nettle	0.06	0.1	5.56	0	0	0	0.06	0.08
Cyanodon dactylon	Bermudagrass	0.06	0.1	5.56	0	0	0	0.06	0.08
Eupatorium sp.	Dog Fennel	0	0	0	0.06	0.52	5.56	0.06	0.08
Aster caroliniana	Climbing Aster	0.06	0.1	5.56	0	0	0	0.06	0.08
Desmodium sp.		0.06	0.1	5.56	0	0	0	0.06	0.08
Sabal palmetto	Cabbage Palm	0.06	0.1	5.56	0	0	0	0.06	0.08
Quercus nigra	Water Oak	0.06	0.1	5.56	0	0	0	0.06	0.08
TOTAL COVER		**57.8**			**10.8**			**68.6**	
Bare Ground/Leaf Litter								**31.4**	
Species Richness		**35**							
Shannon-Wiener Diversity Index		**2.713**							
Shrubs (Woody Plants <1 dbh)									
Urena lobata	Caesar-weed	6.38	39.5	37.5	0	0	0	6.38	39.5
Sida spp.	Broomweed	3.88	24	37.5	0	0	0	3.88	24
Sabal palmetto	Cabbage Palm	2	12.4	37.5	0	0	0	2	12.4
Sambucus canadensis	Elderberry	1.25	7.75	25	0	0	0	1.25	7.75
Eupatorium spp.	Dog Fennel	0.63	3.88	12.5	0	0	0	0.63	3.88
Boehmeria spp.	False Nettle	0.63	3.88	12.5	0	0	0	0.63	3.88
Solanum viarum	Soda Apple	0.63	3.88	12.5	0	0	0	0.63	3.88
Acer rubrum	Red Maple	0.25	1.55	25	0	0	0	0.25	1.55
Prunus caroliniana	Carolina Laurel Cherry	0.13	0.78	12.5	0	0	0	0.13	0.78
Baccharis glomerulifolia	Groundsel Tree	0.13	0.78	12.5	0	0	0	0.13	0.78

Appendix X. (cont.)

SPECIES			Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name		MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Shrubs (Woody Plants <1 dbh)										
Ulmus americana	American Elm		0.13	0.78	12.5	0	0	0	0.13	0.78
Quercus laurifolia	Laurel Oak		0.13	0.78	12.5	0	0	0	0.13	0.78
TOTAL COVER			**16.1**			**0**			**16.1**	
Species Richness		**12**								
Shannon-Wiener Diversity Index		**1.760**								
Canopy Trees (>4 dbh)										
Quercus laurifolia	Laurel Oak		56.4	91.9	100	0	0	0	56.4	91.9
Quercus nigra	Water Oak		3.75	6.11	12.5	0	0	0	3.75	6.11
Sabal palmetto	Cabbage Palm		1.25	2.04	12.5	0	0	0	1.25	2.04
TOTAL COVER			**61.4**			**0**			**61.4**	
Species Richness		**3**								
Shannon-Wiener Diversity Index		**0.328**								
Subcanopy Trees (<4 dbh)										
Sabal palmetto	Cabbage Palm		0.63	45.5	12.5	0	0	0	0.63	45.5
Acer rubrum	Red Maple		0.63	45.5	12.5	0	0	0	0.63	45.5
Ulmus americana	American Elm		0.13	9.09	12.5	0	0	0	0.13	9.09
TOTAL COVER			**1.38**			**0**			**1.38**	
Species Richness		**3**								
Shannon-Wiener Diversity Index		**0.935**								
Woody Vines										
Smilax spp.	Greenbriers		2.13	54.8	50	0	0	0	2.13	54.8
Toxicodendron radicans	Poison Ivy		0.63	16.1	12.5	0	0	0	0.63	16.1
Clusia rosea	Balsam Apple		0.63	16.1	12.5	0	0	0	0.63	16.1
Parthenocissus quinquefolia	Virginia Creeper		0.25	6.45	25	0	0	0	0.25	6.45
Vitis spp.	Grape Vine		0.13	3.23	12.5	0	0	0	0.13	3.23
Rubus spp.	Blackberry		0.13	3.23	12.5	0	0	0	0.13	3.23
TOTAL COVER			**3.88**			**0**			**3.88**	
Species Richness		**6**								
Shannon-Wiener Diversity Index		**1.316**								

* inflorescence not produced at time of collection

Appendix XI. Mean cover (% of sample area), relative abundance (RD, expressed as a percentage of the total cover), and frequency (FREQ, the percentage of quadrats/plots in which a species occurred) for all species within each cover class recorded at Station 10.

SPECIES			Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name		MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Ground Cover										
Brachiaria mutica	Paragrass		0.11	1.02	8.33	39.4	80.1	41.7	39.6	65.8
	Algae		9.72	89.1	11.1	0	0	0	9.72	16.2
Typha sp.	Cattail		0	0	0	3.39	6.88	25	3.39	5.64
Clematis crispa	Leather Flower		0	0	0	3.19	6.49	5.56	3.19	5.31
Colocasia esculenta	Wild Taro		1.03	9.41	11.1	0.83	1.69	5.56	1.86	3.09
Peltandra sp.	Spoonflower		0	0	0	1.28	2.6	8.33	1.28	2.12
Pontederia cordata	Pickerelweed		0	0	0	0.72	1.47	8.33	0.72	1.2
Sesbania sp.			0	0	0	0.17	0.34	5.56	0.17	0.28
Vitis sp.	Grape Vine		0	0	0	0.14	0.28	2.78	0.14	0.23
Mikania sp.			0	0	0	0.06	0.11	5.56	0.06	0.09
Quercus laurifolia	Laurel Oak		0.03	0.25	2.78	0	0	0	0.03	0.05
Commelina sp.	Day-flower		0.03	0.25	2.78	0	0	0	0.03	0.05
TOTAL COVER			**10.9**			**49.2**			**60.1**	
Bare Ground/Leaf Litter									**39.9**	
Species Richness		**12**								
Shannon-Wiener Diversity Index		**1.175**								
Shrubs (Woody Plants <1 dbh)										
Ludwigia peruviana	Primrose Willow		0	0	0	2.81	42.1	12.5	2.81	41.3
Smilax sp.	Greenbriers		0	0	0	2.5	37.4	6.25	2.5	36.7
Salix caroliniana	Carolina Willow		0.06	50	6.25	0.94	14	6.25	1	14.7
Sambucus canadensis	Elderberry		0	0	0	0.31	4.67	6.25	0.31	4.59
Sabal palmetto	Cabbage Palm		0	0	0	0.06	0.93	6.25	0.06	0.92
Quercus laurifolia	Laurel Oak		0.06	50	6.25	0	0	0	0.06	0.92
Sesbania sp.			0	0	0	0.06	0.93	6.25	0.06	0.92
TOTAL COVER			**0.13**			**6.69**			**6.81**	
Species Richness		**7**								
Shannon-Wiener Diversity Index		**1.285**								
Canopy Trees (>4 dbh)										
Salix caroliniana	Carolina Willow		1.38	68.8	31.3	21.6	81	75	23	80.2
Quercus laurifolia	Laurel Oak		0.63	31.3	6.25	5	18.7	6.25	5.63	19.6
Sabal palmetto	Cabbage Palm		0	0	0	0.06	0.23	6.25	0.06	0.22
TOTAL COVER			**2**			**26.7**			**28.7**	
Species Richness		**3**								
Shannon-Wiener Diversity Index		**0.510**								
Subcanopy Trees (<4 dbh)										
Salix caroliniana	Carolina Willow		3.81	100	18.8	0.31	10.9	6.25	4.13	61.7
Ludwigia peruviana	Primrose Willow		0	0	0	1.88	65.2	18.8	1.88	28
Quercus laurifolia	Laurel Oak		0	0	0	0.38	13	12.5	0.38	5.61
Cornus foemina	Swamp Dogwood		0	0	0	0.31	10.9	6.25	0.31	4.67
TOTAL COVER			**3.81**			**2.88**			**6.69**	
Species Richness		**4**								
Shannon-Wiener Diversity Index		**0.959**								
Woody Vines										
Aster caroliniana	Climbing Aster		0	0	0	0.94	35.7	6.25	0.94	35.7
Mikania sp.			0	0	0	0.75	28.6	25	0.75	28.6
Smilax sp.	Greenbriers		0	0	0	0.63	23.8	6.25	0.63	23.8
Clematis crispa	Leather Flower		0	0	0	0.31	11.9	6.25	0.31	11.9
TOTAL COVER			**0**			**2.63**			**2.63**	
Species Richness		**4**								
Shannon-Wiener Diversity Index		**1.321**								

Appendix XII. Mean cover (% of sample area), relative abundance (RD, expressed as a percentage of the total cover), and frequency (FREQ, the percentage of quadrats/plots in which a species occurred) for all species within each cover class recorded at Station 11.

SPECIES			Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name		MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Ground Cover										
Ludwigia peruviana	Primrose Willow		0.23	1.22	11.4	18.9	42.7	54.3	19.1	30.3
Thelypteris sp.	Shield Fern		0	0	0	18.1	40.8	62.9	18.1	28.6
Peltandra sp.			14.3	76.4	85.7	0	0	0	14.3	22.8
Sambucus canadensis	Elderberry		0.37	1.98	11.4	3	6.78	25.7	3.37	5.35
Saururus cernuus	Lizard's-tail		2.31	12.3	5.71	0	0	0	2.31	3.67
Aster caroliniana	Climbing Aster		0	0	0	1.71	3.87	11.4	1.71	2.72
Salix caroliniana	Carolina Willow		1.29	6.85	8.57	0.03	0.06	2.86	1.31	2.09
Vitis munsoniana	Southern Fox Grape		0.14	0.76	2.86	0.86	1.94	2.86	1	1.59
Parthenocissus quinquefolia	Virginia Creeper		0.06	0.3	5.71	0.57	1.29	2.86	0.63	1
Boehmeria cylindrica	False Nettle		0.03	0.15	2.86	0.57	1.29	2.86	0.6	0.95
Cyperus sp.			0	0	0	0.29	0.65	2.86	0.29	0.45
Hyptis mutabilis			0	0	0	0.29	0.65	2.86	0.29	0.45
TOTAL COVER			**18.8**			**44.3**			**63**	
Bare Ground/Leaf Litter									**37**	
Species Richness		**12**								
Shannon-Wiener Diversity Index		**1.718**								
Shrubs (Woody Plants <1 dbh)										
Ludwigia peruviana	Primrose Willow		0	0	0	32.9	74.2	70.6	32.9	73.1
Sambucus canadensis	Elderberry		0.41	63.6	17.6	11.2	25.2	47.1	11.6	25.7
Hyptis mutabilis			0.06	9.09	5.88	0.29	0.66	5.88	0.35	0.78
Quercus laurifolia	Laurel Oak		0.06	9.09	5.88	0	0	0	0.06	0.13
Urena biloba	Caesar-weed		0.06	9.09	5.88	0	0	0	0.06	0.13
Boehmeria cylindrica	False Nettle		0.06	9.09	5.88	0	0	0	0.06	0.13
TOTAL COVER			**0.65**			**44.4**			**45.1**	
Species Richness		**6**								
Shannon-Wiener Diversity Index		**0.642**								
Canopy Trees (>4 dbh)										
Salix caroliniana	Carolina Willow		8.24	100	70.6	13.2	100	41.2	21.5	100
TOTAL COVER			**8.24**			**13.2**			**21.5**	
Species Richness		**1**								
Shannon-Wiener Diversity Index		**0**								
Subcanopy Trees (<4 dbh)										
Ludwigia peruviana	Primrose Willow		0	0	0	15.3	54.1	35.3	15.3	44.8
Salix caroliniana	Carolina Willow		5	85	23.5	8	28.3	29.4	13	38
Sambucus canadensis	Elderberry		0	0	0	4.12	14.6	29.4	4.12	12
Quercus laurifolia	Laurel Oak		0.88	15	5.88	0.88	3.12	5.88	1.76	5.16
TOTAL COVER			**5.88**			**28.3**			**34.2**	
Species Richness		**4**								
Shannon-Wiener Diversity Index		**1.135**								
Woody Vines										
Aster carolinianus	Climbing Aster		0	0	0	5.94	71.6	29.4	5.94	69.7
Vitis munsoniana	Southern Fox Grape		0.18	75	17.6	2.35	28.4	11.8	2.53	29.7
Parthenocissus quinquefolia	Virginia Creeper		0.06	25	5.88	0	0	0	0.06	0.69
TOTAL COVER			**0.24**			**8.29**			**8.53**	
Species Richness		**3**								
Shannon-Wiener Diversity Index		**0.647**								

Appendix XIII. Mean cover (% of sample area), relative abundance (RD, expressed as a percentage of the total cover), and frequency (FREQ, the percentage of quadrats/plots in which a species occurred) for all species within each cover class recorded at Station 12.

SPECIES			Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name		MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Ground Cover										
Ludwigia peruviana	Primrose Willow		0	0	0	34.2	53.4	88.9	34.2	53.3
Thelypteris sp.	Shield Fern		0	0	0	16.5	25.7	63.9	16.5	25.7
Typha sp.	Cattail		0.03	50	2.78	10.7	16.6	19.4	10.7	16.7
Aster carolinianus	Climbing Aster		0	0	0	2.5	3.9	8.33	2.5	3.9
Clematis crispa	Leather Flower		0	0	0	0.22	0.35	11.1	0.22	0.35
Salix caroliniana	Carolina Willow		0.03	50	2.78	0.03	0.04	2.78	0.06	0.09
TOTAL COVER			**0.06**			**64.1**			**64.2**	
Bare Ground/Leaf Litter									**35.8**	
Species Richness		**6**								
Shannon-Wiener Diversity Index		**1.135**								
Shrubs (Woody Plants <1 dbh)										
Ludwigia peruviana	Primrose Willow		0	0	0	55.9	100	100	55.9	99.9
Salix caroliniana	Carolina Willow		0.06	100	6.25	0	0	0	0.06	0.11
TOTAL COVER			**0.06**			**55.9**			**56**	
Species Richness		**2**								
Shannon-Wiener Diversity Index		**0.009**								
Canopy Trees (>4 dbh)										
Salix caroliniana	Carolina Willow		0.81	100	31.3	9.38	88.2	50	10.2	89.1
Ludwigia peruviana	Primrose Willow		0	0	0	1.25	11.8	6.25	1.25	10.9
TOTAL COVER			**0.81**			**10.6**			**11.4**	
Species Richness		**2**								
Shannon-Wiener Diversity Index		**0.345**								
Subcanopy Trees (<4 dbh)										
Salix caroliniana	Carolina Willow		0.69	100	37.5	13	53.5	56.3	13.7	54.8
Ludwigia peruviana	Primrose Willow		0	0	0	11.3	46.3	56.3	11.3	45
Sambucus canadensis	Elderberry		0	0	0	0.06	0.26	6.25	0.06	0.25
TOTAL COVER			**0.69**			**24.3**			**25**	
Species Richness		**3**								
Shannon-Wiener Diversity Index		**0.704**								
Woody Vines										
Aster carolinianus	Climbing Aster		0	0		5.31	85		5.31	85
Clematis crispa	Leather Flower		0	0		0.94	15		0.94	15
TOTAL COVER			**0**	**0**		**6.25**			**6.25**	
Species Richness		**2**								
Shannon-Wiener Diversity Index		**0.423**								

Appendix XIV. Mean cover (% of sample area), relative abundance (RD, expressed as a percentage of the total cover), and frequency (FREQ, the percentage of quadrats/plots in which a species occurred) for all species within each cover class recorded at Station 13.

SPECIES		Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name	MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Ground Cover									
Nephrolepis sp.	Boston Fern	13	67.2	17.4	5	12.5	13	18	30.4
Vitis munsoniana	Southern Fox Grape	4.52	23.4	43.5	12.4	31.1	47.8	17	28.6
Thelypteris sp.	Shield Fern	0	0	0	5.74	14.4	21.7	5.74	9.68
Parthenocissus quinquefolia	Virginia Creeper	0.22	1.12	21.7	5.26	13.2	34.8	5.48	9.24
Rubus sp.	Blackberry	0	0	0	5.09	12.7	47.8	5.09	8.58
Sambucus canadensis	Elderberry	0.61	3.15	21.7	2.91	7.29	34.8	3.52	5.94
Smilax sp.	Catbrier	0.22	1.12	21.7	2.61	6.53	26.1	2.83	4.77
Lantana camara	Lantana	0.3	1.57	13	0.43	1.09	4.35	0.74	1.25
Pteridium aquilinum	Bracken Fern	0	0	0	0.43	1.09	8.7	0.43	0.73
Unknown forbs	Seedlings	0.35	1.8	17.4	0	0	0	0.35	0.59
Lemna sp.	Duckweed	0.04	0.22	4.35	0	0	0	0.04	0.07
Salvina minima	Water Spangles	0.04	0.22	4.35	0	0	0	0.04	0.07
Saururus cernuus	Lizard's-tail	0.04	0.22	4.35	0	0	0	0.04	0.07
Quercus nigra	Water Oak	0	0	0	0.04	0.11	4.35	0.04	0.07
TOTAL COVER		**19.3**			**40**			**59.3**	
Bare Ground/Leaf Litter								**40.7**	
Species Richness		**14**							
Shannon-Wiener Diversity Index		**1.831**							
Shrubs (Woody Plants <1 dbh)									
Sambucus canadensis	Elderberry	0.9	12.2	50	10	90.9	50	10.9	59.2
Serenoa repens	Saw Palmetto	3.5	47.3	20	0	0	0	3.5	19
Lantana camara	Lantana	2.5	33.8	40	0	0	0	2.5	13.6
Ludwigia peruviana	Primrose Willow	0	0	0	1	9.09	10	1	5.43
Rhus copallina	Winged Sumac	0.5	6.76	10	0	0	0	0.5	2.72
TOTAL COVER		**7.4**			**11**			**18.4**	
Species Richness		**5**							
Shannon-Wiener Diversity Index		**1.153**							
Canopy Trees (>4 dbh)									
Quercus virginiana	Live Oak	10	62.5	30	0	0	0	10	45.5
Sambucus canadensis	Elderberry	0	0	0	4.5	75	20	4.5	20.5
Prunus serotina	Black Cherry	4.5	28.1	30	0	0	0	4.5	20.5
Acer rubrum	Red Maple	0	0	0	1.5	25	10	1.5	6.82
Quercus nigra	Water Oak	1	6.25	10	0	0	0	1	4.55
Sabal palmetto	Cabbage Palm	0.5	3.13	10	0	0	0	0.5	2.27
TOTAL COVER		**16**			**6**			**22**	
Species Richness		**6**							
Shannon-Wiener Diversity Index		**1.417**							
Subcanopy Trees (<4 dbh)									
Sambucus canadensis	Elderberry	0	0	0	8.1	89	60	8.1	81.8
Ludwigia peruviana	Primrose Willow	0	0	0	1	11	10	1	10.1
Sabal palmetto	Cabbage Palm	0.5	62.5	10	0	0	0	0.5	5.05
Prunus serotina	Black Cherry	0.1	12.5	10	0	0	0	0.1	1.01
Acer rubrum	Red Maple	0.1	12.5	10	0	0	0	0.1	1.01
Rhus copallina	Winged Sumac	0.1	12.5	10	0	0	0	0.1	1.01
TOTAL COVER		**0.8**			**9.1**			**9.9**	
Species Richness		**6**							
Shannon-Wiener Diversity Index		**0.686**							

Appendix XIV. (cont.)

SPECIES		Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name	MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Woody Vines									
Vitis munsoniana	Southern Fox Grape	34.6	75.9	90	10.7	40.1	60	45.3	62.7
Smilax sp.	Catbrier	6.5	14.3	20	8.5	31.8	30	15	20.7
Parthenocissus quinquefolia	Virginia Creeper	4.3	9.43	40	2.5	9.36	20	6.8	9.41
Rubus sp.	Blackberry	0.1	0.22	10	3	11.2	20	3.1	4.29
Ampelopsis arborea	Pepper Vine	0.1	0.22	10	2	7.49	10	2.1	2.9
TOTAL COVER		**45.6**			**26.7**			**72.3**	
Species Richness		**5**							
Shannon-Wiener Diversity Index		**1.079**							

Appendix XV. Mean cover (% of sample area), relative abundance (RD, expressed as a percentage of the total cover), and frequency (FREQ, the percentage of quadrats/plots in which a species occurred) for all species within each cover class recorded at Station 14.

SPECIES			Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name		MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Ground Cover										
Vitis munsoniana	Southern Fox Grape		14.2	19.8	65	0.55	42.3	10	14.8	20.2
Thelypteris sp.	Shield Fern		13	18.1	50	0.25	19.2	5	13.3	18.1
Sambucus canadensis	Elderberry		12.9	18	70	0	0	0	12.9	17.6
Rubus sp.	Blackberry		6.85	9.53	35	0.5	38.5	5	7.35	10
Lantana camara	Lantana		7.1	9.88	30	0	0	0	7.1	9.71
Hydrocotyle sp.	Pennywort		5.25	7.31	15	0	0	0	5.25	7.18
Lemna sp.	Duckweed		3.75	5.22	10	0	0	0	3.75	5.13
Ludwigia peruviana	Primrose Willow		2.8	3.9	20	0	0	0	2.8	3.83
Saururus cernuus	Lizard's-tail		2.5	3.48	15	0	0	0	2.5	3.42
Salix caroliniana	Carolina Willow		1.5	2.09	15	0	0	0	1.5	2.05
Clematis crispa	Leather Flower		1	1.39	5	0	0	0	1	1.37
Peltandra			0.45	0.63	25	0	0	0	0.45	0.62
Ipomoea sp.	Morning Glory		0.15	0.21	15	0	0	0	0.15	0.21
Galium tinctorium	Bedstraw		0.15	0.21	15	0	0	0	0.15	0.21
Unknown forb			0.1	0.14	10	0	0	0	0.1	0.14
Ambrosia artemisiifolia	Common Ragweed		0.05	0.07	5	0	0	0	0.05	0.07
Myrica cerifera	Wax Myrtle		0.05	0.07	5	0	0	0	0.05	0.07
Urena lobata	Caesar-weed		0.05	0.07	5	0	0	0	0.05	0.07
TOTAL COVER			**71.9**			**1.3**			**73.2**	
Bare Ground/Leaf Litter									**26.9**	
Species Richness		**18**								
Shannon-Wiener Diversity Index		**2.196**								
Shrubs (Woody Plants <1 dbh)										
Sambucus canadensis	Elderberry		42.5	82.7	87.5	0	0	0	42.5	82.7
Lantana camara	Lantana		8.88	17.3	25	0	0	0	8.88	17.3
TOTAL COVER			**51.4**			**0**			**51.4**	
Species Richness		**2**								
Shannon-Wiener Diversity Index		**0.460**								
Canopy Trees (>4 dbh)										
Salix caroliniana	Carolina Willow		8.75	70	37.5	0	0	0	8.75	70
Quercus nigra	Water Oak		3.75	30	25	0	0	0	3.75	30
TOTAL COVER			**12.5**			**0**			**12.5**	
Species Richness		**2**								
Shannon-Wiener Diversity Index		**0.611**								
Subcanopy Trees (<4 dbh)										
Salix caroliniana	Carolina Willow		7	66.7	62.5	0	0	0	7	66.7
Ludwigia peruviana	Primrose Willow		2.5	23.8	12.5	0	0	0	2.5	23.8
Sambucus canadensis	Elderberry		0.63	5.95	12.5	0	0	0	0.63	5.95
Quercus nigra	Water Oak		0.25	2.38	25	0	0	0	0.25	2.38
Quercus laurifolia	Laurel Oak		0.13	1.19	12.5	0	0	0	0.13	1.19
TOTAL COVER			**10.5**			**0**			**10.5**	
Species Richness		**5**								
Shannon-Wiener Diversity Index		**0.922**								
Woody Vines										
Vitis munsoniana	Southern Fox Grape		44.4	88.5	87.5	0.13	100	12.5	44.5	88.6
Rubus sp.	Blackberry		5.63	11.2	25	0	0	0	5.63	11.2
Lygodium japonicum	Japanese Climbing Fern		0.13	0.25	12.5	0	0	0	0.13	0.25
TOTAL COVER			**50.1**			**0.13**			**50.3**	
Species Richness		**3**								
Shannon-Wiener Diversity Index		**0.368**								

Appendix XVI. Mean cover (% of sample area), relative abundance (RD, expressed as a percentage of the total cover), and frequency (FREQ, the percentage of quadrats/plots in which a species occurred) for all species within each cover class recorded at Station 15.

SPECIES		Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name	MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Ground Cover									
Ludwigia repens	Red Ludwigia	10.4	28	69.4	0	0	0	10.39	27.89
Smilax sp.	Catbrier	7.36	19.9	63.9	0.14	83.3	2.78	7.50	20.13
Unknown 15.2	Unknown	3.19	8.61	69.4	0	0	0	3.19	8.58
Dichanthelium sp.		2.17	5.84	50	0	0	0	2.17	5.82
Unknown 15.1	Unknown	1.81	4.87	61.1	0	0	0	1.81	4.85
Thelypteris sp.	Shield Fern	1.56	4.19	8.33	0	0	0	1.56	4.18
Viola sp.	Violet	1.19	3.22	33.3	0	0	0	1.19	3.21
Hydrocotyle sp.	Pennywort	1.11	3	25	0	0	0	1.11	2.98
Clematis crispa	Leather Flower	1.06	2.85	19.4	0	0	0	1.06	2.83
Polygonum sp.	Knotweed	0.97	2.62	27.8	0	0	0	0.97	2.61
Ludwigia peruviana	Primrose Willow	0.83	2.25	5.56	0	0	0	0.83	2.24
Sambucus canadensis	Elderberry	0.75	2.02	11.1	0.03	16.7	2.78	0.78	2.09
Parthenocissus quinquefolia	Virginia Creeper	0.72	1.95	27.8	0	0	0	0.72	1.94
Carpinus caroliniana	Hornbeam	0.42	1.12	2.78	0	0	0	0.42	1.12
Citrus sp.		0.42	1.12	2.78	0	0	0	0.42	1.12
Viburnum obovatum	Small Viburnum	0.36	0.97	11.1	0	0	0	0.36	0.97
Commelina diffusa	Day-flower	0.33	0.9	22.2	0	0	0	0.33	0.89
Toxicodendron radicans	Poison Ivy	0.33	0.9	11.1	0	0	0	0.33	0.89
Celtis laevigata	Sugarberry	0.31	0.82	5.56	0	0	0	0.31	0.82
Cornus foemina	Swamp Dogwood	0.31	0.82	5.56	0	0	0	0.31	0.82
Pshychotria nervosa	Wild Coffee	0.28	0.75	5.56	0	0	0	0.28	0.75
Sabal palmetto	Cabbage Palm	0.28	0.75	2.78	0	0	0	0.28	0.75
Cardamine hirsuta	Bitter-cress	0.25	0.67	13.9	0	0	0	0.25	0.67
Oplismenus setarius	Basketgrass	0.17	0.45	5.56	0	0	0	0.17	0.45
Unknown 15.6	Unknown	0.14	0.37	2.78	0	0	0	0.14	0.37
Quercus laurifolia	Laurel Oak	0.14	0.37	2.78	0	0	0	0.14	0.37
Boehmeria cylindrica	False Nettle	0.03	0.07	2.78	0	0	0	0.03	0.07
Cyperus sp.		0.03	0.07	2.78	0	0	0	0.03	0.07
Magnolia virginiana	Sweetbay	0.03	0.07	2.78	0	0	0	0.03	0.07
Fraxinus caroliniana	Pop Ash	0.03	0.07	2.78	0	0	0	0.03	0.07
Acer rubrum	Red Maple	0.03	0.07	2.78	0	0	0	0.03	0.07
Prunus caroliniana	Carolina Laurel Cherry	0.03	0.07	2.78	0	0	0	0.03	0.07
Saururus cernuus	Lizard's-tail	0.03	0.07	2.78	0	0	0	0.03	0.07
Euonymus americanus	Strawberry Bush	0.03	0.07	2.78	0	0	0	0.03	0.07
Crinum americanum	String-Lily	0.03	0.07	2.78	0	0	0	0.03	0.07
TOTAL COVER		**37.1**			**0.17**			**37.25**	
Bare Ground/Leaf Litter								**62.75**	
Species Richness		**35**							
Shannon-Wiener Diversity Index		**2.517**							
Shrubs (Woody Plants <1 dbh)									
Serenoa repens	Saw Palmetto	1.88	21	6.25	0	0	0	1.88	20.98
Sambucus canadensis	Elderberry	1.75	19.6	43.8	0	0	0	1.75	19.58
Viburnum obovatum	Small Viburnum	1.69	18.9	31.3	0	0	0	1.69	18.88
Carpinus caroliniana	Hornbeam	1.38	15.4	25	0	0	0	1.38	15.38
Celtis laevigata	Sugarberry	0.75	8.39	25	0	0	0	0.75	8.39
Quercus laurifolia	Laurel Oak	0.5	5.59	25	0	0	0	0.50	5.59
Euonymus americanus	Strawberry Bush	0.31	3.5	6.25	0	0	0	0.31	3.50
Bumelia sp.		0.13	1.4	12.5	0	0	0	0.13	1.40
Acer rubrum	Red Maple	0.13	1.4	12.5	0	0	0	0.13	1.40
Liquidambar styraciflua	Sweetgum	0.13	1.4	12.5	0	0	0	0.13	1.40

Appendix XVI. (cont.)

SPECIES			Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name		MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Shrubs (Woody Plants <1 dbh)										
Fraxinus caroliniana	Pop Ash		0.06	0.7	6.25	0	0	0	0.06	0.70
Itea virginica	Virginia Willow		0.06	0.7	6.25	0	0	0	0.06	0.70
Cornus foemina	Swamp Dogwood		0.06	0.7	6.25	0	0	0	0.06	0.70
Cephalanthus occidentalis	Buttonbush		0.06	0.7	6.25	0	0	0	0.06	0.70
Pshychotria nervosa	Wild Coffee		0.06	0.7	6.25	0	0	0	0.06	0.70
TOTAL COVER			**8.94**			**0**			**8.938**	
Species Richness		**15**								
Shannon-Wiener Diversity Index		**2.089**								
Canopy Trees (>4 dbh)										
Quercus laurifolia	Laurel Oak		20.9	25.4	68.8	0	0	0	20.94	25.38
Sabal palmetto	Cabbage Palm		15.7	19	68.8	0	0	0	15.69	19.02
Liquidambar styraciflua	Sweetgum		12.2	14.8	62.5	0	0	0	12.19	14.77
Ulmus americana	American Elm		8.5	10.3	37.5	0	0	0	8.50	10.30
Carpinus caroliniana	Hornbeam		8.13	9.85	37.5	0	0	0	8.13	9.85
Acer rubrum	Red Maple		5.94	7.2	18.8	0	0	0	5.94	7.20
Taxodium distichum	Bald Cypress		5.38	6.52	18.8	0	0	0	5.38	6.52
Celtis laevigata	Sugarberry		4.06	4.92	12.5	0	0	0	4.06	4.92
Citrus sp.	Citrus		0.63	0.76	6.25	0	0	0	0.63	0.76
Fraxinus caroliniana	Pop Ash		0.38	0.45	12.5	0	0	0	0.38	0.45
Magnolia virginiana	Sweetbay		0.31	0.38	6.25	0	0	0	0.31	0.38
Pinus elliotii	Slash Pine		0.31	0.38	6.25	0	0	0	0.31	0.38
Carya aquatica	Water Hickory		0.06	0.08	6.25	0	0	0	0.06	0.08
TOTAL COVER			**82.5**			**0**			**82.5**	
Species Richness		**13**								
Shannon-Wiener Diversity Index		**2.033**								
Subcanopy Trees (<4 dbh)										
Carpinus caroliniana	Hornbeam		14.4	67.5	68.8	0	0	0	14.44	67.54
Viburnum obovatum	Small Viburnum		4.06	19	31.3	0	0	0	4.06	19.01
Celtis laevigata	Sugarberry		1	4.68	18.8	0	0	0	1.00	4.68
Ulmus americana	American Elm		0.94	4.39	12.5	0	0	0	0.94	4.39
Quercus laurifolia	Laurel Oak		0.31	1.46	6.25	0	0	0	0.31	1.46
Pinus elliotii	Slash Pine		0.31	1.46	6.25	0	0	0	0.31	1.46
Sabal palmetto	Cabbage Palm		0.31	1.46	6.25	0	0	0	0.31	1.46
TOTAL COVER			**21.4**			**0**			**21.38**	
Species Richness		**7**								
Shannon-Wiener Diversity Index		**1.046**								
Woody Vines										
Smilax sp.	Catbrier		11.2	69.4	75	0.06	100		11.25	69.5
Toxicodendron radicans	Poison Ivy		2.5	15.5	43.8	0	0		2.5	15.44
Clematis crispa	Leather Flower		0.94	5.81	43.8	0	0		0.938	5.792
Parthenocissus quinquefolia	Virginia Creeper		0.81	5.04	56.3	0	0		0.813	5.019
Vitis munsoniana	Southern Fox Grape		0.69	4.26	12.5	0	0		0.688	4.247
TOTAL COVER			**16.1**			**0.06**			**16.19**	
Species Richness		**5**								
Shannon-Wiener Diversity Index		**0.991**								

Appendix XVII. Mean cover (% of sample area), relative abundance (RD, expressed as a percentage of the total cover), and frequency (FREQ, the percentage of quadrats/plots in which a species occurred) for all species within each cover class recorded at Station 16.

SPECIES			Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name		MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Ground Cover										
Ludwigia peruviana	Primrose Willow		28.7	44.9	89.7	0.21	4.55	6.9	28.9	42.2
Typha sp.	Cattail		14.7	23	51.7	3.66	80.3	20.7	18.3	26.8
Sambucus canadensis	Elderberry		9.52	14.9	34.5	0	0	0	9.52	13.9
Aster carolinianus	Climbing Aster		2.59	4.05	24.1	0.69	15.2	6.9	3.28	4.78
Cicuta mexicana	Water Hemlock		1.62	2.54	20.7	0	0	0	1.62	2.37
Thelypteris sp.	Shield Fern		1.28	2	24.1	0	0	0	1.28	1.86
Urena lobata	Caesar-weed		1.28	2	17.2	0	0	0	1.28	1.86
Apios americana	Groundnut		1.03	1.62	17.2	0	0	0	1.03	1.51
Lantana camara	Lantana		0.86	1.35	3.45	0	0	0	0.86	1.26
Salvina minima	Water Spangles		0.52	0.81	6.9	0	0	0	0.52	0.76
Peltandra sp.			0.45	0.7	17.2	0	0	0	0.45	0.65
Lemna sp.	Duckweed		0.38	0.59	6.9	0	0	0	0.38	0.55
Vitis munsoniana	Southern Fox Grape		0.24	0.38	10.3	0	0	0	0.24	0.35
Chenopodium ambrosioides	Mexican Tea		0.21	0.32	6.9	0	0	0	0.21	0.3
Mikania scandens	Bindweed		0.21	0.32	6.9	0	0	0	0.21	0.3
Nephrolepis sp.	Boston Fern		0.17	0.27	3.45	0	0	0	0.17	0.25
Boehmeria cylindrica	False Nettle		0.03	0.05	3.45	0	0	0	0.03	0.05
Erechtites hieracifolia	Fireweed		0.03	0.05	3.45	0	0	0	0.03	0.05
Passiflora incarnata	Maypop		0.03	0.05	3.45	0	0	0	0.03	0.05
Hydrocotyle sp.	Pennywort		0.03	0.05	3.45	0	0	0	0.03	0.05
Alternanthera philoxeroides	Alligator-weed		0.03	0.05	3.45	0	0	0	0.03	0.05
Baccharis halimifolia	Groundsel Tree		0.03	0.05	3.45	0	0	0	0.03	0.05
TOTAL COVER			**63.9**			**4.55**			**68.5**	
Bare Ground/Leaf Litter									**31.5**	
Species Richness		**22**								
Shannon-Wiener Diversity Index		**1.684**								
Shrubs (Woody Plants <1 dbh)										
Ludwigia peruviana	Primrose Willow		31.2	85.4	61.5	0	0	0	31.2	85.4
Urena biloba	Caesar-weed		1.92	5.27	23.1	0	0	0	1.92	5.27
Sambucus canadensis	Elderberry		1.23	3.38	23.1	0	0	0	1.23	3.38
Lantana camara	Lantana		1.15	3.16	15.4	0	0	0	1.15	3.16
Chenopodium ambrosioides	Mexican Tea		0.77	2.11	15.4	0	0	0	0.77	2.11
Baccharis halimifolia	Groundsel Tree		0.23	0.63	23.1	0	0	0	0.23	0.63
TOTAL COVER			**36.5**			**0**			**36.5**	
Species Richness		**6**								
Shannon-Wiener Diversity Index		**0.627**								
Canopy Trees (>4 dbh)										
Salix caroliniana	Carolina Willow		5.38	100	15.4	0	0	0	5.38	100
TOTAL COVER			**5.38**			**0**			**5.38**	
Species Richness		**1**								
Shannon-Wiener Diversity Index		**0**								
Subcanopy Trees (<4 dbh)										
Ludwigia peruviana	Primrose Willow		12.4	51.9	69.2	0	0	0	12.4	51.9
Salix caroliniana	Carolina Willow		7	29.4	30.8	0	0	0	7	29.4
Sambucus canadensis	Elderberry		3.62	15.2	53.8	0	0	0	3.62	15.2
Quercus laurifolia	Laurel Oak		0.85	3.55	15.4	0	0	0	0.85	3.55
TOTAL COVER			**23.8**			**0**			**23.8**	
Species Richness		**4**								
Shannon-Wiener Diversity Index		**1.105**								

Appendix XVII. (cont.)

SPECIES		Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name	MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Woody Vines									
Vitis munsoniana	Southern Fox Grape	7.31	89.6	23.1	0	0	0	7.31	89.6
Apios americana	Groundnut	0.85	10.4	23.1	0	0	0	0.85	10.4
TOTAL COVER		**8.15**			**0**			**8.15**	
Species Richness		**2**							
Shannon-Wiener Diversity Index		**0.333**							

Appendix XVIII. Mean cover (% of sample area), relative abundance (RD, expressed as a percentage of the total cover), and frequency (FREQ, the percentage of quadrats/plots in which a species occurred) for all species within each cover class recorded at Station 17.

SPECIES		Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name	MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Ground Cover									
Sabal palmetto	Cabbage Palm	9.86	22.6	47.2	0	0	0	9.86	22.6
Ludwigia repens	Red Ludwigia	9.64	22.1	30.6	0	0	0	9.64	22.1
Dichanthelium sp.		9.08	20.8	72.2	0	0	0	9.08	20.8
Smilax sp.	Catbrier	2.94	6.76	63.9	0	0	0	2.94	6.76
Urena biloba	Caesar-weed	1.39	3.19	47.2	0	0	0	1.39	3.19
Commelina diffusa	Day-flower	0.94	2.17	19.4	0	0	0	0.94	2.17
Clematis crispa	Leather Flower	0.83	1.91	25	0	0	0	0.83	1.91
Thelypteris sp.	Shield Fern	0.75	1.72	13.9	0	0	0	0.75	1.72
Polygonum sp.	Smartweed	0.53	1.21	16.7	0	0	0	0.53	1.21
Rhynchospora inundata		0.44	1.02	5.56	0	0	0	0.44	1.02
Oplismenus setarius	Basket grass	0.42	0.96	5.56	0	0	0	0.42	0.96
Carpinus caroliniana	Hornbeam	0.39	0.89	16.7	0	0	0	0.39	0.89
Dichondra carolinensis	Pony-foot	0.33	0.76	11.1	0	0	0	0.33	0.76
Unknown 17.2	Rush	0.31	0.7	5.56	0	0	0	0.31	0.7
Viola sp.	Violet	0.31	0.7	8.33	0	0	0	0.31	0.7
Woodwardia sp.	Chain Fern	0.28	0.64	2.78	0	0	0	0.28	0.64
Unknown 17.6	Vine	0.28	0.64	2.78	0	0	0	0.28	0.64
Sabal minor	Dwarf Palmetto	0.28	0.64	2.78	0	0	0	0.28	0.64
Hypericum hypericoides	St. Andrew's- cross	0.28	0.64	5.56	0	0	0	0.28	0.64
Unknown 54	Unknown shrub	0.28	0.64	5.56	0	0	0	0.28	0.64
Unknown grass		0.28	0.64	2.78	0	0	0	0.28	0.64
Bidens alba	Begger-ticks	0.28	0.64	2.78	0	0	0	0.28	0.64
Acer rubrum	Red Maple	0.25	0.57	25	0	0	0	0.25	0.57
Boehmeria cylindrica	False Nettle	0.22	0.51	11.1	0	0	0	0.22	0.51
Unknown 17.1	Unknown	0.22	0.51	11.1	0	0	0	0.22	0.51
Cyperus sp.		0.19	0.45	8.33	0	0	0	0.19	0.45
Drymaria cordata	West Indian Chickweed	0.19	0.45	8.33	0	0	0	0.19	0.45
Baccharis glomerulifolia	Groundsel Tree	0.19	0.45	8.33	0	0	0	0.19	0.45
Cardamine hirsuta	Bitter-cress	0.17	0.38	5.56	0	0	0	0.17	0.38
Gleditsia aquatica	Water Locust	0.17	0.38	5.56	0	0	0	0.17	0.38
Hypolepis repens	Flakelet Fern	0.14	0.32	2.78	0	0	0	0.14	0.32
Unknown 17.4	Rush	0.14	0.32	2.78	0	0	0	0.14	0.32
Unknown 17.5	Forb	0.14	0.32	2.78	0	0	0	0.14	0.32
Unknown forb	Forb	0.14	0.32	2.78	0	0	0	0.14	0.32
Liquidambar styraciflua	Sweetgum	0.14	0.32	2.78	0	0	0	0.14	0.32
Rumex sp.	Rumex	0.14	0.32	2.78	0	0	0	0.14	0.32
Chasmanthium sp.	Chasmanthium	0.14	0.32	2.78	0	0	0	0.14	0.32
Juncus effusus	Soft Rush	0.14	0.32	2.78	0	0	0	0.14	0.32
Parthenocissus quinquefolia	Virginia Creeper	0.11	0.25	11.1	0	0	0	0.11	0.25
Toxicodendron radicans	Poison Ivy	0.11	0.25	11.1	0	0	0	0.11	0.25
Sida acuta	Broomweed	0.08	0.19	8.33	0	0	0	0.08	0.19
Oxalis sp.	Wood Sorrel	0.08	0.19	8.33	0	0	0	0.08	0.19
Mitchella repens	Twinberry	0.06	0.13	5.56	0	0	0	0.06	0.13
Rubus sp.	Blackberry	0.06	0.13	5.56	0	0	0	0.06	0.13
Quercus laurifolia	Laurel Oak	0.06	0.13	5.56	0	0	0	0.06	0.13
Unknown 17.3	Forb	0.03	0.06	2.78	0	0	0	0.03	0.06
Hydrocotyle sp.	Pennywort	0.03	0.06	2.78	0	0	0	0.03	0.06
Crinum americanum	String-Lily	0.03	0.06	2.78	0	0	0	0.03	0.06
Saururus cernuus	Lizard's-tail	0.03	0.06	2.78	0	0	0	0.03	0.06

Appendix XVIII. (cont.)

SPECIES			Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name		MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Ground Cover										
Citrus sp.			0.03	0.06	2.78	0	0	0	0.03	0.06
Iris hexagona	Prairie Iris		0.03	0.06	2.78	0	0	0	0.03	0.06
Gelsemium sempervirens	Yellow Jessamine		0.03	0.06	2.78	0	0	0	0.03	0.06
TOTAL COVER			**43.6**			**0**			**43.6**	
Bare Ground/Leaf Litter									**56.4**	
Species Richness		**52**								
Shannon-Wiener Diversity Index		**2.494**								
Shrubs (Woody Plants <1 dbh)										
Sabal palmetto	Cabbage Palm		11.8	58	56.3	0	0	0	11.8	58
Urena biloba	Caesar-weed		1.75	8.64	43.8	0	0	0	1.75	8.64
Styrax americana	Storax		1.25	6.17	6.25	0	0	0	1.25	6.17
Baccharis glomerulifolia	Groundsel Tree		1.06	5.25	31.3	0	0	0	1.06	5.25
Carpinus caroliniana	Hornbeam		0.69	3.4	43.8	0	0	0	0.69	3.4
Quercus laurifolia	Laurel Oak		0.5	2.47	25	0	0	0	0.5	2.47
Sida acuta	Broomweed		0.5	2.47	25	0	0	0	0.5	2.47
Liquidambar styraciflua	Sweetgum		0.44	2.16	18.8	0	0	0	0.44	2.16
Gleditsia aquatica	Water Locust		0.44	2.16	18.8	0	0	0	0.44	2.16
Viburnum obovatum	Small Viburnum		0.31	1.54	6.25	0	0	0	0.31	1.54
Acer rubrum	Red Maple		0.31	1.54	31.3	0	0	0	0.31	1.54
Citrus sp.			0.31	1.54	6.25	0	0	0	0.31	1.54
Bidens alba	Begger's-ticks		0.31	1.54	6.25	0	0	0	0.31	1.54
Cephalanthus occidentalis	Buttonbush		0.19	0.93	18.8	0	0	0	0.19	0.93
Hypericum hypericoides	St. Andrew's- cross		0.13	0.62	12.5	0	0	0	0.13	0.62
Quercus virginiana	Live Oak		0.13	0.62	12.5	0	0	0	0.13	0.62
Boehmeria cylindrica	False Nettle		0.06	0.31	6.25	0	0	0	0.06	0.31
Unknown 17.1	Unknown shrub		0.06	0.31	6.25	0	0	0	0.06	0.31
Clitoria sp.			0.06	0.31	6.25	0	0	0	0.06	0.31
TOTAL COVER			**20.3**			**0**			**20.3**	
Species Richness		**19**								
Shannon-Wiener Diversity Index		**1.735**								
Canopy Trees (>4 dbh)										
Ulmus americana	American Elm		16.6	22.3	62.5	0	0	0	16.6	22.3
Acer rubrum	Red Maple		15.6	21	56.3	0	0	0	15.6	21
Sabal palmetto	Cabbage Palm		14.1	18.9	56.3	0	0	0	14.1	18.9
Gleditsia aquatica	Water Locust		10.9	14.7	43.8	0	0	0	10.9	14.7
Quercus laurifolia	Laurel Oak		9.75	13.1	56.3	0	0	0	9.75	13.1
Carpinus caroliniana	Hornbeam		3.44	4.62	12.5	0	0	0	3.44	4.62
Liquidambar styraciflua	Sweetgum		2.19	2.94	12.5	0	0	0	2.19	2.94
Baccharis glomerulifolia	Groundsel Tree		0.94	1.26	6.25	0	0	0	0.94	1.26
Fraxinus caroliniana	Pop Ash		0.63	0.84	12.5	0	0	0	0.63	0.84
Carya aquatica	Water Hickory		0.31	0.42	6.25	0	0	0	0.31	0.42
TOTAL COVER			**74.4**			**0**			**74.4**	
Species Richness		**10**								
Shannon-Wiener Diversity Index		**1.889**								
Subcanopy Trees (<4 dbh)										
Acer rubrum	Red Maple		3.81	40.7	25	0	0	0	3.81	40.7
Sabal palmetto	Cabbage Palm		2.5	26.7	18.8	0	0	0	2.5	26.7
Ulmus americana	American Elm		0.94	10	6.25	0	0	0	0.94	10
Quercus laurifolia	Laurel Oak		0.63	6.67	12.5	0	0	0	0.63	6.67
Gleditsia aquatica	Water Locust		0.38	4	12.5	0	0	0	0.38	4
Cornus foemina	Swamp Dogwood		0.38	4	12.5	0	0	0	0.38	4

Appendix XVIII. (cont.)

SPECIES			Live Cover			Dead Cover			Total Cover	
Scientific Name	Common Name		MEAN	RD	FREQ	MEAN	RD	FREQ	MEAN	RD
Subcanopy Trees (<4 dbh)										
Styrax americana	Storax		0.31	3.33	6.25	0	0	0	0.31	3.33
Liquidambar styraciflua	Sweetgum		0.31	3.33	6.25	0	0	0	0.31	3.33
Cephalanthus occidentalis	Buttonbush		0.06	0.67	6.25	0	0	0	0.06	0.67
Citrus sp.	Citrus		0.06	0.67	6.25	0	0	0	0.06	0.67
TOTAL COVER			**9.38**			**0**			**9.38**	
Species Richness		**10**								
Shannon-Wiener Diversity Index		**1.680**								
Woody Vines										
Smilax sp.	Catbrier		1.94	47	68.8	0	0	0	1.94	47
Toxicodendron radicans	Poison Ivy		1.19	28.8	43.8	0	0	0	1.19	28.8
Clematis crispa	Leather Flower		0.38	9.09	37.5	0	0	0	0.38	9.09
Vitis munsoniana	Southern Fox Grape		0.13	3.03	12.5	0	0	0	0.13	3.03
Rubus sp.	Blackberry		0.13	3.03	12.5	0	0	0	0.13	3.03
Parthenocissus quinquefolia	Virginia Creeper		0.06	1.52	6.25	0	0	0	0.06	1.52
Unknown 17.6	Vine		0.06	1.52	6.25	0	0	0	0.06	1.52
Aster carolinianus	Climbing Aster		0.06	1.52	6.25	0	0	0	0.06	1.52
Gelsemium sempervirens	Yellow Jessamine		0.06	1.52	6.25	0	0	0	0.06	1.52
Campsis radicans	Trumpet Creeper		0.06	1.52	6.25	0	0	0	0.06	1.52
Ampelopsis arborea	Pepper Vine		0.06	1.52	6.25	0	0	0	0.06	1.52
TOTAL COVER			**4.13**			**0**			**4.13**	
Species Richness		**11**								
Shannon-Wiener Diversity Index		**1.524**								