

SURVEY OF TREES AT ST. BARNABAS EPISCOPAL CHURCH

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## INTRODUCTION

The purpose of this survey is to provide baseline data for use in developing a landscape design for St. Barnabas Episcopal Church. The primary objectives were to identify, locate, and map existing trees or other woody plants with landscaping potential and to note the presence of non-indigenous invasive plants.

## METHODS

The study area comprises the property herein designated as St. Barnabas Episcopal Church, located at 3565 Bemiss Road, Valdosta, Georgia. Boundaries of the study area are shown in Figure 1. The survey was conducted on 05 August 2010 from 0815-1215 and 1315-1745. During the survey period, the maximum ambient temperature was 93.9°, and the maximum relative humidity 90% (Weather Underground, 2010).

The survey team consisted of two individuals: Richard Carter and James R. Sanderson (student volunteer). Within the study area, the following data were recorded for all trees with a stem diameter at breast height (DBH)  $\geq$  25 mm: identification to species, DBH, and geographical location (latitude/longitude as decimal degrees. Trees were located and data were recorded with a handheld Garmin GPSmap 60CSx global positioning unit; the margin of error throughout



Figure 1. The location of the St. Barnabas Episcopal Church property in Valdosta, Georgia, just north of the intersection of Bemiss Road (Hwy. GA 125) and Mt. Zion Church Road.

the survey period was 9 feet. Additionally, location data and species identifications were recorded for special interest trees and shrubs with a DBH less than 25 mm or certain other plants for which the minimum DBH was not applicable (i.e., small individuals of native trees with potential as landscaping elements, or exotic invasive species). DBH was measured with a metric diameter equivalent tape, or rarely estimated when necessitated by field conditions (i.e., when vine-coverage of boles was exceptionally high or when yellow jacket nests were encountered). Using methods described by Cox (1967), relative frequency and relative dominance were calculated for trees with DBH  $\geq$  25 mm. Other plant species observed were also identified and noted. Data were downloaded from the GPS into MS Excel for analysis and into ExpertGPS™ and Google™ Earth (Google Inc., 2009) for visual presentation. Mapped data were also exported and made available to Mr. Brett Ganas, Ganas Landscape Designs Inc., as a CAD Drawing Exchange File (\*.dxf). Wunderlin and Hansen (2008) was used for nomenclature and information on nativity of species, and Godfrey (1988) was used for taxonomic concepts of species.

RESULTS

Table 1 contains summary data from the active logs for both morning and afternoon tracks, and Figure 2 shows these tracks plotted together using Google™ Earth. The results of the tree survey are presented in Appendix A and Figures 3-8, and the general floristic inventory in Appendix B. More than 400 individual woody plants were located and identified. Based upon relative frequency and relative dominance (Figures 3 and 4), the most prevalent species were *Quercus nigra* (water oak), *Pinus taeda* (loblolly pine), *Carya illinoensis* (pecan), and *Q. virginiana* (live oak), and the largest specimen trees were of *Carya illinoensis*, *Quercus virginiana*, *Quercus nigra*, and *Pinus taeda* (cf. Appendix A). The high proportion of pecan and the presence of many other non-indigenous species at the St. Barnabas site are indicative of prolonged anthropogenic disturbance (Figures 3 and 4, Appendices A and B).

Morning log 2010-08-05	Afternoon log 2010-08-05	Daily totals 2010-08-05
Distance: 3.2 km	Distance: 3.7 km	Distance: 6.9 km
Average speed: 803.2 m/hr	Average speed: 934.1 m/hr	Duration: 7 hrs 54 min
Duration: 3 hrs 56 min	Duration: 3 hrs 58 min	

For the most part, the St. Barnabas property is situated in an abandoned pecan grove, hence the high proportion of mature, non-indigenous pecan trees. [Note: Although native to the southeastern United States, pecan is not indigenous to Georgia, its native range being farther to the west in the middle-south: black-belt of Alabama westward into eastern Texas.] The relative proportions of loblolly pine, water oak, and live oak indicate ecological succession toward a hardwood dominated community, which eventually, in the absence of further disturbance and fire, would likely include the following trees: *Quercus virginiana*, *Q. alba*, *Q. michauxii*, *Q. hemisphaerica*, *Carya glabra*, *C. tomentosa*, *Magnolia grandiflora*, *Fagus grandifolia*, *Tilia*, *Pinus taeda*, *P. glabra*, *Osmanthus americanus*, *Chionanthus virginicus*, *Ilex americana*, *I. vomitoria*, *Carpinus caroliniana*, *Ostrya virginiana*, *Vaccinium arboreum*, *Viburnum rufidulum*, *Lyonia ferruginea*, etc.

In addition to native woody plants with positive landscaping potential, a number of non-indigenous invasive trees, shrubs, and vines were noted in the study area: *Sapium sebiferum* (Chinese tallow tree),



Figure 2. Track (blue line) recorded by GPS during tree survey; cf. Table 1 for summary of log.

*Ligustrum lucidum* (glossy privet), *Ligustrum sinense* (Chinese privet), *Albizia julibrissin* (mimosa), *Cinnamomum camphora* (camphor tree), *Nandina domestica* (nandina), *Ardisia crenata* (coralberry), *Lonicera japonica* (Japanese honeysuckle), and *Lygodium japonicum* (Japanese climbing fern). Large individuals of invasive trees and shrubs can produce copious numbers of seeds; therefore, an attempt was made to locate and map these in the hope they might receive highest priority for removal (cf. Appendix B, Figures 8A-B).

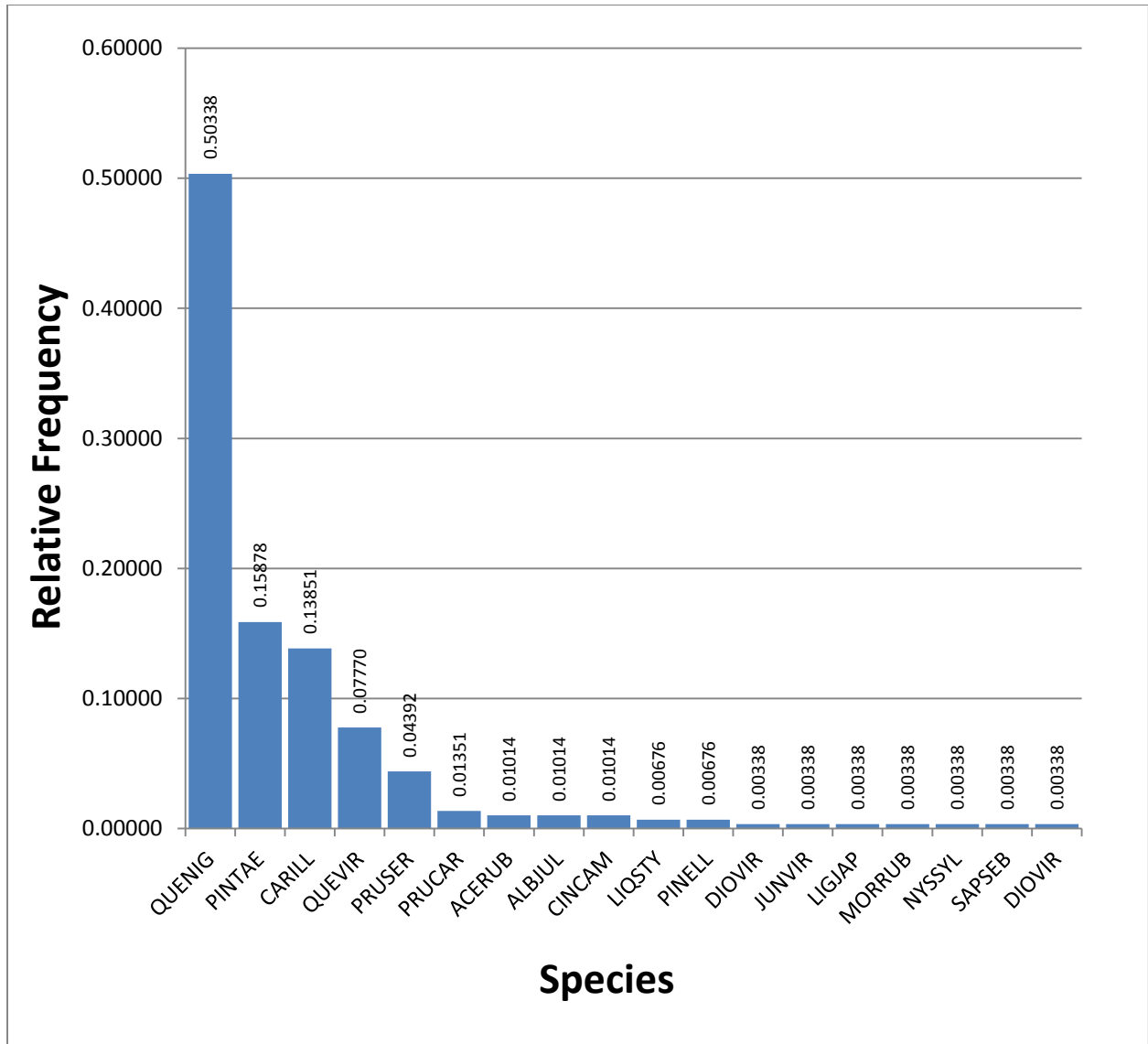


Figure 3. Relative frequency of trees with DBH  $\geq$ 25 mm. Key to abbreviations: ACERUB = *Acer rubrum* / red maple; ALBJUL = *Albizia julibrisin* / mimosa; CARILL = *Carya illinoensis* / pecan; CINCAM = *Cinnamomum camphora* / camphortree; DIOVIR = *Diospyros virginiana* / persimmon; JUNVIR = *Juniperus virginiana* / red cedar; LIGLUC = *Ligustrum lucidum* / glossy privet; LIQSTY = *Liquidambar styraciflua* / sweetgum; MORRUB = *Morus rubra* / red mulberry; NYSSYL = *Nyssa sylvatica* / blackgum; PINELL = *Pinus elliottii* / slash pine; PINTAE = *Pinus taeda* / loblolly pine; PRUCAR = *Prunus caroliniana* / Carolina laurelcherry; PRUSER = *Prunus serotina* / blackcherry; QUENIG = *Quercus nigra* / water oak; QUEVIR = *Quercus virginiana* / live oak; SAPSEB = *Sapium sebiferum* (*Triadica sebifera*) / Chinese tallow tree.

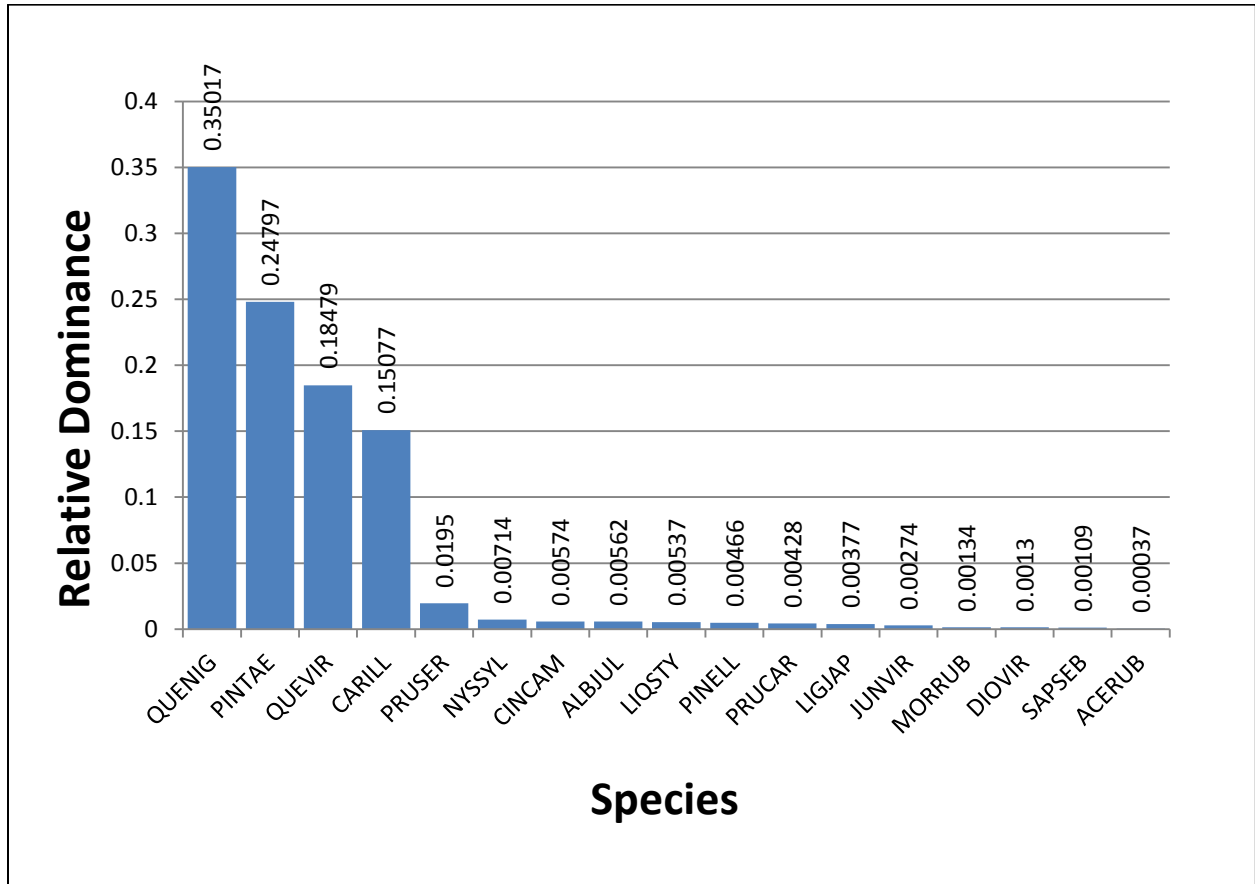
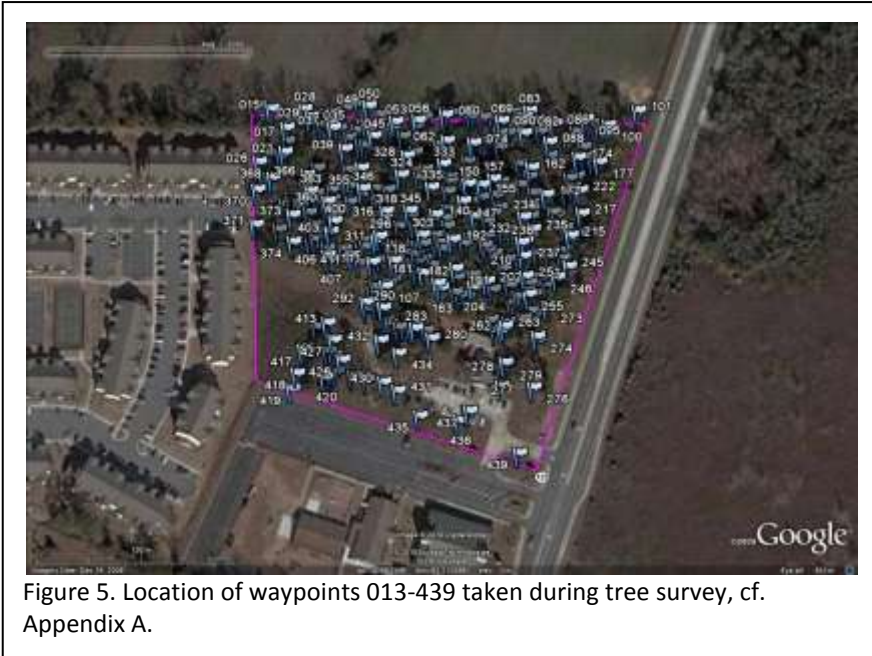


Figure 4. Relative dominance of trees with DBH  $\geq 25$  mm. Key to abbreviations: ACERUB = *Acer rubrum* / red maple; ALBJUL = *Albizia julibrisin* / mimosa; CARILL = *Carya illinoensis* / pecan; CINCAM = *Cinnamomum camphora* / camphortree; DIOVIR = *Diospyros virginiana* / persimmon; JUNVIR = *Juniperus virginiana* / red cedar; LIGLUC = *Ligustrum lucidum* / glossy privet; LIQSTY = *Liquidambar styraciflua* / sweetgum; MORRUB = *Morus rubra* / red mulberry; NYSSYL = *Nyssa sylvatica* / blackgum; PINELL = *Pinus elliottii* / slash pine; PINTAE = *Pinus taeda* / loblolly pine; PRUCAR = *Prunus caroliniana* / Carolina laurelcherry; PRUSER = *Prunus serotina* / blackcherry; QUENIG = *Quercus nigra* / water oak; QUEVIR = *Quercus virginiana* / live oak; SAPSEB = *Sapium sebiferum* (*Triadica sebifera*) / Chinese tallow tree.

Additional considerations. A rubbish heap was noted in the area immediately adjacent to the church, which included what appeared to be mostly old, rusty metal cans and tin left from the days when the



site was part of the neighboring farm. Several of the larger pecan trees are diseased and should be removed – in particular one along the woods’ edge immediately adjacent to the church (Waypoint 184). Also, the “green island” just west of the fenced playground contains a number of large specimens of *Ligustrum lucidum* (glossy privet) that should receive high priority for removal and replacement with appropriate indigenous plants (Figures 8A-B).

Figure 5. Location of waypoints 013-439 taken during tree survey, cf. Appendix A.

#### CONCLUSIONS

Increasingly, the attributes and benefits of urban green space are being recognized (cf. Kramer and Dorfman, 2010; Padoa-Schioppa, 2009). Although exhibiting substantial anthropogenic effects, the St. Barnabas Episcopal Church property is valuable green space within the rapidly expanding Valdosta metropolitan area, and this is especially the case when its restoration potential and possibilities of environmental education are considered.

Presumably having been dispersed into the area naturally during the process of ecological succession, the following native species are well represented in the plant community at the study site: *Quercus nigra*, *Q. virginiana*, *Pinus taeda*, *Prunus caroliniana*, and *P. serotina*. A number of other indigenous species are present, but are less frequent, and should be preserved in efforts to take advantage of the existing diversity: *Magnolia grandiflora*, *Quercus stellata*, *Nyssa sylvatica*, *Diospyros virginiana*, *Juniperus virginiana*, *Morus rubra*, and *Ilex vomitoria* (Figures 7, 8C-D). Although not indigenous to the interior of Georgia (including Lowndes County), *Sabal palmetto* is a native of hammock communities along the coast; therefore, it should be preserved. The high relative frequency and relative dominance of *Pinus taeda*, *Quercus nigra*, and *Quercus virginiana* indicate succession toward a hardwood dominated community, as do moderate levels of species such as *Prunus serotina*, *Prunus caroliniana*, *Nyssa sylvatica*, and *Liquidambar styraciflua*. The low frequency and immature state of *Magnolia grandiflora* suggest it and other common associates would eventually be present in the mature climax community at this particular site, perhaps a community comprised of beech, magnolia, oak and hickory (cf. Quarterman and Keever, 1962). Ecological succession and its most likely outcome should be taken into consideration in selecting species for a landscape design.

Recommendations. Based upon the results of this tree survey, the following recommendations are made for preserving the study area as green space and as an arboretum emphasizing indigenous species.

- Develop a theme for the low-impact use of the area, e.g., an arboretum emphasizing indigenous species
- Incorporate the use of indigenous plants already present on site, whenever possible, with an emphasis on maintaining as much of the existing diversity as possible
- Divide the area into zones, and prioritize these zones for installation of landscape elements
- Initiate a program to systematically reduce the level of non-indigenous invasive species, i.e., establish priorities and *realistic goals* for reduction or elimination of these plants
- As they are removed, replace non-indigenous plants with ecologically equivalent native species
- Develop a master list of desirable indigenous species for introduction to the site, including general information on habitat requirements for each species
- Whenever possible, introduce native species from seeds or cuttings obtained from locally occurring populations
- Establish a program for regular monitoring of restored areas and measures to prevent reestablishment of non-indigenous species
- Develop an educational program around restoration efforts, which emphasizes stewardship and – while including parishioners of all ages – particularly involves adolescents and pre-adolescents



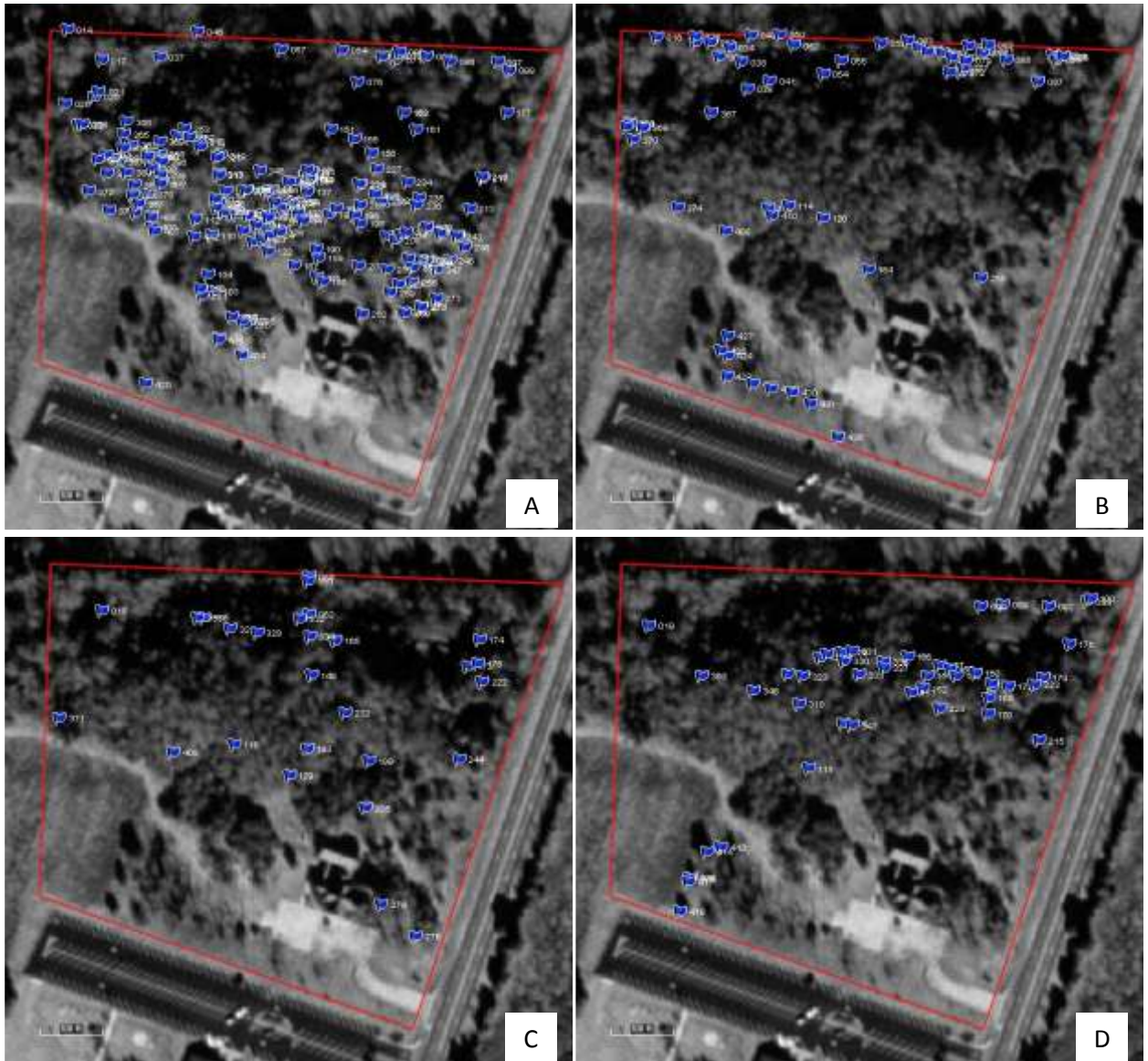


Figure 6. The distributions of the four most common tree species: *Quercus nigra* (A), *Carya illinoensis* (B), *Quercus virginiana* (C), and *Pinus taeda* (D).



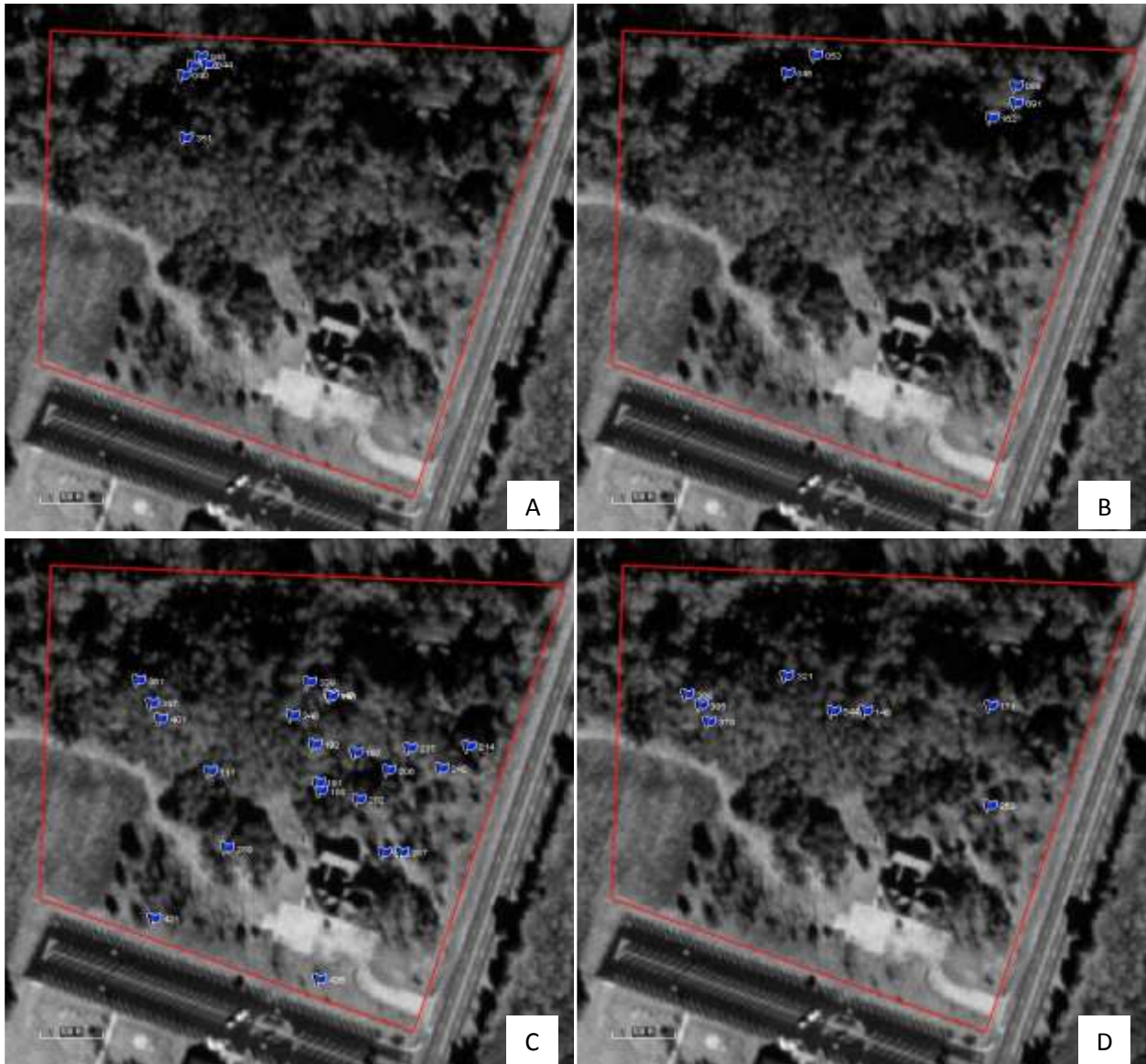


Figure 7. The distributions of four moderately frequent indigenous tree species: *Liquidambar styraciflua* (A), *Acer rubrum* (B), *Prunus serotina* (C), and *Magnolia grandiflora* (D).

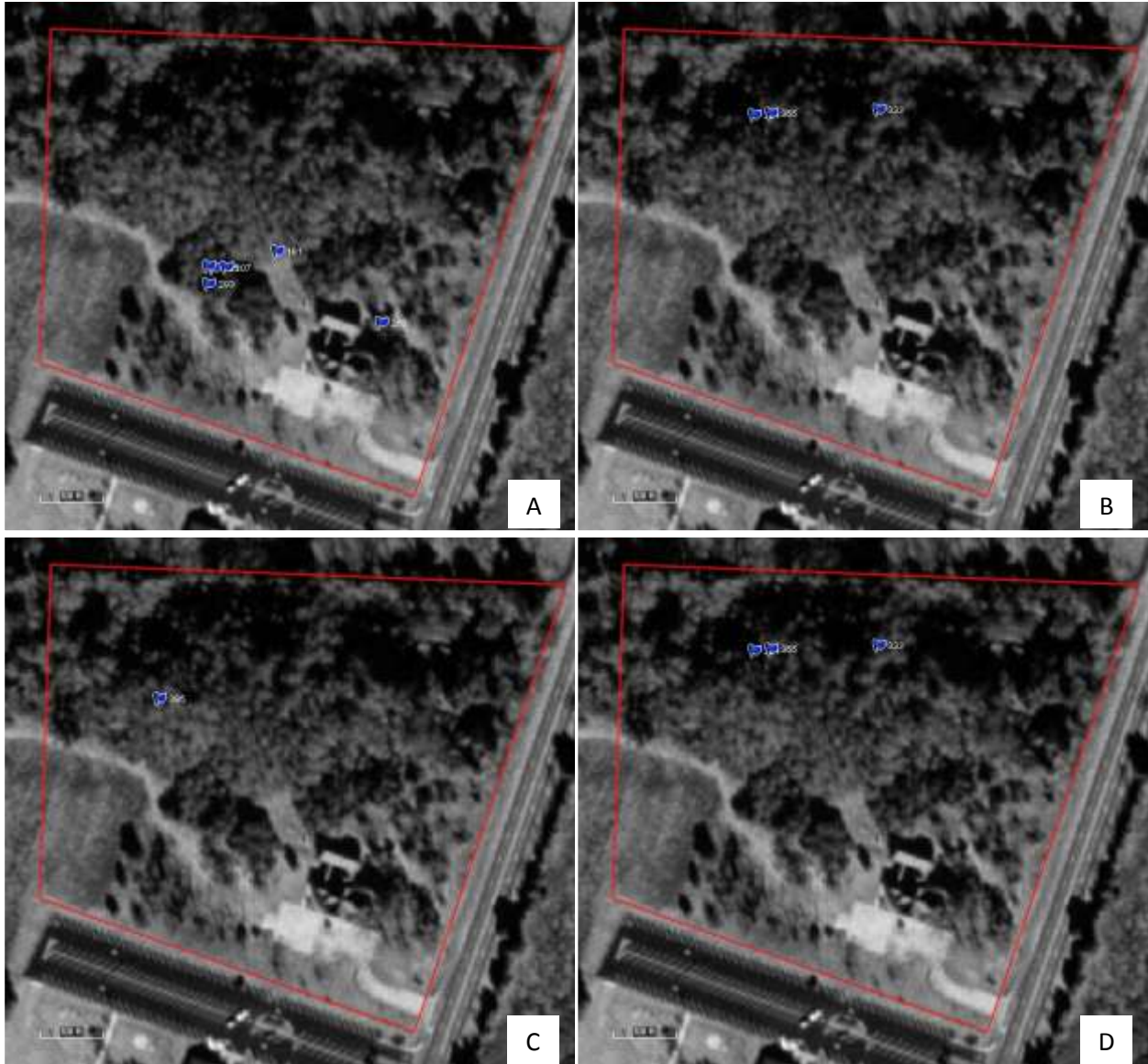


Figure 8. The distributions of two non-indigenous, invasive species: *Ligustrum lucidum* (A) and *Sapium sebiferum* (B), and two infrequent indigenous species: *Ilex vomitoria* (C) and *Nyssa sylvatica* var. *biflora* (D).

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**Appendix A. Results of tree survey.** Key to abbreviations: ACERUB = *Acer rubrum* / red maple; [ALBJUL] = *Albizia julibrisin* / mimosa; BETNIG = *Betula nigra* / river birch; BUTCAP = *Butia capitata* / pindo palm; CARILL = *Carya illinoensis* / pecan; CELLAE = *Celtis laevigata* / hackberry; [CINCAM] = *Cinnamomum camphora* / camphortree; DIOVIR = *Diospyros virginiana* / persimmon; ILECOR = *Ilex cornuta* / Chinese holly; ILEVOM = *Ilex vomitoria* / yaupon holly; JUNVIR = *Juniperus virginiana* / red cedar; LAGIND = *Lagerstroemia indica* / crape myrtle; [LIGLUC] = *Ligustrum lucidum* / glossy privet; LIQSTY = *Liquidambar styraciflua* / sweetgum; MAGGRA = *Magnolia grandiflora* / bullbay magnolia; MORRUB = *Morus rubra* / red mulberry; NYSSYL = *Nyssa sylvatica* / blackgum; PINELL = *Pinus elliottii* / slash pine; PINTAE = *Pinus taeda* / loblolly pine; PRUCAR = *Prunus caroliniana* / Carolina laurelcherry; PRUSER = *Prunus serotina* / blackcherry; QUENIG= *Quercus nigra* / water oak; QUEMIC = *Quercus michauxii* / swamp chestnut oak; QUESTE = *Quercus stellata* / post oak; QUEVIR = *Quercus virginiana* / live oak; [SAPSEB] = *Sapium sebiferum* (*Triadica sebifera*) / Chinese tallow tree; \* = seedling or sapling plant; NA = not applicable; [bracket] = non-indigenous species with invasive potential, which should be targeted for removal.

Waypoint	Species / Corner	DBH (mm)	Latitude	Longitude
13	NE	NA	30.89435	-83.27181
14	QUENIG	672	30.89435	-83.27178
15	PRUCAR	257	30.89433	-83.2717
16	CARILL	945	30.89432	-83.27168
17	QUENIG	177	30.89422	-83.2716
18	QUEVIR	263	30.89414	-83.2716
19	PINTAE	485	30.89407	-83.27172
20	QUENIG	226	30.89406	-83.27164
21	PINTAE	788	30.89408	-83.27161
22	CARILL	270	30.89394	-83.27171
23	CARILL	292	30.89394	-83.27181
24	CARILL	441	30.89394	-83.27181
25	CARILL	360	30.89392	-83.27183
26	QUENIG	235	30.89403	-83.27178
27	CARILL	255	30.8943	-83.27149
28	CARILL	211	30.89432	-83.27149
29	PRUCAR	261	30.89428	-83.27144
30	PRUCAR	280	30.89429	-83.27145
31	CARILL	261	30.89424	-83.27137
32	CELLAE	222	30.89424	-83.27137
33	CARILL	721	30.8943	-83.27141
34	CARILL	580	30.89428	-83.27131
35	CELLAE	150	30.89422	-83.2713
36	CELLAE	122	30.89428	-83.27133
37	QUENIG	130	30.89424	-83.27131
38	CARILL	268	30.89422	-83.27126
39	CARILL	270	30.8941	-83.27122
40	LIQSTY	115	30.89416	-83.27119

41	CARILL	282	30.89414	-83.27111
42	LIQSTY	525	30.8942	-83.27114
43	LIQSTY	148	30.89424	-83.2711
44	LIQSTY	124	30.89421	-83.27107
45	ACERUB	167	30.89417	-83.27103
46	QUENIG	147	30.89435	-83.27112
47	[SAPSEB]	139	30.89431	-83.27129
48	CARILL	321	30.89433	-83.27121
49	[CINCAM]	229	30.89436	-83.27106
50	CARILL	697	30.89434	-83.27106
51	[SAPSEB]	225	30.89422	-83.2709
52	CARILL	625	30.89429	-83.27099
53	ACERUB	295	30.89425	-83.27089
54	CARILL	410	30.89417	-83.27084
55	CARILL	250	30.89423	-83.27075
56	DIOVIR	240	30.89426	-83.27074
57	QUENIG	1050	30.89428	-83.2707
58	QUEVIR	959	30.89431	-83.27056
59	CARILL	197	30.89431	-83.27055
60	QUEVIR	568	30.89429	-83.27056
61	DIOVIR	290	30.8943	-83.27053
62	QUEVIR	600	30.89415	-83.27055
63	CARILL	515	30.89433	-83.27042
64	QUENIG	211	30.89428	-83.27039
65	CARILL	421	30.89429	-83.27036
66	CARILL	420	30.89428	-83.27032
67	CARILL	376	30.89427	-83.27024
68	QUENIG	445	30.89426	-83.27019
69	CARILL	229	30.89426	-83.27019

70	CARILL	844	30.89431	-83.27011
71	QUENIG	230	30.89424	-83.27012
72	CARILL	122	30.89419	-83.27015
73	CARILL	200	30.89419	-83.27021
74	[SAPSEB]	265	30.89413	-83.27038
75	[SAPSEB]	195	30.89413	-83.27036
76	QUENIG	168	30.89415	-83.27031
77	CARILL	178	30.89421	-83.27013
78	QUENIG	73	30.89426	-83.27011
79	CARILL	121	30.89424	-83.27012
80	QUENIG	220	30.89428	-83.2701
81	CARILL	230	30.89429	-83.27001
82	CARILL	289	30.89428	-83.27004
83	CARILL	1045	30.89431	-83.27001
84	QUENIG	247	30.89426	-83.26996
85	CARILL	396	30.89425	-83.26992
86	QUENIG	396	30.89424	-83.26984
87	CARILL	277	30.89416	-83.26976
88	ACERUB	288	30.89414	-83.26988
89	PINTAE	950	30.8942	-83.26994
90	PINTAE	883	30.89419	-83.27004
91	ACERUB	233	30.89406	-83.26987
92	PINTAE	950	30.8942	-83.2697
93	CARILL	438	30.89428	-83.26968
94	CARILL	331	30.89425	-83.26967
95	CARILL	505	30.89427	-83.26964
96	CARILL	354	30.89427	-83.26963
97	QUENIG	173	30.89425	-83.26961
98	QUENIG	306	30.89421	-83.26954
99	PINTAE	650	30.89422	-83.26951
100	PINTAE	650	30.89423	-83.26949
101	NE	NA	30.89431	-83.2693
102	[SAPSEB]	194	30.89411	-83.26965
103	QUENIG	404	30.89323	-83.27101
104	QUENIG	270	30.8933	-83.27104
105	[LIGLUC]	*	30.89332	-83.27102
106	[LIGLUC]	*	30.89333	-83.27104
107	[LIGLUC]	*	30.89333	-83.27095
108	[CINCAM]	*	30.89337	-83.27089
109	[ALBJUL]	108	30.89348	-83.27098
110	QUENIG	291	30.89347	-83.27103

111	PRUSER	155	30.89346	-83.27104
112	QUENIG	277	30.89353	-83.27111
113	CARILL	355	30.89358	-83.2711
114	CARILL	312	30.8936	-83.271
115	QUENIG	346	30.89356	-83.27094
116	QUEVIR	279	30.89357	-83.27092
117	QUENIG	268	30.89357	-83.2709
118	PINTAE	328	30.89347	-83.2709
119	QUENIG	248	30.89349	-83.27087
120	CARILL	550	30.89355	-83.27083
121	QUENIG	448	30.89344	-83.27082
122	QUENIG	292	30.8934	-83.27074
123	QUENIG	315	30.89345	-83.27078
124	QUENIG	473	30.89347	-83.27074
125	QUENIG	350	30.89351	-83.27075
126	QUENIG	261	30.89356	-83.27077
127	QUENIG	410	30.89357	-83.2707
128	QUENIG	480	30.89349	-83.27069
129	QUEVIR	435	30.89345	-83.27064
130	QUENIG	264	30.89355	-83.27061
131	QUENIG	336	30.89356	-83.27062
132	QUENIG	413	30.89357	-83.2706
133	QUENIG	291	30.89362	-83.27062
134	QUENIG	460	30.89362	-83.27061
135	QUENIG	315	30.8936	-83.27068
136	QUENIG	262	30.89361	-83.27063
137	QUENIG	488	30.89367	-83.27055
138	QUENIG	350	30.89371	-83.27056
139	QUENIG	365	30.89372	-83.27054
140	MAGGRA	*	30.89373	-83.27062
141	QUENIG	409	30.89354	-83.27057
142	QUENIG	230	30.89373	-83.27057
143	QUENIG	280	30.89374	-83.27056
144	QUENIG	268	30.89372	-83.27054
145	QUENIG	388	30.89375	-83.27053
146	QUENIG	268	30.89376	-83.27055
147	PRUSER	328	30.89381	-83.27044
148	PRUSER	275	30.8938	-83.27043
149	QUEVIR	211	30.89388	-83.27053
150	[CINCAM]	318	30.8939	-83.27041
151	QUENIG	303	30.89394	-83.27044

152	PINTAE	251	30.89383	-83.27033
153	PINTAE	355	30.89381	-83.27039
154	PINTAE	576	30.89388	-83.27031
155	QUENIG	343	30.8939	-83.27032
156	QUENIG	284	30.89384	-83.27023
157	PINTAE	760	30.89393	-83.27025
158	PINTAE	611	30.89391	-83.2702
159	PINTAE	432	30.89389	-83.27016
160	PINTAE	869	30.8939	-83.27006
161	QUENIG	276	30.89395	-83.27001
162	ACERUB	264	30.89399	-83.27
163	QUENIG	342	30.89402	-83.27007
164	[CINCAM]	*	30.89411	-83.2702
165	QUEVIR	275	30.89403	-83.27042
166	PINTAE	482	30.89397	-83.27041
167	PINTAE	275	30.89384	-83.26998
168	PINTAE	418	30.89385	-83.26998
169	PINTAE	290	30.89379	-83.26999
170	PINTAE	594	30.89372	-83.27
171	MAGGRA	194	30.89377	-83.27
172	PINTAE	540	30.89384	-83.2699
173	QUEVIR	142	30.89393	-83.26975
174	QUEVIR	974	30.89405	-83.26969
175	[CINCAM]	230	30.89406	-83.26965
176	PINTAE	595	30.89403	-83.26959
177	QUENIG	388	30.89403	-83.26955
178	QUEVIR	970	30.89395	-83.2697
179	PINTAE	671	30.89389	-83.26972
180	[ALBJUL]	295	30.89341	-83.2707
181	[LIGLUC]	*	30.8934	-83.2707
182	QUENIG	243	30.89334	-83.27061
184	CARILL	762	30.89333	-83.27059
185	QUENIG	398	30.89329	-83.2705
186	QUENIG	321	30.89328	-83.27046
187	MORRUB	*	30.89327	-83.27042
188	PRUSER	295	30.89339	-83.27048
189	QUENIG	219	30.89338	-83.27048
190	QUENIG	220	30.89342	-83.2705
191	PRUSER	476	30.89343	-83.27049
192	PRUSER	241	30.89359	-83.27051
193	QUEVIR	209	30.89356	-83.27055

194	QUENIG	417	30.89357	-83.27044
195	QUENIG	351	30.89359	-83.2704
196	QUENIG	327	30.89357	-83.27031
197	PRUSER	311	30.89356	-83.2703
198	QUENIG	253	30.89353	-83.27028
199	QUEVIR	138	30.89351	-83.27024
200	PRUCAR	187	30.89343	-83.27018
201	QUENIG	231	30.89335	-83.27028
202	PRUSER	219	30.89336	-83.27029
203	[ALBJUL]	360	30.89339	-83.27038
204	MORRUB	295	30.89332	-83.27038
205	QUEVIR	325	30.89331	-83.27025
206	PRUSER	235	30.89348	-83.27014
207	QUENIG	242	30.89348	-83.27015
208	QUENIG	257	30.89346	-83.2701
209	QUENIG	358	30.89349	-83.27007
210	QUENIG	248	30.8935	-83.27005
211	QUENIG	220	30.89349	-83.26987
212	PINELL	471	30.89363	-83.26968
213	QUENIG	240	30.89361	-83.26973
214	PRUSER	188	30.89359	-83.26974
215	PINTAE	480	30.89361	-83.26974
216	PINELL	280	30.89366	-83.26978
217	QUENIG	450	30.89374	-83.26967
218	QUENIG	260	30.89374	-83.26967
219	[CINCAM]	200	30.89373	-83.26983
220	[CINCAM]	191	30.89374	-83.26983
221	[CINCAM]	191	30.89374	-83.26986
222	QUEVIR	978	30.89387	-83.26967
223	PINTAE	668	30.89386	-83.26976
224	QUENIG	717	30.89363	-83.27013
225	QUENIG	251	30.89363	-83.27018
226	QUENIG	395	30.89366	-83.27021
227	QUENIG	399	30.89377	-83.2702
228	PINTAE	350	30.89374	-83.27024
229	QUENIG	393	30.8937	-83.27028
230	JUNVIR	140	30.8937	-83.27029
231	QUENIG	900	30.8937	-83.27029
232	QUEVIR	1080	30.89372	-83.27036
233	QUENIG	547	30.89361	-83.27028
234	QUENIG	719	30.89372	-83.27005



235	QUENIG	442	30.89365	-83.26999
236	QUENIG	392	30.89362	-83.27
237	PRUSER	253	30.89358	-83.27004
238	[ALBJUL]	382	30.89357	-83.27006
239	QUENIG	268	30.89351	-83.26995
240	QUENIG	244	30.89352	-83.26994
241	QUENIG	825	30.8935	-83.26988
242	PRUSER	214	30.8935	-83.26987
243	QUENIG	300	30.89349	-83.26979
244	QUEVIR	482	30.89353	-83.26978
245	QUENIG	815	30.89344	-83.26975
246	QUENIG	402	30.89338	-83.26983
247	QUENIG	430	30.89334	-83.26989
248	QUENIG	307	30.89337	-83.26992
249	QUENIG	364	30.89338	-83.26994
250	QUENIG	205	30.89338	-83.26997
251	QUENIG	380	30.89338	-83.27003
252	QUENIG	265	30.89335	-83.27001
253	MAGGRA	*	30.89333	-83.26999
254	QUENIG	254	30.89328	-83.26998
255	QUENIG	319	30.89328	-83.27001
256	CARILL	366	30.8933	-83.27002
257	QUENIG	261	30.89327	-83.27008
258	QUENIG	478	30.89333	-83.27014
259	QUENIG	333	30.89323	-83.27012
260	QUENIG	662	30.89314	-83.27026
261	PRUCAR	241	30.89308	-83.27023
262	LAGIND	*	30.89308	-83.27018
263	[LIGLUC]	*	30.8931	-83.27017
264	PRUCAR	206	30.89312	-83.27015
265	PRUSER	244	30.89313	-83.27015
266	PRUCAR	144	30.89313	-83.27012
267	PRUSER	299	30.89313	-83.27007
268	QUENIG	361	30.89315	-83.27006
269	QUENIG	265	30.89315	-83.27005
271	QUENIG	265	30.89318	-83.26996
272	QUENIG	351	30.89318	-83.26997
273	QUENIG	503	30.89321	-83.26989
274	[CINCAM]	450	30.89304	-83.26996
275	PRUCAR	253	30.89302	-83.26995
276	QUEVIR	891	30.89276	-83.26998

277	QUEMIC	85	30.89276	-83.27019
278	CORFLO	170	30.8929	-83.27017
279	QUEVIR	1089	30.89289	-83.27016
280	JUNVIR	420	30.89303	-83.27065
281	BUTCAP	*	30.89308	-83.27069
282	[ALBJUL]	*	30.89311	-83.27075
283	BUTCAP	*	30.89309	-83.27076
284	[LIGLUC]	493	30.89308	-83.27078
285	QUENIG	261	30.8931	-83.27082
286	QUENIG	330	30.89308	-83.27085
287	QUENIG	205	30.8931	-83.27087
288	QUENIG	264	30.89312	-83.27092
289	PRUSER	160	30.89313	-83.27094
290	[CINCAM]	258	30.8932	-83.27097
291	QUENIG	404	30.8932	-83.27107
292	QUENIG	268	30.89324	-83.27108
293	[LIGLUC]	*	30.89325	-83.27104
294	[CINCAM]	*	30.89335	-83.27093
295	QUENIG	341	30.8936	-83.27101
296	QUENIG	247	30.89361	-83.27099
297	QUENIG	359	30.89366	-83.27096
298	QUENIG	349	30.89356	-83.27093
299	QUENIG	257	30.89356	-83.2709
300	QUENIG	313	30.89356	-83.27085
301	QUENIG	364	30.89352	-83.27081
302	QUENIG	258	30.89355	-83.27075
303	QUENIG	317	30.89362	-83.27071
304	QUENIG	254	30.89367	-83.27073
305	PINTAE	299	30.89367	-83.27073
306	QUENIG	268	30.89367	-83.27074
307	QUENIG	272	30.89366	-83.27076
308	QUENIG	252	30.89366	-83.27087
309	QUENIG	369	30.89357	-83.27097
310	QUENIG	321	30.89357	-83.27097
311	QUENIG	341	30.89359	-83.27101
312	QUENIG	429	30.89363	-83.27101
313	QUENIG	334	30.89373	-83.271
314	QUENIG	371	30.89367	-83.27086
315	QUENIG	292	30.89367	-83.27086
316	SABPAL	*	30.89372	-83.27096
317	QUENIG	334	30.89373	-83.271

318	PINTAE	360	30.89375	-83.27095
319	QUENIG	293	30.89381	-83.27099
320	QUENIG	225	30.89381	-83.27101
321	MAGGRA	*	30.89388	-83.27102
322	PINTAE	650	30.89388	-83.27101
323	PINTAE	567	30.89387	-83.27094
324	PINTAE	264	30.89395	-83.27085
325	PINTAE	863	30.89397	-83.27082
326	QUEVIR	1113	30.89408	-83.27095
327	ILECOR	*	30.89408	-83.27076
328	QUEVIR	325	30.89406	-83.27081
329	PINTAE	556	30.89398	-83.27074
330	PINTAE	900	30.89394	-83.27073
331	PINTAE	807	30.89398	-83.27069
332	QUEVIR	812	30.89413	-83.2706
333	NYSSYL	167	30.89402	-83.27057
334	QUEVIR	593	30.89405	-83.27055
335	PINTAE	420	30.89388	-83.27065
336	PINTAE	317	30.89394	-83.27053
337	PINTAE	480	30.89391	-83.27053
338	QUESTE	*	30.89387	-83.27053
339	PRUSER	323	30.89386	-83.27055
340	PRUSER	281	30.89371	-83.27063
341	QUENIG	346	30.89371	-83.27062
342	QUENIG	358	30.89371	-83.27065
343	PINTAE	452	30.89366	-83.27068
344	MAGGRA	73	30.89373	-83.27079
345	QUENIG	331	30.89375	-83.27079
346	QUENIG	265	30.89388	-83.2711
347	QUENIG	251	30.89385	-83.2711
348	PINTAE	673	30.8938	-83.27118
349	QUENIG	361	30.8939	-83.27121
350	JUNVIR	192	30.89389	-83.2712
351	LIQSTY	265	30.89389	-83.27117
352	QUENIG	246	30.89389	-83.27115
353	QUENIG	294	30.89393	-83.27118
354	NYSSYL	154	30.89398	-83.2712
355	NYSSYL	679	30.89399	-83.27111
356	QUEVIR	640	30.89412	-83.27109
357	QUEVIR	443	30.89412	-83.27111
358	QUENIG	277	30.89382	-83.2713

359	QUENIG	369	30.89387	-83.2713
360	QUENIG	293	30.8938	-83.27133
361	PRUSER	241	30.89385	-83.27141
362	QUENIG	340	30.89385	-83.27144
363	PINTAE	414	30.89386	-83.27145
364	QUENIG	423	30.89384	-83.27148
365	QUENIG	343	30.8939	-83.27148
366	QUENIG	406	30.89395	-83.27147
367	CARILL	250	30.89399	-83.2714
368	QUENIG	416	30.89394	-83.27169
369	CARILL	587	30.89392	-83.27174
370	CARILL	265	30.89387	-83.27179
371	QUEVIR	722	30.89367	-83.2718
372	QUENIG	306	30.89365	-83.27165
373	QUENIG	362	30.89373	-83.27156
374	CARILL	518	30.89358	-83.27156
375	QUENIG	261	30.89357	-83.27155
376	QUESTE	*	30.89356	-83.27144
377	QUENIG	258	30.89356	-83.27141
378	QUENIG	383	30.89364	-83.27135
379	MAGGRA	*	30.89367	-83.27141
380	QUENIG	281	30.89364	-83.27143
381	QUESTE	*	30.89359	-83.27141
382	QUENIG	294	30.89359	-83.27141
383	QUENIG	334	30.8936	-83.2714
384	QUENIG	250	30.89368	-83.27142
385	MAGGRA	*	30.89374	-83.27145
386	QUENIG	240	30.89373	-83.27146
387	QUENIG	367	30.89378	-83.2715
388	MAGGRA	*	30.89379	-83.27152
389	QUENIG	393	30.89379	-83.27153
390	QUESTE	*	30.89381	-83.27154
391	QUENIG	300	30.89381	-83.27157
392	QUENIG	423	30.89379	-83.27161
393	QUESTE	*	30.89373	-83.27147
394	QUENIG	313	30.8938	-83.27136
395	ILEVOM	*	30.89377	-83.2713
396	QUENIG	365	30.89378	-83.27129
397	PRUSER	319	30.89375	-83.27134
398	QUENIG	339	30.89375	-83.27134
399	QUENIG	297	30.89372	-83.27129

400	QUENIG	300	30.89369	-83.27129
401	PRUSER	252	30.89369	-83.27129
402	QUENIG	257	30.89368	-83.27129
403	QUESTE	*	30.89363	-83.27131
404	QUESTE	*	30.89353	-83.27134
405	QUENIG	318	30.89354	-83.27134
406	QUENIG	431	30.8935	-83.27133
407	QUENIG	357	30.89348	-83.27132
408	CARILL	500	30.89348	-83.27132
409	QUEVIR	308	30.89354	-83.27122
410	CARILL	358	30.89355	-83.27108
411	QUESTE		30.8935	-83.27117
412	QUENIG	284	30.89346	-83.27112
413	PINTAE	396	30.89312	-83.27133
414	PINTAE	900	30.8931	-83.2714
415	PINTAE	300	30.89298	-83.27148
416	PINTAE	300	30.89298	-83.27149
417	PINTAE	300	30.89297	-83.27149
418	PINTAE	505	30.89284	-83.27153
419	SW	NA	30.89275	-83.27157
420	QUENIG	607	30.89282	-83.27135
421	PRUSER	295	30.89282	-83.27131
422	QUESTE	*	30.89284	-83.27128
423	CARILL	mature	30.89285	-83.2713
424	CARILL	mature	30.89294	-83.27129
425	CARILL	mature	30.89296	-83.27133
426	JUNVIR	238	30.89291	-83.27124
427	CARILL	mature	30.89303	-83.27129
428	CARILL	mature	30.89282	-83.27116
429	CARILL	mature	30.8928	-83.27107
430	CARILL	mature	30.89279	-83.27097
431	CARILL	mature	30.89274	-83.27087
432	QUENIG	620	30.89302	-83.27098
433	QUENIG	538	30.89301	-83.27098
434	QUENIG	449	30.89295	-83.27087
435	CARILL	mature	30.8926	-83.27073
436	PRUSER	275	30.89257	-83.27047
438	BETNIG	224	30.89262	-83.27041
439	SE	NA	30.89239	-83.27008

**Appendix B.** General list of species observed. Key to symbols used: ◊ = indigenous (native) species; Δ = species indigenous to the southeastern United States, but not indigenous to the immediate area; \* = non-indigenous species; [bracket] = invasive, non-indigenous species that should be a target for removal.

Scientific Name	Common Name	Status
<i>Acalypha gracilens</i>	slender three-seed mercury	◊
<i>Acer rubrum</i>	redmaple	◊
[ <i>Albizia julibrisin</i> ]	mimosa	*
[ <i>Aleurites fordii</i> ]	tungoil tree	*
<i>Ambrosia artemisiifolia</i>	common ragweed	◊
[ <i>Ardisia crenata</i> ]	coralberry	*
<i>Asplenium platyneuron</i>	ebony spleenwort fern	◊
<i>Baccharis halimifolia</i>	eastern baccharis	◊
<i>Betula nigra</i>	river birch	◊
[ <i>Bidens alba</i> ]	beggarticks	*
<i>Boehmeria cylindrica</i>	false nettle	◊
<i>Butia capitata</i>	pindo palm	*
<i>Callicarpa americana</i>	American beautyberry	◊
<i>Campsis radicans</i>	trumpet creeper	◊
<i>Carex caroliniana</i>	Carolina sedge	◊
<i>Carex longii</i>	Long's sedge	◊
<i>Carex lurida</i>	shallow sedge	◊
<i>Carya illinoensis</i>	pecan	Δ
<i>Celtis laevigata</i>	hackberry	◊
<i>Chamaecrista fasciculatum</i>	partridge pea	◊
<i>Chasmanthium laxum</i>	slender woodoats	◊
[ <i>Cinnamomum camphora</i> ]	camphortree	*
<i>Cirsium nuttallii</i>	Nuttall's thistle	◊
<i>Commelina communis</i>	Asiatic dayflower	*
<i>Conoclinium coelestinum</i>	blue mistflower	◊

<i>Conyza bonariensis</i>	asthma weed	*
<i>Cynodon dactylon</i>	coastal Bermuda grass	*
<i>Cyperus croceus</i>	Baldwin's flatsedge	◊
<i>Cyperus haspan</i>	a flatsedge	◊
<i>Cyperus retrorsus</i>	a flatsedge	◊
<i>Cyperus virens</i>	green flatsedge	◊
<i>Dactyloctenium aegyptium</i>	Durban crowfootgrass	*
<i>Desmodium tortuosum</i>	Florida beggarticks	*
<i>Dichanthelium dichotomum</i>	cypress witchgrass	◊
<i>Dichondra carolinensis</i>	Carolina ponysfoot	◊
<i>Digitaria sp.</i>	a crabgrass	*
<i>Diodia teres</i>	poor joe	◊
<i>Diospyros virginiana</i>	persimmon	◊
<i>Echinochloa colona</i>	jungle rice	*
<i>Eclipta alba</i>	false daisy	◊
[ <i>Elaeagnus pungens</i> ]	silverthorn	*
<i>Eleusine indica</i>	Indian goosegrass	*
<i>Erechtites hieraciifolius</i>	American burngrass	◊
<i>Eremochloa ophiuroides</i>	centipedegrass	*
<i>Saccharum giganteum</i>	sugarcane plumegrass	◊
<i>Eupatorium capillifolium</i>	dogfennel	◊
<i>Poinsettia heterophylla</i>	fiddler's spurge	*
<i>Gelsemium sempervirens</i>	yellow jessamine	◊
[ <i>Hedera helix</i> ]	English ivy	*
<i>Hypericum hypericoides</i>	St. Andrew's cross	◊
<i>Ilex cornuta</i>	Chinese holly	*

<i>Ilex vomitoria</i>	yaupon	◇
<i>Ipomoea hederifolia</i>	scarlet morningglory	◇
<i>Jacquemontia tamnifolia</i>	hairy clustervine	◇
<i>Juncus effusus</i>	soft rush	◇
<i>Juniperus virginiana</i>	eastern redcedar	◇
<i>Kyllinga brevifolia</i>	shortleaf spikesedge	*
<i>Kyllinga odorata</i>	fragrant spikesedge	*
<i>Kyllinga pumila</i>	low spikesedge	◇
<i>Lagerstroemia indica</i>	crapemyrtle	*
[ <i>Ligustrum lucidum</i> ]	glossy privet	*
[ <i>Ligustrum sinense</i> ]	Chinese privet	*
<i>Liquidambar styraciflua</i>	sweetgum	◇
<i>Liriope spicata</i>	monkey grass	*
[ <i>Lonicera japonica</i> ]	Japanese honeysuckle	*
<i>Ludwigia decurrens</i>	wingleaf primrosewillow	◇
[ <i>Lygodium japonicum</i> ]	Japanese climbing fern	*
<i>Magnolia grandiflora</i>	bullbay magnolia	◇
[ <i>Melia azedarach</i> ]	Chinaberry	*
<i>Melochia corchorifolia</i>	chocolate weed	*
<i>Mikania scandens</i>	hempvine	◇
<i>Morus rubra</i>	red mulberry	*
[ <i>Nandina domestica</i> ]	nandina	*
<i>Nephrolepis</i> sp.	swordfern	*
<i>Nyssa sylvatica</i>	blackgum	◇
<i>Oplismenus hirtellus</i>	basketgrass	◇
<i>Oxalis corniculata</i>	common yellow woodsorrel	◇
<i>Panicum scoparium</i>	velvet witchgrass	◇
<i>Parthenocissus quinquefolia</i>	Virginia creeper	◇
<i>Paspalum setaceum</i>	thin paspalum	◇
<i>Paspalum notatum</i>	Bahiagrass	*

<i>Paspalum urvillei</i>	Vaseygrass	*
<i>Passiflora incarnata</i>	passionflower	◇
<i>Phyllanthus urinaria</i>	chamber bitter	*
<i>Physalis angulata</i>	cutleaf groundcherry	◇
<i>Phytolacca americana</i>	pokeweed	◇
<i>Pinus elliotii</i>	slash pine	◇
<i>Pinus taeda</i>	loblolly pine	◇
<i>Polygonum hydropiperoides</i>	swamp smartweed	◇
<i>Polypodium polypodioides</i>	resurrection fern	◇
<i>Portulaca pilosa</i>	pink purslane	◇
<i>Prunus caroliniana</i>	Carolina laurelcherry	◇
<i>Prunus serotina</i>	blackcherry	◇
<i>Pyracantha coccinea</i>	pyracantha	*
<i>Pyrrhopappus carolinianus</i>	pyrrhopappus	◇
<i>Quercus michauxii</i>	swamp chestnut oak	◇
<i>Quercus nigra</i>	water oak	◇
<i>Quercus stellata</i>	post oak	◇
<i>Quercus virginiana</i>	live oak	◇
<i>Richardia brasiliensis</i>	buttonweed	*
<i>Rubus cuneifolius</i>	sand blackberry	◇
<i>Rubus trivialis</i>	southern dewberry	◇
<i>Sabal palmetto</i>	cabbage palm	Δ
<i>Salix nigra</i>	blackwillow	◇
<i>Sambucus canadensis</i>	American elderberry	◇
[ <i>Sapium sebiferum</i> ]	Chinese tallowtree	*
<i>Scirpus cyperinus</i>	wool grass	◇
<i>Senna obtusifolia</i>	sicklepod	*
<i>Sida rhombifolia</i>	Cuban jute	◇
<i>Smilax bona-nox</i>	saw greenbrier	◇
<i>Smilax laurifolia</i>	bamboo vine	◇

<i>Smilax rotundifolia</i>	bullbrier	◇
<i>Smilax smallii</i>	Jackson vine	◇
<i>Solanum americanum</i>	American black nightshade	◇
<i>Solanum carolinense</i>	Carolina horsenettle	◇
<i>Solidago canadensis</i>	goldenrod	◇
<i>Toxicodendron radicans</i>	poison ivy	◇
<i>Urochloa platyphylla</i>	broadleaf signalgrass	◇
<i>Vitis rotundifolia</i>	muscadine	◇
<i>Wahlenbergia marginata</i>	southern rockbell	*
[ <i>Wisteria sinensis</i> ]	Chinese wisteria	*
<i>Woodwardia virginica</i>	Virginia chain fern	◇