

AVIFAUNA MONITORING PLAN

NATCHEZ TRACE PARKWAY

AVIFAUNA

INVENTORY PROJECT



FOR

NATIONAL PARK SERVICE

NATCHEZ TRACE PARKWAY

BY

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MONITORING PLAN FOR AVIFAUNA ON THE NATCHEZ TRACE PARKWAY

Introduction

The following pages outline a detailed plan for monitoring avian populations on the Natchez Trace Parkway. We will provide a narrative outlining the premises, goals, methodologies, manpower needs and expected results of this proposed program. Also included is a list of target species and detailed discussion of the proposed methodologies.

Premises

The basic premises of this proposed plan are as follows:

1. A monitoring program is necessary for understanding and management of the various ecosystems of the Natchez Trace Parkway.
2. Although input from outside sources is useful, monitoring conducted by resource management personnel holds the greatest promise of achieving an understanding of ecosystems parkwide.
3. A fundamental, but scientifically valid program initiated now is more desirable than a more ambitious program initiated sometime in the future.
4. Data collected must be quantifiable.
5. Data management is of the utmost importance.

Goals

This monitoring program for birds on the Natchez Trace Parkway has the following goals:

1. To determine long term changes in abundance of target species at selected sites.
2. To determine long term changes in diversity of avian populations at selected sites.
3. To continue to refine and expand methods used for monitoring bird species.
4. To serve as a mechanism for expanding public awareness of the importance of these animals as components of functioning ecosystems.

Methodologies

A detailed review of the field methods to be utilized in this monitoring program are provided in the following pages. This selection of methodologies was determined by the need to balance the availability of suitable personnel against the need to establish a valid, quantifiable

monitoring program. Data analyzed from our baseline inventory from 1999-2000 indicates that road counts for raptors provide excellent data for inventory purposes, but are not suitable for a monitoring program utilizing agency personnel because the road count approach does not provide survey data with the same statistical soundness and comparability as either of the point count methods discussed below. These things considered, this monitoring plan relies heavily on two methodologies; Breeding Bird Surveys (BBS) and Southeastern Point Counts (SEPTCT). We recommend that these methods be used at selected sites along the Natchez Trace Parkway with efforts centering on the period of May through June and November. This period is a time of the most avian activity on the Parkway and avoids the busy summer months. It is recommended that these methodologies be used to monitor the fifteen species listed in this plan. These species, in general, are abundant enough on the Parkway to provide a reasonable sample to allow quantitative analysis among sampling periods. They also represent species which are permanent residents along the Parkway, as well as neotropical migrant species. The latter have been a source of concern for numerous Federal and state agencies, as well as Partners in Flight, the collective energy of more than 150 governmental agencies and private organizations committed to conserving birds and their habitats across the Western Hemisphere. Monitoring should take place at least every five years, but three year intervals would be preferred to pick up subtle changes in avian populations.

Statistical power, the likelihood that a given statistical procedure will correctly find a difference between two samples when that difference truly exists should not become a factor in this monitoring plan since the proposed methodologies mirror the original techniques utilized in the original inventory process. These methodologies are standardized to the degree that direct statistical analysis may be made between data over several years at the various locations.

Manpower Needs

The time investment required to implement this proposed monitoring plan is approximately 140 man hours per full month for the month of May, 40 man hours for the month of June and 40 man hours for the month of November during monitoring years. This time investment includes only actual monitoring hours and does not include travel time between sample locations, an especially important consideration considering the long, narrow nature of the Natchez Trace Parkway. Estimated monthly totals for the two field methodologies proposed are as follows; Breeding Bird Surveys—100 hours, all in May and Southeastern Point Counts—40 hours in May, 40 hours in June and 40 hours in November of monitoring years. This would accomplish the basic requirements for a statistically valid monitoring plan throughout the entire Parkway. If, however, Parkway personnel who would be responsible for the implementation of this program are already over committed in terms of time or responsibility, it is possible that this monitoring plan may not be successfully initiated by Parkway personnel. This would leave two alternate possibilities: (1) reduce time requirements by reducing either the temporal or spatial scope of the plan, or (2) have all or part of the plan operated by outside agencies or volunteers. Either alternative could be utilized with the simplest choice being to reduce the number of months (eliminate November samplings) during which the program is operated. This would reduce total personnel requirements, but still provide a valid, quantifiable monitoring program. Another alternative would be to solicit birding volunteers to accomplish the work through the

American Birding Association's Volunteer Opportunities for Birders Directory. The Federal Breeding Bird Survey is already conducted by volunteers so there are many birders out there who are already familiar with those protocols. The point count surveys are not hard to learn for experienced birders. Many times highly qualified volunteers will work in exchange for free camping or small volunteer stipends. To list your opportunities for birders contact American Birding Association, PO Box 6599, Colorado Springs, Colorado 80934-6599 or email: exesec@aba.org. You may also submit your listing online by going to www.americanbirding.org/voldiformn.htm.

Results and Data Management

The expected results of this monitoring program are to determine long term changes in the abundance and composition of populations of birds on the Natchez Trace Parkway. The data collected should answer such questions as "has the number of Summer Tanagers on the Parkway changed between 2000 and 2003?" or "has the composition of neotropical migrants on the Parkway changed over the past five years?"

Accurate and complete data management is a critical component of a monitoring program. During the initial baseline inventory surveys data was placed on Microsoft EXCEL spreadsheets. The same spreadsheet model is recommended for use with this monitoring plan and a copy of a blank spreadsheet on disk will be provided with this report.

Details on the use of the two proposed field methodologies, species to be monitored and recommended sites to be utilized will be provided in the following section. These techniques provide the best available combination of quantifiable data and minimal manpower requirements. The design of this program is subject to revision and modification as experience dictates and biologists writing this plan will remain available for consultation and additional research should revisions become necessary.

Species Targeted for Monitoring at the Natchez Trace Parkway

The following species should be targeted for monitoring on the Natchez Trace Parkway. This list includes a cross section of species which include permanent residents on the Parkway, as well as neotropical migrants. All species are, in general, abundant enough on the Parkway to provide a reasonable sample to allow quantitative analysis among sampling periods. In addition, the Brown-headed Cowbird should be monitored to avoid build ups in populations in areas where they may over parasitize species of concern such as Bewick's Wrens in the northern portions of the Parkway and Cerulean Warbler, Swainson's Warblers and other high priority species where ever they occur on the Parkway.

Yellow-billed Cuckoo	Blue Jay	Pine Warbler
Red-bellied Woodpecker	Tufted Titmouse	Hooded Warbler
Eastern Wood Pewee	Carolina Wren	Summer Tanager
Brown-headed Cowbird	White-eyed Vireo	Eastern Bluebird
Eastern Meadowlark	Northern Cardinal	Indigo Bunting

Overview of Monitoring Methods

Breeding Bird Surveys (BBS)

The BBS should be conducted as a systematic sampling at 800 meter (0.5 mile) intervals along the 430 mile length of the completed Parkway motor road. Sampling points should be at each milepost and at the .5 mile point between each milepost along the completed length of the Parkway. This survey should be performed largely in accordance with the standardized procedures published by the US Fish and Wildlife Service with the following exceptions; This BBS is being divided into two transects, one spanning the southern half of the Parkway (below Tupelo), to be surveyed starting around May 1 while the northern half would be surveyed after May 21 to compensate for migrant species that may not have arrived in the mid-South before the latter date. Data fields have been added to address severe weather events affecting individual sampling sites, lengthening the survey route from the standard 24.5 mile transect to that of the more lengthy Parkway, and the extension of the standard 3 minute sampling interval by 45 seconds for each vehicle passing the sampler, not to exceed an additional 3 minutes per sample point (data from the standard 3 minute sampling interval should be distinguished from that collected from any extension).

All sampling using this methodology occurs only between 30 minutes prior to local sunrise and 10:00 a.m. daylight savings time or 9:00 a.m. standard time.

An entire set of Breeding Bird Survey transects should be accomplished and data compiled during May of monitoring years.

Equipment needed for sampling using this method include a clipboard, data sheet (see Appendix A), an automobile and a pair of binoculars.

Problems encountered at these sites with this technique include the high speeds and noise from traffic along the Parkway and people (both visitors and Parkway staff) stopping to ask questions about what we were doing during the timed surveys. Traffic is always a problem and **every effort should be made to pull completely off of the Parkway road whenever possible to conduct sampling.** While courtesy should always be employed, it is best to tell people you are conducting a timed survey and your complete attention is required for the remainder of the time involved.

Southeastern Point Counts (SEPTCT)

The SEPTCT provides a stratified random sampling of habitats within the Parkway's Natural Zone lands and waters. The survey procedures and methods proposed by Accipiter Biological Consultants follow those published by the US Forest Service's Southern Research Station and is consistent with the guidelines of the monitoring working group of the Partners in Flight Neotropical Migratory Bird Conservation Program.

The sample stratification of the 300 plots located in January of 1999 proportioned the number of sampling points within each physiographic region to the relative length of the Parkway traversing it with at least two replicate sites in each major physiographic region. Within each physiographic region the sample points were further stratified to ensure that each habitat occurring within the region is represented and that habitats which have experienced fragmentation or a significant reduction in former extent due to land use changes are also sampled. Each site should be sampled twice during the breeding season (once in May and once in June) and a third time in November during each monitoring year. All sampling using this methodology should occur only between 30 minutes prior to local sunrise and 10:00 a.m. daylight savings time or 9:00 a.m. standard time. Locations of the 300 plots may be found in Appendix B of this document.

In addition to bird species encountered at the sites, databases have been developed to describe the physical and vegetative variables encountered at each site. These databases should be checked and updated every five years to account for changes in habitat due to succession, logging, fire, extreme weather or any other causes.

Equipment needed for sampling using this method include a clipboard, data sheet (see Appendix A), a pair of binoculars and a compass. A good pair of hiking boots and snake chaps are also recommended. While poisonous snakes do exist near many of the plots, the chaps are also good protection against the ever present greenbriar.

Problems encountered at these sites with this technique include the possibility of finding poisonous snakes, wasp nests near the plots, feral dogs in the woods, uneven footing and profuse amounts of greenbriar on the routes into and out of the plots. When parking to go into the plots always remember to park off of the Parkway road to the greatest extent possible.

Summary

We feel that implementing this monitoring plan for bird species on the Natchez Trace Parkway utilizing the methodologies and locations recommended herein will meet the goals listed on page 1 of this plan. They also provide for the best available combination of quantifiable data and minimal manpower requirements. However, it must be remembered that the design of this or any program should be subject to modification and revision should future experience dictate. The investigators writing this plan will remain available for consultation and additional research should such revisions prove necessary in the future.

APPENDIX A

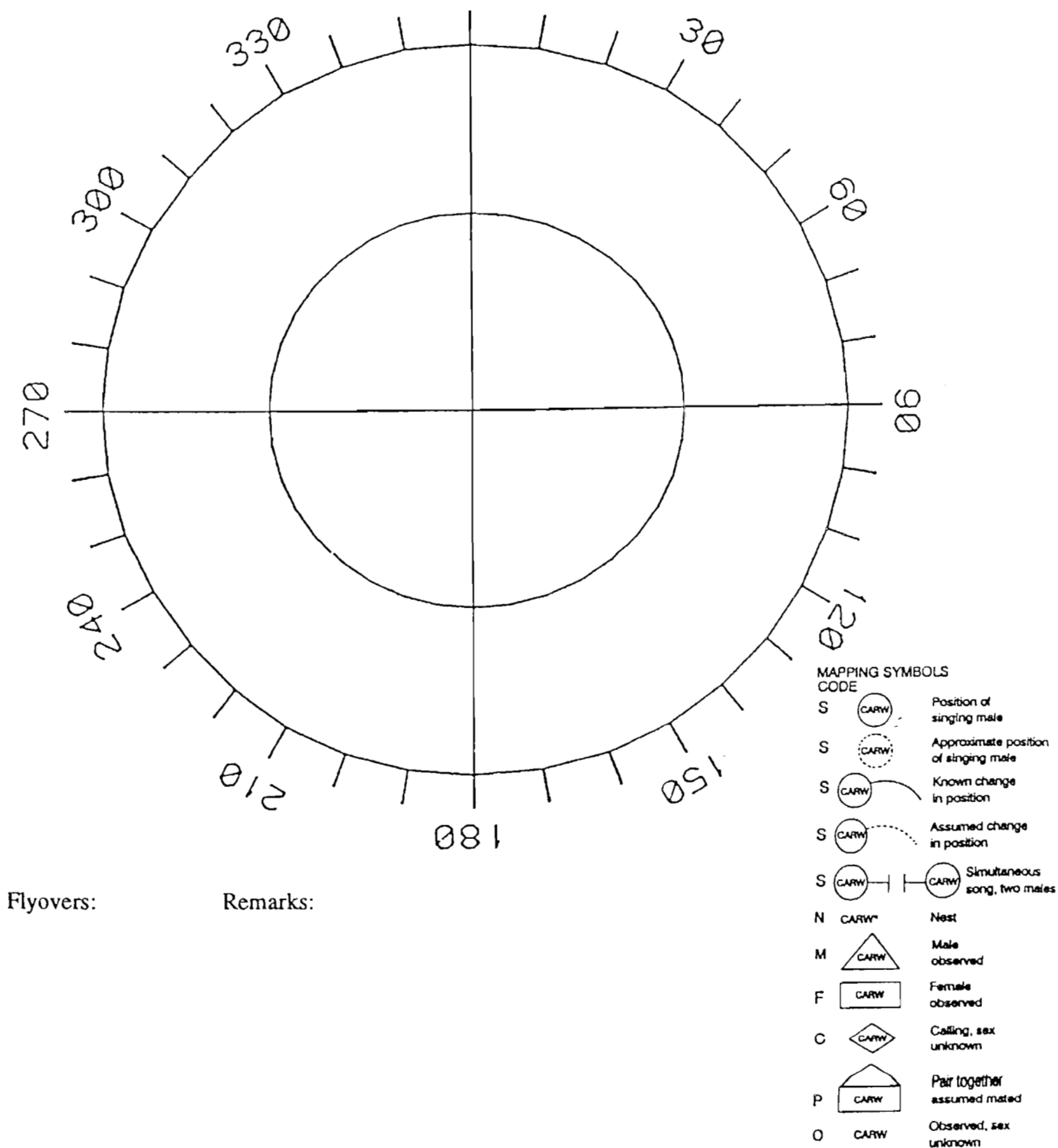
SAMPLE

FIELD SHEETS

Southeastern Point Count Data Sheet

STATE NATR STATION POINT MM / DD / YY : HH MM

OBSERVER TEMP WIND SKY CONDITION RECENT WEATHER



Flyovers:

Remarks:

STATE NAIR PARK STATION POINT M M / D D Y Y H H M M

[illegible]

Subalter	Remarks
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Breeding Bird Field Sheets

PARK: NATR STATE: PROVINCE: REGION: DATE:
SKY: WIND: START TEMP: END TEMP:
START TIME: END TIME: OBSERVER: NJH

RECENT DISTURBANCE										VEHICLES										
MILEPOST START:										MILEPOST END:										
ALFA CODE										TOT	ALFA CODE									TOT
ACFL										0	LOWA									0
AMCR										0	MODO									0
AMGO										0	NOCA									0
AMKE										0	NOMO									0
AMRO										0	NOPA									0
BAOR										0	NRWS									0
BARS										0	OROR									0
BAOW										0	OVEN									0
BEKI										0	PABU									0
BEWR										0	PARE									0
BLVU										0	PIWO									0
BAWW										0	PIWA									0
BLGR										0	PRAW									0
BLJA										0	PROW									0
BGGN										0	PUMA									0
BWWA										0	RBWO									0
BWHA										0	REVI									0
BRTH										0	RHWO									0
BHCO										0	RSHA									0
CAGO										0	RTHA									0
CACH										0	RWBL									0
CARW										0	RTHU									0
CAEG										0	RSTO									0
CEDW										0	SCTA									0
CERW										0	SSHA									0
CHSW										0	SOSP									0
CHSP										0	SUTA									0
CWWI										0	SWWA									0
CLSW										0	TUVU									0
COGR										0	WAVI									0
CONI										0	WPWI									0
COYE										0	WBNU									0
COHA										0	WEVI									0
DICK										0	WODU									0
DOWO										0	WOTH									0
EABL										0	WEWA									0
EAKI										0	YWAR									0
EAME										0	YBCU									0
EAPH										0	YBCH									0
EASO										0	YCNH									0
EAWP										0	YSFL									0
ETTI										0	YTVI									0
EUST										0	YTWA									0
FISP										0	WITU									0
FICR										0	AMRE									0
GRSP										0	LBHE									0
GRCA										0	MIKI									0
GTBH										0	RODO									0
GREG										0	MALL									0
GHOW										0	ROYT									0
GCFL										0	AMWO									0
GNBH										0	NOBO									0
HAWO										0	BACS									0
HOWA										0	BBCU									0
HOFI										0										0
HOSP										0										0
INBU										0										0
KEWA										0										0
KILL										0										0
LOSH										0										0

PARK: NATR STATE: PROVINCE: REGION: DATE:
SKY: WIND: START TEMP: END TEMP:
START TIME: END TIME: OBSERVER: NJH

Breeding Bird Summary Sheets

Park: NATR State: Province: Region:
Start Temp: End Temp: Start Sky: End Sky:
Start Wind: End Wind: Start Mileage: End Mileage:
Start Time: End Time: Observer: NJH

ALFA CODE	Page Totals					Tot. Ind.	St ps	ALFA CODE	Page Totals					Tot. Ind.	St ps
	1	2	3	4	5				1	2	3	4	5		
ACFL	0	0	0	0	0	0		LOWA	0	0	0	0	0	0	
AMCR	0	0	0	0	0	0		MODO	0	0	0	0	0	0	
AMGO	0	0	0	0	0	0		NOCA	0	0	0	0	0	0	
AMKE	0	0	0	0	0	0		NOMO	0	0	0	0	0	0	
AMRO	0	0	0	0	0	0		NOPA	0	0	0	0	0	0	
BAOR	0	0	0	0	0	0		NRWS	0	0	0	0	0	0	
BARS	0	0	0	0	0	0		OROR	0	0	0	0	0	0	
BAOW	0	0	0	0	0	0		OVEN	0	0	0	0	0	0	
BEKI	0	0	0	0	0	0		PABU	0	0	0	0	0	0	
BEWR	0	0	0	0	0	0		PARE	0	0	0	0	0	0	
BLVU	0	0	0	0	0	0		PIWO	0	0	0	0	0	0	
BAWW	0	0	0	0	0	0		PIWA	0	0	0	0	0	0	
BLGR	0	0	0	0	0	0		PRAW	0	0	0	0	0	0	
BLJA	0	0	0	0	0	0		PROW	0	0	0	0	0	0	
BGGN	0	0	0	0	0	0		PUMA	0	0	0	0	0	0	
BWWA	0	0	0	0	0	0		RBWO	0	0	0	0	0	0	
BWHA	0	0	0	0	0	0		REVI	0	0	0	0	0	0	
BRTH	0	0	0	0	0	0		RHWO	0	0	0	0	0	0	
BHCO	0	0	0	0	0	0		RSHA	0	0	0	0	0	0	
CAGO	0	0	0	0	0	0		RTHA	0	0	0	0	0	0	
CACH	0	0	0	0	0	0		RWBL	0	0	0	0	0	0	
CARW	0	0	0	0	0	0		RTHU	0	0	0	0	0	0	
CAEG	0	0	0	0	0	0		RSTO	0	0	0	0	0	0	
CEDW	0	0	0	0	0	0		SCTA	0	0	0	0	0	0	
CERW	0	0	0	0	0	0		SSHA	0	0	0	0	0	0	
CHSW	0	0	0	0	0	0		SOSP	0	0	0	0	0	0	
CHSP	0	0	0	0	0	0		SUTA	0	0	0	0	0	0	
CWWI	0	0	0	0	0	0		SWWA	0	0	0	0	0	0	
CLSW	0	0	0	0	0	0		TUVU	0	0	0	0	0	0	
COGR	0	0	0	0	0	0		WAVI	0	0	0	0	0	0	
CONI	0	0	0	0	0	0		WPWI	0	0	0	0	0	0	
COYE	0	0	0	0	0	0		WBNU	0	0	0	0	0	0	
COHA	0	0	0	0	0	0		WEVI	0	0	0	0	0	0	
DICK	0	0	0	0	0	0		WODU	0	0	0	0	0	0	
DOWO	0	0	0	0	0	0		WOTH	0	0	0	0	0	0	
EABL	0	0	0	0	0	0		WEWA	0	0	0	0	0	0	
EAKI	0	0	0	0	0	0		YWAR	0	0	0	0	0	0	
EAME	0	0	0	0	0	0		YBCU	0	0	0	0	0	0	
EAPH	0	0	0	0	0	0		YBCH	0	0	0	0	0	0	
EASO	0	0	0	0	0	0		YCNH	0	0	0	0	0	0	
EAWP	0	0	0	0	0	0		YSFL	0	0	0	0	0	0	
ETTI	0	0	0	0	0	0		YTVI	0	0	0	0	0	0	
EUST	0	0	0	0	0	0		YTWA	0	0	0	0	0	0	
FISP	0	0	0	0	0	0		WITU	0	0	0	0	0	0	
FICR	0	0	0	0	0	0		AMRE	0	0	0	0	0	0	
GRSP	0	0	0	0	0	0		BLHE	0	0	0	0	0	0	
GRCA	0	0	0	0	0	0		MIKI	0	0	0	0	0	0	
GTBH	0	0	0	0	0	0		RODO	0	0	0	0	0	0	
GREG	0	0	0	0	0	0		MALL	0	0	0	0	0	0	
GHOW	0	0	0	0	0	0		ROYT	0	0	0	0	0	0	
GCFL	0	0	0	0	0	0		AMWO	0	0	0	0	0	0	
GNBH	0	0	0	0	0	0		NOBO	0	0	0	0	0	0	
HAWO	0	0	0	0	0	0		BACS	0	0	0	0	0	0	
HOWA	0	0	0	0	0	0		BBCU	0	0	0	0	0	0	
HOFI	0	0	0	0	0	0			0	0	0	0	0	0	
HOSP	0	0	0	0	0	0			0	0	0	0	0	0	
INBU	0	0	0	0	0	0			0	0	0	0	0	0	
KEWA	0	0	0	0	0	0			0	0	0	0	0	0	
KILL	0	0	0	0	0	0			0	0	0	0	0	0	
LOSH	0	0	0	0	0	0			0	0	0	0	0	0	

APPENDIX B

SOUTHEASTERN POINT COUNT PLOT LOCATIONS

FIELD LOCATIONS FOR SEPTCT PLOTS

SIDE OF ROAD	MILE POST #	POINT #	DIRECTIONS
W	0046	001	
W	0066	002	1.8 miles past gate
E	0080	003	
E	0094	004	
E	0107	005	
E	0113	006	
E	0127	007	
E	0145	008	
W	0150	009	
E	0161	010	on Cole Creek - south side of bridge
W	0176	011	½ way across field- stake is at tree line
W	0180	012	in field @ treeline
E	0184	013	on Bullen Creek Nature Walk -enter in north end- go to tree size sign and look north
E	0192	014	.3 maybe
E	0215	015	Blame Tom for this one!!
E	0223	016	
W	0244	017	½ way across field - flag in tree line
W	0266	018	
W	0278	019	
E	0294	020	Lorman Parking Area - in line with trash can
E	0304	021	drive down on ramp for 552 - just past island - south side of road
E	0322	022	
W	0330	023	
E	0350	024	just before MP35
W	0355	025	
	0376	026	get on 61N to north edge of pond (west side of 61 - before Shell station) park in fisherman park area and follow edge of pond to site
W	0389	027	on ridge close to road
E	0393	028	½ way across field—just past district office sign
E	0418	029	
W	0442	030	by tree in middle of field
E	0449	031	
W	0468	032	½ way across field
E	0480	033	actual site is 25 meters from edge of water
E	0485	034	watch for sump holes—tree down—walk to left—plot in back of fallen tree
E	0487	035	100 meters out from blue dot (flagging in trees hard to see)
E	0512	036	
W	0541	037	follow old logging road to top of ridge
W	0552	038	.3 maybe
E	0556	039	.5 maybe
E	0587	040	open field beyond pines
W	0603	041	
W	0618	042	

E	0634	043	
E	0650	044	past the milepost by .05 mile
E	0663	045	site half way across field (flagging in trees)
W	0671	046	
E	0680	047	
W	0690	048	
W	0698	049	
W	0709	050	site is 75 meters into field-flagging at back of field
W	0717	051	
E	0725	052	
W	0732	053	site is marked by tree
E	0735	054	on Dean's Stand Loop
E	0740	055	stake by tree
E	0745	056	
E	0746	057	
W	0754	058	
E	0762	059	½ way across field
E	0770	060	plus a little
E	0794	061	
W	0804	062	
E	0810	063	stake at tree-site is ½ way across field
E	0826	064	½ way across field
E	0834	065	
E	0837	066	just past bridge
W	0863	067	on north side of bridge—walk along creek
E	1020	068	
W	1037	069	cross bridge, walk back in grassy area follow flagging to site—blue tape for way out—call in 10 minutes before overlook sign
W	1051	070	
E	1071	071	
E	1086	072	just past bridge along lake shore
W	1104	073	just past bridge along lake shore
W	1127	074	
E	1130	075	at base of tree
W	1140	076	
W	1150	077	
E	1180	078	
W	1190	079	
E	1199	080	(dark blue dots are now being used) 50 meters into field (1/2 way across) flagging in trees
E	1205	081	walk along south side of creek-on ridge
E	1220	082	on nature trail just after sign about cypress knees-in a stump-no flagging except on stake
E	1224	083	
E	1233	084	½ way across field-stake in trees
E	1251	085	
E	1269	086	site is 20 meters from stake
W	1281	087	

W	1293	088	next to barbed wire fence
E	1314	089	actual site in middle of field (go down side road to avoid fence)
E	1327	090	½ way across field -stake in trees next to road south of ditch
W	1341	091	
W	1348	092	
E	1363	093	
W	1381	094	
W	1395	095	
E	1409	096	
E	1426	097	
E	1442	098	maybe .1--stake by pine tree-site is south in open area
E	1446	099	
W	1456	100	
E	1480	101	
E	1490	102	½ way across open field- flagging in trees
W	1507	103	
W	1535	104	stake at fence corner post-site in middle of field
W	1550	105	stake at edge of water-site 50 meters out
E	1572	106	
E	1585	107	
E	1594	108	follow sewer line to site-just before cement "thing" south side
E	1613	109	stake by tree-site in middle of field north of stake
E	1622	110	½ way across field-stake in tree line (cedar across road from site)
W	1636	111	
W	1644	112	Hurricane Nature Trail-on north side before trail starts uphill
E	1658	113	maybe 165.9--light blue spray paint used for rest of dots on highway
E	1675	114	
E	1685	115	site 25 meters into damage
W	1705	116	
E	1720	117	
E	1732	118	maybe 173.3--site at tree line
E	1757	119	on Cole Creek Nature Walk between soil build and decay signs west side of the trail--go in on s. end
W	1775	120	
E	1792	121	
E	1794	122	
E	1816	123	
W	1822	124	
W	1840	125	
E	1850	126	plus a little
W	1865	127	
E	1889	128	should be 187.9
E	1896	129	
E	1903	130	
E	1914	131	
E	1924	132	north of bridge
E	1956	133	
W	1960	134	south of drainage- ½ way across field (stake in trees)

E	1991	135	go north over bridge-follow east side of creek
E	1997	136	
E	2014	137	Ballard Creek Picnic Area-follow creek through picnic area to site
E	2035	138	at Pigeon Roost—right of sign
W	2048	139	
W	2060	140	north of drainage ½ way back
W	2081	141	.2 maybe
E	2091	142	
W	2114	143	.3 maybe
E	2132	144	site ½ across field stake at creek line
W	2149	145	
E	2163	146	50 meters into field (note: this is the NATR boundary)
E	2184	147	go north of bridge-walk east side of creek to site
E	2193	148	after Mantee turnoff sign
E	2210	149	site past second small creek
W	2226	150	walk the Trace to site
W	2246	151	
W	2256	152	100 meters into field
W	2272	153	
E	2289	154	
W	2312	155	½ way across field
E	2316	156	stake is at south edge of evergreen tree
E	2324	157	just past Bynum Mound
W	2346	158	
E	2363	159	
E	2380	160	
E	2398	161	
E	2411	162	wasp nest just left of center post
W	2418	163	50 meters north of tree inclusion
E	2434	164	across from Hernando DeSoto Parking Area <u>WATCH FOR HOLES</u>
E	2456	165	Monroe Mission Parking Area—go in on right of sin but out on left
E	2462	166	walk in cleared drainage area-site to north of cleared edge
W	2481	167	site is ½ way across field
E	2510	168	stake on south side of creek
W	2520	169	at north edge of Black Belt Parking Area- walk down mowed area stake on west side of mowed area
E	2531	170	north side of bridge at shrub line
W	2564	171	maybe 256.6--at tree line
W	2592	172	
W	2611	173	walk down drainage south on horse trail on west side
W	2618	174	at Chickasaw Village-walk along drainage to horse trail bridge
W	2618	175	at Chickasaw Village-take nature trail 2 nd sign will be about plums-site across path
W	2640	176	Old Town Picnic Area-south side of pond
W	2654	177	
W	2666	178	
W	2679	179	walk along power line-site on south 100 meters back—go in south of dot
W	2690	180	south side along creek

E	2700	181	
W	2713	182	
W	2724	183	
E	2739	184	
W	2753	185	Dogwood turn off-down trail to Logging Road Sign-site is 20 feet north of path
E	2769	186	maybe 276.8
W	2789	187	south side of creek-100 meters up (next to creek)
E	2802	188	
W	2824	189	
W	2829	190	stake in 3 trees-center of site at an azimuth of 300-60 meters out from stake
E	2834	191	
W	2859	192	on levy before bridge
E	2862	193	at Indian Mounds ½ mile sign-next to pond edge
W	2878	194	
W	2898	195	
W	2912	196	
E	2923	197	walk levy
W	2933	198	at Tenn Tom Parking Area- ½ way across levy WATCH FOR NESTING ALLIGATORS
W	2952	199	
W	2967	200	
E	2975	201	stake at tree-azimuth 90- 25 meters into field
W	2995	202	
W	3009	203	
W	3025	204	
W	3041	205	Fire area (PB)
W	3052	206	60 meters out from pine tree-this is the border of NATR
W	3084	207	at Spring Cave Parking Area-on south side by H brace in fence
W	3089	208	blue dot will direct you- flagging at Bear Creek Mound-site to left of sign
W	3098	209	at county road #1
W	3110	210	50 meters into field- this is the border of NATR
W	3115	211	follow creek south for 30 meters
E	3132	212	
W	3186	213	
W	3197	214	
W	3202	215	at Buzzard Roost Springs-take maintained trail to actual springs & fisherman's trail to site
W	3217	216	stake in trees- azimuth 280- 50 meters out
E	3238	217	at Sink Hole Parking Area-follow path watch for flagging
E	3250	218	stake at tree furthest from road-site is 12 meters beyond that
E	3254	219	on bend in drainage
W	3268	220	½ way across field
W	3274	221	at Colbert Ferry-go to Old Ferry Crossing Overlook-follow tree line to shore-site along shore going towards bridge
E	3287	222	Lauderdale Picnic Area-at end of fence
E	3302	223	at Rock Spring-look for blue dot 2/3 way around circular drive
W	3316	224	walk along drainage
E	3344	225	

E	3359	226	
W	3372	227	
E	3384	228	go to north side of bridge-follow creek to site
E	3405	229	
E	3434	230	go to north side of bridge-follow creek to site
W	3438	231	60 meters out from road
E	3455	232	
W	3457	233	walk down drainage-site on south
W	3468	234	
E	3487	235	
W	3504	236	
W	3511	237	
E	3537	238	site ½ way between blue dot and deciduous tree
E	3546	239	
W	3557	240	
E	3570	241	
W	3579	242	site 40 meters out from blue dot
E	3591	243	
E	3610	244	
W	3627	245	follow flagging on south side of creek
W	3633	246	maybe .4--100 meters from trees
E	3651	247	at south end of closed parking area
E	3674	248	
E	3700	249	take turn off to park information area-blue dot is on this road across from actual turn in for information
E	3702	250	site is 75 meters from blue dot
W	3722	251	
W	3739	252	
E	3749	253	
E	3760	254	
E	3781	255	south end of bridge
E	3806	256	
W	3831	257	60 meters from edge of road
E	3847	258	
E	3854	259	
W	3869	260	south side of bridge-go down along bridge-follow creek to site
W	3880	261	
E	3893	262	.4 maybe
W	3915	263	north side of bridge at fence (boundary of NATR)
W	3925	264	at Swan View Overlook-blue dot across island from parking area-walk abandon road
E	3943	265	
W	3956	266	walk abandon road
E	3976	267	
W	3986	268	
E	4005	269	cross dirt road -continue to follow flagging
E	4035	270	

E	4045	271	½ way across field
E	4056	272	.7 maybe--stake beside small tree-site south 5 meters
W	4076	273	go over bridge-follow creek to site
E	4077	274	turn into Gordon House-open field next to bridge-site 70 meters from stake
E	4080	275	
E	4093	276	just beyond north most rock outcrop-from top of slope site is ½ way across field (Walk towards the middle building)
W	4115	277	follow horse trail to site
E	4120	278	walk Old Trace to flagging
W	4137	279	cross horse trail-site behind dump
E	4140	280	just before milepost--stake in tree-site 100 meters from edge of road
W	4154	281	site 60 meters from road
E	4158	282	
E	4173	283	
E	4191	284	
E	4216	285	
E	4247	286	
W	4261	287	across from Old Trace Parking Area
E	4276	288	Garrison's Creek Overlook-60 meters past pedestrian gate on established path
E	4288	289	
W	4293	290	site is 50 meters from edge of road
W	4301	291	
E	4305	292	
E	4312	293	
W	4319	294	
E	4324	295	
E	4328	296	
E	4333	297	
E	4351	298	on boundary
E	4367	299	milepost #436 is missing
E	4400	300	follow abandon road