PERFORMANCE REPORT

State: Louisiana Project Number: W-55-25

Project Title: Upland Survey

Period Covered: July 1, 2010 - June 30, 2011

Study Number and Title: V-4, Bobwhite Fall Whistling Surveys

Study Objective: To determine relative size and distribution of bobwhite populations in Louisiana.

Study Abstract

Bobwhite fall whistling counts were conducted statewide along 32 routes (7 additional routes were assumed zeros and 4 others were unable to be run). Fall whistling counts did not differ ($P = 0.3482$) among the 5 habitat types for 2010. They did, however, differ between 2009 and 2010, with more whistling counts detected in 2009 than in 2010 for both the Northwest mixed shortleaf and loblolly pine-hardwood and Florida Parishes loblolly pine habitats. No coveys were recorded on the Northwest mixed shortleaf and loblolly pine-hardwood or Mississippi/Atchafalaya agricultural belt (0.00 whistles/stop) in 2010 (Tables 1 and 2). Jackson-Bienville WMA, Camp Beauregard, and Vernon District No. 1 routes yielded 0.25, 0.00, and 0.10 whistles/stop, respectively (Table 3).

Five (5) summer bobwhite counts were conducted on the Sandy Hollow Wildlife Management Area. Counts ranged from 12-45 (Figure 1). The 2011 mean count was 27.6, which is the same as in 2010. The peak count (45) was lower than the long-term (1986-2010) average peak count of 89.3, but was higher than 8 of the past 10 years (Figure 2).

A. Activity: Fall whistling counts were conducted along 37 pre-selected routes to determine relative size and distribution of fall bobwhite populations. The 5 habitat types surveyed were historic longleaf pine, mixed shortleaf and loblolly pine-hardwood, loblolly pine (Florida Parishes), the rice belt and the Mississippi/Atchafalaya agricultural belt. Bobwhite summer whistling counts were also conducted on the Sandy Hollow Wildlife Management Area.

B. Target Date for Achievement: June 30, 2011

C. Date Accomplished: June 30, 2011

D. Significant Deviations: None

E. Remarks:

F. Recommendations: Continue survey.

Prepared by:_____

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Jimmy Stafford, Small Game and Turkey Program Leader

Table 1. Whistles per stop recorded during the 2010 statewide fall whistling counts for bobwhites.

Date	Route Number	Whistles Per Stop 2009	2010
Loblolly (Florida Parishes)			
01 November 2010	18	0.00	0.00
06 November 2010	21	0.11	0.00
25 October 2010	29	0.00	0.00
21 October 2010	35	0.12	0.00
21 October 2010	43	0.07	0.00
07 November 2010	46	0.05	0.05
	All Routes	0.06	0.01
Historic Longleaf			
19 October 2010	03	0.11	0.00
19 October 2009	05	0.00	0.00*
21 October 2009	10	0.00	0.00*
24 October 2010	11	0.00	0.00
27 October 2010	17	0.05	0.00
	23	0.00*	0.00*
19 October 2010	34	0.00*	0.20
20 October 2010	37	0.00*	0.00
20 October 2009	39	0.00	0.00*
28 October 2010	40	0.00	0.00
03 November 2009	44	0.00	0.00*
	50		
08 November 2010	52	0.11	0.10
20 October 2010	56	0.00*	0.00
	All Routes	0.02	0.03
Rice			
01 November 2010	02	0.10	.010

Date	Route Number	Whistles Per Stop 2009	2010
25 October 2010	13	0.00	0.00
26 October 2010	32	0.00	0.00
	41	0.00*	0.00*
	49	0.00*	0.00*
21 October 2009	67	0.00	0.00*
	All Routes	0.03	0.01
Shortleaf-Loblolly Pine / Hardwood			
1 November 2009	09	0.00	0.00*
30 October 2010	15	0.05	0.00
29 October 2010	22	0.05	0.00
	25	0.00*	0.00*
21 October 2010	26	0.00	0.00
09 November 2010	28	0.00	0.00
27 October 2010	30	0.00*	0.00
01 November 2010	31	0.00	0.00
28 October 2010	36	0.05	0.00
28 October 2010	47	0.05	0.00
	48	0.00*	0.00*
27 October 2010	53	0.00	0.00
29 October 2010	55	0.00	0.00
27 October 2010	59	0.05	0.00
	62	0.00*	0.00*
06 November 2010	69	0.00	0.00
	All Routes	0.02	0.00
Mississippi / Atchafalaya Agricultural Belt			
05 November 2010	06	0.00	0.00
28 October 2009	12	0.00	0.00*

Date	Route Number	Whistles Per Stop 2009	2010
29 October 2010	14	0.00	0.00
02 November 2009	16	0.00	0.00*
26 October 2010	20	0.00	0.00
02 November 2009	33	0.00	0.00*
	All Routes	0.00	0.00

* Assumed zero

Table 2. Paired t statistics for the 2010 fall quail whistling counts by region (base year 2009).

Region	N	Mean Difference	Standard Error	t	Prob.
Loblolly	6	0.049	0.020	2.09	0.0909
Longleaf	9	-0.010	0.028	-0.37	0.7205
Rice	6	0.020	0.020	1.00	0.3739
Shortleaf	15	0.017	0.006	2.65	0.0192
Agriculture	3	-	-	-	-
All Routes	39	0.014	0.008	1.71	0.0956

Table 3. Whistles per stop recorded during the 2010 special fall whistling counts for bobwhites.

Date	Route	Whistles Per Stop 2009	2010
	Ft. Polk WMA	-	-
21 October 2010	Camp Beauregard	0.00	0.00
04 November 2010	Jackson-Bienville	0.11	0.25
03 November 2009	Peason Ridge	0.15	-
21 October 2010	Vernon District #1	0.06	0.10
4 November 2009	Vernon District #2	0.05	-
	Ft. Polk-Fullerton	-	-

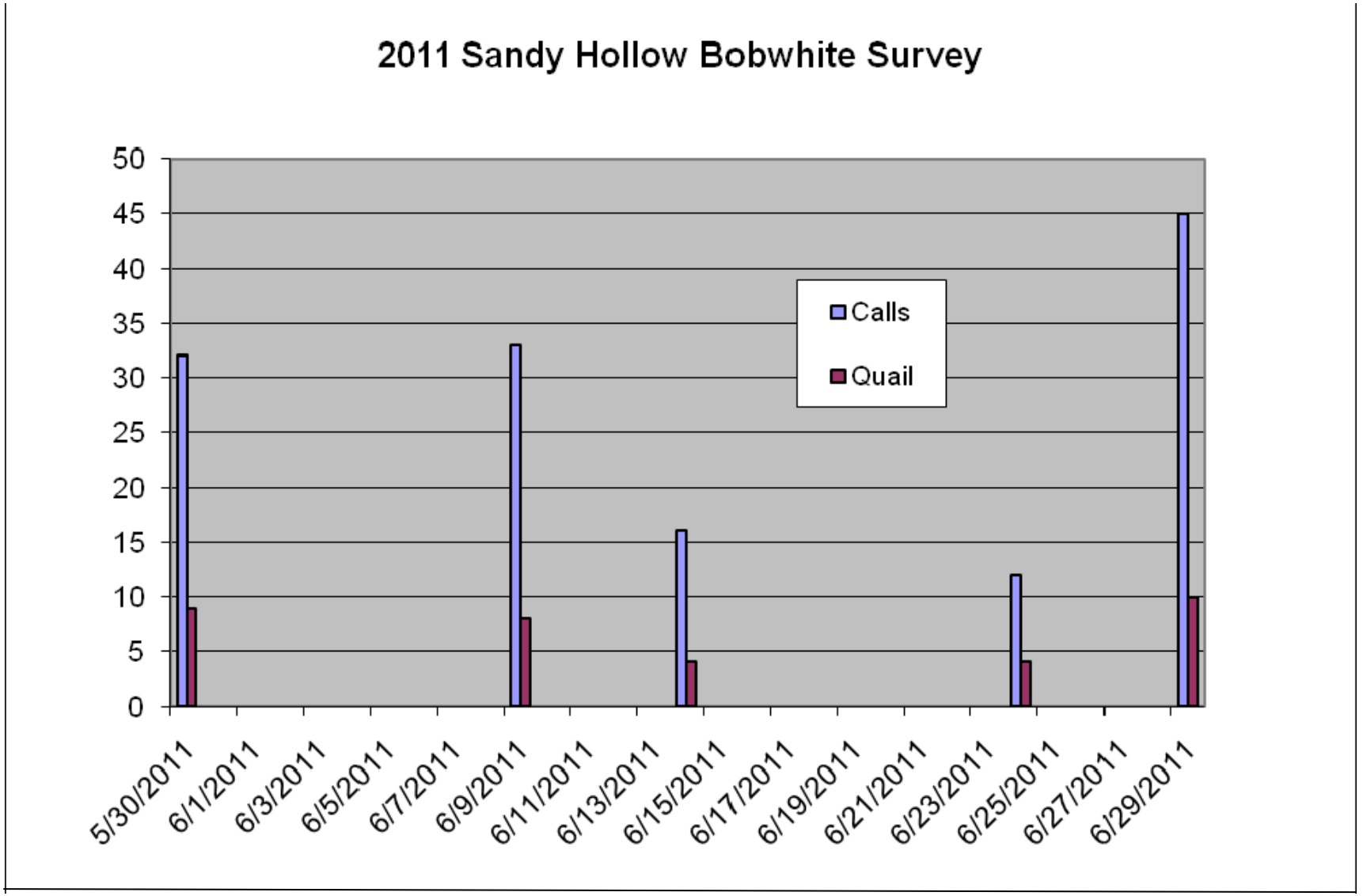
2011 Sandy Hollow Bobwhite Survey
50
45
40
35
30
25
20
15
10
5
0
Calls
Quail
5/30/2011
6/1/2011
6/3/2011
6/5/2011
6/7/2011
6/9/2011
6/11/2011
6/13/2011
6/15/2011
6/17/2011
6/19/2011
6/21/2011
6/23/2011
6/25/2011
6/27/2011
6/29/2011

Figure 1.

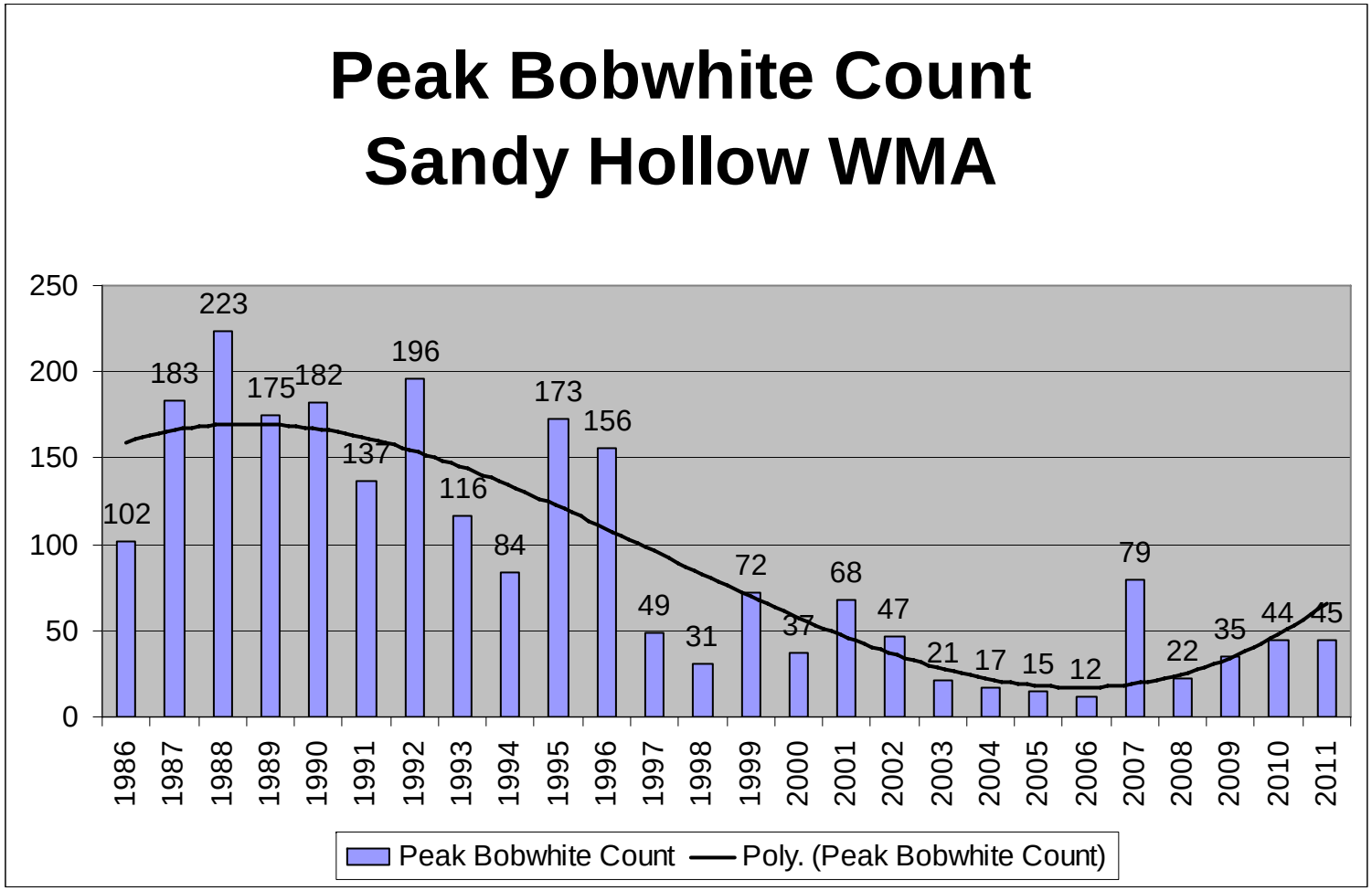
Peak Bobwhite Count
Sandy Hollow WMA
250
200
150
100
50
0
102
183
223
175
182
137
196
116
84
173
156
49
31
72
37
68
47
21
17
15
12
79
22
35
44
45
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Peak Bobwhite Count
Poly. (Peak Bobwhite Count)

Figure 2.

Appendix 1.

Fall Bobwhite Quail Whistling Survey Report - 2010

Introduction

A fall bobwhite quail whistling survey was initiated in Louisiana on Ft. Polk Wildlife Management Area (WMA) and portions of the adjoining Kisatchie National Forest in the fall of 1977. The results of this survey seemed to reflect the population trend and hunter success for that region. In 1983, the fall whistling survey was expanded, and the survey is now conducted statewide. This information is used to formulate indices to document the status of bobwhite quail in Louisiana.

Procedure

The fall bobwhite whistling survey is conducted across the state along 54 routes. The state is divided into 5 habitat types encompassing the historic bobwhite range: Longleaf, Northwest Loblolly-Shortleaf-Hardwood, Southeast Loblolly, Acadiana Rice Belt, and Mississippi/Atchafalaya Agricultural Belt (Figure 1). Six lines are assigned to both agrarian habitats and 36 routes are assigned to the forested habitat types on the basis of acreage. The Northwest Loblolly-Shortleaf-Hardwood Region has 16 routes, the Longleaf Region has 14 routes, and the Southeast Loblolly Region type has 6 routes. Two routes on the Vernon Unit of the Kisatchie National Forest and routes on Camp Beauregard, Ft. Polk, Peason Ridge, and Jackson-Bienville WMAs are also run.

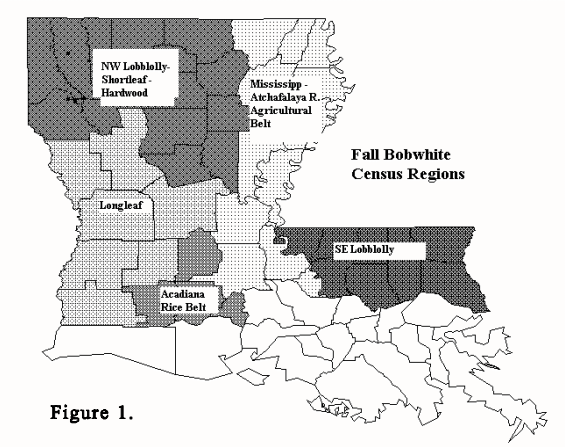

Figure 1.

If no bobwhites are recorded on a route for 3 consecutive years, zero is assumed for 5 years. After 5 years the route is run again, and if no quail are heard, it remains an assumed zero route for 5 more years. If quail are heard, the route is run again annually until 3 consecutive years pass without hearing a quail.

The starting points for all routes (except the WMA and special Kisatchie National Forest areas) were randomly selected. Routes were first plotted on parish road maps primarily along secondary roads. Ground truthings were then conducted and adjustments were made when necessary.

Whistling routes are approximately 30 km (19 miles) long with whistling stations located at approximately 1.6 km (1 mile) intervals. By whistling at the starting point as well as at the 1.6 km intervals, a total of 20 stops per route are made. The elapsed time between stations is approximately 3 minutes.

Responses are elicited via a quail call recorded on a CD. The sequence of the calls at each whistling station is 5-5-5-5-5-5-5 with a listening period of 7 seconds allocated after each mini-series of calls. Observers record the number of coveys heard and rate the disturbance factor at each stop (none, low, moderate, high). Whistling counts begin ½ hour before sunrise and normally finish before 1½ hours after sunrise.

The recording used to elicit responses was changed in 2008. Prior to 2008, a cassette tape of a quail call was used. The change to CD was done to better standardize the series of calls each observer played, improve audio quality, and address problems with acquiring replacement cassette players.

Results are expressed in terms of calls per stop. In some cases, routes may have less than 20 stops. If there was significant disturbance at a stop, the stop is not included in the analysis. A paired t-test was used to compare the current year indices with those of the prior year.

Results

Fall whistling surveys were conducted along 32 routes in 5 habitat types. There were 7 assumed zero routes and 4 routes not run. Calls per stop did not differ significantly among habitat regions in 2010 ($F = 1.15$, df = 4, $P = 0.3482$). There were more calls detected in the SE Loblolly ($t = 2.65$, $P = 0.0192$) and NW Loblolly Shortleaf-Hardwood ($t = 2.09$, $P = 0.0909$) habitats in 2009 than in 2010, other habitat regions did not differ between years. There was a significant negative decline in calls per stop from 1983 to 2010 (Figures 2-6). Data are summarized in Table 1 and Figures 2-6.

Table 1. Statewide fall bobwhite whistling survey results, 2010.

Habitat Type	Calls Per Stop 2009	Calls Per Stop 2010	Change From 2009	Long-Term Mean Calls per Stop 1983-2009
SE Loblolly	0.06	0.01	-83% (S)	0.18
NW Loblolly-Shortleaf-Hardwood	0.02	0.00	(S)	0.10
Miss./Atchaf. R. Agricultural Belt	0.00	0.00	(NS)	0.06
Longleaf	0.02	0.03	50% (NS)	0.13
Acadiana Rice Belt	0.04	0.02	-50%(NS)	0.07

S = Significant ($P < 0.10$)
NS = Not Significant ($P \geq 0.10$)

The 2010 regional indices (calls per stop) remain below the long-term averages. The number of routes on which no quail were heard was the highest recorded since the inception of this survey. This year no quail were heard on 35 routes, including those assumed to be zero, compared to 32 routes last year. Prior to last year, the previous high number of routes on which no quail were heard was 39 routes in 2008.

In addition to the random routes, fall bobwhite whistling surveys were conducted on 2 Wildlife Management Areas (WMA) and a portion of the Kisatchie National Forest (KNF). The highest index was recorded from Jackson-Bienville WMA (Table 2 and Figures 7 - 9).

Table 2. Results of fall bobwhite whistling surveys on selected Wildlife Management Areas (WMA) and the Vernon Unit, Calcasieu Ranger District, Kisatchie National Forest, 2010.

Route	Calls per stop 2009	Calls per stop 2010	Long-term mean Calls per stop*
Camp Beauregard WMA	0	0	0.03
Ft. Polk WMA	-	-	0.19
Jackson-Bienville WMA	0.11	0.25	0.33
Peason Ridge WMA	0.25	-	0.32
Vernon Unit #1	0.06	0.10	0.12
Vernon Unit #2	0.05	-	0.11

*Baseline years vary by route and do not include current year: Camp Beauregard WMA 1990-2009; Ft. Polk WMA 1983-2009; Jackson-Bienville WMA 1990-2009; Peason Ridge WMA 2003-2009; Vernon Units #1 and #2 1990-2009.

Discussion

In most years, the majority of the hatches in Louisiana occur from mid-July through August. Fall populations seem to be highest when a large proportion of the hatches occur after the first week of August. Weather conditions during this period and the preceding few weeks can greatly influence productivity. Quail production is usually best in years when summer rainfall is above normal and temperatures are below normal. High temperatures and drought are thought to negatively impact insect production, which in turn can affect hen condition and chick survival. Hot and dry conditions may also reduce cover and make nests and broods more susceptible to predation.

Weather conditions were generally poor across the state during the majority of the summer. Temperatures were generally above normal with rainfall well below normal during the critical periods. Rainfall and temperatures during July were an exception, being near normal. May, June, August, and September were warmer than normal. Rainfall was generally less than normal in May, June, and September. Rainfall was more variable in July and August except for the Southeast Loblolly habitat region that had more than twice the normal rainfall during August. Weather conditions are summarized in Table 3.

Adverse weather and habitat deterioration have reduced bobwhite quail abundance over the last 20 years. Year to year fluctuations are due largely to weather conditions. However, deteriorating habitat conditions are thought to be responsible for the long-term decline. During 1983-92, the number of routes on which no quail were heard ranged from 4 – 14 per year, and

averaged 8.0 routes per year. During 1993 - 2007, the number of routes on which quail were not heard ranged from 8-29 per year, and averaged 17 routes per year. In 2008, no quail were head on 42 routes. Covey calls were recorded on about 25% more routes in 2009 than 2008, but fell again in 2010 to 43 routes with no responses. Comparison of the 2010 indices with the long-term (1983-2009) means in Table 1 further illustrates the decline in bobwhite quail.

The longleaf region of western and central Louisiana was historically one of the best areas of bobwhite habitat. However, in recent years the index from that region has declined considerably. The 2008 index is the lowest recorded for this region with only 1 route recording responses. The declining trend in this region has accelerated since 1999. The average index for the Longleaf Region from 1983-1998 was 0.18 calls per stop with an average of 1.4 routes per year on which no quail were heard. During 1999-2007, the average index was 0.046 calls per stop, with the number of routes on which no quail were heard averaging 8.6 per year. In 2010, no birds were heard on 7 routes, but an additional 6 routes were unable to be run. Nonetheless, quail were heard on 1 of the routes in 2010.

Habitat quality in this region has deteriorated as more land is subject to intensive pine management practices. The decreased use of prescribed burning as a forest management tool is probably the most important change in this area in the past several years. On U. S. Forest Service land within this habitat region burning is common but done on a large scale that offers limited post burn proximal cover for quail. As a result, even when weather is favorable for bobwhite production, negative habitat influences may keep production (and resulting populations) at a low level.

Although conditions were unfavorable for bobwhite production in 2008, the use of a different recording to elicit bobwhite responses brings into question whether the 2008 survey reflects the status of the bobwhite population. There were aspects of the new recording that some observers thought might actually reduce responses from bobwhites. In 2009 conditions for bobwhite production were ostensibly worse than the 2008 conditions across much of the state, but covey call counts were generally up. Except for the Longleaf habitat region that had a slight increase and the Miss./Atch. River Ag. Belt habitat region that remained at 0.0, call counts decreased in 2010.

Table 3. Summary of Louisiana precipitation and temperature expressed as a percentage of normal, May – September, 2010.

	May	June	July	August	September

Region	Temp.[a]	Rain[a]	Temp.[a]	Rain[a]	Temp.[a]	Rain[a]	Temp.[a]	Rain[a]	Temp.[a]	Rain[a]
SE Loblolly	105	78	104	120	101	84	102	213	101	23
NW Loblolly-Shortleaf-Hardwood	106	40 - 46	106 – 108	51 - 58	101	110 - 122	105 - 106	54 - 140	107 - 105	21
Longleaf	105 - 107	31 – 52	105 - 106	83 - 95	101	79 - 117	105	79 – 130	107 - 103	32 - 45
Acadiana Rice Belt	105	46 – 57	104 - 105	83 - 95	101	79 - 111	104 - 105	93 - 130	103 - 104	31 - 32
Miss./Atchaf. R. Agricultural Belt	105 - 106	31 - 46	105	22 - 95	101	79 - 99	104 - 105	79 - 136	104 - 103	32 - 36

[a] Data from the Louisiana Office of State Climatology. Range is provided when survey regions contain more than one climate region.

Fall Bobwhite Survey
Northwest Loblolly/ Shortleaf Hardwood

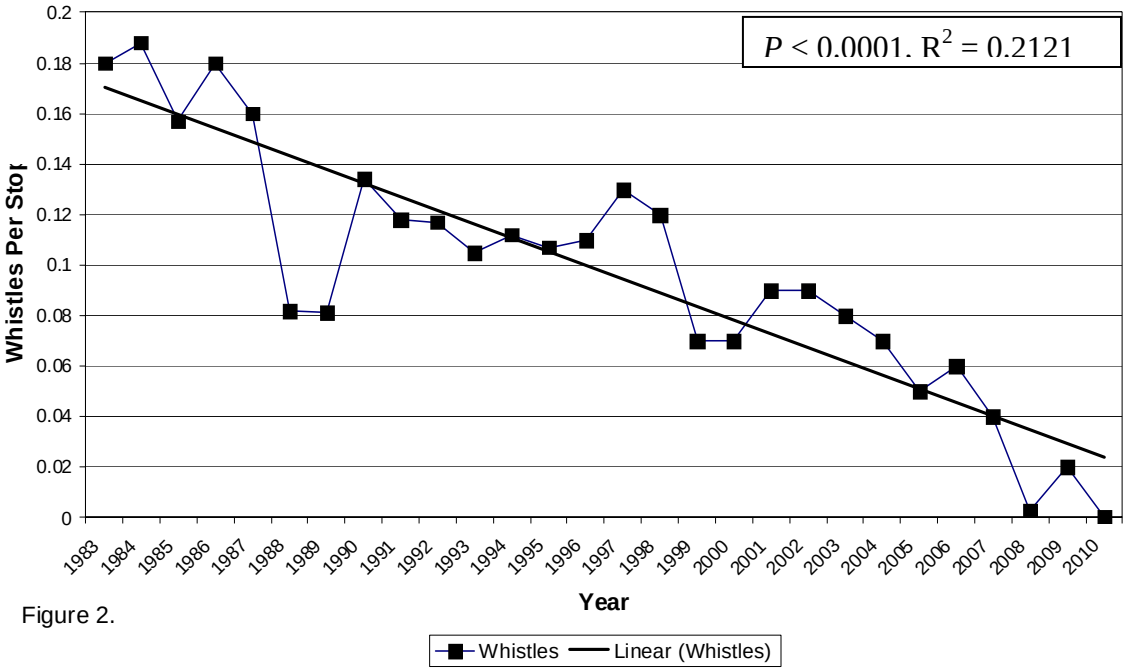

Figure 2.

Fall Bobwhite Survey
Southeast Loblolly

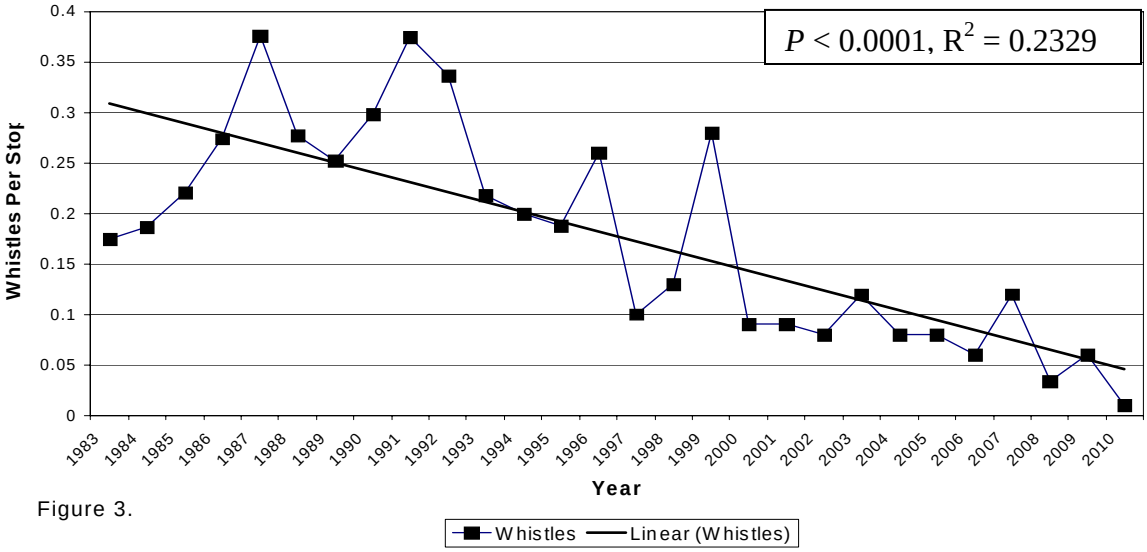

Figure 3.

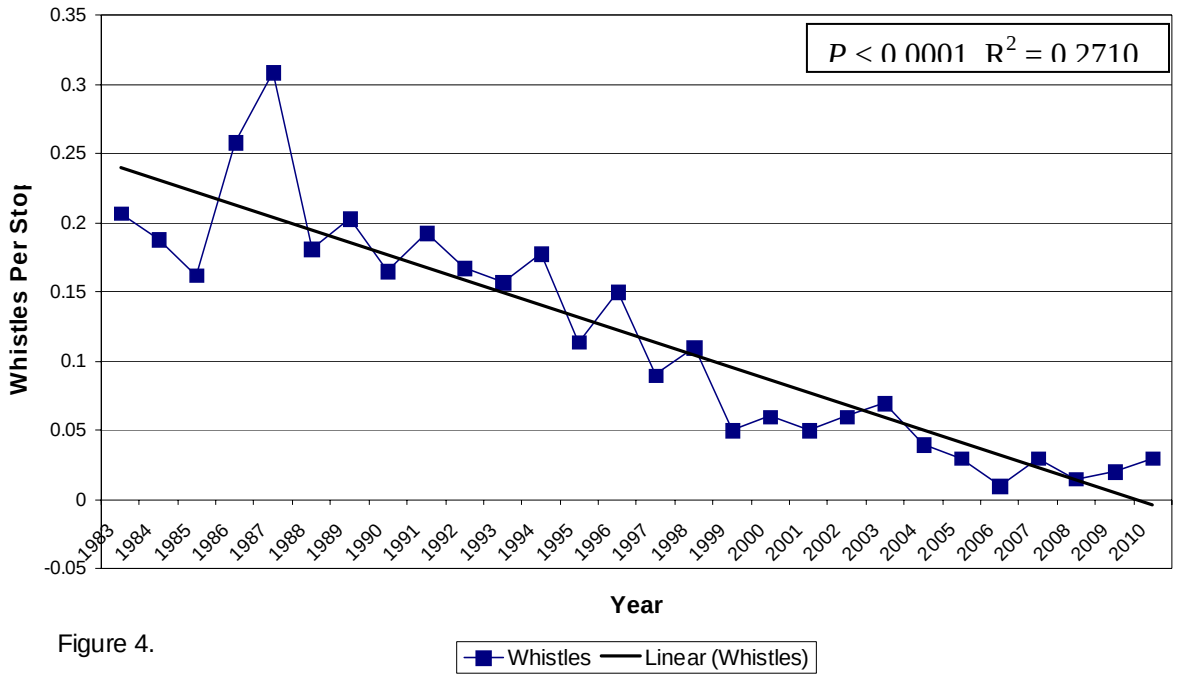

Figure 4.

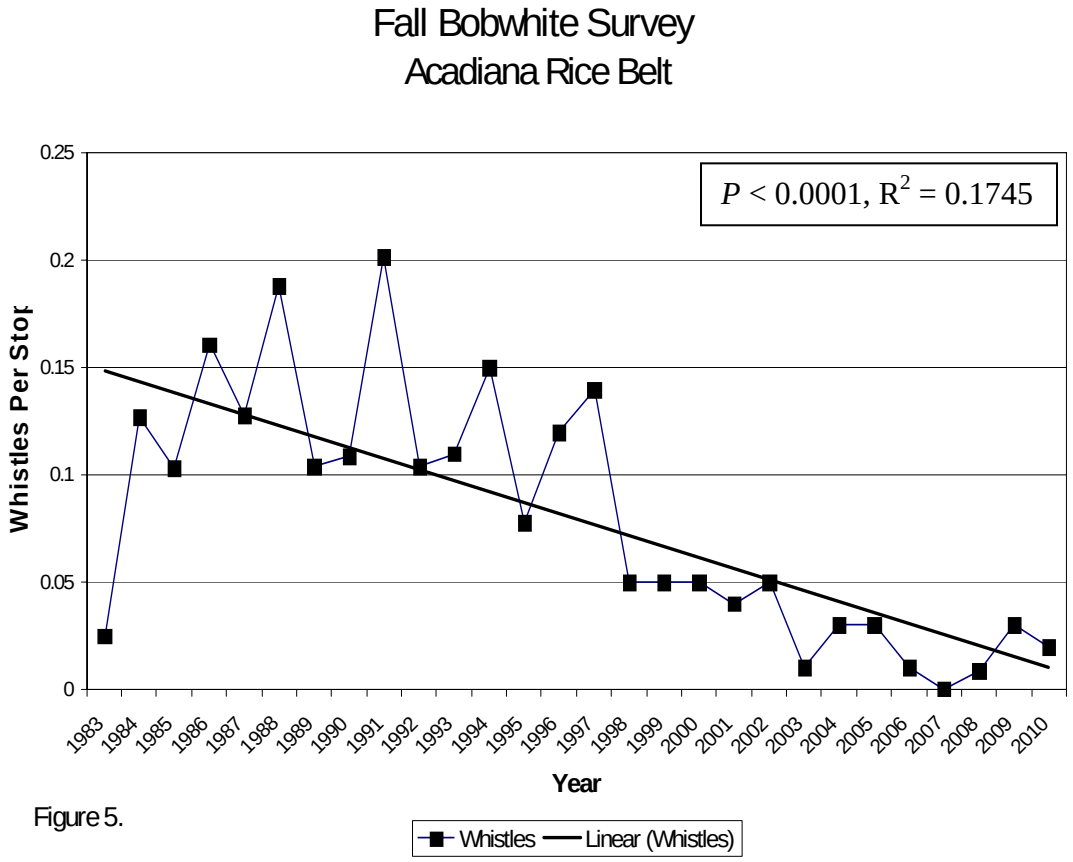

Figure 5.

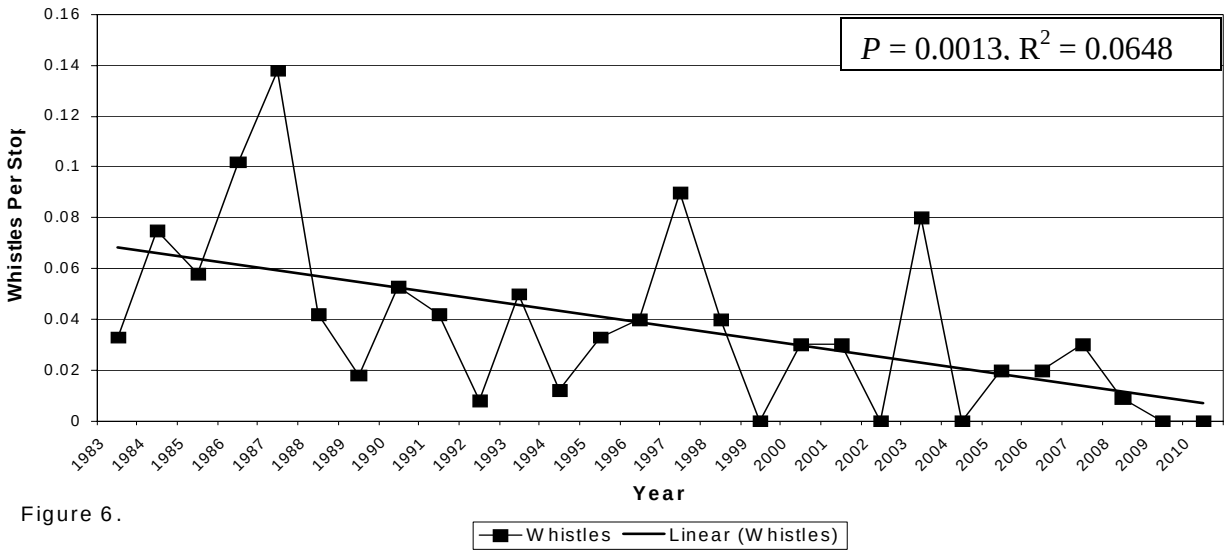
Fall Bobwhite Survey
Mississippi / Atchafalaya Agriculture Belt
P = 0.0013, R2 = 0.0648
Whistles Per Stop
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
Year
Whistles
Linear (Whistles)

Figure 6.

Fall Bobwhite Survey
Vernon District, KNF

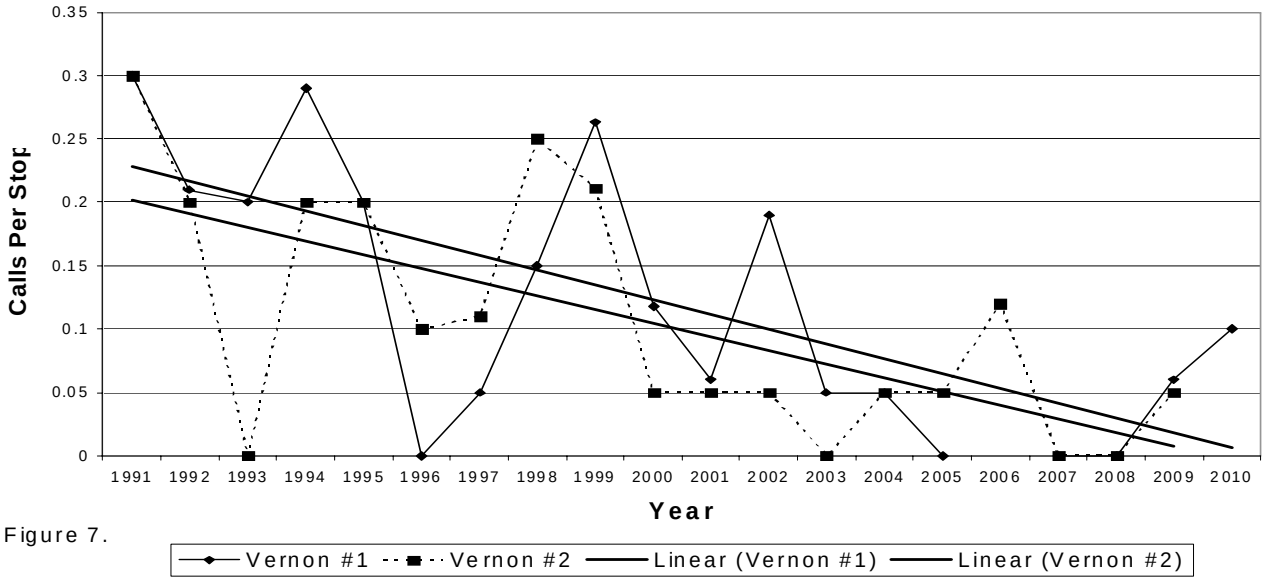

Figure 7.

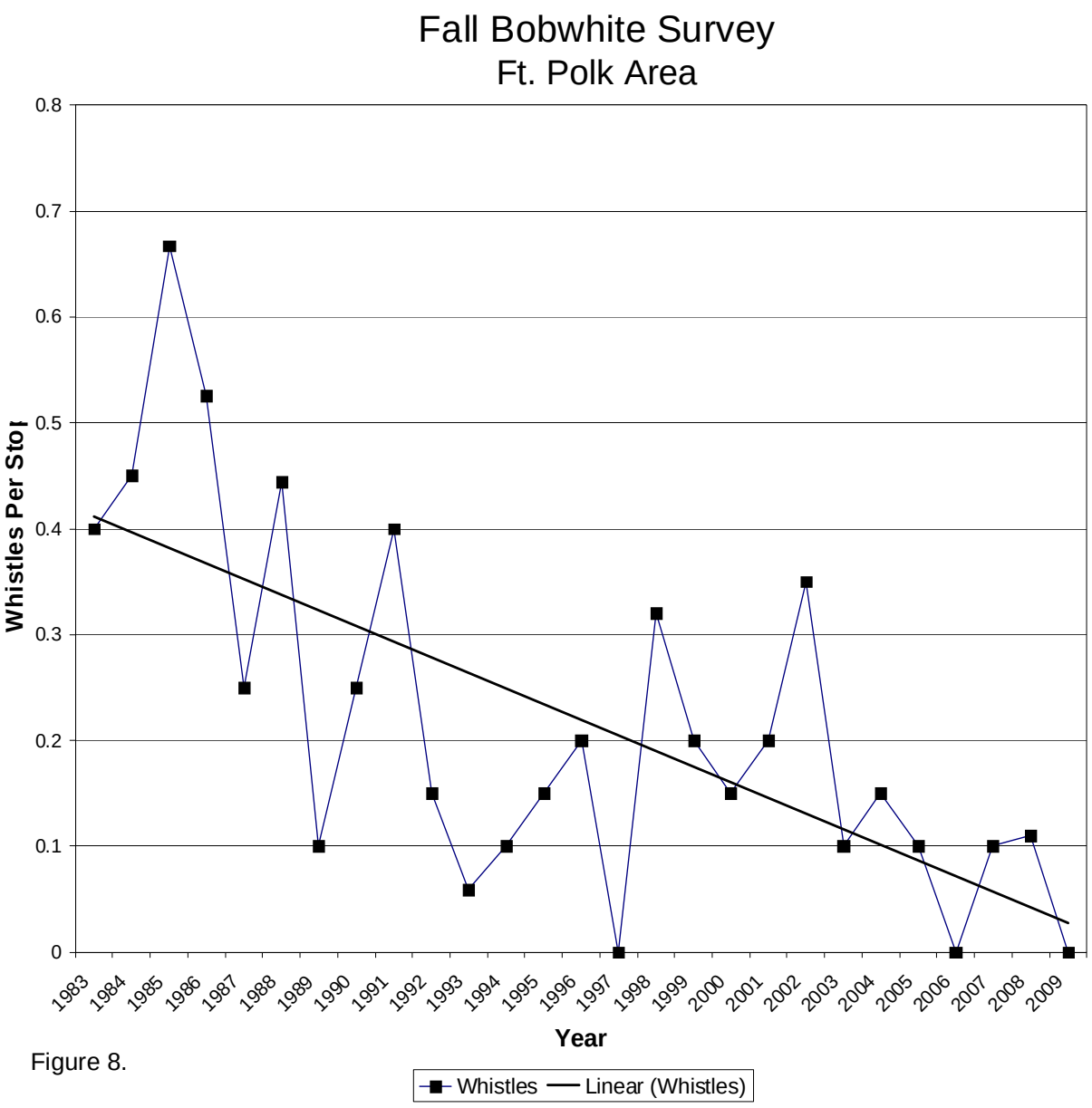
Fall Bobwhite Survey
Ft. Polk Area
Whistles Per Stop
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
Year
Whistles
Linear (Whistles)

Figure 8.