State: Georgia
Grant Number: 8-1
Study Number: 6

LONG RANGE PERFORMANCE REPORT

Grant Title: State Funded Wildlife Survey

Period Covered: July 1, 1996 - June 30, 1997

Study Title: Wild Turkey Production and Population Indices

Study Objectives:

1. To determine annually an index of statewide turkey populations and production success in Georgia.

2. To organize data obtained in a form so that it can be used in sound management of turkeys in Georgia.

Abstract

The statewide production index, poults seen per observer, for 1996 was 40 % lower than the 1995 index. In addition, the population index, hours hunted by cooperators per turkey seen, for 1997 was 6.7 % higher than in 1996. An inverse correlation coefficient of r = -0.85 is obtained between the annual production and population indices for the entire survey period which began in 1978.

A. Activity:

Job A. Turkey Production Index Survey - This survey was conducted during the months of May through August from 1978 to 1991. Beginning in 1991, the survey period was shortened to June through August when statistical analysis of data indicated the shorter time period was adequate. Data collection and summary for the 1997 survey period is not complete.

Cooperators involved in data collection for this survey were field personnel of the Game Management Section and Law Enforcement Section of the Wildlife Resources Division. Observations were those made during the course of their regular field duties. No special efforts were made to locate turkeys for the survey. Man-power reallocations for the Olympic Games severely affected the quantity and quality of field observations by available personnel, however.

Records were maintained of all turkey broods and hens, with and without broods. Broods were visually aged on the basis of plumage and size when possible. Observation data record forms and a field observation key for estimating the age of poults were provided to all participating personnel. The average number of poults seen per observer has proven to be the best measure to use as an index of production. Data were compiled on a statewide and physiographic region basis.

Job B. Turkey Hunting Population Index Survey - The hunter cooperators participating in the survey were obtained from names of prospects submitted by WRD personnel and current cooperators. Cooperators were also solicited through newspaper and magazine requests and programs to interest groups. In addition to these, randomly selected members of the Georgia Chapter of the National Wild Turkey Federation were contacted to bring the total potential cooperating hunters to 2,000.

This survey is conducted during the regular spring gobbler hunting season which begins the third Saturday in March and ends May 15. Specific information requested about each hunting trip was the date, hours hunted, county or physiographic region hunted, the number of turkeys seen, and the number of gobblers heard. Kill information was also asked for, but it was an optional item. Hunt record forms were supplied to all cooperators along with full instructions and a short newsletter on survey findings from previous years.

The number of turkeys observed per unit of hunting effort is used as an index of the hunting season population. The correlation between the population indices and the production indices are used in evaluating annual production and populations and in making comparisons for trends. Data were calculated on a statewide and physiographic region basis.

B. Target Date for Achievement and Accomplishments:

Job A. Planned dates and dates of accomplishment coincide, June 30, 1997.

Job B. Planned dates and dates of accomplishment coincide, June 30, 1997.

C. Significant Deviations:

Job A. None

Job B. None

D. Finds:

Job A. In 1996, 271 broods were observed (Table 1). This total is the lowest since 1982. The average brood size of 7.5 poults is the lowest in four years and is 28% lower than the 1995 average of 10.4 poults.

The production index of 18.9 poults seen per observer is 41 % lower than that for 1995 which was the highest index since the survey began (Table 3). The production index for each physiographic region was also down considerably than for 1995 with particularly strong decreases in the Valley and Ridge - Lookout Mountain Plateau, Piedmont Plateau, and Lower Coastal Plain Plateau.

The number of hens reported totaled 756 (Table 4). This total can be misleading as an indicator due to variations in the number observers from year to year. The percent of hens with poults, 39 %, is down 22 percentage points compared to the previous year (Table 5) and is the lowest by far since the brood survey began. The number of poults per hen averaged 2.7, which is 37 % lower than the 1995 average of 4.3.

Most Game Management and Law Enforcement field personnel were involved in the Olympics during the period the 1996 brood production survey was conducted. Personnel not dispatched to the Olympics found themselves saddled with increased office duties. These shifts in manpower had obvious and great effects on the results of the survey. Still, Olympic effects aside, it appears that production did decrease somewhat from the record-setting previous few years but was still fair to good.

Job B. Usable hunt data was supplied by 472 cooperators. These cooperators reported spending a total of 18,357 hours hunting (Table 6). The average season hunter effort was 11.1 trips totaling 38.9 hours. They reported observing 11,570 turkeys and hearing 8,377 gobblers. The statewide population index of 1.6 was 6.7 % higher than that for 1996. The effort per gobbler heard of 2.2 hours was 12 % lower than the 2.5 hours for the 1996 season. Once again, the least hunting effort per turkey seen occurred in the Valley & Ridge - Lookout Mountain Plateau region, and the greatest in the Blue Ridge Mountains. As in 1995 and 1996, effort per gobbler heard was least in the Upper Coastal Plain and highest in the Blue Ridge Mountains.

Peak gobbling activity, 2.6 gobblers per trip, occurred opening weekend, March 22-23 and the first week of the season, March 24-28 (Table 8). Compared to 1996, the number of gobblers heard per hunting trip was slightly higher through the third weekend, April 5-6, but equal to or lower than 1996 levels over the remainder of the season.

The statewide gobbler harvest during the first seven days of the season amounted to 40.6 % of the total season harvest up considerably from 1996 and the survey's previous high of 38.6 in 1995 (Table 9). Peak harvest was during opening weekend (March 22-23) and week (March 24-28) for the Valley and Ridge-Lookout Mountain Plateau. Peak harvest in the Blue Ridge Mountains and Piedmont Plateau occurred during opening weekend (March 22-23). Peak harvest occurred during the first week (March 24-28) in both the Upper and Lower Coastal Plain regions. Subsequent peaks occurred in the Blue Ridge Mountains and Lower Coastal Plain during the fourth weekend (April 12-13) and third week (April 7-11), respectively.

Hunter success remained at 70 % with 330 of 472 hunters taking at least one gobbler. Of these, 128 (27 %) hunters took one bird, 92 (20 %) took two birds, and 101 (21 %) took three birds. Nine (9) hunters (2 %) reported taking or participated in taking more than three birds.

As for previous seasons, the greatest number of trips was made during the first seven days of the season, 1,449 (28 %) of the season total of 5,242 trips (Tables 12 & 13). Only minor variations in hunting effort measures have occurred over the years.

A relatively high inverse correlation, r = -0.85, continues to be indicated between the production index, poults per observer, and the population index, hours of hunting per turkey observed. (Correlation coefficient calculations exclude production indices for 1986 and 1994 and population indices for 1987 and 1995 due to aberrations associated with severe drought and flood.) With a 1996 production index of 18.9, the predicted 1997 population index is 1.91. The actual index from hunter observations is 1.6.

Table 1. Turkey broods and poults observed statewide in Georgia, 1978-1996.

Year	Broods		Poults	
	Total	Poult Counts	Brood Average	Est. Total
1978	123	82	8.6	1,058
1979	183	160	8.6	1,565
1980	176	169	8.4	1,479
1981	264	241	7.6	2,006
1982	260	218	7.7	2,002
1983	298	261	8.8	2,622
1984	293	247	6.8	1,992
1985	324	274	7.2	2,333
1986	430	377	9.4	4,042
1987	347	328	9.7	3,366
1988	347	321	7.9	2,741
1989	322	306	9.0	2,898
1990	459	278	7.6	3,488
1991	289	213	7.1	2,039
1992	298	274	6.8	2,027
1993	328	303	8.2	2,676
1994	341	316	9.4	3,209
1995	408	386	10.4	4,209
1996	271	239	7.5	2,033

Table 2. Turkey brood observations by physiographic region and month in Georgia, 1996.

Month	Region[1]					Total
	I	II	III	IV	V	
June	11	4	29	24	9	77
July	15	2	34	7	4	63
August	18	6	46	36	18	131
Totals	44	12	109	67	31	271

[1]Roman numerals correspond to physiographic regions as follows:

I - Valley and Ridge Lookout Mountain Plateau
II - Blue Ridge Mountains
III - Piedmont
IV - Upper Coastal Plain
V - Lower Coastal Plain

Table 3. Average number of turkey poults seen per observer (production index) in Georgia, 1978-96.

Physiographic Region	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
I	4.84	0	4.80	3.45	3.52	10.30	9.09	7.20	23.19	27.87	22.10	30.70	18.92	21.19	15.93	26.75	38.68
II	11.18	5.70	3.85	5.32	10.36	21.21	16.54	7.90	36.62	19.79	34.61	21.82	19.89	7.07	12.89	17.31	20.11
III	7.04	8.88	11.13	12.12	14.79	20.24	11.01	15.93	22.99	23.11	18.80	21.72	23.06	20.69	15.90	22.03	25.22
IV	3.86	5.16	5.23	7.15	11.44	9.42	8.78	15.03	23.03	11.54	12.01	12.72	10.83	7.71	7.84	14.91	19.17
V	6.28	7.36	3.63	8.89	5.37	5.19	6.37	10.93	13.74	6.60	9.32	8.12	20.10	5.27	10.32	11.15	8.00
Statewide	7.50	6.33	7.31	8.72	10.77	13.29	10.02	13.07	22.42	17.31	16.05	17.53	18.88	12.01	12.39	16.39	20.63

Table 3. Continued.

Physiographic Region	19951996	
I	66.3	32.3
II	22.06	16.2
III	48.99	26.9
IV	21.0	16.5
V	14.83	4.5
Statewide	31.78	18.9

Table 4. Turkey hens observed with poults, without poults, and uncertain of accompanying poults statewide in Georgia, 1978-96.

Year	Hens Reported			
	With Poults	Without Poults	Uncertain of Poults	Total
1978	145	70	26	241
1979	176	131	39	346
1980	166	133	15	314
1981	276	116	66	458
1982	327	136	24	487
1983	361	211	72	644
1984	261	232	59	552
1985	475	251	81	807
1986	648	283	84	1,015
1987	519	230	52	801
1988	529	305	59	893
1989	459	261	48	768
1990	642	371	49	1,062
1991	321	399	59	779
1992	407	490	59	956
1993	374	292	41	707
1994	463	361	66	890
1995	606	301	83	990
1996	298	384	74	756

Table 5. Percent of turkey hens accompanied by poults (2nd potential population index) and the average number of poults per hen statewide in Georgia, 1978-96.

Year	Percent Hens With Poults	Poults Per Hen
1978	60	4.4
1979	51	4.5
1980	53	4.7
1981	60	4.4
1982	67	4.1
1983	56	4.1
1984	47	3.6
1985	59	3.6
1986	64	4.4
1987	65	4.2
1988	59	3.1
1989	60	3.8
1990	60	3.3
1991	41	2.6
1992	43	2.1
1993	56	3.8
1994	56	3.6
1995	61	4.3
1996	39	2.7

Table 6. Summary of turkey hunter cooperator data in Georgia, 1997.

Item	Physiographic Region[1]					
	I	II	III	IV	V	Statewide
Total Hunters	40	22	281	89	36	472
Total Hours	1,549	1,358	10,594	3,392	1,327	18,357
Total Trips	468	365	2,822	1,089	467	5,242
Avg. Hours	38.7	61.7	37.7	38.1	36.9	38.9
Avg. Trips	11.7	16.6	10.0	12.2	13.0	11.1
Avg. Hrs./Trip	3.3	3.7	3.8	3.1	2.8	3.5
Total Turkeys Seen	1,588	647	5,981	2,265	991	11,570
Hrs./Turkeys Seen	0.98	2.1	1.8	1.5	1.3	1.6
Total Gobblers Heard	667	243	4,728	2,075	614	8,377
Hrs./Gobbler Heard	2.3	5.6	2.2	1.6	2.2	2.2
Total Kill	54	35	332	173	64	662
Companion Killed	3	0	37	0	2	42
Hours/Kill	28.7	38.8	31.9	19.6	20.7	27.7

[1]Roman numerals correspond to physiographic regions as follows:

I - Valley and Ridge Lookout Mountain Plateau
II - Blue Ridge Mountains
III - Piedmont
IV - Upper Coastal Plain
V - Lower Coastal Plain

Table 7. Turkey hunting population indices in Georgia, 1979-1997.

Population Index	Hunt Season	Physiographic Region I	II	III	IV	V	Statewide
Hours/Turkey Seen	1979	20.5	3.5	2.9	3.1	2.8	3.0
	1980	1.6	6.0	2.9	2.6	2.4	3.1
	1981	1.5	4.7	2.2	3.2	2.8	2.5
	1982	2.2	5.0	2.8	3.3	1.8	2.9
	1983	2.5	3.1	2.2	2.0	1.9	2.3
	1984	2.2	4.1	2.4	1.6	1.5	2.3
	1985	2.3	3.4	2.6	2.5	3.5	2.6
	1986	3.2	4.6	2.3	2.0	3.4	2.5
	1987	4.1	2.9	2.6	1.7	2.1	2.4
	1988	1.0	2.9	1.9	1.6	2.1	1.8
	1989	1.7	2.3	2.3	1.6	1.2	1.9
	1990	1.8	2.8	2.0	1.9	1.7	2.0
	1991	1.6	2.3	2.0	1.7	1.8	1.9
	1992	1.4	2.7	2.4	1.7	2.3	2.1
	1993	2.0	4.0	2.5	1.6	1.6	2.1
	1994	2.4	2.2	2.1	1.6	1.4	1.9
	1995	1.7	2.2	2.4	1.8	2.0	2.1
	1996	1.2	1.8	1.6	1.6	1.5	1.5
	1997	1.0	2.1	1.8	1.5	1.3	1.6
Hours/Gobbler Heard	1979	50.7	7.3	3.3	2.1	1.8	3.2
	1980	2.9	4.7	3.4	2.9	9.1	3.4
	1981	2.9	4.4	3.0	2.3	2.0	2.9
	1982	3.1	3.6	3.0	2.3	2.3	2.9
	1983	4.4	2.8	3.3	2.0	2.4	2.8
	1984	3.1	5.2	3.3	1.8	1.4	3.0
	1985	2.4	4.2	2.9	1.8	3.0	2.6
	1986	2.6	3.4	2.1	1.3	1.6	2.0
	1987	2.2	5.2	2.4	1.7	2.0	2.4
	1988	1.5	2.6	2.7	1.4	1.6	2.2
	1989	2.1	2.1	2.1	1.5	2.1	1.9
	1990	2.3	4.2	2.5	1.7	1.7	2.2
	1991	2.7	5.5	2.7	2.0	2.9	2.7
	1992	2.4	4.2	2.9	1.8	1.6	2.6
	1993	3.2	6.3	3.6	2.1	2.7	3.1
	1994	3.4	6.1	3.5	1.9	2.2	2.9
	1995	2.0	3.3	2.5	1.9	2.1	2.3
	1996	3.3	3.5	2.7	2.0	2.1	2.5
	1997	2.3	5.6	2.2	1.6	2.2	2.2
Hours/Gobbler Killed	1979	96.5	79.8	35.1	27.5	23.3	35.7
	1980	13.2	35.7	39.6	35.8	19.1	35.9
	1981	10.7	29.5	31.0	29.9	23.0	30.7
	1982	25.5	90.3	29.7	30.0	19.0	31.3
	1983	30.9	29.7	27.8	28.3	22.6	27.4

Table 7. Continued.

Population Index	Hunt Season	Physiographic Region I	II	III	IV	V	Statewide
	1984	31.1	45.8	35.3	31.4	12.8	34.0
	1985	22.2	48.2	38.7	24.0	32.4	33.6
	1986	23.0	42.1	28.6	21.9	16.0	26.7
	1987	35.4	68.3	30.4	25.8	32.1	32.1
	1988	17.6	25.3	35.9	18.9	18.7	28.0
	1989	22.6	41.4	29.8	17.0	21.1	24.8
	1990	29.8	55.2	29.3	26.4	16.3	28.3
	1991	42.7	48.4	36.9	24.7	23.2	33.9
	1992	44.9	49.4	45.3	20.9	22.0	36.7
	1993	32.2	46.5	46.0	19.8	38.7	34.9
	1994	36.2	42.0	36.9	20.9	18.7	30.1
	1995	25.4	29.9	25.3	18.6	18.7	22.7
	1996	28.9	34.1	29.3	25.9	26.0	26.8
	1997	28.7	38.8	31.9	19.6	20.7	27.7

Table 8. Number of turkey gobblers heard per hunting trip in Georgia, 1997.

Date		Physiographic Region					Statewide
Weekend	Weekday	I	II	III	IV	V	
3/22-3/23		2.4	0.4	2.7	3.0	1.9	2.6
	3/24-3/28	1.7	0.6	2.0	2.4	1.7	1.9
3/29-3/30		1.7	1.0	2.0	1.8	1.2	1.8
	3/31-4/04	1.4	0.6	1.7	1.9	1.4	1.6
4/05-4/06		1.7	0.3	1.5	1.8	2.1	1.6
	4/07-4/11	1.3	0.8	1.4	1.5	1.1	1.3
4/12-4/13		1.2	0.5	1.1	2.0	0.8	1.2
	4/14-4/18	1.2	0.3	1.4	2.1	1.3	1.4
4/19-4/20		2.3	0.9	1.8	1.7	1.4	1.7
	4/21-4/25	1.0	1.1	1.2	1.4	1.1	1.2
4/26-4/27		0.6	1.1	1.1	1.2	0.7	1.1
	4/28-5/02	0.6	0.7	0.9	0.8	0.6	0.8
5/03-5/04		1.2	0.4	0.8	1.2	0.7	0.8
	5/05-5/09	0.5	1.0	1.3	1.4	0.3	1.1
5/10-5/11		1.2	0.3	0.8	0.8	0.8	0.8
	5/12-5/15	0.3	0.7	0.8	1.4	0.1	0.8
Season		1.4	0.7	1.7	1.9	1.3	1.6

Table 9. Chronological summary of turkey gobbler harvest in Georgia, 1997.

Date		Gobblers	% of Season Kill	
Weekend	Weekday	Killed	Date	Cumulative
3/22-3/23		164	22.7	22.7
	3/24-3/28	129	17.9	40.6
3/29-3/30		67	9.3	49.9
	3/31-4/04	56	7.8	57.7
4/05-4/06		42	5.8	63.5
	4/07-4/11	45	6.2	69.8
4/12-4/13		27	3.7	73.5
	4/14-4/18	27	3.7	77.3
4/19-4/20		31	4.3	81.6
	4/21-4/25	28	3.9	85.4
4/26-4/27		19	2.6	88.1
	4/28-5/02	13	1.8	89.9
5/03-5/04		19	2.6	92.5
	5/05-5/09	12	1.7	94.2
5/10-5/11		22	3.1	97.2
	5/12-5/15	17	2.4	99.6
Total		721	100.0	100.0

Table 10. Chronological distribution of turkey gobbler harvest by physiographic region in Georgia, 1997.

Dates		Physiographic Region					Statewide
Weekend	Weekday	I	II	III	IV	V	
3/22-3/23		9	5	104	34	11	164
	3/24-3/28	9	2	62	40	16	129
3/29-3/30		3	2	36	19	7	67
	3/31-4/04	6	3	27	16	4	56
4/05-4/06		6	2	18	9	6	42
	4/07-4/11	4	2	19	12	8	45
4/12-4/13		2	4	14	7	0	27
	4/14-4/18	1	2	14	8	2	27
4/19-4/20		2	2	15	7	4	31
	4/21-4/25	3	1	13	8	3	28
4/26-4/27		0	3	9	5	1	19
	4/28-5/02	3	2	4	3	1	13
5/03-5/04		2	2	7	8	0	19
	5/05-5/09	2	0	7	3	0	12
5/10-5/11		1	0	11	7	3	22
	5/12-5/15	4	3	8	2	0	17
Total		57	35	369	190	66	721

Table 11. Chronological distribution of turkey gobbler harvest (%) by physiographic region in Georgia, 1997.

Date		Physiographic Region					Statewide
Weekend	Weekday	I	II	III	IV	V	
3/22-3/23		15.8	14.3	28.2	17.9	16.7	22.7
	3/24-3/28	15.8	5.7	16.8	21.1	24.2	17.9
3/29-3/30		5.3	5.7	9.8	10.0	10.6	9.3
	3/31-4/04	10.5	8.6	7.3	8.4	6.1	7.8
4/05-4/06		10.5	5.7	4.9	4.7	9.1	5.8
	4/07-4/11	7.0	5.7	5.1	6.3	12.1	6.2
4/12-4/13		3.5	11.4	3.8	3.7	0.0	3.7
	4/14-4/18	1.8	5.7	3.8	4.2	3.0	3.7
4/19-4/20		3.5	5.7	4.1	3.7	6.1	4.3
	4/21-4/25	5.3	2.9	3.5	4.2	4.5	3.9
4/26-4/27		0.0	8.6	2.4	2.6	1.5	2.6
	4/28-5/02	5.3	5.7	1.1	1.6	1.5	1.8
5/03-5/04		3.5	5.7	1.9	4.2	0.0	2.6
	5/05-5/09	3.5	0.0	1.9	1.6	0.0	1.7
5/10-5/11		1.8	0.0	3.0	3.7	4.5	3.1
	5/12-5/15	7.0	8.6	2.2	1.1	0.0	2.4

Table 12. Chronological distribution of turkey hunting trips by physiographic region in Georgia, 1997.

Dates		Physiographic Region					Statewide
Weekend	Weekday	I	II	III	IV	V	
3/22-3/23		49	29	373	121	51	627
	3/24-3/28	80	41	431	182	87	822
3/29-3/30		36	23	220	81	33	393
	3/31-4/04	49	33	295	127	54	564
4/05-4/06		28	18	198	71	26	344
	4/07-4/11	43	33	238	88	34	440
4/12-4/13		25	15	134	40	22	240
	4/14-4/18	20	23	153	73	25	294
4/19-4/20		15	23	154	55	21	271
	4/21-4/25	25	27	120	55	28	257
4/26-4/27		10	16	79	29	19	155
	4/28-5/02	20	18	87	29	20	174
5/03-5/04		13	21	99	38	13	184
	5/05-5/09	22	13	91	36	19	181
5/10-5/11		12	12	81	34	8	148
	5/12-5/15	20	20	56	26	7	129
Total		468	365	2,822	1,089	467	5,242

Table 13. Chronological distribution of turkey hunting trips (%) by physiographic region in Georgia, 1997.

Dates		Physiographic Region					Statewide
Weekend	Weekday	I	II	III	IV	V	
3/22-3/23		10.5	7.9	13.2	11.1	10.9	12.0
	3/24-3/28	17.1	11.2	15.3	16.7	18.6	15.7
3/29-3/30		7.7	6.3	7.8	7.4	7.1	7.5
	3/31-4/04	10.5	9.0	10.5	11.7	11.6	10.8
4/05-4/06		6.0	4.9	7.0	6.5	5.6	6.6
	4/07-4/11	9.2	9.0	8.4	8.0	7.3	8.4
4/12-4/13		5.3	4.1	4.7	3.7	4.7	4.6
	4/14-4/18	4.3	6.3	5.4	6.7	5.4	5.6
4/19-4/20		3.2	6.3	5.5	5.1	4.5	5.2
	4/21-4/25	5.3	7.4	4.3	5.1	6.0	4.9
4/26-4/27		2.1	4.4	2.8	2.7	4.1	3.0
	4/28-5/02	4.3	4.9	3.1	2.7	4.3	3.3
5/03-5/04		2.8	5.8	3.5	3.5	2.8	3.5
	5/05-5/09	4.7	3.6	3.2	3.3	4.1	3.5
5/10-5/11		2.6	3.3	2.9	3.1	1.7	2.8
	5/12-5/15	4.3	5.5	2.0	2.4	1.5	2.5