

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

## LONG RANGE PERFORMANCE REPORT

Grant Title: State Funded Wildlife Survey

Period Covered: July 1, 1997 - June 30, 1998

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 1997 was 14 % lower than the 1996 index. In addition, the population index, hours hunted by cooperators per turkey seen, for 1998 was 6.3 % higher than in 1997. An inverse correlation coefficient of  $r = -0.84$  is obtained between the annual production and population indices for the entire survey period which began in 1978. Hunter success has remained at 70 % over the last 3 years of the survey.

#### 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 1998 survey period is not complete.

Cooperators involved in data collection for this survey were field personnel of the Game Management Section, Fisheries 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.

Records were maintained of all turkey broods and hens, with and without broods. 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 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, 1998.

Job B. Planned dates and dates of accomplishment coincide, June 30, 1998.

C. Significant Deviations:

Job A. None

Job B. None

D. Finds:

Job A. In 1997, 408 broods were observed (Table 1). This total is substantially higher than in 1996 when low numbers seen were most likely an artifact of manpower being redirected to Olympic Games security. The average brood size of 6.5 poults is the lowest in the history of the survey and is 13 % lower than the 1996 average of 7.5.

The production index of 16.2 poults seen per observer is 14 % lower than that for 1996 and is the lowest index in 6 years (Table 3). The production index for each physiographic region was also down from 1996, except in the Lower Coastal Plain, with a particularly strong decrease in the Valley and Ridge - Lookout Mountain Plateau for the second consecutive year.

The number of hens reported totaled 1,449 (Table 4). This total can be misleading as an indicator due to variations in the number of observers from year to year. The percent of hens with poults, 39 %, equaled the 1996 total. Both seasons are down 22 percentage points compared to 1995 (Table 5) and are the lowest by far since the brood survey began. The average number of poults per hen 1.8 was the lowest in the history of the survey being 33 % lower than in 1996. Production continued to decrease from record-setting previous years of 1993-95 and must be considered poor to fair at best.

Job B. Usable hunt data was supplied by 472 cooperators. These cooperators reported spending a total of 18,309 hours hunting (Table 6). The average season hunter effort was 11.6 trips totaling 38.8 hours. They reported observing 10,955 turkeys and hearing 7,509 gobblers. The statewide population index of 1.7 was 6.3 % higher than that for 1997 (1.6). The effort per gobbler heard of 2.4 hours was 9 % higher than the 2.2 hours for the 1997 season. The least hunting effort per turkey seen occurred in the Valley & Ridge - Lookout Mountain Plateau region, and the greatest in the Blue Ridge Mountains and Piedmont Plateau. As in 1995-97, effort per gobbler heard was least in the Upper Coastal Plain and highest in the Blue Ridge Mountains.

Peak gobbling activity, 1.8 gobblers per trip, occurred the second weekend, March 28-29 and the second week of the season, March 30-April 3 (Table 8). After the first seven days of the season the number of gobblers heard per trip was approximately equal to the figures observed during 1997.

The statewide gobbler harvest during the first seven days of the season amounted to only 28.9 % of the total season harvest, down considerably from 1997 and obviously a result of the decreased gobbling activity early on (Table 9). Peak harvest was during opening weekend for the Valley and Ridge-Lookout Mountain Plateau and Lower Coastal Plain. Peak harvest in the Blue Ridge Mountains occurred during the last week (Table 10). Peak harvest occurred during the first week in both the Piedmont Plateau and Upper Coastal Plain regions.

Hunter success remained at 70 % with 327 of 470 hunters reporting kill taking at least one gobbler. Of these, 138 (29 %) hunters took one bird, 99 (21 %) took two birds, and 75 (16 %) took three birds. Fifteen (15) hunters (3 %) reported taking or participated in taking more than three birds. Cooperators reported 48 gobblers killed by companions.

As for previous seasons, the greatest number of trips was made during the first seven days of the season, 1,335 (24 %) of the season total of 5,482 trips (Tables 12 & 13). Only minor variations in hunting effort measures have occurred over the years.

A relatively high inverse correlation,  $r = -0.84$ , 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 1997 production index of 16.2, the predicted 1998 population index is 2.1. The actual index from hunter observations is 1.7.

Table 1. Turkey broods and poult counts observed statewide in Georgia, 1978-1997.

Year	Broods		Poults		Est. Total
	Total	Poult Counts	Brood Average		
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
1997	408	304	6.5		2,613

Table 2. Turkey brood observations by physiographic region and month in Georgia, 1997.

Month	Region <sup>1</sup>					Total
	I	II	III	IV	V	
June	13	18	47	23	23	141
July	25	6	45	27	18	124
August	8	14	67	11	9	135
Totals	46	38	159	69	50	408

<sup>1</sup>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 poult seen per observer (production index) in Georgia, 1978-97.

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	1995	1996	1997
I	66.3	32.3	20.8
II	22.06	16.2	13.7
III	48.99	26.9	26.6
IV	21.0	16.5	14.1
V	14.83	4.5	9.1
Statewide	31.78	18.9	16.2

Table 4. Turkey hens observed with poults, without poults, and uncertain of accompanying poults statewide in Georgia, 1978-97.

Year	Hens Reported			Total
	With Poults	Without Poults	Uncertain of Poults	
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
1997	560	618	271	1,449

Table 5. Percent of turkey hens accompanied by poults (2nd potential population index) and the average number of poults per hen statewide in Georgia, 1978-97.

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
1997	39	1.8

Table 6. Summary of turkey hunter cooperator data in Georgia, 1998.

Item	Physiographic Region <sup>1</sup>					Statewide
	I	II	III	IV	V	
Total Hunters	41	21	240	115	53	472
Total Hours	1,137	896	9,732	4,467	1,957	18,309
Total Trips	366	269	2,691	1,436	697	5,482
Avg. Hours	27.7	42.7	40.6	38.8	36.9	38.8
Avg. Trips	8.9	12.8	11.2	12.5	13.2	11.6
Avg. Hrs./Trip	3.1	3.3	3.6	3.1	2.8	3.3
Total Turkeys Seen	1,157	470	5,244	2,636	1,397	10,955
Hrs./Turkeys Seen	1.0	1.9	1.9	1.7	1.4	1.7
Total Gobblers Heard	448	217	3,562	2,341	926	7,509
Hrs./Gobbler Heard	2.5	4.1	2.7	1.9	2.1	2.4
Total Kill	39	25	319	167	93	646
Companion Killed	0	0	14	25	10	49
Hours/Kill	29.2	35.8	29.2	23.3	19.0	26.3

<sup>1</sup>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, 1979-1998.

Population Index	Hunt Season	Physiographic Region					Statewide
		I	II	III	IV	V	
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	
1998	1.0	1.9	1.9	1.7	1.4	1.7	
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	
1998	2.5	4.1	2.7	1.9	2.1	2.4	

Table 7. Continued.

Population Index	Hunt Season	Physiographic Region					Statewide
		I	II	III	IV	V	
Hours/Gobbler	1979	96.5	79.8	35.1	27.5	23.3	35.7
Killed	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
	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
	1998	29.2	35.8	29.2	23.3	19.0	26.3

Table 8. Number of turkey gobblers heard per hunting trip in Georgia, 1998.

Date		Physiographic Region					Statewide
Weekend	Weekday	I	II	III	IV	V	
3/21-3/22		1.1	0.1	0.7	1.2	0.9	0.9
	3/23-3/27	1.1	0.6	1.6	2.0	1.1	1.6
3/28-3/29		1.8	0.7	1.7	2.6	1.3	1.8
	3/30-3/03	1.7	1.0	1.7	1.9	1.5	1.7
4/04-4/05		1.0	1.0	1.5	1.8	1.1	1.5
	4/06-4/10	1.3	1.4	1.3	1.4	1.5	1.4
4/11-4/12		1.8	1.3	1.6	1.9	1.3	1.6
	4/13-4/17	0.7	0.6	1.1	1.1	1.6	1.1
4/18-4/19		0.7	0.9	1.2	1.3	1.7	1.2
	4/20-4/24	1.0	1.0	1.3	1.1	1.9	1.3
4/25-4/26		1.4	1.0	1.5	2.1	1.7	1.6
	4/27-5/01	1.2	0.6	0.9	1.4	1.2	1.1
5/02-5/03		0.9	0.5	1.5	1.4	1.8	1.4
	5/04-5/08	1.4	1.1	0.9	1.1	1.0	1.1
5/09-5/10		1.2	0.6	1.0	1.2	1.2	1.0
	5/11-5/15	0.8	0.7	1.0	1.0	1.5	1.0
Season		1.2	0.8	1.3	1.6	1.3	1.4

Table 9. Chronological summary of turkey gobbler harvest in Georgia, 1998.

Date		Gobblers	% of Season Kill	
Weekend	Weekday	Killed	Date	Cumulative
3/21-3/22		92	13.2	13.2
	3/23-3/27	109	15.7	28.9
3/28-3/29		57	8.2	37.1
	3/30-4/03	72	10.4	47.6
4/04-4/05		52	7.5	55.1
	4/06-4/10	51	7.3	62.4
4/11-4/12		29	4.2	66.6
	4/13-4/17	37	5.3	71.9
4/18-4/19		30	4.3	76.2
	4/20-4/24	37	5.3	81.5
4/25-4/26		25	3.6	85.1
	4/27-5/01	23	3.3	88.4
5/02-5/03		29	4.2	92.6
	5/04-5/08	18	2.6	95.2
5/09-5/10		16	2.3	97.5
	5/11-5/15	20	2.9	100.0
Total		695	100.0	100.0

Table 10. Chronological distribution of turkey gobbler harvest by physiographic region in Georgia, 1998.

Dates		Physiographic Region					Statewide
Weekend	Weekday	I	II	III	IV	V	
3/21-3/22		7	0	48	15	21	92
	3/23-3/27	5	0	60	42	14	121
3/28-3/29		3	1	31	18	4	57
	3/30-4/03	5	4	33	23	7	72
4/04-4/05		3	1	27	17	3	52
	4/06-4/10	2	0	31	11	7	51
4/11-4/12		0	3	9	10	7	29
	4/13-4/17	1	2	16	14	4	37
4/18-4/19		2	1	8	9	9	30
	4/20-4/24	0	2	22	7	6	37
4/25-4/26		3	0	11	9	2	25
	4/27-5/01	3	1	9	8	2	23
5/02-5/03		2	2	11	3	7	25
	5/04-5/08	0	2	7	6	3	18
5/09-5/10		2	1	6	2	5	16
	5/11-5/15	0	5	9	5	1	20
<b>Total</b>		<b>39</b>	<b>25</b>	<b>333</b>	<b>192</b>	<b>103</b>	<b>695</b>

Table 11. Chronological distribution of turkey gobbler harvest (%) by physiographic region in Georgia, 1998.

Date		Physiographic Region					Statewide
Weekend	Weekday	I	II	III	IV	V	
3/21-3/22		17.9	0.0	14.4	7.8	20.4	13.2
	3/23-3/27	12.8	0.0	18.0	21.9	13.6	17.4
3/28-3/29		7.7	4.0	9.3	9.4	3.9	8.2
	3/30-4/03	12.8	16.0	9.9	12.0	6.8	10.4
4/04-4/05		7.7	4.0	8.1	8.9	2.9	7.5
	4/06-4/10	5.1	0.0	9.3	5.7	6.8	7.3
4/11-4/12		0.0	12.0	2.7	5.2	6.8	4.2
	4/13-4/17	2.6	8.0	4.8	7.3	3.9	5.3
4/18-4/19		5.1	4.0	2.4	4.7	8.7	4.3
	4/20-4/24	0.0	8.0	6.6	3.6	5.8	5.3
4/25-4/26		7.7	0.0	3.3	4.7	1.9	3.6
	4/27-5/01	7.7	4.0	2.7	4.2	1.9	3.3
5/02-5/03		5.1	8.0	3.3	1.6	6.8	3.6
	5/04-5/08	0.0	8.0	2.1	3.1	2.9	2.6
5/09-5/10		5.1	4.0	1.8	1.0	4.9	2.3
	5/11-5/15	0.0	20.0	2.7	2.6	1.0	2.9

Table 12. Chronological distribution of turkey hunting trips by physiographic region in Georgia, 1998.

Dates		Physiographic Region					Statewide
Weekend	Weekday	I	II	III	IV	V	
3/21-3/22		36	14	308	139	68	568
	3/23-3/27	50	28	367	215	103	767
3/28-3/29		32	15	233	122	59	466
	3/30-4/03	27	23	225	155	67	497
4/04-4/05		26	15	188	92	41	362
	4/06-4/10	35	18	208	114	55	432
4/11-4/12		18	8	158	79	33	297
	4/13-4/17	19	26	141	94	43	323
4/18-4/19		17	7	97	58	29	210
	4/20-4/24	24	19	148	83	29	304
4/25-4/26		22	15	144	54	26	263
	4/27-5/01	9	18	84	55	31	197
5/02-5/03		20	13	115	48	29	225
	5/04-5/08	11	8	85	51	25	180
5/09-5/10		11	11	76	25	19	142
	5/11-5/15	8	23	107	51	37	227
<b>Total</b>		<b>366</b>	<b>269</b>	<b>2,691</b>	<b>1,436</b>	<b>697</b>	<b>5,482</b>

Table 13. Chronological distribution of turkey hunting trips (%) by physiographic region in Georgia, 1998.

Dates		Physiographic Region					Statewide
Weekend	Weekday	I	II	III	IV	V	
3/21-3/22		9.8	5.2	11.4	9.7	9.8	10.4
	3/23-3/27	13.7	10.4	13.6	15.0	14.8	14.0
3/28-3/29		8.7	5.6	8.7	8.5	8.5	8.5
	3/30-4/03	7.4	8.6	8.4	10.5	9.6	9.1
4/04-4/05		7.1	5.6	7.0	6.3	5.9	6.6
	4/06-4/10	9.6	6.7	7.7	7.9	7.9	7.9
4/11-4/12		4.9	3.0	5.9	5.5	4.7	5.4
	4/13-4/17	5.2	9.7	5.2	6.5	6.2	5.9
4/18-4/19		4.6	2.6	3.6	4.0	4.2	3.8
	4/20-4/24	6.6	7.1	5.5	5.8	4.2	5.5
4/25-4/26		6.0	5.6	5.4	3.8	3.7	4.8
	4/27-5/01	2.5	6.7	3.1	3.8	4.4	3.6
5/02-5/03		5.5	4.8	4.3	3.3	4.2	4.1
	5/04-5/08	3.0	3.0	3.2	3.6	3.6	3.3
5/09-5/10		3.0	4.1	2.8	1.8	2.7	2.6
	5/11-5/15	2.2	8.6	4.0	3.6	5.3	4.1