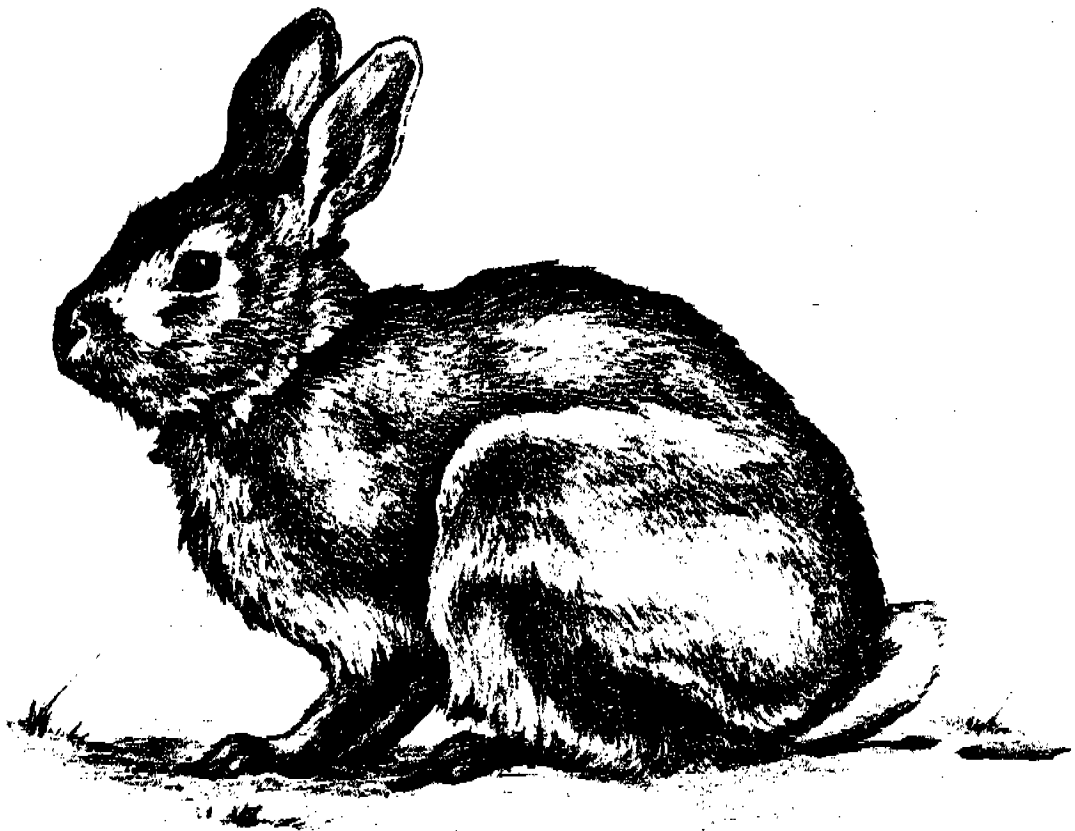


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Utah Upland Game
Annual Report
1988



Utah Department of Natural Resources
Division of Wildlife Resources
Publication 89-6

U T A H
U P L A N D G A M E

Annual Report

1988

Prepared by:

Jay A. Roberson
Upland Game Coordinator

PUBLICATION NO. 89-6

Annual Performance Report for Federal Aid Project W-65-R-35 Job A-4

Utah Department of Natural Resources

DIVISION OF WILDLIFE RESOURCES

An Equal Opportunity Employer

Timothy H. Provan
Director

"FINDING OUT HOW MANY THERE ARE LEFT IS
THE LEAST OF THE PURPOSES OF GAME CENSUS.
MEASURING THE RESPONSE OF GAME POPULATIONS
TO CHANGES - DELIBERATE OR ACCIDENTAL -
IN THEIR ENVIRONMENT IS THE BIG PURPOSE.
CONTINUOUS CENSUS IS THE YARDSTICK OF
SUCCESS OR FAILURE IN CONSERVATION."

ALDO LEOPOLD 1932

TABLE OF CONTENTS

	<u>Page</u>
Abstract	1
Objectives	1
Procedures	1
Recommendations	2
Introduction	3
Pheasants	9
Migratory Upland Game Birds	
Mourning Dove	32
Band-tailed Pigeon	50
Chukar Partridge	53
Sage Grouse	72
Forest Grouse	99
Quail	125
Hungarian Partridge	141
Wild Turkey	157
Sharp-tailed Grouse	173
White-tailed Ptarmigan	175
Rabbits and Hares	181
Cottontail Rabbit	182
Snowshoe Hare	197
Appendix A: Weather Conditions	204
Appendix B: License Sales	207
Appendix C: DWR Summer Survey Effort	211
Appendix D: Season Dates, Bag Limits, Areas Open - 1988	216
Appendix E: Summary Harvest Questionnaire Returns	219

JOB PERFORMANCE REPORT
RESEARCH PROJECT SEGMENT
(Inventory)

State: U T A H Project Title: Statewide Wildlife

Project No.: Management Inventory
W-65-R-35

Job Title: Statewide Upland Game
Job No.: A-4 Inventory and Management

Period Covered: December 15, 1986 to April 30, 1988

Abstract: This report includes upland game inventory and harvest data relating to the 1988-89 hunting seasons. Results of annual inventory and harvest surveys and long-term trends of indices derived by each method are included. Data obtained in 1988 are compared to 1987 and long-term averages.

Objectives: To conduct annual inventories and determine the population trend and annual harvest of upland game.

Procedures: Annual inventory procedures for ring-necked pheasants included winter sex ratio counts and summer roadside counts. The winter sex ratio counts were conducted from December 15, 1987 through February 10, 1988, as snow cover conditions allowed. Indices derived include hen-cock ratios and pheasants observed per 100 hours. Annual summer roadside counts (three or more per route) were conducted from July 23-August 18 on permanently established routes. Indices derived include pheasants per mile, young per mile, young per hen, mean brood and percent of hens with young.

Mourning dove breeding population trend was determined via the annual call count survey. This survey is part of a nationwide survey administered by the U. S. Fish and Wildlife Service. Call counts are conducted over 15 permanent, 20-mile routes. One count was made on each route between May 20-30.

Random brood counts were conducted on chukar and Hungarian partridge, forest grouse (ruffed and blue), sage grouse, sharp-tailed grouse, wild turkey and quail from June 15-August 26. Indices derived for each species include mean brood size, young per 100 adults and birds observed per 100 hours of effort.

Sage grouse strutting ground counts and sharp-tailed grouse dancing ground counts were conducted from March 15-May 15. Total cocks counted, average cocks per ground and percent change from 1987 for comparable grounds were determined on a county basis.

The Gambel's quail call count route in Washington County was discontinued in 1980. Long period waterhole counts were completed in July and August.

Cottontail rabbit roadside counts were conducted over pre-established routes between July 15 and August 5. Indices derived include rabbits per mile and young per 100 adults.

Harvest questionnaires were used to determine the harvest of upland game birds, cottontail rabbit, snowshoe hare, and wild turkey. A 14.2 percent sample of eligible licensees from the current year's (1988) resident small game license file and 1988 combination license file was selected for the game bird and rabbit and hare questionnaire. Separate questionnaires were mailed to all ptarmigan and wild turkey permittees. Indices derived include total hunters, hunter-days, total harvest and hunter success per day plus success for each season.

The upland game questionnaires were analyzed by the Division of Wildlife Resources information systems services subsection. Due to accumulated rounding errors associated with transferring data from the printout, some columns may not total exactly. Wild turkey and ptarmigan questionnaires were analyzed separately by Game Management personnel.

Field bag checks of upland game hunters were made primarily at checking stations, with additional random field checks made during each hunting season. Indices derived include bag per hunter (per day), bag per 100 hours, average hours per hunter-day and average hours per bird bagged. Additional sex and age composition data were compiled for some species using wing samples collected at checking stations.

In 1988 a computerized pull apart mailer was again used to obtain harvest data. However, a modification was made in the questionnaire this year. Small prints and descriptions of upland game were added to the questionnaire to help hunters to distinguish species when hunting. This was done for "look-alike" species - Black-tailed jackrabbit, white-tailed jackrabbit, cottontail, snowshoe hare, ruffed grouse, blue grouse, sharp-tailed grouse, and sage grouse. Data input and storage was entered on tape. This method was initiated in 1981.

Recommendations: This project should be continued for the purpose of determining trends of upland game populations and harvest statistics in Utah.

INTRODUCTION

The objective of Utah's upland game management program is to provide recreational hunting opportunity for sportsmen within the limits of the annual harvestable surplus for each species. It is based on the knowledge that populations of upland game experience relatively high rates of annual turnover. High reproductive rates are naturally compensated for by high death rates, whether hunting is allowed or not. Annual surveys are conducted to measure the production, trend and harvest of each upland game population hunted.

This is the eighteenth edition of this annual Upland Game Report. It is an annual performance report of information compiled during inventory and harvest surveys conducted under Federal Aid Project W-65-R, Job A-4. Information contained herein was compiled by conservation officers, biologists, game managers and the upland game management staff of the Division of Wildlife Resources.

This report serves as a handbook of inventory and harvest data. It is designed primarily for the use of those concerned with the management of upland game in Utah. A separate section is devoted to each species of upland game hunted in Utah. Data are presented primarily in tabular form with limited narrative comment. The first page of each section provides a brief summary of population status and trend as indicated by inventory and harvest data.

During 1988, a total of 70,142 Utah sportsmen spent 499,621 days afield in pursuit of various upland game species (Table 1). The harvest of upland game totaled 548,416 animals. The proportion of the total upland game hunters which pursued each species is shown in Table 2 and the percentage failing to bag at least one bird of each species in Table 3. The regulations for 1988 upland game hunting seasons are shown in Appendix D.



Table 1. Summary of harvest statistics from the mail questionnaire for 1988.

Species	Hunters Afield	Total Harvest	Hunter Days	Bag per Hunter-day	Bag/Hunter For Season
Pheasant	54,514	97,658	184,180	0.53	1.79
Mourning dove	22,457	178,469	76,219	2.34	7.95
Chukar partridge	11,237	32,057	40,088	0.80	2.85
Sage grouse	8,499	14,692	19,418	0.76	1.73
Forest grouse	16,947	53,562	51,726	1.04	3.16
Quail	2,671	8,849	8,682	1.02	3.31
Hungarian partridge	2,471	4,424	5,392	0.82	1.79
Wild turkey	421	66	1,267	0.05	0.16
Band-tailed pigeon	29	--	--	--	--
Sharp-tailed grouse	0	0	0	--	--
Ptarmigan	15	22	15	1.47	1.47
Cottontail	24,076	150,386	97,190	1.55	6.25
Snowshoe	4,725	8,231	15,444	0.53	1.74

TOTAL -- 548,416 499,621 -- --

Total hunters afield for all species of upland game = 70,142

HARVEST QUESTIONNAIRE

Harvest statistics were obtained from a random sample of licensed hunters by their response to a hunter questionnaire. The combined upland game bird and rabbit-hare questionnaire was again used.

A total of 15,350 upland game bird questionnaires, a 14.2 percent sample, were mailed. Of the total, 648 (4.2%) questionnaires were undeliverable. Of the 14,702 questionnaires delivered, 6,527 (44%) usable upland game questionnaires were returned. Of those, 2,326 purchased a license but did not hunt upland game. By dividing the total of 108,077 eligible licensees by the usable returns (6,527), a projection factor of 16.696585 is derived.

The 1988 hunter questionnaire sample size increased from 1987, and a follow-up questionnaire was not sent to those who failed to return the first one. A high rate of return is desirable in order to obtain an adequate sample of harvest estimates in counties where hunting pressure and harvest are limited. Extremely small samples from these counties tend to over-estimate the harvest and thus bias the results. Although harvest, number of hunters and days-afield may be over-estimated where small samples are obtained, harvest per hunter-day should be relatively precise.

Table 2. Number and percent of total upland game hunters afield who reported hunting each game species during 1982-88.

Species	Number of Hunters								Percent of Total							
	1982	1983	1984	1985	1986	1987	1988	1989	1982	1983	1984	1985	1986	1987	1988	
Pheasant	85,368	77,847	76,840	69,889	59,987	57,118	54,514	87.4	85.9	86.9	86.2	84.2	83.8	77.7		
Chukar	11,326	10,418	9,846	7,930	9,397	11,276	11,237	11.6	11.5	11.1	9.8	13.2	16.5	16.0		
Mourning dove	31,756	28,258	30,573	28,183	26,583	22,553	22,457	32.5	31.2	34.6	34.7	37.3	33.	32.0		
Sage grouse	8,997	9,201	8,283	7,586	7,233	7,060	8,499	9.2	10.2	9.4	9.4	10.2	10.4	12.1		
Forest grouse	12,384	13,414	11,511	12,645	12,117	14,831	16,947	12.7	14.8	13.0	15.6	17.0	21.8	24.2		
Quail	4,368	4,012	3,654	3,065	2,432	2,549	2,671	4.5	4.4	4.1	3.8	3.4	3.7	3.8		
Hungarian partridge	2,590	2,889	1,523	1,157	1,257	2,010	2,471	2.7	3.2	1.7	1.4	1.8	2.9	3.5		
Wild turkey***	23	118*	255*	270	335	347	421	0.02	0.1	0.3	0.3	0.5	0.5	0.6		
Sharp-tailed grouse**	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Band-tailed pigeon**	51	--	--	--	--	--	29	0.1	--	--	0.1	--	--	0.0		
Ptarmigan**	19	13	20	14	14	9	15	0.02	0.01	0.02	0.02	0.02	0.01	0.02		
Cottontail rabbit	26,714	22,467	18,616	14,059	13,992	20,322	24,076	27.3	24.8	21.1	17.3	19.6	29.8	34.3		
Snowshoe hare	4,245	3,544	3,796	3,365	3,277	3,702	4,725	4.3	3.9	4.3	4.1	4.6	5.4	6.7		
TOTAL HUNTERS***	97,705	90,592	88,431	81,119	71,259	68,174	70,142									

*Includes both spring and fall hunts.

**Although wild turkey, band-tailed pigeon, ptarmigan and sharp-tailed grouse harvest was determined by separate questionnaires, it is assumed that these hunters are derived from the same group of hunters who reported hunting other upland game bird species.

***Note: This is not the total of the columns because many upland game hunters hunted more than one species.

Table 3. Percent of hunter trips resulting in failure to bag at least one bird, 1961-88.

Year	Pheasant			Dove			Chukar			Sage Grouse			Forest Grouse			Quail			Huns		
	0 Bag	Hunt. Trips	%	0 Bag	Hunt. Trips	%	0 Bag	Hunt. Trips	%	0 Bag	Hunt. Trips	%	0 Bag	Hunt. Trips	%	0 Bag	Hunt. Trips	%	0 Bag	Hunt. Trips	%
1961	714	3,204	22	51	583	9	318	539	59	--	--	--	--	--	--	109	383	28	72	123	59
1962	500	2,685	19	39	456	9	147	362	41	--	--	--	--	--	--	62	201	31	36	108	33
1963	795	3,317	24	53	691	8	248	550	45	220	468	47	188	281	67	71	305	23	59	177	33
1964	911	3,115	29	60	681	9	266	568	47	45	154	29	144	229	63	94	316	30	62	150	41
1965	1,165	4,009	29	--	--	--	486	851	57	82	168	49	225	311	72	128	371	34	93	233	40
1966	1,242	4,297	29	136	1,067	13	423	881	48	54	131	41	133	331	40	106	315	34	63	219	29
1967	1,353	4,833	28	153	1,319	12	477	915	52	138	266	52	194	475	41	161	424	38	116	315	37
1968	1,422	5,223	27	236	1,312	18	495	1,095	45	185	449	41	177	665	27	171	457	37	132	347	38
1969	1,897	5,335	36	214	1,568	14	647	1,250	52	241	648	37	273	646	42	182	465	39	148	292	51
1970	1,546	4,686	33	193	1,274	15	466	962	48	257	603	43	209	666	31	126	314	40	101	210	48
1971	1,783	5,049	35	210	1,333	16	464	934	50	234	625	37	223	673	33	162	385	42	87	210	41
1972	1,743	4,617	38	270	1,421	19	457	827	55	259	593	44	271	794	34	154	339	45	120	224	54
1973	1,659	4,699	35	209	1,596	13	414	824	50	226	553	41	329	1,019	32	128	311	41	97	196	49
1974	2,347	5,323	44	323	1,951	17	511	955	54	292	668	44	388	1,259	31	157	333	47	108	227	48
1975	2,472	5,604	44	329	2,554	13	607	1,105	55	374	901	42	535	1,354	40	177	406	44	121	220	55
1976	1,739	4,294	40	273	1,709	16	408	781	52	259	783	33	371	1,131	33	105	266	39	87	184	47
1977	1,874	5,175	36	295	1,967	15	511	943	54	397	972	41	528	1,388	38	125	299	42	106	247	43
1978	1,507	4,858	31	279	1,986	14	343	882	39	301	853	35	419	1,419	30	103	306	34	85	246	35
1979	2,222	7,024	32	343	2,671	13	528	1,150	46	400	1,215	33	585	1,691	35	130	403	32	119	243	49
1980	1,684	5,867	29	258	2,145	12	458	1,008	45	392	944	42	501	1,283	39	87	254	34	75	206	36
1981	1,305	4,637	28	239	1,558	15	302	669	45	184	493	37	297	741	40	97	241	40	57	172	33
1982	1,768	6,725	26	363	2,338	16	406	824	49	269	620	43	325	919	35	128	292	44	89	176	51
1983	1,645	7,153	23	348	2,381	15	362	880	41	294	729	40	300	1,118	27	105	310	34	82	225	36
1984	1,245	4,643	27	274	1,711	16	287	548	52	202	435	46	270	640	42	84	189	44	51	76	67
1985	1,207	4,017	30	221	1,500	15	208	426	49	161	376	43	228	656	35	61	148	41	35	54	65
1986	1,211	3,615	33	224	1,476	15	237	537	44	139	368	38	221	667	33	58	125	46	36	61	59
1987	863	2,837	30	140	1,047	13	194	537	36	90	307	29	143	671	21	46	111	41	34	97	35
1988	1,372	3,953	35	244	1,525	16	308	776	40	187	557	34	224	1,184	19	63	171	37	73	154	47

AVERAGES (1961-87)	(837)	(360)	(1310)	(1007)	(961)	(1024)	(1212)
	31	14	49	40	38	38	45

The upland game questionnaire is designed to monitor statewide harvest trend from year to year. The more extensively a species is hunted, the more accurately the questionnaire measures the trend data. In an effort to improve the accuracy of indices for species which receive very little hunting pressure and harvest, and which have low densities and limited distribution, a unique questionnaire for that species is mailed to the permit holder. This method has been used for wild turkey, band-tailed pigeon, sharp-tailed grouse and white-tailed ptarmigan.

The annual harvest report is sometimes criticized for being inaccurate and without value. However, report users must recognize that the accuracy of the questionnaire is based on some basic assumptions. These assumptions are: (1) the returned useable sample is a completely random sample (2) respondents recorded data correctly, i.e., they clearly understood the questionnaire, (3) respondents recorded data accurately, did not guess or lie, and (4) respondents correctly identified species hunted. If these assumptions are not met, projections of harvest by county may be over-estimated due to nonrespondent or memory biases. Extreme caution should be used in the interpretation of estimated harvest and hunters for specific species in specific counties. Rather, the long term trend in these indices should be used in managing the populations.

Presently, the upland game annual report contains the best data available and therefore constitutes the basic facts of upland game management. Although this report has its limitations, the trend data is valuable in making professional judgments regarding upland game populations and harvest.

The annual report is used in wildlife planning. It can be used to establish relative importance among species and for developing new resources through transplants or habitat developments. It points out areas of needed research by indicating problems and possible causes. It documents population trends and it combines all this inventory information into one easily accessible publication. Thus it is used extensively by federal land management agencies in environmental impact statements and management plans. It will become increasingly more important in developing management plans, and assessing impacts on wildlife habitat.

RING-NECKED PHEASANT

SUMMARY

Based on the 1987 harvest data, the 1988 statewide breeding population increased slightly from the previous year. The effect of the 1983-84 winter finally seemed to be wearing off even though emergent vegetation still had not returned to inundated mud flats around the Great Salt Lake. Winter carry-over from 1987 was good in northern and central Utah on what suitable habitat remained.

Weather conditions during the nesting season were good in 1988. Statewide monthly average temperatures were above normal, but average precipitation was also above normal across several climatic subdivisions in April. However, temperatures were above normal and precipitation below normal June through August. Drought conditions in northern Utah may have negatively influenced brood survival. Fewer pheasants were observed, and fewer hens appeared to have young. Overall, production was down.

Harvest statistics compiled from the questionnaire indicated reduced success compared to 1987. All harvest indices declined and were below average, resulting in the lowest recorded values since 1950. Opening weekend success was down compared to the previous year based upon field bag check data. Hunters did not react to reduced pheasant populations in a directly density dependent fashion. While they hunted fewer days or not at all, the reduction in hunters and days hunted was not in proportion to the reduction in harvest and the average number of hours hunted actually increased in 1987.



Winter Sex Ratio Counts

Results of the survey for the winter of 1987-88 and long-term trends are shown in Tables 1, 2 and Figure 2 of this section. Statewide comparisons to the winter of 1986-87 and the 10-year average are as follows:

	<u>Winter of</u> <u>1987-88</u>	<u>Percent change from</u> <u>1986-87</u> <u>Average</u>	
Total pheasants counted (roadside)	2,586	+46	-50
Hens per cock	4.1	+11	+8
Pheasants observed per 100 hours	1,724	+61	+23
Total hours effort (roadside)	150	-38	-65

Winter sex ratio counts indicated a 61 percent increase in pheasants observed per unit of effort. However, density estimates can be biased due to the non-random nature of the survey technique if effort is minimal. The hen-cock ratio increased 11 percent from 1987 and was 8 percent higher than the long term average. Access was good but the lack of snow kept birds scattered and counting conditions were not as good as previous years. Less than average effort also reduced pheasant observations. No effort was expended in the Southeastern Region.

Roadside Counts

A summary of summer roadside pheasant counts for 1988 is shown in Table 3. Long-term trends of pheasants per mile, young per mile, young per hen, percent of hens with young and mean brood size are found in Tables 4-8 and Figure 4. Summer 1988 survey results compared to 1987 and the previous 10-year average follow:

	<u>1988</u>	<u>Percent change from</u> <u>1987</u> <u>Average</u>	
Total pheasants observed	1,573	-34	-41
Total miles driven	1,933	-11	-19
Pheasants per mile	0.81	-26	-26
Average brood size	5.3	+4	0
Young per hen	3.68	-10	-10
Percent of hens with young	72	-17	-5

December 1987 through February 1988 temperatures were below normal. Precipitation was at or below normal November 1987 through March 1988. April and November had above average precipitation. The rest of the year precipitation was at or below normal. Temperature and precipitation were normal during the critical month of May. The North Central and Uintah Basin climatic subdivisions (major pheasant distribution) had below normal precipitation in May, which should have increased nesting success. However, this below average precipitation continued through October, resulting in drought over the northern part of the state. Average temperatures in both subdivisions was well above average April through August. Brood survival may have declined due to hot, dry weather May through August.

Pheasant production appears to have decreased from 1987 in Western Utah. Production and hunter success were down in all areas except southeastern and northeastern Utah. The statewide density index (pheasants per mile) decreased from 1.10 in 1987 to 0.81 in 1988, and is 26 percent below the 10-year average (1.10).

Little emergent vegetation due to alkaline soils around the Great Salt Lake continued to reduce both the quantity and quality of wintering, nesting and brood rearing habitat in Box Elder, Salt Lake, Davis, and Weber counties.

Harvest

Hunter Questionnaire

Results of the hunter questionnaire for 1988 are shown in Table 9. Long-term trends of pheasants bagged per hunter-day, percent of harvest and percent of pressure (hunter-days) by county are found in Tables 10-12, Figure 1 and total statewide harvest statistics in Table 13 and Figure 3. A comparison of 1988 harvest statistics to 1987 and the 40-year average follow:

	1988	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Pheasant hunters	54,514	-5	-31
Pheasants harvested	97,650	-18	-55
Hunter-days afield	184,180	-8	-17
Pheasants per hunter-day	0.53	-12	-46
Pheasants per hunter	1.79	-14	-33

In northern Utah, hunters were told to expect poor hunting with success similar to 1987. Low breeding populations were noted and production was poor for those birds which made it through the winter. We predicted 55,000 hunters and 110,000 harvest.

Total hunters again decreased 5 percent from 1987 and remained below the long-term (1948-87) average. Total harvest decreased 18 percent from 1987. Hunter success (pheasants per hunter-day) decreased 12 percent from 1987. Pheasants per hunter also decreased 14 percent.

Long-term trends (1970-88) of total hunters, hunter-days, harvest and hunter success are shown in Figures 1 and 2. Generally, the recent trend is toward less hunter-days with declines in total pheasants harvested and hunter success. We believe this is the result of the accumulated effects of loss of quantity and quality of habitat due to urbanization, flooding, and modern agricultural practices.

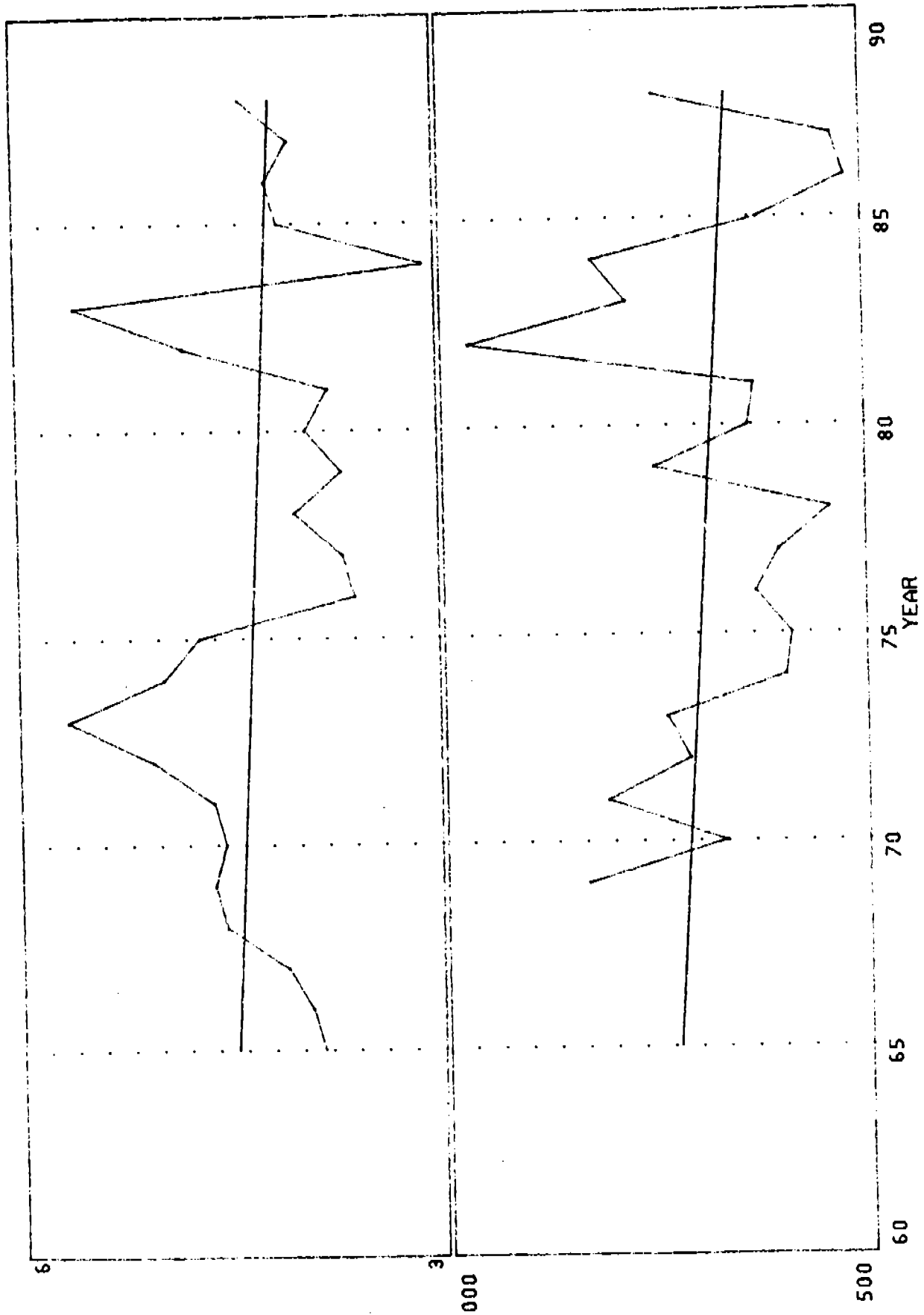


Figure 1. Pheasants winter sex ratio indices, 1965-88.

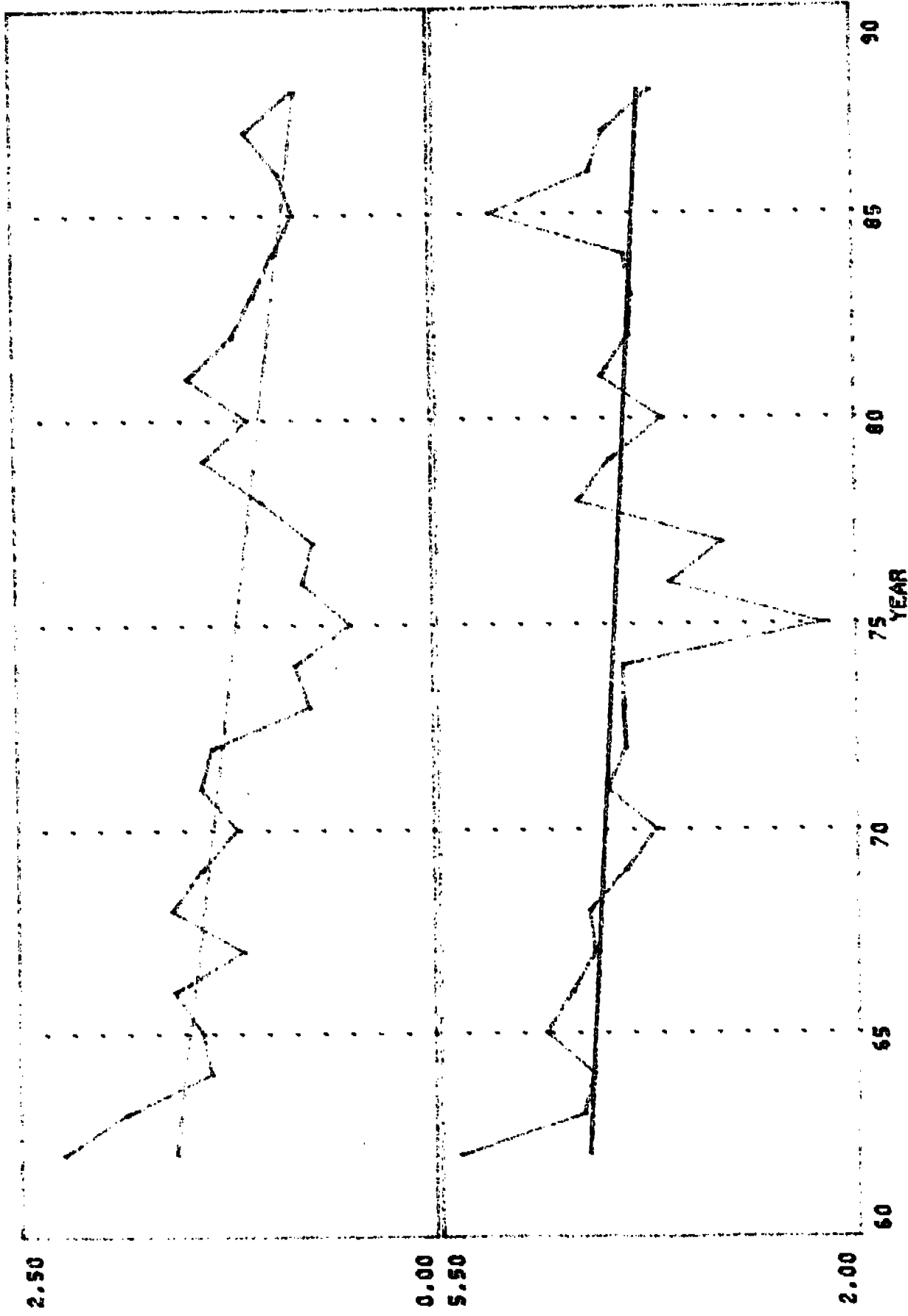


Figure 2. Statewide pheasant production indices, 1962-88.

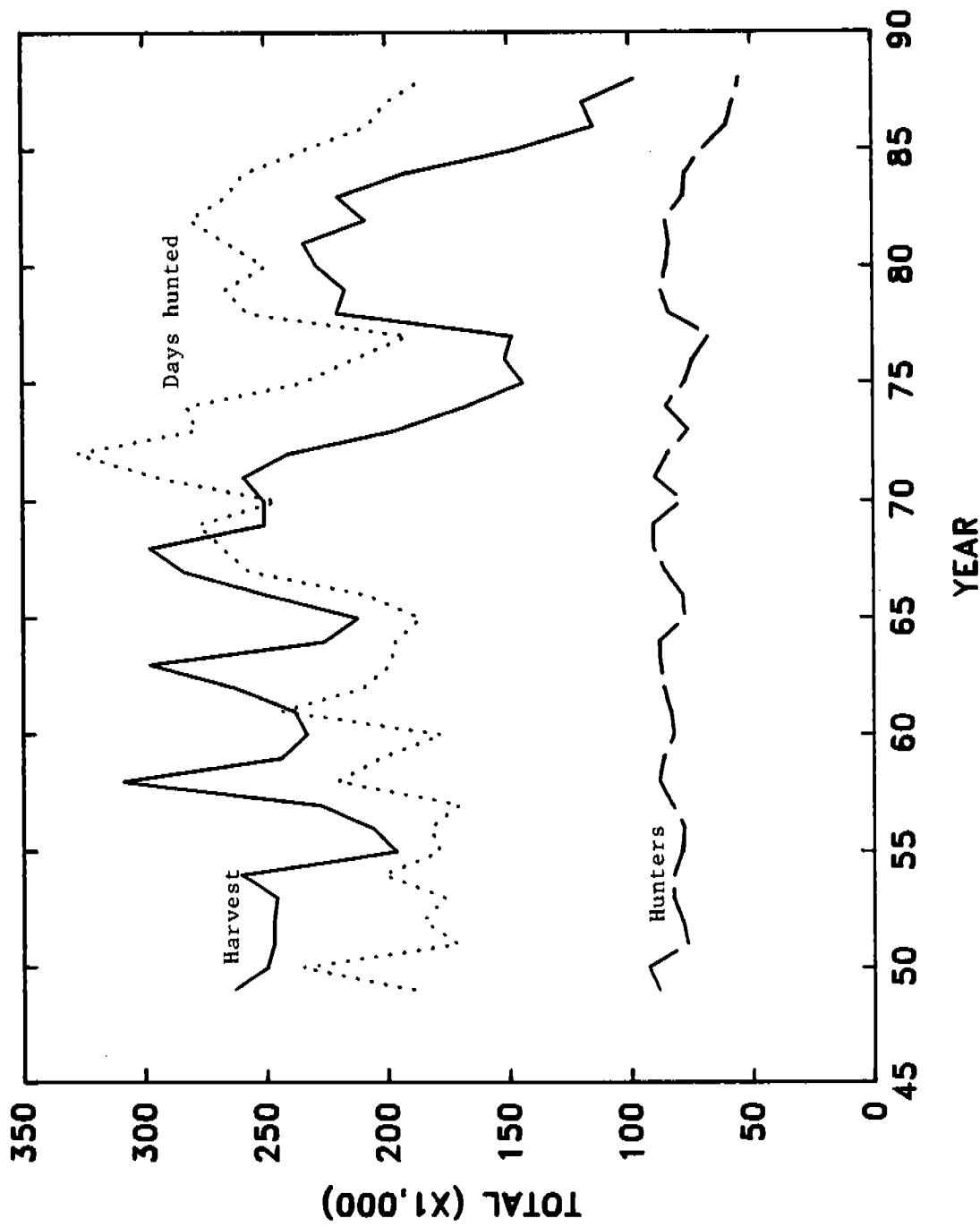


Figure 3. Statewide trend of pheasant harvest statistics.

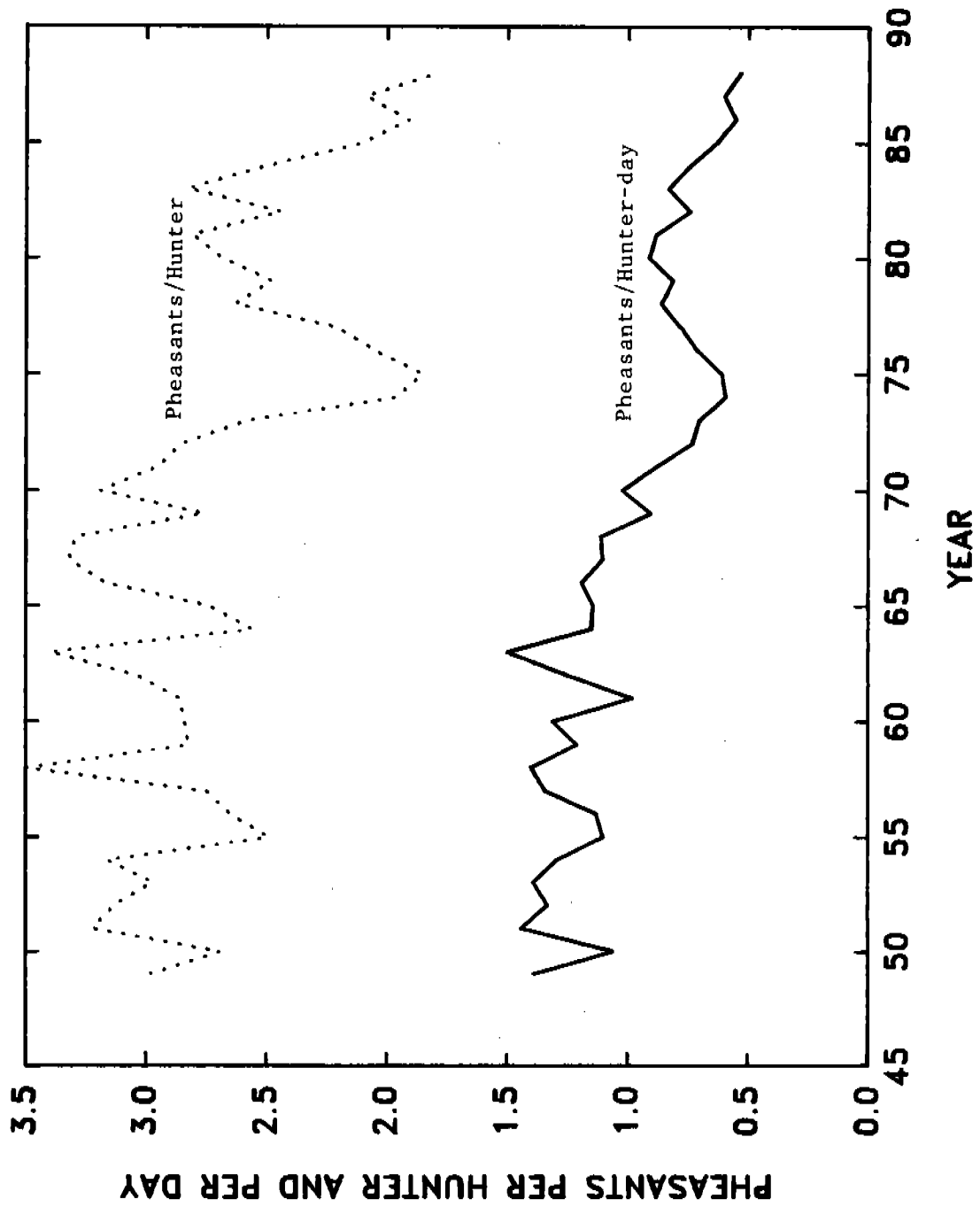


Figure 4. Statewide trend in pheasant hunter success rates, 1948-88.

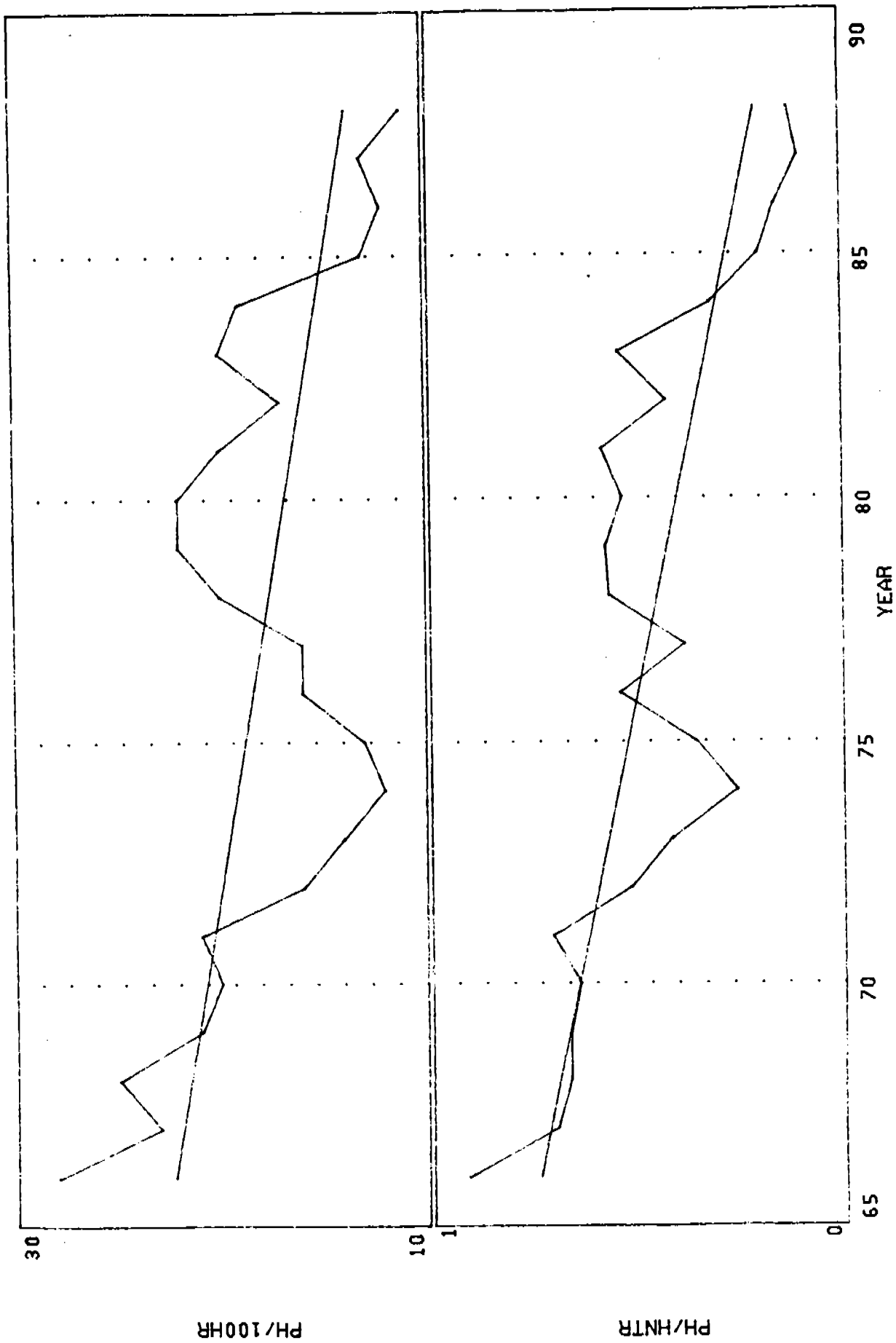


Figure 5. Statewide pheasant field bag check indices, 1962-88.

Field Bag Checks

A summary of pheasant field bag check data for 1988 is shown in Table 14. The hunter success trend determined via bag checks since 1983 is found in Table 15 and Figure 5. A comparison of 1988 data, on a statewide basis, to 1987 and the 10-year average follow:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Total hunters checked	2,564	-1	-37
Total hours hunted	7,328	+12	-43
Pheasants per hunter (complete hunts)	0.35	+9	-49
Pheasants bagged per 100 hours	11	-15	-37
Average hours per hunter-day (complete hunts)	3.1	+24	-18
Hours hunted per pheasant bagged (complete)	8.9	+14	+49

Checking Station Report

Rain fell throughout the northern pheasant areas in the state on November 2 and 3 in amounts ranging from a trace to 0.77 inches. Weather was generally fair over the State Saturday and Sunday (November 5 and 6, 1988). Sunny and fair weather prevailed over northern Utah on Saturday, and temperatures were in high 50's and low 60's.

Hunting pressure was down in Central and Northeastern Utah. Pressure was about the same in other areas of the State. This is attributed to decreasing pheasant populations and to less land being accessible to hunters. Statewide hunter success was about the same as 1987 on opening weekend but success over the entire season was down compared to the previous year. The pheasant season on Ute tribal trust lands opened on October 29th. The few hunters who were aware of this and took advantage of it had good hunting success. However, when the general season opened one week later, there were numerous complaints that the pheasants had "all been killed."

Table 1. Summary of pheasant winter sex ratio counts, 1987-88.

Region and County	Roadside Observations			Flushing Observations			Effort Expended			Pheas. Obs./ 100 Hours of Road. Obs.					
	Cocks	Hens	Total	Hens/ 100 Cocks	Cocks/ 100 Hens	Total	Hens	Cocks	Vehicle Miles		Hours of Effort	Walk Total			
Northern Region															
Box Elder	46	219	265	4.8	21	3	14	17	4.7	21	130	11	0	11	2,409
Cache	37	158	195	4.3	23	--	--	--	--	--	618	50	1	51	390
Davis	13	147	160	11.3	9	2	30	32	15.0	7	130	6	4	10	2,667
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	96	524	620	5.5	18	5	44	49	8.8	11	878	67	5	72	925
Central Region															
Juab	37	67	104	1.8	55	--	--	--	--	--	53	7	0	7	1,486
Salt Lake	2	5	7	2.5	40	--	--	--	--	--	34	3	0	3	233
Sanpete	26	166	192	6.4	16	64	249	313	3.9	26	38	10	4	14	1,920
Tooele	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Utah	78	187	265	2.4	42	--	--	--	--	--	75	10	0	10	2,650
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	143	425	568	3.0	34	64	249	313	3.9	26	200	30	4	34	1,893
Southern Region															
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	88	615	703	7.0	14	6	47	53	7.8	13	396	17	1	18	4,135
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	91	355	446	3.9	26	--	--	--	--	--	247	20	0	20	2,230
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	179	970	1,149	5.4	18	6	47	53	7.8	13	643	37	1	38	3,105
Northeastern Region															
Daggett	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	27	43	70	1.6	63	--	--	--	--	--	155	5	0	5	1,400
Uintah	63	116	179	1.8	54	10	23	33	2.3	43	80	11	1	12	1,627
REGIONAL TOTALS	90	159	249	1.8	57	10	23	33	2.3	43	235	16	1	17	1,556
Southeastern Region															
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
STATE TOTALS	508	2,078	2,586	4.1	24	85	363	448	4.3	23	1,956	150	11	161	1,724

[] Estimate

Table 2. Trend of pheasant winter sex ratio counts, 1982-88.

Region and County	1982-83		1983-84		1984-85		1985-86		1986-87		1987-88	
	Hens/ Cock	Birds/ 100 Hr	Hens/ Cock	Birds/ 100 Hr	Hens/ Cock	Birds/ 100 Hr	Hens/ Cock	Birds/ 100 Hr	Hens/ Cock	Birds/ 100 Hr	Hens/ Cock	Birds/ 100 Hr
<u>Northern Region</u>												
Box Elder	3.7	8,400	--	--	4.2	3,074	2.4	1,453	5.8	524	4.8	2,409
Cache	3.6	1,556	--	--	5.7	3,133	17.2	585	6.8	168	4.3	390
Davis	17.0	1,080	11.2	6,090	6.2	3,108	8.4	4,683	7.5	340	11.3	2,667
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	6.0	700	--	--	7.6	3,425	27.0	350	6.3	587	--	--
REGIONAL TOTALS	4.3	1,596	11.2	6,090	5.1	3,127	5.5	1,235	6.3	379	5.5	925
<u>Central Region</u>												
Juab	3.2	1,066	--	--	--	--	3.4	947	3.9	1,005	1.8	1,486
Salt Lake	1.3	973	--	--	--	--	0.0	0	4.5	--	2.5	233
Sanpete	7.7	4,328	--	--	--	--	0.0	0	6.1	3,900	6.4	1,920
Tooele	3.2	267	--	--	--	--	0.0	0	--	--	--	--
Utah	3.2	1,608	--	--	--	--	3.4	965	3.5	857	2.4	2,650
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	6.3	2,668	--	--	--	--	3.4	958	3.8	1,057	3.0	1,893
<u>Southern Region</u>												
Beaver	5.3	543	2.7	433	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	3.7	831	3.2	5,525	--	--	--	--	3.4	4,270	7.0	4,135
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	6.7	1,936	2.2	3,620	3.2	2,667	--	--	9.6	209	3.9	2,230
Washington	4.4	971	0.6	227	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	5.1	1,121	2.6	2,009	3.2	2,667	--	--	3.7	2,943	5.4	3,105
<u>Northeastern Region</u>												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	1.5	553	1.7	1,113	1.4	145	1.5	241	2.0	139	1.6	1,400
Uintah	5.0	1,287	2.1	3,180	3.9	1,645	1.7	285	0.6	145	1.8	1,627
REGIONAL TOTALS	2.7	801	1.9	1,526	2.3	282	1.5	255	1.2	141	1.8	1,556
<u>Southeastern Region</u>												
Carbon	--	--	1.7	2,675	2.8	1,300	2.5	538	--	--	--	--
Emery	--	--	1.7	2,589	2.6	1,706	1.6	161	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	1.8	1,240	1.7	2,615	2.6	1,617	2.0	261	--	--	--	1.9
STATE TOTALS	5.5	1,900	2.6	2,104	3.8	1,116	3.9	594	3.7	673	4.1	1,724
												3.8

Table 3. Pheasant summer inventory, 1988.

Region and County	No. Routes	Total Miles	Distinct Broods		Mixed Observ.		Adults w/o Young		Total Yng	Total Hens	Total Cocks	Total Pheas/ Mile	Yng/ Mile Brood	Mean Ad Hens	Yng/ Ad Hens	% Hens w/Yng	
			Yng	Hens	Yng	Hens	Yng	Hens									
Northern Region																	
Box Elder	1	80	6	29	3	2	5	5	14	31	5	.63	.39	4.8	2.21	64	
Cache	2	162	3	12	0	2	1	3	6	14	1	.13	.09	4.0	2.33	50	
Davis	1	92	6	40	0	8	9	1	7	48	9	.70	.52	6.6	6.86	86	
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	4	334	15	81	3	12	15	9	27	93	15	.40	.28	5.4	3.44	67	
Central Region																	
Juab	1	24	1	4	0	0	3	1	2	4	3	.38	.17	4.0	2.00	50	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	2	126	15	87	9	34	1	3	27	121	1	1.18	.96	5.8	4.48	88	
Tooele	1	60	1	4	0	0	3	1	2	4	3	.15	.07	4.0	2.00	50	
Utah	3	226	55	262	18	93	8	17	90	355	8	2.00	1.57	4.8	3.94	81	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	7	436	72	357	27	127	15	22	121	484	15	1.42	1.11	5.0	4.00	82	
Southern Region																	
Beaver	1	90	2	9	0	0	1	3	5	9	1	0.17	0.10	4.5	1.80	40	
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Millard	2	262	24	117	7	14	9	5	36	131	9	0.67	0.50	4.9	3.64	86	
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Sevier	2	207	34	189	2	7	21	16	52	196	21	1.30	0.95	5.6	3.77	69	
Washington	1	45	1	7	0	0	1	1	2	7	1	0.22	0.16	7.0	3.50	50	
Wayne*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	6	604	61	322	9	21	32	25	95	343	32	0.78	0.57	5.3	3.61	74	
Northeastern Region																	
Daggett	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	3	324	15	79	2	25	40	27	44	104	40	.58	.32	5.3	2.36	39	
Uintah	2	145	8	42	1	2	9	3	12	44	9	.45	.30	5.3	3.67	75	
REGIONAL TOTALS	5	469	23	121	3	27	49	30	56	148	49	.54	.32	5.3	2.64	46	
Southeastern Region																	
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Emery	1	90	10	71	2	6	6	0	12	77	6	1.06	.86	7.1	6.42	100	
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	1	90	10	71	2	6	6	0	12	77	6	1.06	.86	7.1	6.42	100	
STATE TOTALS	23	1,933	181	952	44	193	117	86	311	1,145	117	1,573	0.81	0.59	5.3	3.68	72

*Data collected

Table 4. Trend of pheasants observed per mile during summer roadside counts, 1978-88.

Region and County	Year											Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
<u>Northern Region</u>												
Box Elder	0.78	0.41	1.03	1.40	0.74	1.43	0.46	0.91	0.44	0.81	0.81	.63
Cache	0.71	0.34	0.08	0.92	0.17	0.04	0.19	0.03	0.01	0.29	0.29	.13
Davis	1.59	1.47	1.77	1.38	0.83	1.07	0.34	0.71	1.04	1.30	1.30	.70
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	1.01	1.55	2.03	3.17	1.79	--	1.56	--	0.86	--	--	--
REGIONAL TOTALS	0.96	0.76	1.23	1.56	0.78	0.63	0.48	0.50	0.43	0.71	0.71	0.40
<u>Central Region</u>												
Juab	0.09	0.13	0.94	0.89	0.61	0.44	0.77	0.48	0.71	--	--	.38
Salt Lake	0.09	0.64	0.60	1.09	1.24	--	1.80	0.46	2.10	1.08	--	--
Sanpete	1.28	1.85	2.18	5.25	1.78	1.74	0.99	1.87	1.15	1.63	1.63	1.18
Tooele	1.11	3.83	1.08	0.48	0.45	--	--	--	0.20	0.08	0.08	.15
Utah	1.96	4.14	1.90	2.19	3.89	1.95	2.21	--	2.13	2.35	2.35	2.00
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	1.40	2.83	1.68	2.01	2.15	1.72	1.49	1.35	1.61	1.79	1.42	1.80
<u>Southern Region</u>												
Beaver	0.71	1.01	0.47	0.63	0.66	0.23	0.11	0.63	0.23	0.08	0.08	0.17
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	0.49	0.97	0.67	1.24	0.07	0.31	--	0.06	0.01	0.00	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	1.38	1.11	0.88	2.85	1.15	1.28	1.09	2.27	0.98	2.00	2.00	0.67
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	1.72	1.10	1.13	0.87	1.37	1.27	1.52	0.62	1.82	1.95	1.95	1.30
Washington	1.40	1.36	0.70	1.41	0.62	1.09	--	0.13	1.30	0.47	0.47	0.22
Wayne	2.10	0.21	--	1.04	0.40	0.26	--	0.39	0.38	--	--	--
REGIONAL TOTALS	1.29	1.08	0.86	1.65	1.05	0.94	1.09	1.25	1.07	1.44	0.78	1.17
<u>Northeastern Region</u>												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	0.68	0.38	0.56	0.84	0.73	0.72	0.68	0.16	0.44	0.38	0.38	.58
Uintah	1.75	1.90	1.60	1.05	1.27	2.97	1.33	0.35	0.46	0.55	0.55	.45
REGIONAL TOTALS	1.02	0.90	0.93	0.91	0.90	1.39	0.91	0.22	0.45	0.45	0.45	0.81
<u>Southeastern Region</u>												
Carbon	0.22	0.40	0.37	1.22	0.28	0.42	--	0.12	0.26	0.00	--	--
Emery	0.53	0.39	0.49	0.74	0.74	0.32	0.66	0.83	0.73	0.72	0.72	1.06
Grand	--	--	--	--	--	1.70	--	--	--	--	--	--
San Juan	0.00	0.35	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	0.35	0.38	0.45	0.86	0.61	0.39	0.66	0.59	0.51	0.72	1.06	0.55
STATE TOTALS	1.02	1.37	1.10	1.46	1.19	1.06	0.94	0.81	0.90	1.10	0.81	1.10

Table 5. Trend of young observed per mile during summer roadside pheasant counts, 1978-88.

Region and County	Year										Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	
Northern Region											
Box Elder	0.55	0.03	0.69	1.07	0.44	0.63	0.26	0.65	0.29	0.62	.39
Cache	0.47	0.20	0.07	0.70	0.11	0.00	0.13	0.02	0.00	0.25	.09
Davis	1.26	0.99	1.27	0.81	0.43	0.78	0.16	0.35	0.85	0.98	.52
Morgan	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--
Weber	0.62	1.22	1.53	2.38	1.38	--	1.27	--	0.76	0.00	--
REGIONAL TOTALS	0.68	0.55	0.88	1.15	0.52	0.35	0.32	0.33	0.32	0.55	.28
Central Region											
Juab	0.76	0.02	0.85	0.63	0.42	0.36	0.58	0.39	0.57	--	.17
Salt Lake	0.07	0.44	0.32	0.57	0.84	--	1.26	0.31	1.62	0.79	--
Sanpete	1.06	1.53	1.72	4.40	1.44	1.44	0.76	1.54	0.90	1.23	.96
Tooele	0.72	2.95	0.76	0.28	0.22	--	--	--	0.08	0.07	.07
Utah	1.43	3.00	1.30	1.68	2.52	1.34	1.26	--	1.68	1.81	1.57
Wasatch	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	1.06	2.11	1.21	1.51	1.63	1.31	0.99	1.09	1.26	1.37	1.11
Southern Region											
Beaver	0.58	0.87	0.37	0.54	0.48	0.17	0.08	0.51	0.14	0.07	0.10
Garfield	--	--	--	--	--	--	--	--	--	--	--
Iron	0.38	0.74	0.53	1.07	0.04	0.23	--	0.05	--	0.00	--
Kane	--	--	--	--	--	--	--	--	--	--	--
Millard	1.12	0.89	0.69	2.27	0.83	1.00	0.89	1.98	0.76	1.55	0.50
Piute	--	--	--	--	--	--	--	--	--	--	--
Sevier	1.45	0.93	0.90	0.67	1.07	0.94	1.19	1.25	1.48	1.54	0.95
Washington	1.08	1.02	0.49	0.89	0.43	0.68	--	--	0.86	0.22	0.16
Wayne	1.76	0.15	--	0.87	0.21	0.12	--	0.28	0.19	--	--
REGIONAL TOTALS	1.05	0.87	0.67	1.30	0.76	0.68	0.86	1.03	0.84	1.12	0.57
Northeastern Region											
Daggett	--	--	--	--	--	--	--	--	--	--	--
Duchesne	0.53	0.27	0.37	0.52	0.54	0.55	0.46	0.07	0.29	0.25	.32
Uintah	1.41	1.50	1.20	0.83	0.95	2.25	1.12	0.29	0.33	0.40	.30
REGIONAL TOTALS	0.81	0.69	0.66	0.63	0.66	1.06	0.69	0.14	0.30	0.31	.32
Southeastern Region											
Carbon	0.15	0.30	0.22	0.93	0.18	0.27	--	0.02	0.15	--	--
Emery	0.35	0.28	0.35	0.52	0.45	0.18	0.45	0.63	0.56	0.59	.86
Grand	--	--	--	--	--	1.10	--	--	--	--	--
San Juan	--	0.00	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	0.24	0.26	0.31	0.65	0.68	0.23	0.45	0.42	0.34	0.59	0.42
STATE TOTALS	0.78	1.04	0.80	1.10	0.87	0.77	0.68	0.63	0.69	0.84	0.82

Table 6. Trend of young per adult hen ratios found during summer roadside pheasant counts, 1978-88.

Region and County	Year											Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Northern Region												
Box Elder	3.64	3.92	2.60	4.09	3.00	1.41	2.44	3.63	2.38	4.42	2.21	
Cache	2.80	2.40	4.00	4.18	3.43	0.00	3.40	1.50	0.00	7.17	2.33	
Davis	4.71	2.30	2.78	1.81	1.25	3.31	1.67	1.26	5.92	3.30	6.86	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	1.81	4.13	3.97	3.38	4.70	--	5.50	--	7.33	--	--	
REGIONAL TOTALS	3.10	3.14	3.07	3.39	3.00	1.98	3.23	2.60	3.92	4.18	3.44	3.16
Central Region												
Juab	5.60	1.00	9.67	4.29	3.75	6.50	4.20	4.33	4.00	--	2.00	
Salt Lake	6.00	3.27	1.70	2.04	2.73	--	3.58	3.13	5.10	3.88	--	
Sarpete	6.03	5.91	4.97	6.71	5.48	5.85	5.38	6.10	3.98	3.25	4.48	
Tooele	2.69	3.93	2.88	2.43	2.17	--	--	--	1.50	4.00	2.00	
Utah	3.42	3.20	2.65	3.80	3.53	2.51	1.66	--	4.16	4.18	3.94	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	3.88	3.59	3.23	4.08	3.95	3.69	2.59	5.61	4.18	3.89	4.00	3.87
Southern Region												
Beaver	4.72	6.00	6.29	7.00	4.89	3.75	2.33	5.11	2.60	6.00	1.80	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	5.00	4.25	5.14	8.56	3.00	5.33	--	3.00	--	0.00	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	6.05	5.52	6.00	4.65	4.48	6.37	6.24	8.95	4.04	3.99	3.64	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	6.67	5.96	4.44	4.18	3.94	3.49	4.64	4.58	5.22	5.14	3.77	
Washington	4.52	4.95	5.50	2.69	3.46	2.23	--	--	2.78	1.11	3.50	
Wayne	7.57	5.00	--	8.75	1.67	3.33	--	3.17	2.43	--	--	
REGIONAL TOTALS	5.85	5.44	5.16	4.66	3.93	3.69	5.05	5.92	4.43	4.32	3.61	4.85
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	5.11	5.82	4.22	2.94	6.10	5.03	3.81	3.00	3.73	3.40	2.36	
Uintah	5.63	5.25	3.22	5.50	4.96	5.16	13.00	11.50	4.13	3.65	3.67	
REGIONAL TOTALS	5.39	5.39	3.52	3.73	5.54	5.11	6.38	5.83	3.88	3.52	2.64	4.83
Southeastern Region												
Carbon	3.00	4.80	5.00	7.91	5.67	3.13	--	0.50	3.00	--	--	
Emery	2.61	4.29	3.37	3.97	2.56	2.93	3.75	4.17	5.15	6.63	6.42	
Grand	--	--	--	--	--	5.50	--	--	--	--	--	
San Juan	0.00	0.00	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	2.70	3.00	3.65	4.98	4.93	3.21	3.75	3.80	4.04	6.63	6.42	4.07
STATE TOTALS	4.32	4.05	3.60	4.12	3.88	3.85	3.92	5.04	4.20	4.08	3.68	4.11

Table 7. Trend of the percent of hens observed with broods during summer roadside pheasant counts, 1978-1988.

Region and County	Year											Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Northern Region												
Box Elder	80	62	68	83	73	52	56	74	48	75	64	
Cache	60	60	100	77	71	0	100	50	--	83	50	
Davis	88	80	63	71	67	75	33	42	85	89	86	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	39	70	100	91	91	--	92	--	100	--	--	
REGIONAL TOTALS	64	71	76	80	76	57	66	60	62	82	67	69
Central Region												
Juab	100	--	100	100	100	100	80	100	100	--	50	
Salt Lake	100	64	71	57	62	--	79	63	90	88	--	
Sanpete	90	100	83	97	92	92	90	92	76	85	88	
Tooele	69	96	75	71	67	--	--	--	50	100	50	
Utah	69	57	64	66	71	60	63	--	86	94	81	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	74	66	82	72	76	71	70	56	84	91	82	74
Southern Region												
Beaver	73	77	71	86	89	50	33	89	80	100	40	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	86	83	86	100	100	100	--	100	--	0	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	85	88	87	83	73	94	100	84	98	86	86	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	97	96	96	82	83	76	91	88	87	86	69	
Washington	87	95	33	66	77	83	--	--	64	22	50	
Wayne	100	100	--	88	78	--	--	83	100	--	--	
REGIONAL TOTALS	89	90	87	81	80	83	91	85	88	82	74	86
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	83	88	77	68	66	82	67	75	73	96	39	
Uintah	95	87	92	100	86	75	86	75	73	91	75	
REGIONAL TOTALS	90	88	87	78	75	77	72	75	73	94	46	81
Southeastern Region												
Carbon	44	100	75	100	67	63	--	50	66	--	--	
Emery	48	43	68	72	58	64	65	67	92	100	100	
Grand	--	--	--	--	--	100	--	--	--	--	--	
San Juan	0	0	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	48	56	70	79	59	67	65	65	91	100	100	70
STATE TOTALS	76	73	77	79	75	74	75	62	83	87	72	76

Table 8. Trend of average brood size for pheasants, 1978-88.

Region and County	Year											Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
<u>Northern Region</u>												
Box Elder	5.71	6.38	3.40	4.90	4.13	4.00	4.63	5.77	5.33	6.0	4.8	
Cache	4.60	3.50	4.00	5.93	6.50	0.00	3.40	3.00	0.00	4.8	4.0	
Davis	4.79	4.00	5.13	3.64	2.00	5.40	3.33	3.50	5.12	4.4	6.6	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	4.80	6.00	4.37	3.70	5.66	--	6.00	--	6.33	--	--	
REGIONAL TOTALS	5.00	5.22	4.21	4.48	4.88	4.58	4.72	5.11	5.41	5.1	5.4	4.87
<u>Central Region</u>												
Juab	5.60	--	4.00	3.80	3.75	6.50	6.00	4.33	4.67	--	4.0	
Salt Lake	6.00	5.13	3.33	4.67	4.44	--	4.75	5.00	5.70	3.8	--	
Sanpete	6.56	5.98	5.43	7.24	5.93	6.39	6.38	8.28	5.10	4.8	5.8	
Tooele	4.57	8.93	3.83	3.67	3.50	--	--	--	3.00	4.0	4.0	
Utah	4.91	5.45	4.09	5.38	4.99	4.02	2.95	--	4.75	4.9	4.8	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	5.29	5.81	4.46	5.66	5.15	5.01	3.75	7.42	4.89	4.8	5.0	5.22
<u>Southern Region</u>												
Beaver	6.50	7.10	7.25	6.50	5.00	6.50	7.00	5.75	3.25	6.0	4.5	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	5.00	4.25	6.00	8.14	3.00	5.33	--	--	--	0.0	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	6.88	6.31	6.38	6.30	6.30	6.40	6.00	10.63	3.72	5.3	4.9	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	6.40	5.94	4.70	5.00	4.56	5.14	5.10	5.17	5.69	5.8	5.6	
Washington	6.33	5.00	--	5.90	4.40	3.90	--	--	4.14	5.0	7.0	
Wayne	10.25	5.00	--	1.00	2.00	--	--	3.33	2.25	--	--	
REGIONAL TOTALS	6.71	5.96	5.49	6.14	4.98	5.18	5.42	7.35	4.70	5.6	5.3	5.75
<u>Northeastern Region</u>												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	6.54	6.60	5.50	4.58	7.31	4.50	5.87	4.00	5.75	3.9	5.3	
Uintah	5.75	5.56	3.30	5.50	4.25	5.11	5.50	6.33	5.71	4.4	5.3	
REGIONAL TOTALS	6.12	5.93	3.90	4.89	5.84	4.87	5.72	4.78	5.74	4.1	5.3	5.19
<u>Southeastern Region</u>												
Carbon	6.75	3.33	6.67	7.67	6.00	3.00	--	1.00	--	--	--	
Emery	5.27	6.00	7.00	6.00	4.42	6.60	5.00	5.20	6.89	5.0	7.1	
Grand	--	--	--	--	--	5.50	--	--	--	--	--	
San Juan	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	5.67	5.00	6.86	6.24	4.64	5.30	5.00	4.82	5.46	5.0	7.1	5.40
STATE TOTALS	5.69	5.79	4.58	5.45	5.11	5.03	4.78	6.71	4.94	5.1	5.3	5.32

Table 9. Summary of pheasant hunter success and distribution of harvest and hunting pressure by region and county, 1988.

Region and County	Sample Size*	Hunter-days Afield	Birds Bagged	Birds per Hunter-day	% of Pressure	% of Harvest
<u>Northern Region</u>						
Box Elder	382	16,412	8,114	.49	8.91	8.30
Cache	216	10,485	4,975	.47	5.69	5.09
Davis	310	16,496	5,359	.32	8.95	5.48
Morgan	5	116	200	1.71	.06	.20
Rich	2	183	33	(.18)	(.09)	(.03)
Summit	5	183			.09	
Weber	383	21,037	7,246	.34	11.42	7.42
REGIONAL TOTALS	1,303	64,916	25,929	.40	35.24	26.55
<u>Central Region</u>						
Juab	122	3,890	1,903	.49	2.11	1.94
Salt Lake	194	8,364	2,137	.26	4.54	2.18
Sanpete	309	12,973	10,385	.80	7.04	10.63
Tooele	163	7,012	2,153	.31	3.80	2.20
Utah	866	39,454	25,228	.64	21.42	25.83
Wasatch	6	250	150	(.60)	(.13)	(.15)
REGIONAL TOTALS	1,660	71,945	41,958	.58	39.06	42.96
<u>Southern Region</u>						
Beaver	22	1,335	550	.41	.72	.56
Garfield	2	66	183	2.75	.03	.18
Iron	26	1,085	250	.23	.58	.25
Kane						
Millard	221	9,750	5,893	.60	5.29	6.03
Piute	8	434	183	.42	.23	.18
Sevier	225	10,886	6,194	.57	5.91	6.34
Washington	14	550	217	.39	.29	.22
Wayne	3	133	83	.63	.07	.08
REGIONAL TOTALS	521	24,243	13,557	.56	13.16	13.88
<u>Northeastern Region</u>						
Daggett	4	250	50	(.20)	(.13)	(.05)
Duchesne	153	6,895	6,194	.90	3.74	6.34
Uintah	115	5,943	3,823	.64	3.22	3.91
REGIONAL TOTALS	272	13,090	10,068	.77	7.10	10.30
<u>Southeastern Region</u>						
Carbon	70	2,838	1,452	.51	1.54	1.48
Emery	109	5,626	3,840	.68	3.05	3.93
Grand	1	83	16	(.20)	(.04)	(.01)
San Juan	3	66	100	1.50	.03	.10
REGIONAL TOTALS	183	8,615	5,409	.63	4.67	5.53
Unknown Counties	14	1,369	734	.54	.74	.75
STATE TOTALS	3,953	184,180	97,658	.53	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 10. Summary of pheasants bagged per hunter-day by region and county, 1981-88.

Region and County	Year							
	1981	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>								
Box Elder	1.03	0.86	0.99	0.81	0.66	0.52	0.62	0.49
Cache	0.88	0.74	0.82	0.66	0.42	0.44	0.52	0.47
Davis	0.65	0.63	0.58	0.56	0.46	0.36	0.43	0.32
Morgan	0.57	0.64	0.58	0.44	0.05	0.18	0.70	1.71
Rich	0.00	0.00	(0.67)	(0.80)	(0.17)	0.00	(1.00)	(0.18)
Summit	0.00	0.00	(0.96)	(0.80)	0.00	0.00	(0.67)	0.00
Weber	0.72	0.63	0.72	0.69	0.55	0.39	0.40	0.34
<u>REGIONAL TOTALS</u>	<u>0.84</u>	<u>0.71</u>	<u>0.78</u>	<u>0.68</u>	<u>0.53</u>	<u>0.42</u>	<u>0.49</u>	<u>0.40</u>
<u>Central Region</u>								
Juab	0.89	0.76	1.00	0.86	0.70	0.64	0.66	0.49
Salt Lake	0.68	0.57	0.66	0.51	0.53	0.40	0.45	0.26
Sanpete	1.18	1.00	1.20	1.08	0.98	0.72	0.73	0.80
Tooele	0.65	0.43	0.60	0.58	0.60	0.44	0.56	0.31
Utah	0.91	0.73	0.81	0.82	0.65	0.64	0.68	0.64
Wasatch	0.00	0.00	(0.21)	(0.29)	(0.55)	(0.17)	(0.32)	(0.60)
<u>REGIONAL TOTALS</u>	<u>0.89</u>	<u>0.71</u>	<u>0.83</u>	<u>0.79</u>	<u>0.69</u>	<u>0.60</u>	<u>0.65</u>	<u>0.58</u>
<u>Southern Region</u>								
Beaver	1.06	0.77	0.72	0.66	0.52	0.56	0.37	0.41
Garfield	0.53	0.81	0.41	0.52	0.17	0.58	0.14	2.75
Iron	0.74	0.69	0.61	0.43	0.49	0.32	0.28	0.23
Kane	0.00	0.00	(1.00)	(0.50)	0.00	0.00	0.00	0.00
Millard	1.02	0.97	1.10	0.92	0.88	0.77	0.68	0.60
Piute	0.85	1.00	0.80	0.66	0.56	0.83	0.67	0.42
Sevier	1.03	0.89	0.96	0.87	0.71	0.68	0.65	0.57
Washington	0.45	0.39	0.43	0.24	0.42	0.40	0.21	0.39
Wayne	0.67	0.88	0.50	0.25	1.22	0.33	0.24	0.63
<u>REGIONAL TOTALS</u>	<u>0.95</u>	<u>0.85</u>	<u>0.89</u>	<u>0.79</u>	<u>0.73</u>	<u>0.67</u>	<u>0.60</u>	<u>0.77</u>
<u>Northeastern Region</u>								
Daggett	0.00	0.00	(0.67)	0.00	(0.50)	0.00	(0.50)	(0.20)
Duchesne	1.09	1.05	1.15	0.99	0.88	0.84	0.87	0.90
Uintah	0.98	0.93	0.98	0.86	0.62	0.79	0.80	0.64
<u>REGIONAL TOTALS</u>	<u>1.04</u>	<u>0.99</u>	<u>1.06</u>	<u>0.92</u>	<u>0.75</u>	<u>0.81</u>	<u>0.83</u>	<u>0.56</u>
<u>Southeastern Region</u>								
Carbon	0.70	0.54	0.59	0.44	0.42	0.39	0.47	0.51
Emery	0.85	0.57	0.60	0.65	0.58	0.46	0.48	0.68
Grand	0.63	0.94	2.44	0.38	(2.00)	(0.50)	(0.86)	(0.20)
San Juan	0.68	0.50	0.76	2.50	0.40	0.58	1.64	1.50
<u>REGIONAL TOTALS</u>	<u>0.78</u>	<u>0.56</u>	<u>0.62</u>	<u>0.57</u>	<u>0.51</u>	<u>0.44</u>	<u>0.53</u>	<u>0.63</u>
Unknown Counties	0.77	0.48	1.03	0.47	1.00	0.40	0.63	0.54
<u>STATE TOTALS</u>	<u>0.88</u>	<u>0.74</u>	<u>0.83</u>	<u>0.74</u>	<u>0.63</u>	<u>0.55</u>	<u>0.60</u>	<u>0.53</u>

() Data may be biased because small sample size inflated county harvest beyond reasonable estimate for known pheasant populations.

Table 11. Percentage distribution of pheasant harvest by region and county, 1981-88.

Region and County	Year							
	1981	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>								
Box Elder	12.94	12.40	13.87	10.02	9.84	8.16	9.00	8.30
Cache	8.66	7.07	7.22	4.92	3.61	4.07	4.83	5.09
Davis	5.33	8.27	7.57	7.84	7.34	5.80	6.12	5.48
Morgan	0.23	0.20	0.13	0.08	0.01	0.05	0.14	0.20
Rich	0.00	0.00	(0.02)	(0.04)	(0.01)	0.00	(0.02)	(0.03)
Summit	0.00	0.00	(0.15)	(0.13)	0.00	0.00	(0.04)	0.00
Weber	7.79	10.18	10.66	12.82	12.28	8.81	5.46	7.42
REGIONAL TOTALS	34.95	38.12	39.46	35.69	33.08	26.90	25.63	26.55
<u>Central Region</u>								
Juab	3.19	2.10	1.87	1.80	2.13	2.95	3.47	1.94
Salt Lake	4.88	5.96	5.86	4.64	5.28	4.90	4.48	2.18
Sanpete	7.28	7.47	7.84	9.11	10.25	10.32	9.53	10.63
Tooele	2.05	1.83	2.08	2.29	2.61	2.63	2.79	2.20
Utah	17.89	16.54	15.73	18.69	17.24	22.25	23.70	25.83
Wasatch	0.00	0.00	(0.02)	(0.06)	(0.09)	(0.02)	(0.12)	(0.15)
REGIONAL TOTALS	35.29	33.90	33.38	36.52	37.52	43.07	44.12	42.96
<u>Southern Region</u>								
Beaver	0.91	0.68	0.40	0.58	0.51	0.65	0.45	0.56
Garfield	0.08	0.32	0.05	0.12	0.04	0.13	0.02	0.18
Iron	1.08	1.00	0.83	0.35	0.72	0.47	0.32	0.25
Kane	0.00	--	(0.01)	(0.04)	0.00	0.00	0.00	0.00
Millard	7.77	5.37	4.17	6.93	7.85	8.30	6.29	6.03
Piute	0.30	0.13	0.09	0.24	0.13	0.18	0.24	0.18
Sevier	5.37	5.86	5.04	6.06	6.58	7.42	7.07	6.34
Washington	0.58	0.48	0.50	0.35	0.70	0.61	0.24	0.22
Wayne	0.09	0.11	0.03	0.01	0.16	0.04	0.16	0.08
REGIONAL TOTALS	16.17	13.95	11.11	14.74	16.70	17.80	14.82	13.88
<u>Northeastern Region</u>								
Daggett	0.00	--	0.00	0.00	(0.03)	0.00	(0.08)	(0.05)
Duchesne	4.60	5.51	6.17	4.64	5.04	4.11	5.26	6.34
Uintah	3.99	5.13	6.03	4.87	3.72	4.16	4.74	3.91
REGIONAL TOTALS	8.58	10.64	12.20	9.74	8.76	8.27	10.09	10.30
<u>Southeastern Region</u>								
Carbon	1.73	1.51	1.40	1.01	1.26	1.37	1.37	1.48
Emery	2.84	1.46	1.80	2.13	2.44	2.32	3.00	3.93
Grand	0.11	0.13	0.13	0.05	0.06	0.11	0.37	(0.01)
San Juan	0.12	0.11	0.10	0.05	0.03	0.13	0.47	0.10
REGIONAL TOTALS	4.80	3.20	3.44	3.25	3.78	3.93	5.22	5.53
Unknown Counties	0.21	0.19	0.40	0.30	0.16	0.04	0.10	0.75
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

()Data may be biased because small sample size inflated county harvest beyond reasonable estimate for known pheasant populations.

Table 12. Percentage distribution of pheasant hunting pressure by county hunted, 1981-88.

Region and County	Year							
	1981	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>								
Box Elder	11.07	10.77	11.62	9.26	9.38	8.60	8.67	8.91
Cache	8.65	7.11	7.30	5.53	5.39	5.16	5.59	5.69
Davis	7.24	9.83	10.75	10.33	10.00	8.92	8.43	8.95
Morgan	0.33	0.23	0.19	0.14	0.20	0.17	0.12	0.06
Rich	0.00	—	—	(0.04)	(0.05)	0.00	0.01	0.09
Summit	0.00	—	—	(0.12)	(0.04)	(0.01)	0.03	0.09
Weber	9.62	11.92	12.20	13.93	14.05	12.36	8.19	11.42
<u>REGIONAL TOTALS</u>	<u>36.93</u>	<u>39.86</u>	<u>42.06</u>	<u>39.20</u>	<u>39.03</u>	<u>35.22</u>	<u>31.06</u>	<u>35.24</u>
<u>Central Region</u>								
Juab	3.16	2.05	1.55	1.55	1.91	2.54	3.15	2.11
Salt Lake	6.34	7.74	7.31	6.79	6.31	6.72	5.91	4.54
Sanpete	5.46	5.55	5.39	6.28	6.55	7.86	7.76	7.04
Tooele	2.77	3.18	2.85	2.93	2.76	3.29	2.99	3.80
Utah	17.30	16.94	16.00	16.90	16.81	19.12	20.72	21.42
Wasatch	0.00	—	—	(0.17)	(0.10)	(0.06)	0.23	0.13
<u>REGIONAL TOTALS</u>	<u>35.03</u>	<u>35.46</u>	<u>33.10</u>	<u>34.46</u>	<u>34.34</u>	<u>39.59</u>	<u>40.78</u>	<u>39.06</u>
<u>Southern Region</u>								
Beaver	0.74	0.66	0.46	0.65	0.66	0.64	0.73	0.72
Garfield	0.14	0.29	0.11	0.17	0.17	0.12	0.08	0.03
Iron	1.28	1.07	1.12	0.61	0.91	0.80	0.70	0.58
Kane	0.00	—	—	(0.06)	(0.02)	(0.02)	0.00	0.00
Millard	6.74	4.12	3.15	5.61	5.60	5.95	5.49	5.29
Piute	0.31	0.10	0.10	0.28	0.15	0.12	0.22	0.23
Sevier	4.60	4.90	4.34	5.17	5.83	6.00	6.48	5.91
Washington	1.14	0.91	0.95	1.10	1.04	0.84	0.71	0.29
Wayne	0.12	0.09	0.05	0.31	0.08	0.06	0.41	0.07
<u>REGIONAL TOTALS</u>	<u>15.07</u>	<u>12.14</u>	<u>10.28</u>	<u>13.89</u>	<u>14.39</u>	<u>14.56</u>	<u>14.85</u>	<u>13.16</u>
<u>Northeastern Region</u>								
Daggett	0.00	—	—	(0.06)	(0.04)	(0.02)	0.09	0.13
Duchesne	3.71	3.91	4.45	3.48	3.58	2.69	3.61	3.74
Uintah	3.59	4.10	5.08	4.24	3.77	2.91	3.56	3.22
<u>REGIONAL TOTALS</u>	<u>7.30</u>	<u>8.01</u>	<u>9.53</u>	<u>7.72</u>	<u>7.34</u>	<u>5.62</u>	<u>7.27</u>	<u>7.10</u>
<u>Southeastern Region</u>								
Carbon	2.18	2.08	1.97	1.71	1.90	1.92	1.76	1.54
Emery	2.95	1.89	2.51	2.43	2.66	2.79	3.71	3.05
Grand	0.15	0.10	0.04	0.10	0.02	0.12	0.25	0.04
San Juan	0.15	0.16	0.10	0.02	0.05	0.12	0.17	0.03
<u>REGIONAL TOTALS</u>	<u>5.43</u>	<u>4.23</u>	<u>4.62</u>	<u>4.25</u>	<u>4.63</u>	<u>4.94</u>	<u>5.91</u>	<u>4.67</u>
Unknown Counties	0.24	0.31	0.32	0.47	0.25	0.05	0.09	0.74
<u>STATE TOTALS</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>

() Data combined in unknown counties because of small sample size.

Table 13. Statewide summary of pheasant harvest statistics, 1948-1988.

Year	Total Hunters	Total Harvest	Hunter-days Afield	Pheasants Per Hunter-day	Pheasants Per Hunter
1948	96,534	280,914	--	--	2.91
1949	88,369	263,340	189,453	1.39	2.98
1950	92,724	249,428	235,309	1.06	2.69
1951	76,576	246,575	171,233	1.44	3.22
1952	78,773	246,559	185,383	1.33	3.13
1953	82,595	245,307	176,480	1.39	2.97
1954	82,370	260,289	201,774	1.29	3.16
1955	78,793	196,195	178,359	1.10	2.49
1956	77,826	206,239	182,512	1.13	2.65
1957	83,025	228,319	170,387	1.34	2.75
1958	88,290	309,015	220,725	1.40	3.50
1959	86,268	243,276	202,730	1.21	2.82
1960	81,976	232,812	177,719	1.31	2.84
1961	83,493	238,439	243,305	0.98	2.86
1962	86,336	262,448	209,921	1.25	3.04
1963	87,647	297,873	198,582	1.50	3.40
1964	88,242	225,775	196,314	1.15	2.56
1965	77,409	211,876	186,215	1.14	2.74
1966	78,721	249,814	209,082	1.19	3.17
1967	85,664	284,000	257,033	1.10	3.32
1968	90,453	297,752	267,788	1.11	3.29
1969	90,573	250,241	277,887	0.90	2.76
1970	78,585	250,503	244,958	1.02	3.19
1971	87,878	259,189	294,618	0.88	2.95
1972	84,311	240,573	327,669	0.73	2.85
1973	75,968	196,012	278,033	0.70	2.58
1974	85,252	167,408	282,294	0.59	1.96
1975	77,566	143,783	234,615	0.61	1.85
1976	74,029	151,476	214,023	0.71	2.05
1977	67,195	148,168	191,142	0.78	2.21
1978	83,800	220,398	257,305	0.86	2.63
1979	87,462	216,700	266,245	0.81	2.48
1980	84,868	228,442	249,770	0.91	2.69
1981	83,408	234,217	265,381	0.88	2.81
1982	85,368	208,437	280,624	0.74	2.44
1983	77,847	220,074	265,731	0.83	2.83
1984	76,840	192,190	258,169	0.74	2.50
1985	69,889	146,807	233,328	0.63	2.10
1986	59,987	114,389	207,346	0.55	1.91
1987	57,118	119,236	199,470	0.60	2.09
1988	54,514	97,658	184,180	0.53	1.79
TOTALS (1948-88)	3,314,542	9,082,146	9,073,092	(39.81)	(111.16)
AVERAGES (1948-87)	79,513	219,134	222,223	0.98	2.69

Table 14. Pheasant field bag check summary, 1988.

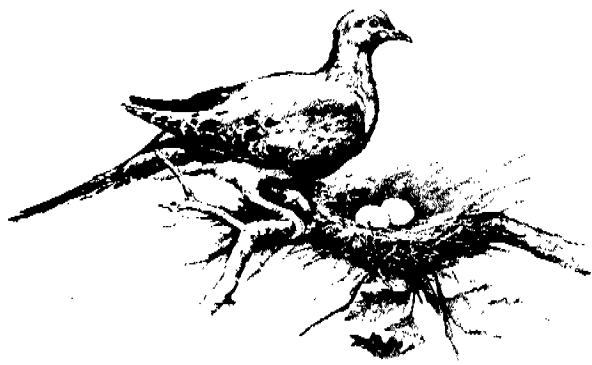
Region and County	ALL HUNTS				COMPLETE HUNTS						
	Total Parties	Total Hunters	Total Hours	Total Birds/100 Hr	Total Hunts	Total Complete Hunters	Total Hours	Total Birds/100 Hr	Birds/Hunter		
<u>Northern Region</u>											
Box Elder	235	476	1,419	102	7	213	414	1,195	88	7	0.21
Cache	53	125	349	28	8	18	38	122	3	2	0.08
Davis	88	198	503	57	11	20	35	85	7	8	0.20
Morgan	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--
Weber	57	119	197	24	12	42	86	158	18	11	0.21
REGIONAL TOTALS	433	918	2,468	211	9	293	573	1,560	116	28	0.20
<u>Central Region</u>											
Juab	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--
Utah	241	528	1,506	197	13	77	169	525	84	16	.50
Wasatch	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	241	528	1,506	197	13	77	169	525	84	16	0.50
<u>Southern Region</u>											
Beaver	21	55	75	11	15	0	0	0	0	0	0
Garfield	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--
Millard	255	593	2,006	170	8	150	306	1,020	102	10	33
Piute	--	--	--	--	--	--	--	--	--	--	--
Sevier	12	35	63	9	14	3	9	9	5	56	56
Washington	26	62	114	35	31	10	24	45	17	38	0.71
Wayne	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	314	745	2,258	225	10	163	339	1,074	124	12	0.37
<u>Northeastern Region</u>											
Daggett	--	--	--	--	--	--	--	--	--	--	--
Duchesne	73	194	625	103	16	12	27	195	53	27	1.96
Uintah	35	136	381	43	11	7	17	113	9	8	.53
REGIONAL TOTALS	108	330	1,006	146	15	19	44	308	62	20	1.41
<u>Southeastern Region</u>											
Carbon	16	43	90	15	17	3	7	20	5	25	.71
Emery	30	58	--	25	--	30	58	--	25	--	.43
Grand	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	16	43	90	15	17	3	7	20	5	25	0.71
STATE TOTALS	1,112	2,564	7,328	794	11	555	1,132	3,487	391	11	0.35

Table 15. Pheasant hunter success trend as determined by field bag check, 1983-88.

Region and County	1983		1984		1985		1986		1987		1988	
	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter
Northern Region												
Box Elder	22	0.50	15	0.38	9	0.31	5	0.14	11	0.29	7	0.21
Cache	--	--	16	0.47	5	0.13	--	--	31	1.25	2	0.08
Davis	12	0.35	13	0.34	16	0.46	6	0.19	18	0.80	8	0.20
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	24	0.59	15	0.35	7	0.18	12	0.21	9	0.13	11	0.21
REGIONAL TOTALS	20	0.47	15	0.38	9	0.27	7	0.16	11	0.23	28	0.20
Central Region												
Juab	54	0.35	--	--	--	--	--	--	--	--	--	--
Salt Lake	4	0.06	--	--	--	--	--	--	--	--	--	--
Sanpete	34	0.97	--	--	--	--	--	--	--	--	--	--
Tooele	80	2.18	--	--	--	--	--	--	--	--	--	--
Utah	26	0.86	53	1.62	35	0.88	28	0.74	24	0.68	16	0.50
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	31	0.31	53	1.62	35	0.88	28	0.74	24	0.68	16	0.50
Southern Region												
Beaver	--	--	24	0.31	14	0.37	--	--	6	0.18	0	0.00
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	12	0.71	16	0.66	12	0.59	10	0.48	9	0.50	10	0.33
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	22	1.01	23	0.94	16	0.66	14	0.65	6	1.67	56	0.56
Washington	21	0.70	--	--	6	0.07	33	0.50	17	0.22	38	0.71
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	15	0.82	17	0.68	14	0.61	11	0.51	12	0.40	12	0.37
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	22	1.87	18	0.84	11	0.40	38	1.50	13	0.50	27	1.96
Uintah	19	1.47	25	0.77	15	0.37	17	0.50	--	--	8	0.53
REGIONAL TOTALS	21	1.64	21	0.80	21	0.38	24	0.79	13	0.50	20	1.41
Southeastern Region												
Carbon	21	0.55	4	0.09	--	--	7	0.33	0	0.00	25	0.71
Emery	17	0.29	9	0.29	23	1.80	14	0.35	6	0.33	--	0.43
Grand	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	38	1.00	--	--	--	--	--	--	--	--
REGIONAL TOTALS	20	0.48	9	0.24	23	1.80	13	0.35	5	0.32	25	0.71
STATE TOTALS	20	0.85	19	0.58	13	0.44	12	0.39	13	0.32	11	0.35

MIGRATORY UPLAND GAME BIRDS

SUMMARY



Mourning Doves

The breeding density index increased in 1988, but remained below average.

Harvest statistics derived from the questionnaire showed the same number of hunters, but decreased harvest compared to 1987. Hunter success for the season decreased 12 percent.

Field bag checks also indicated a decrease in hunter success on opening day. Hunters who participated hunted longer hours than the previous year.

Aging of wings indicated the juvenile per 100 adult ratio decreased to 100 compared to 137 in 1987, and the 21-year average of 116. Either production was down or juvenile doves migrated earlier than previous years.

Band-tailed Pigeons

Banding of band-tailed pigeons was discontinued in 1979, as a result of recommendations by the Four-Corners Band-tailed Pigeon Study Committee.

Only 29 hunters participated in 1988. Total harvest is unknown but is probably less than 100 birds.



MOURNING DOVE

Call Count Survey

Results of the 1988 call count survey are found in Table 1 of this section. The long-term trend of the state's breeding density index (average doves heard per route) is shown in Table 2. Indices shown in each of these tables are unweighted and consequently differ from those published in the annual Mourning Dove Status Report compiled by the Fish and Wildlife Service. However, indicated trends are similar (Figure 1). The following is a comparison of the results of the 1988 survey to 1987 and the average for the period 1964-1987:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Average doves heard per route	9.4	+6	-28
Average calls heard per route	42.4	+17	-23
Average doves seen per route	18.5	+95	+30

Coo count data indicated increased breeding activity in late May compared to 1987, but was 28 percent below the long-term average of 13 doves heard per route.

Harvest

Hunter Questionnaire

Information obtained from the hunter questionnaire for 1988 is summarized in Table 3. Long-term trends of mourning doves bagged per hunter-day, percent of harvest and percent of pressure (hunter-days) by county are found in Tables 4-6 and total statewide harvest statistics in Table 7 and Figure 2,3. The following is a comparison of the harvest statistics for 1988 compared to 1987 and the 12-year (1976-87) average:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Mourning dove hunters	22,457	0	-24
Mourning dove harvest	178,469	-13	-38
Hunter-days afield	76,219	-15	-26
Mourning doves per hunter-day	2.34	+3	-16
Mourning doves hunter	7.95	-12	-17

An increase in dove hunter success was predicted due to a 6 percent increase in the spring dove call count index. We predicted 20,000 hunters, 200,000 harvest and 90,000 hunter days. Hunter success decreased slightly. Total harvest decreased 13 percent compared to 1987. Numbers of dove hunters,

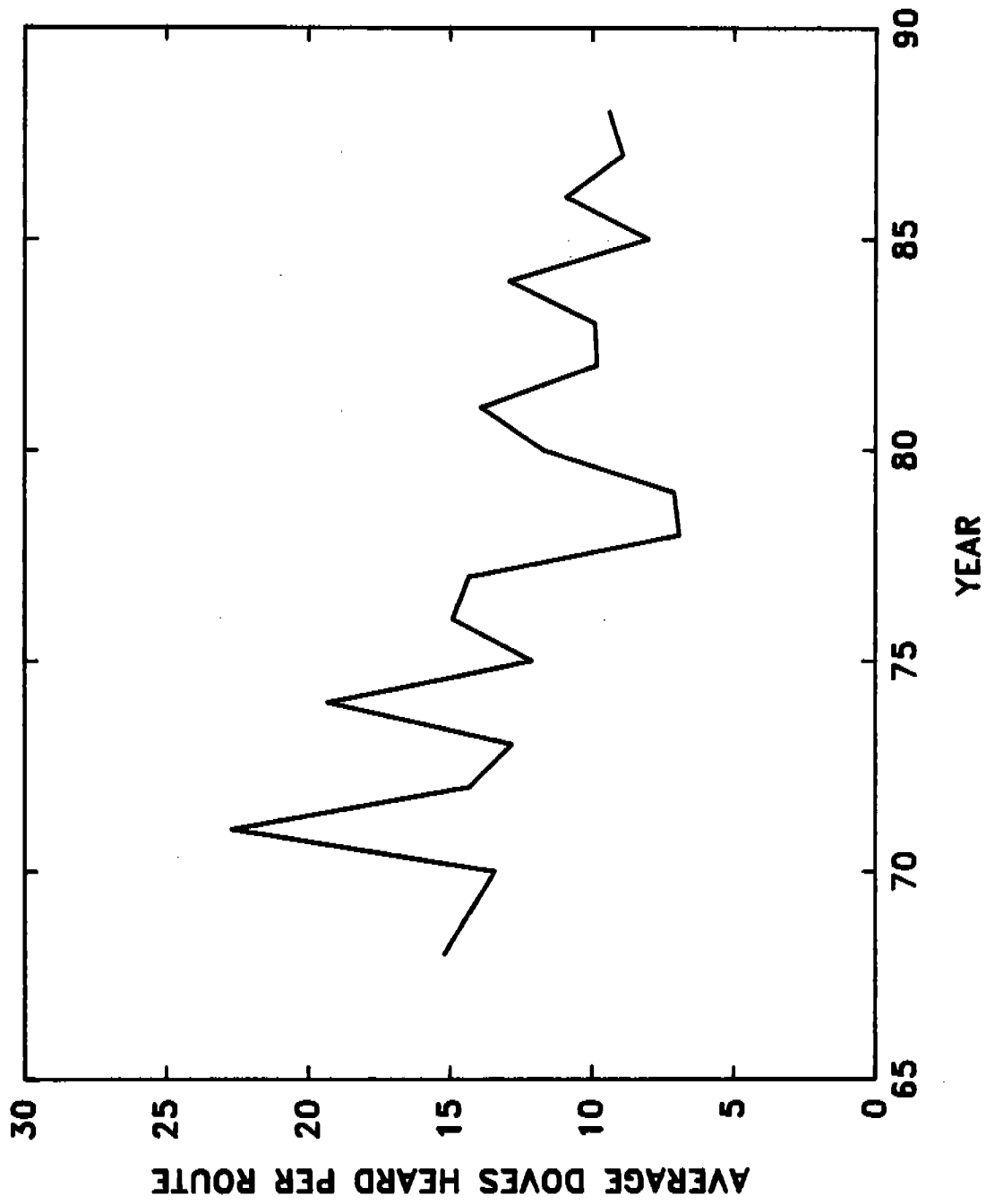


Figure 1. Mourning Dove breeding density index trend, 1968-88.

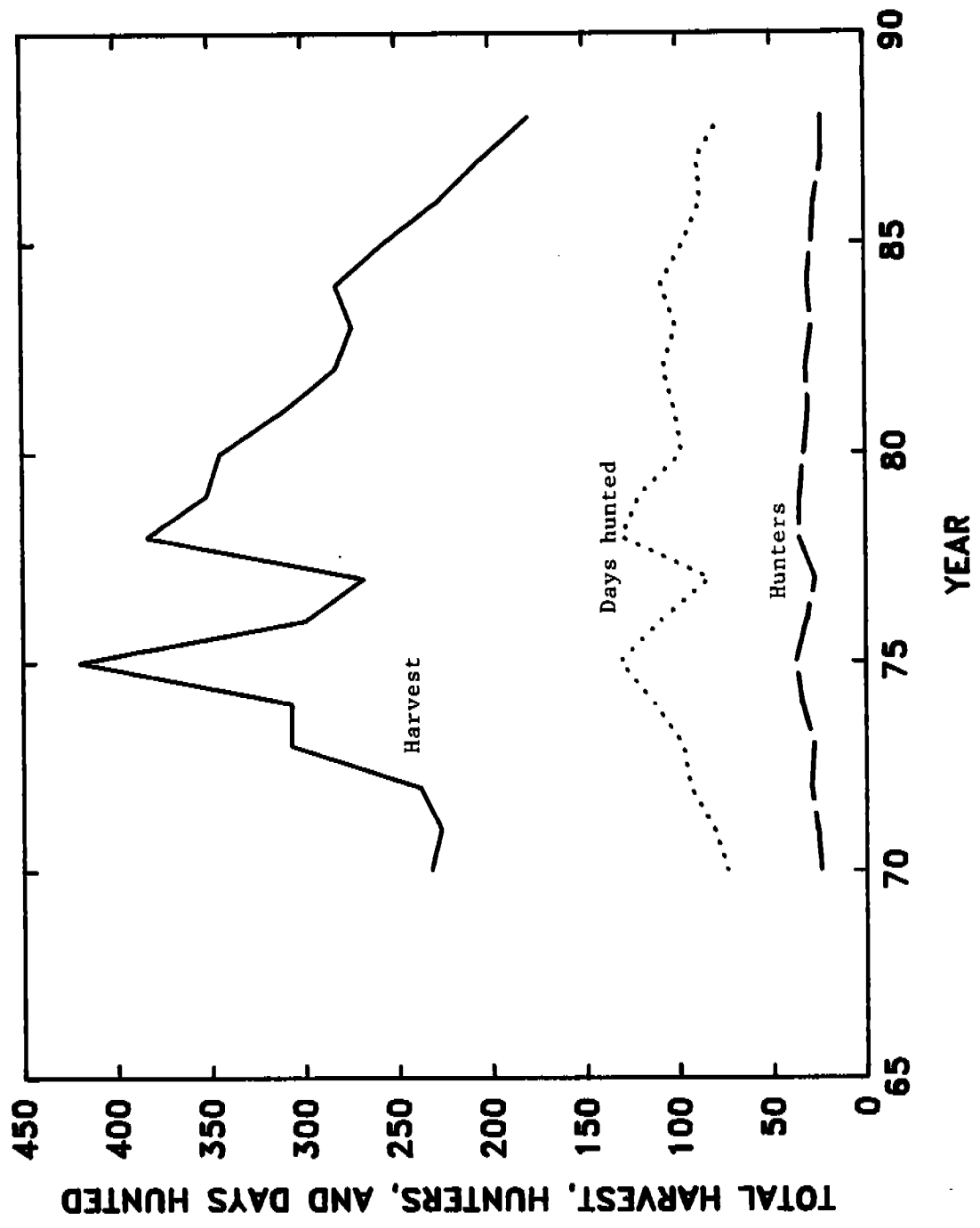


Figure 2.. Statewide trends of mourning dove harvest statistics.

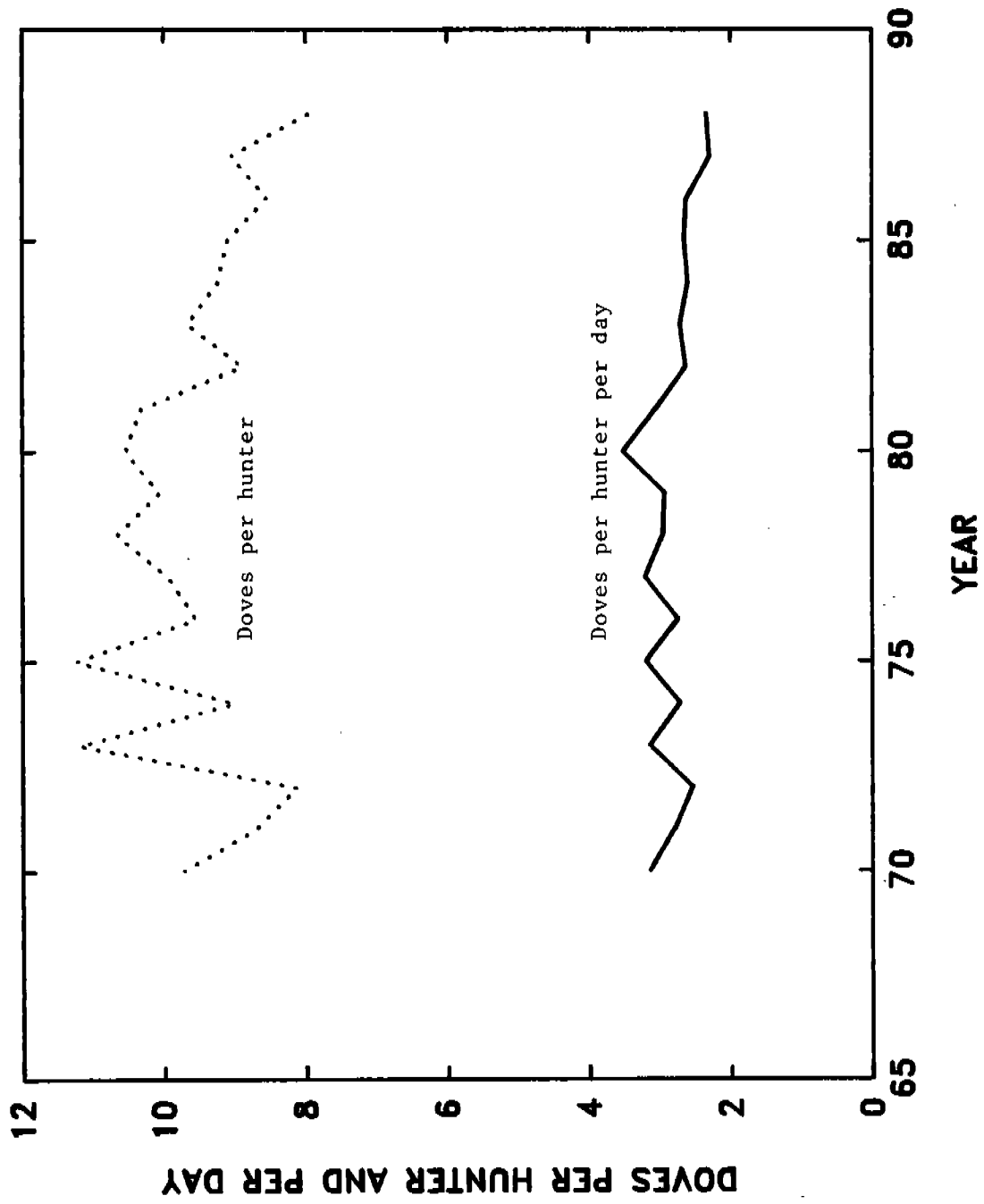


Figure 3. Statewide trends of mourning dove hunter success rates, 1968-88.

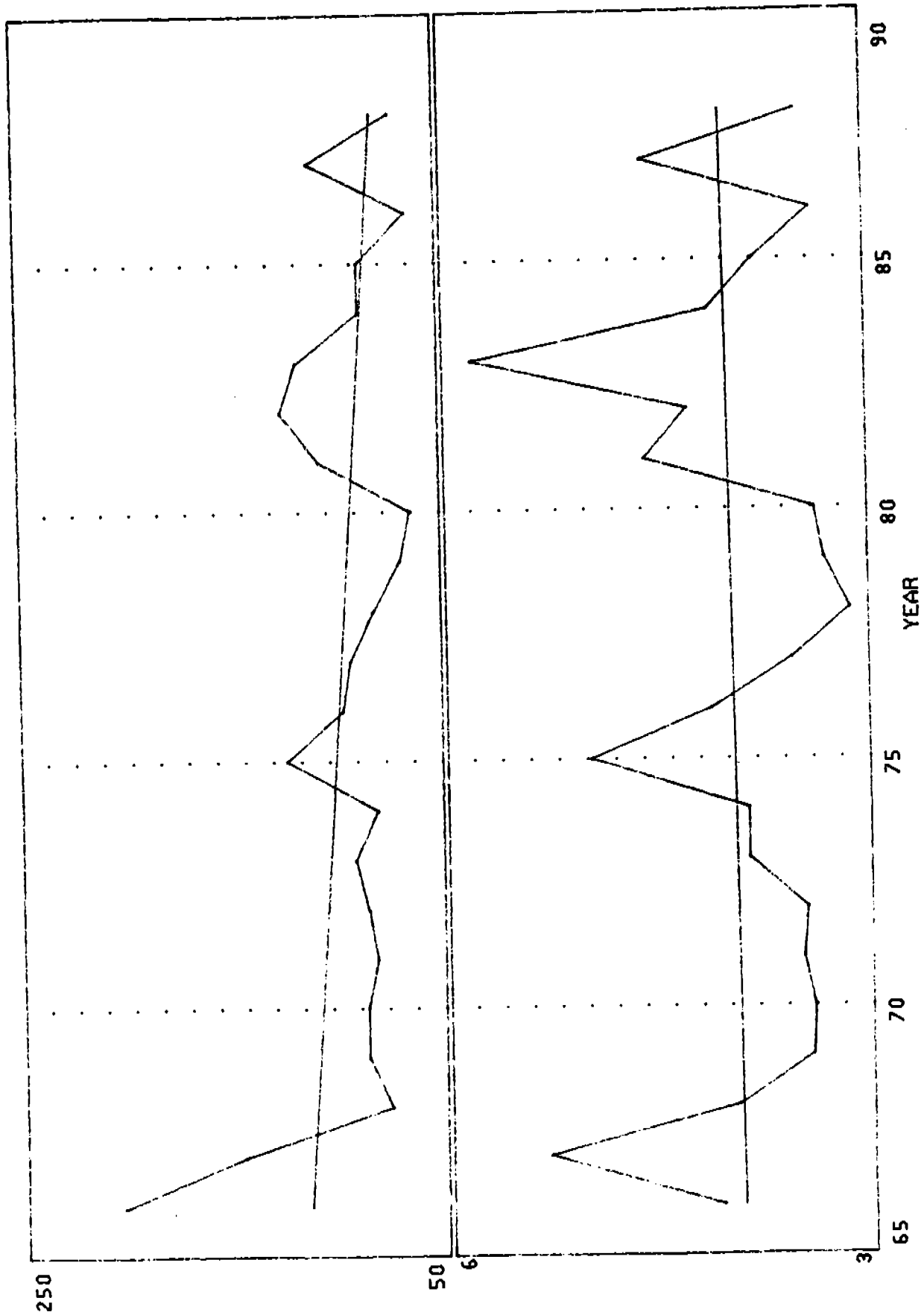


Figure 4. Statewide dove field bag check indices, 1966-88.

hunter-days afield and doves per hunter-day were significantly below the 12-year average. Decreased success seemed to be due to factors other than weather. May through August were dryer and warmer than normal. However, on August 26, heavy thunderstorms in central and southern Utah dropped up to two inches of rain and caused some flooding. Precipitation in August was normal or below normal in major dove concentration areas. A cold front that moved into Utah on the 15th produced some low nighttime temperatures on the 16th.

Long-term harvest trends are depicted in Figure 2.

Field Bag Checks

A summary of field bag check data for 1988 is shown in Table 8. Hunter success trends determined via this method are shown in Table 9. Results of the 1988 survey compared to 1987 and the 10-year average (1978-87) follow:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Total hunters checked	1,176	-22	-47
Total hours hunted	4,550	-11	-49
Doves per hunter (complete hunts)	3.05	-30	-18
Doves bagged per 100 hours	66	-34	-23
Average hours per hunter-day (complete hunts)	4.3	+10	+8
Hours hunted per dove bagged	1.4	+56	+27

September 1, 1988 was a Thursday rather than a Saturday or Sunday, so one would expect less hunter participation. Hunt conditions were good on opening day with dry and warm weather. Hunter participation should have been about the same as last year's Tuesday opening. Field bag checks indicated a decrease in hunter success. This agrees with the questionnaire results which indicated a decrease in hunter success. This might indicate that opening day success was worse than last year and the 10 year average. The total number of hunters checked was down 22 percent from 1987. Dove hunters spent more time afield per hunter-day than in 1987, and more time was spent per dove bagged, according to field bag check data.

Age Composition of the Harvest

A summary of the age composition of harvested mourning doves from 1978 through 1988 is contained in Table 10. Hatching dates for immature doves harvested in the Northern Region since 1978 are shown in Table 11. Hatching dates for immature doves harvested in Utah in 1988 are shown in Table 12.

Following is a comparison of data collected in 1988 to 1987 and long-term averages (1966-87):

	1988	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Sample size	1,641	-54	-51
Immatures/100 adults	100	-27	-14
Percent of immatures hatched on: (N. Region)			
August 3 or later	--	--	--
July 25 or later	--	--	--
Before July 25	--	--	--

Sample size was down by half because the Northern Region either did not collect, analyze, or report wing results. The 100 immatures per 100 adults indicated a worse hatch compared to the previous 22-year average.

Table 1. Summary of the mourning dove call-count survey for 1988.

Region and County	Route Number	Total Doves Heard Per Route	Total Calls Heard Per Route	Total Doves Seen Per Route
<u>Northern Region</u>				
Summit	R1020	5	14	0
Box Elder	R1500	0	0	9
REGIONAL TOTALS		5	14	9
<u>Central Region</u>				
Juab	R2830	23	151	4
REGIONAL TOTALS		23	151	4
<u>Southern Region</u>				
Sevier-Sanpete	R0370	3	7	15
Wayne-Sevier	R0660	3	11	0
Garfield	R1090	0	0	0
Millard	R3640	5	8	5
Beaver	R3820	13	69	18
Iron	R4000	20	84	3
Washington	R4310	1	3	0
REGIONAL TOTALS		45	182	41
<u>Northeastern Region</u>				
Duchesne	R0080	8	23	0
Uintah	R0220	6	20	13
REGIONAL TOTALS		14	43	13
<u>Southeastern Region</u>				
Emery	R0540	15	72	6
San Juan	R1171	37	163	204
San Juan	R1450	2	11	0
REGIONAL TOTALS		54	246	210
STATE TOTALS		141	636	277
STATE AVERAGE		9.4	42.4	18.5
PERCENT CHANGE (from previous year)		+5.6	+17.1	+94.7

Table 2. Regional and county summary of mourning dove breeding population trend as indicated by the number of doves heard per route during random call count surveys, 1976-88.

Region and County	Route Number	Number of Doves Heard Per Route												
		1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Northern Region														
Summit	R1020	11	10	5	6	5	4	5	--	1	4	5	3	5
Box Elder	R1500	1	4	2	9	4	8	--	1	0	0	1	2	0
REGIONAL TOTALS		12	14	7	15	9	12	5	1	1	4	6	5	5
Central Region														
Juab	R2830	28	25	31	15	31	22	9	25	19	20	19	16	23
REGIONAL TOTALS		28	25	31	15	31	22	9	25	19	20	19	16	23
Southern Region														
Sevier-Sanpete	R0370	0	2	0	0	3	0	0	3	5	4	4	3	3
Wayne-Sevier	R0660	5	8	1	2	5	14	4	--	17	3	2	0	3
Garfield	R1090	3	1	0	0	0	9	2	3	15	3	1	1	0
Millard	R3640	6	29	8	4	2	10	9	5	14	2	2	3	5
Beaver	R3820	0	0	0	5	9	7	13	3	6	6	4	17	13
Iron	R4000	45	27	12	14	40	36	21	19	31	41	26	23	20
Washington	R4310	19	15	1	4	3	6	0	14	1	0	6	7	1
REGIONAL TOTALS		78	82	22	29	62	82	49	47	89	53	45	54	45
Northeastern Region														
Duchesne	R0080	11	14	2	2	1	13	7	0	1	8	3	4	8
Uintah	R0220	27	7	4	--	49	19	1	9	10	5	20	12	6
REGIONAL TOTALS		38	21	6	2	50	32	8	9	11	13	23	16	14
Southeastern Region														
Emery	R0540	14	4	10	9	7	22	7	11	10	3	10	11	15
San Juan	R1170	51	67	24	28	14	38	26	30	57	25	60	31	37
San Juan	R1450	2	1	3	1	3	0	24	5	7	2	0	1	2
REGIONAL TOTALS		67	72	37	38	24	60	57	46	74	30	70	43	54
STATE TOTALS		223	214	103	99	176	208	128	128	194	120	163	134	141
STATE AVERAGES		14.9	14.3	6.9	7.1	11.7	13.9	9.8	9.9	12.9	8.0	10.9	8.9	9.4
PERCENT CHANGE (from previous year)		+23	-4	-52	+3	+65	+18	-38	0	+30	-38	+36	-18	+6

*Automatic zero.

Table 3. Summary of mourning dove hunter success and distribution of harvest and hunting pressure by region and county, 1988.

Region and County	Sample Size*	Hunter-days Afield	Birds Bagged	Birds per Hunter-day	% of Pressure	% of Harvest
<u>Northern Region</u>						
Box Elder	148	5,392	18,416	3.41	7.07	10.31
Cache	64	2,738	5,259	1.92	3.59	2.94
Davis	59	3,873	5,843	1.51	5.08	3.27
Morgan	10	467	1,101	2.36	.61	.61
Rich	13	450	1,185	2.63	.59	.66
Summit	6	534	1,168	2.19	.70	.65
Weber	75	5,426	6,561	1.21	7.11	3.67
REGIONAL TOTALS	375	18,883	39,537	2.09	24.77	22.15
<u>Central Region</u>						
Juab	134	4,441	14,442	3.25	5.82	8.09
Salt Lake	83	4,240	7,814	1.84	5.56	4.37
Sanpete	63	2,788	7,680	2.75	3.65	4.30
Tooele	154	8,448	19,501	2.31	11.08	10.92
Utah	306	14,626	28,868	1.97	19.18	16.17
Wasatch	15	1,352	1,619	1.97	1.77	.90
REGIONAL TOTALS	755	35,897	79,926	2.23	47.09	44.78
<u>Southern Region</u>						
Beaver	19	901	3,155	3.50	1.18	1.76
Garfield	2	116	450	3.86	.15	.25
Iron	22	1,552	5,760	3.71	2.03	3.22
Kane	5	350	601	1.71	.46	.33
Millard	132	6,945	20,937	3.01	9.11	11.73
Piute	6	200	834	4.17	.26	.46
Sevier	58	3,155	6,411	2.03	4.14	3.59
Washington	11	584	1,970	3.37	.76	1.10
Wayne	3	116	267	2.29	.15	.14
REGIONAL TOTALS	258	13,924	40,389	2.90	18.26	22.63
<u>Northeastern Region</u>						
Daggett	1	50			.06	
Duchesne	19	801	2,270	2.83	1.05	1.27
Uintah	34	1,636	4,391	2.68	2.14	2.46
REGIONAL TOTALS	54	2,487	6,661	2.68	3.26	3.73
<u>Southeastern Region</u>						
Carbon	24	1,452	2,988	2.06	1.90	1.67
Emery	43	2,304	6,611	2.87	3.02	3.70
Grand	4	166	333	2.00	.21	.18
San Juan	6	367	1,068	2.91	.48	.59
REGIONAL TOTALS	77	4,291	11,003	2.56	5.62	6.16
Unknown Counties	6	734	951	1.30	.96	.53
STATE TOTALS	1,525	76,219	178,469	2.34	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 4. Summary of mourning doves bagged per hunter-day by region and county, 1981-88.

Region and County	Year							
	1981	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>								
Box Elder	3.04	3.74	3.50	3.19	2.18	3.18	3.46	3.41
Cache	2.83	2.16	2.48	2.05	2.34	1.92	1.79	1.92
Davis	1.59	1.52	1.32	1.66	1.53	1.24	1.18	1.51
Morgan	2.73	4.78	2.65	1.91	1.72	2.04	3.00	2.36
Rich	3.00	1.57	3.08	6.69	2.28	3.72	0.00	2.63
Summit	3.19	2.34	2.08	3.89	1.92	1.08	2.50	2.19
Weber	2.18	1.93	1.81	1.55	1.68	1.63	1.15	1.21
REGIONAL TOTALS	2.57	2.50	2.43	2.27	1.92	2.26	2.19	2.09
<u>Central Region</u>								
Juab	3.82	3.64	5.35	4.44	5.16	4.54	2.95	3.25
Salt Lake	2.65	1.89	2.14	1.95	1.91	1.95	1.36	1.84
Sanpete	3.23	2.48	3.64	2.98	2.71	3.51	1.88	2.75
Tooele	2.30	2.54	2.74	2.90	2.55	2.87	2.17	2.31
Utah	2.96	2.10	2.10	2.21	2.50	2.14	2.30	1.97
Wasatch	1.46	1.39	0.83	2.20	1.50	1.97	0.82	1.20
REGIONAL TOTALS	2.86	2.33	2.64	2.60	2.71	2.72	2.11	2.23
<u>Southern Region</u>								
Beaver	4.86	4.78	5.62	3.45	3.43	2.02	1.72	3.50
Garfield	4.02	4.15	3.07	1.80	0.60	0.20	1.67	3.86
Iron	4.42	3.24	3.60	3.07	4.99	3.54	3.10	3.71
Kane	4.71	2.50	4.38	5.76	2.54	1.06	3.06	1.71
Millard	4.11	4.49	4.63	4.25	4.30	3.58	2.83	3.01
Piute	4.05	0.63	1.65	1.94	1.60	1.62	1.67	4.17
Sevier	2.30	2.51	2.73	2.11	2.33	1.82	2.15	2.03
Washington	4.19	2.92	4.34	2.62	3.17	3.90	2.68	3.37
Wayne	3.76	2.56	2.50	2.00	2.47	2.57	5.65	2.29
REGIONAL TOTALS	3.85	3.49	3.80	3.22	3.53	2.85	2.62	2.90
<u>Northeastern Region</u>								
Daggett	1.00	2.33	1.34	1.48	0.00	1.20	0.83	0.00
Duchesne	3.76	3.09	2.79	1.83	2.50	2.70	2.46	2.83
Uintah	1.81	2.51	2.33	2.61	2.39	1.91	2.82	2.68
REGIONAL TOTALS	2.43	2.74	2.39	2.20	2.39	2.05	2.55	2.68
<u>Southeastern Region</u>								
Carbon	3.42	3.13	2.06	2.13	2.76	2.76	1.94	2.06
Emery	3.62	2.37	2.00	2.24	3.28	1.62	2.41	2.87
Grand	4.12	2.99	2.85	2.46	2.00	4.28	2.41	2.00
San Juan	3.75	3.68	3.70	3.51	3.38	3.26	4.08	2.91
REGIONAL TOTALS	3.75	2.99	2.41	2.41	3.01	2.54	2.76	2.56
Unknown Counties	0.64	1.56	7.20	0.00	0.00	0.00	1.93	1.30
STATE TOTALS	3.05	2.62	2.71	2.59	2.65	2.61	2.28	2.34

Table 5. Percentage distribution of mourning dove harvest by region and county, 1981-88.

Region and County	Year							
	1981	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>								
Box Elder	8.89	10.36	11.40	9.96	5.48	10.36	11.51	10.31
Cache	2.77	2.85	4.85	4.71	3.85	2.46	2.99	2.94
Davis	1.90	2.73	2.71	3.35	2.91	2.08	1.93	3.27
Morgan	1.05	1.27	0.64	0.30	0.76	0.44	0.18	0.61
Rich	0.23	0.26	0.54	0.77	0.55	1.08	0.00	0.66
Summit	0.46	0.48	0.12	0.25	0.84	0.12	0.18	0.65
Weber	3.37	5.67	4.31	3.57	4.21	2.71	2.12	3.67
REGIONAL TOTALS	18.66	23.62	24.56	22.92	18.61	19.26	18.92	22.15
<u>Central Region</u>								
Juab	6.99	7.97	8.93	9.42	10.97	11.09	8.36	8.09
Salt Lake	7.09	7.12	7.34	7.90	5.59	5.50	5.39	4.37
Sanpete	2.59	2.65	3.44	3.49	4.08	5.54	2.88	4.30
Tooele	5.31	8.27	9.46	8.67	7.42	11.39	8.55	10.92
Utah	17.37	15.20	14.14	13.94	17.75	14.38	20.06	16.17
Wasatch	0.78	0.58	0.24	0.86	0.98	0.52	0.61	0.90
REGIONAL TOTALS	40.13	41.79	43.56	44.27	46.79	48.42	45.87	44.78
<u>Southern Region</u>								
Beaver	1.70	2.60	1.65	2.31	1.55	1.82	1.67	1.76
Garfield	1.54	1.17	0.90	0.26	0.02	0.01	0.12	0.25
Iron	4.20	2.64	2.71	1.68	4.05	3.82	3.24	3.22
Kane	1.36	0.11	0.84	1.41	0.28	0.30	0.66	0.33
Millard	7.73	6.80	6.17	10.20	10.25	9.42	9.80	11.73
Piute	1.03	0.03	0.41	0.45	0.56	0.19	0.24	0.46
Sevier	2.91	3.37	3.23	3.98	3.24	3.50	4.67	3.59
Washington	3.16	3.25	3.70	2.37	2.44	3.26	2.28	1.10
Wayne	0.64	0.35	0.12	0.11	0.35	0.33	1.35	0.14
REGIONAL TOTALS	24.26	20.42	19.74	22.77	22.75	22.64	24.05	22.63
<u>Northeastern Region</u>								
Daggett	0.12	0.15	0.21	0.42	0.00	0.16	0.12	0.00
Duchesne	2.40	2.30	1.53	0.99	1.42	1.05	0.76	1.27
Uintah	1.99	2.52	2.49	2.66	2.78	1.92	2.81	2.46
REGIONAL TOTALS	4.50	4.97	4.24	4.07	4.20	3.14	3.70	3.73
<u>Southeastern Region</u>								
Carbon	2.44	3.94	2.28	2.39	2.93	1.65	0.74	1.67
Emery	3.32	2.00	2.37	1.45	3.35	1.83	2.66	3.70
Grand	3.90	1.20	0.99	0.88	0.27	1.24	0.84	0.18
San Juan	2.75	1.90	2.08	1.24	1.10	1.81	2.54	0.59
REGIONAL TOTALS	12.40	9.04	7.73	5.97	7.65	6.54	6.80	6.16
Unknown counties	0.05	0.15	0.18	0.00	0.00	0.00	0.64	0.53
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 6. Percentage distribution of mourning dove hunting pressure by region and county, 1981-88.

Region and County	Year							
	1981	1982	1983	1984	1985	1986	1987	1988
Northern Region								
Box Elder	8.91	7.25	8.84	8.10	6.68	8.50	7.59	7.07
Cache	2.98	3.46	5.29	5.97	4.37	3.34	3.81	3.59
Davis	3.65	4.69	5.57	5.24	5.04	4.38	3.75	5.08
Morgan	1.17	0.70	0.65	0.41	1.18	0.57	0.13	0.61
Rich	0.23	0.43	0.48	0.30	0.64	0.76	0.00	0.59
Summit	0.44	0.54	0.16	0.17	1.15	0.28	0.16	0.70
Weber	4.72	7.71	6.45	5.97	6.66	4.35	4.22	7.11
REGIONAL TOTALS	22.10	24.78	27.45	26.16	25.74	22.17	19.69	24.77
Central Region								
Juab	5.57	5.73	4.53	5.50	5.64	6.37	6.47	5.82
Salt Lake	8.16	9.90	9.30	10.51	7.75	7.36	9.02	5.52
Sanpete	2.44	2.80	2.57	3.04	4.00	4.12	3.51	3.65
Tooele	7.05	8.52	9.39	7.76	7.73	10.36	8.99	11.08
Utah	17.90	18.92	18.28	16.38	18.88	17.53	19.93	19.18
Wasatch	1.63	1.08	0.78	1.01	1.73	0.69	1.70	1.77
REGIONAL TOTALS	42.76	46.95	44.85	44.21	45.73	46.43	49.64	47.09
Southern Region								
Beaver	1.06	1.48	0.80	1.74	1.20	2.34	2.22	1.18
Garfield	1.17	0.74	0.80	0.37	0.11	0.12	0.16	0.15
Iron	2.90	2.13	2.05	1.42	2.15	2.82	2.38	2.03
Kane	0.88	0.11	0.52	0.63	0.29	0.73	0.49	0.46
Millard	5.74	3.97	3.62	6.23	6.33	6.86	7.89	9.11
Piute	0.77	0.11	0.68	0.60	0.93	0.31	0.32	0.26
Sevier	3.86	3.51	3.20	4.89	3.69	4.99	4.96	4.14
Washington	2.30	2.92	2.31	2.35	2.04	2.18	1.94	0.76
Wayne	0.52	0.35	0.13	0.15	0.38	0.33	0.54	0.15
REGIONAL TOTALS	19.20	15.34	14.11	18.38	17.12	20.68	20.95	18.26
Northeastern Region								
Daggett	0.35	0.17	0.42	0.75	0.07	0.35	0.32	0.06
Duchesne	1.94	1.95	1.49	1.40	1.51	1.02	0.71	1.05
Uintah	3.34	2.63	2.90	2.65	3.09	2.63	2.27	2.14
REGIONAL TOTALS	5.63	4.75	4.81	4.80	4.66	4.00	3.31	3.26
Southeastern Region								
Carbon	2.17	3.30	3.00	2.91	2.82	1.56	0.87	1.90
Emery	2.80	2.21	3.23	1.68	2.71	2.96	2.52	3.02
Grand	2.88	1.05	0.94	0.93	0.35	0.76	0.79	0.21
San Juan	2.23	1.35	0.53	0.91	0.87	1.44	1.42	0.48
REGIONAL TOTALS	10.08	7.91	8.71	6.44	6.75	6.72	5.62	5.62
Unknown counties	0.23	0.26	0.07	0.02	0.00	0.00	0.76	0.96
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 7. Statewide summary of mourning dove harvest statistics, 1951-88.

Year	Total Hunters	Total Harvest	Hunter-days Afield	Doves Per Hunter-day	Doves Per Hunter
1951	3,007	20,448	4,455	4.59	6.80
1952	6,420	49,498	10,784	4.59	7.71
1953	9,887	75,636	17,797	4.25	7.65
1954	9,901	75,941	19,724	3.85	7.67
1955	9,653	79,444	19,282	4.12	8.23
1956	10,744	95,729	20,411	4.69	8.91
1957	11,298*	86,769*	18,620*	4.66	7.68
1958	11,853	85,934	21,591	3.98	7.25
1959	12,142	110,856	24,911	4.45	9.13
1960	12,440	108,477	25,766	4.21	8.72
1961	15,192	128,001	33,434	3.89	8.42
1962	14,663	144,826	34,281	4.23	9.89
1963	18,258	162,769	40,490	4.02	8.91
1964	19,829	193,538	51,671	3.75	9.76
1965	18,710	164,087	48,835	3.36	8.69
1966	20,594	212,696	60,608	3.51	10.33
1967	25,161	263,949	74,171	3.56	10.49
1968	25,105	207,922	70,186	2.96	8.28
1969	29,131	279,311	90,965	3.07	9.59
1970	23,908	232,469	73,984	3.14	9.72
1971	26,064	226,645	81,271	2.79	8.70
1972	29,341	238,354	94,046	2.53	8.12
1973	27,435	307,062	97,788	3.14	11.19
1974	34,021	306,076	112,967	2.71	9.00
1975	37,378	420,308	131,312	3.20	11.24
1976	31,293	298,505	108,780	2.74	9.54
1977	26,905	267,487	83,218	3.21	9.94
1978	35,985	383,696	130,173	2.95	10.66
1979	34,903	351,161	120,459	2.92	10.06
1980	32,627	343,851	97,644	3.52	10.54
1981	30,060	310,068	101,728	3.05	10.31
1982**	31,756	282,188	107,728	2.62	8.89
1983	28,258	272,979	100,568	2.71	9.66
1984	30,573	282,307	108,793	2.59	9.23
1985	28,183	256,045	96,507	2.65	9.09
1986	26,583	226,985	87,084	2.61	8.54
1987***	22,553	204,030	89,378	2.28	9.05
1988	22,457	178,469	76,219	2.34	7.95
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TOTALS					
(1951-88)	844,271	7,934,501	2,587,615	(129.44)	(345.54)
(1976-87)	354,049	3,427,272	1,224,917	(33.54)	(114.37)
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AVERAGES					
(1951-88)	22,218	208,803	68,095	3.41	9.09
(1976-87)	29,504	285,606	102,076	2.80	9.53

*Estimated.

**Bag Limit increased to 15.

***Bag Limit reduced to 10.

Table 8. Mourning dove field bag check summary, 1988.

Region and County	ALL HUNTS					COMPLETE HUNTS					
	Total Parties	Total Hunters	Total Hours	Total Birds/100 Hr	Total Birds/100 Hr	Total Hunters	Total Hours	Total Complete Hunts	Total Birds/100 Hr	Total Birds/100 Hr Hunter	
Northern Region											
Box Elder	88	197	705	492	70	124	491	56	398	81	3.21
Cache	7	39	109	18	17	1	2	1	0	0	0
Davis	8	14	35	32	91	4	6	2	2	33	0.50
Morgan	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	103	250	849	542	64	129	499	59	400	80	3.10
Central Region											
Juab	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
Southern Region											
Beaver	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--
Iron	4	12	20	34	170	8	12	3	20	167	2.50
Kane	--	--	--	--	--	--	--	--	--	--	--
Millard	70	175	493	461	94	13	8	6	14	175	1.08
Piute	--	--	--	--	--	--	--	--	--	--	--
Sevier	21	49	169	220	130	3	9	2	30	333	10.00
Washington	11	27	54	89	165	13	35	5	72	206	5.54
Wayne	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	106	263	736	804	109	37	64	16	136	213	3.68
Northeastern Region											
Daggett	1	1	0	1	--	--	--	--	--	--	--
Duchesne	3	5	12	6	49	--	--	--	--	--	--
Uintah	1	3	9	10	111	3	9	1	10	111	3.33
REGIONAL TOTALS	5	9	21	17	81	3	9	1	10	111	3.33
Southeastern Region											
Carbon	8	17	56	38	68	2	33	2	28	85	2.80
Emery	4	10	56	40	71	8	23	3	32	139	4.00
Grand	--	--	--	--	--	--	--	--	--	--	--
San Juan	8	15	41	52	127	2	4	2	8	200	4.00
REGIONAL TOTALS	20	42	153	130	85	7	60	7	68	113	3.40
LEHI CHECK STATION	197	435	1,870	824	44	288	1,274	33	631	50	2.19
NEPHI CHECK STATION*	67	177	921	671	73	102	586	33	522	89	5.12
STATE TOTALS	498	1,176	4,550	2,988	66	579	2,492	116	1,767	71	3.05

*Includes Millard

Table 9. Mourning dove hunter success trend determined by field bag checks, 1983-88.

Region and County	1983		1984		1985		1986		1987		1988	
	Doves/ 100 Hr Hunter	Doves/ 100 Hr Hunter	Doves/ 100 Hr Hunter	Doves/ 100 Hr Hunter	Doves/ 100 Hr Hunter	Doves/ 100 Hr Hunter	Doves/ 100 Hr Hunter	Doves/ 100 Hr Hunter	Doves/ 100 Hr Hunter	Doves/ 100 Hr Hunter	Doves/ 100 Hr Hunter	Doves/ 100 Hr Hunter
Northern Region												
Box Elder	128	5.61	101	4.35	50	1.94	131	5.98	143	5.52	81	3.21
Cache	33	1.67	--	--	--	--	163	5.33	--	--	0	0.00
Davis	75	2.00	116	2.42	--	--	81	2.74	64	1.20	33	0.50
Morgan	100	1.00	--	--	--	--	--	--	--	--	--	--
Rich	--	--	156	6.25	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	214	3.00	182	6.20	--	--	--	--	--	--	--	--
REGIONAL TOTALS	126	5.12	103	4.36	50	1.94	129	5.72	140	5.20	80	3.10
Central Region												
Juab	--	--	--	--	--	--	68	4.30	--	--	--	--
Salt Lake	61	1.40	--	--	--	--	333	3.33	--	--	--	--
Sanpete	--	--	--	--	--	--	20	0.56	--	--	--	--
Tooele	133	3.33	--	--	--	--	241	8.09	--	--	--	--
Utah	172	7.86	62	1.33	40	2.00	53	1.80	--	--	--	--
Wasatch	0	0.00	--	--	23	1.00	--	--	--	--	--	--
REGIONAL TOTALS	122	3.90	62	1.33	34	1.63	75	3.84	--	--	--	--
Southern Region												
Beaver	--	--	88	8.36	--	--	224	9.25	131	5.75	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	720	14.00	500	10.00	550	11.00	167	2.50
Kane	35	6.13	--	--	--	--	180	5.65	--	--	--	--
Millard	113	8.03	101	4.85	300	6.00	172	6.20	64	2.75	175	1.08
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	1.83*	--	2.15*	75	1.50	--	--	--	--	333	10.00
Washington	236	4.71	--	--	--	--	343	6.86	--	--	206	5.54
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	148	6.80	94	6.09	397	7.94	203	6.41	126	5.23	213	3.68
Northeastern Region												
Daggett	--	--	--	--	--	--	59	1.11	--	--	--	--
Duchesne	67	1.60	135	3.45	2,300	11.00	100	1.00	--	--	--	--
Uintah	146	2.11	50	0.94	500	15.00	124	2.38	111	3.33	111	3.33
REGIONAL TOTALS	108	1.93	90	1.93	925	12.33	87	1.61	111	3.33	111	3.33
Southeastern Region												
Carbon	183	2.20	750	9.38	103	10.33	177	3.65	--	--	85	2.80
Emery	193	5.80	428	15.00	182	3.50	233	3.50	641	7.05	139	4.00
Grand	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	566	11.33	188	4.45	200	4.00	261	5.64	397	7.38	200	4.00
REGIONAL TOTALS	231	5.74	358	7.33	150	4.36	215	4.43	485	7.22	113	3.40
NEPHI CHECK STATION	155	7.40	56	2.61	167	7.47	37	1.68	114	5.09	89	5.12
LEHI CHECK STATION	83	5.14	135	6.50	62	2.37	50	2.39	78	3.23	50	2.19
STATE TOTALS	117	5.76	87	3.80	87	3.42	64	2.94	110	4.33	71	3.05

*Doves per hunter index based on all hunts.

Table 10. Age composition (Immatures/100 Adults) of mourning doves harvested, 1979-88.

Region and County	1979 I/100A (n)	1980 I/100A (n)	1981 I/100A (n)	1982 I/100A (n)	1983 I/100A (n)	1984 I/100A (n)	1985 I/100A (n)	1986 I/100A (n)	1987 I/100A (n)	1988 I/100A (n)	1978-87 Avg. I/100A (n)
Northern Region											
Box Elder	84 (1271)	121 (1454)	107 (700)	124 (716)	143 (515)	135 (1172)	146 (137)	131 (1086)	128 (770)	--	--
Cache	106 (33)	151 (113)	--	--	67 (5)	--	181 (45)	--	325 (17)	--	--
Davis	71 (65)	169 (43)	--	107 (56)	55 (17)	121 (42)	85 (74)	--	--	--	--
Morgan	--	--	--	--	188 (46)	--	--	--	--	--	--
Rich	92 (25)	--	--	4,200 (43)	--	53 (23)	600 (7)	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--
Weber	190 (29)	--	--	--	183 (34)	--	--	--	--	--	122 (972)
REGIONAL TOTALS	86 (1423)	124 (1610)	107 (700)	135 (815)	143 (617)	133 (1237)	138 (443)	131 (1086)	132 (787)	--	81 (888)
Central Region											
Juab	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--
Tooele	84 (103)	118 (96)	78 (71)	80 (137)	--	--	--	--	--	--	--
Utah	80 (1823)	45 (29)	--	100 (32)	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	81 (1926)	95 (125)	78 (71)	89 (169)	--	--	--	--	--	--	81 (888)
Southern Region											
Beaver	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
Northeastern Region											
Daggett	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
Southeastern Region											
Carbon	67 (167)	--	--	160 (138)	--	--	--	52 (64)	80 (187)	70 (187)	--
Emery	--	--	260 (18)	76 (88)	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	53 (227)	63 (275)	31 (42)	--
San Juan	--	--	50 (84)	--	--	--	--	53 (291)	69 (462)	61 (229)	109 (221)
REGIONAL TOTALS	67 (167)	281 (80)	65 (102)	119 (226)	--	--	--	140 (1137)	180 (1004)	104 (671)	120 (1270)
NEPHI CHECK STATION	114 (1814)	100 (862)	105 (1067)	62 (754)	108 (1239)	198 (1130)	107 (1678)	137 (1396)	130 (1283)	114 (741)	101 (1370)
LEHI CHECK STATION	--	98 (1204)	75 (2075)	83 (1075)	84 (1021)	96 (1517)	107 (1391)	127 (3910)	137 (3536)	100 (1641)^a	107 (3925)
STATE TOTALS	91 (5330)	111 (3881)	87 (4015)	91 (3143)	106 (2877)	131 (3884)	117 (3512)	127 (3910)	137 (3536)	100 (1641)^a	107 (3925)

^a missing northern region data.

Table 11. Percent of harvest by hatching date of immature mourning doves in northern Utah, 1979-88.

Date Hatched	Age* (Days)	PERCENT OF HARVEST BY HATCH DATE										S A M P L E S I Z E									
		1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Aug 3	none	45.6	35.6	46.1	32.6	22.8	43.1	44.7	31.2	34.8	--	265	316	166	152	77	304	115	192	155	--
Jul 31	1	22.7	26.9	33.6	24.9	21.3	29.4	26.8	35.0	21.8	--	132	239	121	116	72	207	69	215	97	--
Jul 25	2	14.3	16.4	14.2	21.7	21.0	19.0	14.0	15.6	17.5	--	83	146	51	101	71	134	36	96	78	--
Jul 18	3	8.1	11.6	5.0	7.7	14.8	6.0	3.9	8.6	10.6	--	47	103	18	36	50	42	10	53	47	--
Jul 9	4	5.0	5.1	0.6	4.7	9.2	2.1	1.9	4.7	5.7	--	29	45	2	22	31	15	5	29	25	--
Jun 30	5	1.5	2.4	--	4.1	6.2	0.4	1.6	2.8	4.3	--	9	21	0	19	21	3	4	17	19	--
Jun 21	6	1.7	1.5	--	2.8	2.1	0.0	0.0	1.3	3.8	--	10	13	0	13	7	0	0	8	17	--
Jun 8	7	--	0.3	--	1.3	2.4	--	0.0	0.5	1.1	--	0	3	0	6	8	0	0	3	5	--
May 22	8	0.2	--	0.3	0.2	0.0	--	0.0	0.3	0.2	--	1	0	1	1	1	0	0	2	1	--
Apr 27	9	0.9	0.2	0.3	--	--	--	0.0	0.0	0.2	--	5	2	1	0	0	0	0	0	1	--
Apr 21	10	--	--	--	--	--	--	7.0	0.0	0.0	--	0	0	0	0	0	0	18	0	0	--
		100	100	100	100	100	100	100	100	100	--	466	581	888	360	466	338	705	257	445	--

*Allen, J. M., 1963.

P = Last primary molted.

Table 12. Percent of harvest by hatching date of immature mourning doves from the various regions (wing barrels) and check stations in Utah, 1988.

Date Hatched (Days) or P	Age*	PERCENT OF HARVEST BY HATCH DATE										S A M P L E					S I Z E				
		N Region		Nephi CS		Lehi CS		C Region		SE Region		N Region		Nephi CS		Lehi CS		C Region		SE Region	
		Total	Region	Total	Region	Total	Region	Total	Region	Total	Region	Total	Region	Total	Region	Total	Region	Total	Region	Total	Region
Aug 3	29	none	--	43.1	47.9	45.5	63.3	--	87	102	189	55									
Jul 31	32	1	--	33.7	41.3	37.6	26.4	--	68	88	156	23									
Jul 25	38	2	--	13.4	7.5	10.4	5.7	--	27	16	43	5									
Jul 18	45	3	--	5.0	2.8	3.9	4.6	--	10	6	16	4									
Jul 9	54	4	--	2.5	0.0	1.2	0.0	--	5	0	5	0									
Jun 30	63	5	--	2.0	0.0	1.0	0.0	--	4	0	4	0									
Jun 21	72	6	--	0.3	0.0	0.2	0.0	--	1	0	1	0									
Jun 8	85	7	--	0.0	0.0	0.0	0.0	--	0	0	0	0									
May 22	102	8	--	0.0	0.5	0.2	0.0	--	0	1	1	0									
Apr 27	127	9	--	0.0	0.0	0.0	0.0	--	0	0	0	0									
Apr 21	133	10	--	0.0	0.0	0.0	0.0	--	0	0	0	0									
			--	100.00	100.00	100.00	100.00	--	202	213	415	87									

*Allen, J. M., 1963.

P = Last primary molted.

BAND-TAILED PIGEON

Banding

Between 1969 and 1978, 2,649 total pigeons were banded in Utah and 975 recaptured. Results of banding efforts through 1972 indicated a direct recovery rate of 1.4 percent. If expanded, using an assumed 30 percent band reporting rate, an estimated harvest rate of less than 5 percent of the state's pigeon population is indicated. Addition of an estimated 16 percent crippling loss would result in a total kill rate of from 5-10 percent, well within the harvestable surplus.

Harvest

Results of the 1988 band-tailed pigeon harvest are unknown, because hunter reports were lost. Permits were required, and a questionnaire was not sent to participants. Only 29 hunters purchased the \$2.00 band-tailed pigeon permit. Harvest trends since 1970 are shown in Table 14.

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Band-tailed pigeon hunters	29	--	--
Band-tailed pigeon harvest	--	--	--
Hunter-days afield	--	--	--
Pigeons per hunter-day	--	--	--
Pigeons per hunter	--	--	--

Total hunters, hunter-days afield and total harvest are unknown for 1987, however, it is assumed that a majority of the 1988 harvest again occurred in Iron and Washington counties.

Table 13. Band-tailed pigeon harvest statistics, 1988.

Area Hunted	Participating Hunters		Hunter-days		Harvest		Pigeons/ Hunter-day	Percent of Pressure*	Percent of Harvest
	Reported	Calc.	Reported	Calc.	Reported	Calc.			
Beaver County	--	--	--	--	--	--	--	--	--
Blue Mountain-Elk Ridge	--	--	--	--	--	--	--	--	--
Carbon County	--	--	--	--	--	--	--	--	--
Garfield County	--	--	--	--	--	--	--	--	--
Iron County	--	--	--	--	--	--	--	--	--
Kane County	--	--	--	--	--	--	--	--	--
LaSal Mountain	--	--	--	--	--	--	--	--	--
Millard County	--	--	--	--	--	--	--	--	--
Piute County	--	--	--	--	--	--	--	--	--
Utah County	--	--	--	--	--	--	--	--	--
Washington County	--	--	--	--	--	--	--	--	--
Wayne County	--	--	--	--	--	--	--	--	--
Mixed counties (Washington & Iron)	--	--	--	--	--	--	--	--	--
TOTALS	--	--	--	--	--	--	--	--	--

*Based on hunter-days.

Table 14. Band-tailed pigeon harvest trend, 1970-88.

Year	Total Hunters Afield	Total Harvest	Hunter-Days Afield	Pigeons Per Hunter-day	Pigeons Per Hunter
1970	34	109	53	2.1	3.2
1971	54	156	110	1.4	2.9
1972	61	211	122	1.7	3.5
1973	25	18	42	0.4	0.7
1974	74	95	141	0.7	1.3
1975	54	116	119	1.0	2.2
1976	54	119	162	0.7	2.2
1977	70	435	225	1.9	6.2
1978	78	264	238	1.1	3.4
1979	62	117	133	0.9	1.9
1980	62	182	175	1.0	2.9
1981	67	101	142	0.7	1.5
1982	51	113	125	0.9	2.2
1983	--	--	--	--	--
1984	--	--	--	--	--
1985	--	--	--	--	--
1986	--	--	--	--	--
1987	--	--	--	--	--
1988	29	--	--	--	--
<hr/>					
TOTALS (1970-82)	746	2,036	1,787	1.1	2.7
<hr/>					
AVERAGES (1970-82)	57	157	137	1.1	2.8
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CHUKAR PARTRIDGE

SUMMARY

The statewide breeding population of chukars increased again in 1988 following another normal winter in northwestern Utah. Late winter and early spring precipitation, critical to successful chukar production, was again average.

Results of the brood survey indicated that brood production was above average, although breeding populations were still down. Favorable nesting conditions and adequate forage were available as a result of average precipitation during late winter and early spring. However, dry and hot weather in May through August apparently did not adversely affected brood survival. Chukar density increased significantly during 1988, and was 117 percent above average.

Harvest statistics from mail questionnaires reflected no increase in harvest. Hunter success (chukars per hunter-day) decreased 5 percent from 1987. Chukar hunters and time afield were virtually the same as the year before. However, hunting success on opening weekend as measured by field bag checks indicated increased hunter success in central and southeastern Utah.



Brood Counts

Results of the annual random brood survey for 1988 are shown in Table 1 of this section. Long-term trends of young-adult ratios, mean brood size and chukars observed per 100 hours are found in Tables 2-4 and Figure 1. Following are the survey results for 1988 compared to 1987 and the 10-year (1978-87) average:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Total chukars observed	1,007	+19	+20
Young per 100 adults	496	+21	+17
Mean brood size	8.00	+1	-2
Chukars observed per 100 hours	959	+93	+117
Total hours effort	105	-51	-34

Harvest data for 1987 indicated breeding populations for 1988 were still significantly below statewide averages. The 1987-88 winter weather was reasonably mild with below average precipitation but below normal temperatures statewide. Late winter and early spring precipitation (January-April) was average over the entire state (Figure 4). However, above average temperatures and below normal precipitation were common from July through October. Above normal precipitation occurred in April which should have increased cheatgrass for food and cover.

Effort on chukar brood counts decreased from 1987 and remained below average.

Brood count sample sizes were again small for all regions. The Central Region counted 15, the Northern Region counted 3, and the Southern Region counted 4 of the state total of 41 broods. Chukar density was 117 percent above the 10-year average and production was up from 1987.

Harvest

Hunter Questionnaire

Results of the hunter questionnaire survey for 1988 are shown in Table 5. Long-term trends of chukars bagged per hunter-day, percent of harvest and percent of pressure (hunter-days) by county are found in Tables 6-8 and total statewide harvest statistics in Table 9 and Figure 2 and 3. Following is a comparison of 1988 harvest statistics to 1987 and the 30-year average:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Chukar hunters	11,237	0	-22
Chukars harvested	32,057	-2	-21
Hunter-days afield	40,088	+3	-2
Chukars per hunter-day	0.80	-5	-14
Chukars per hunter	2.85	-2	+3

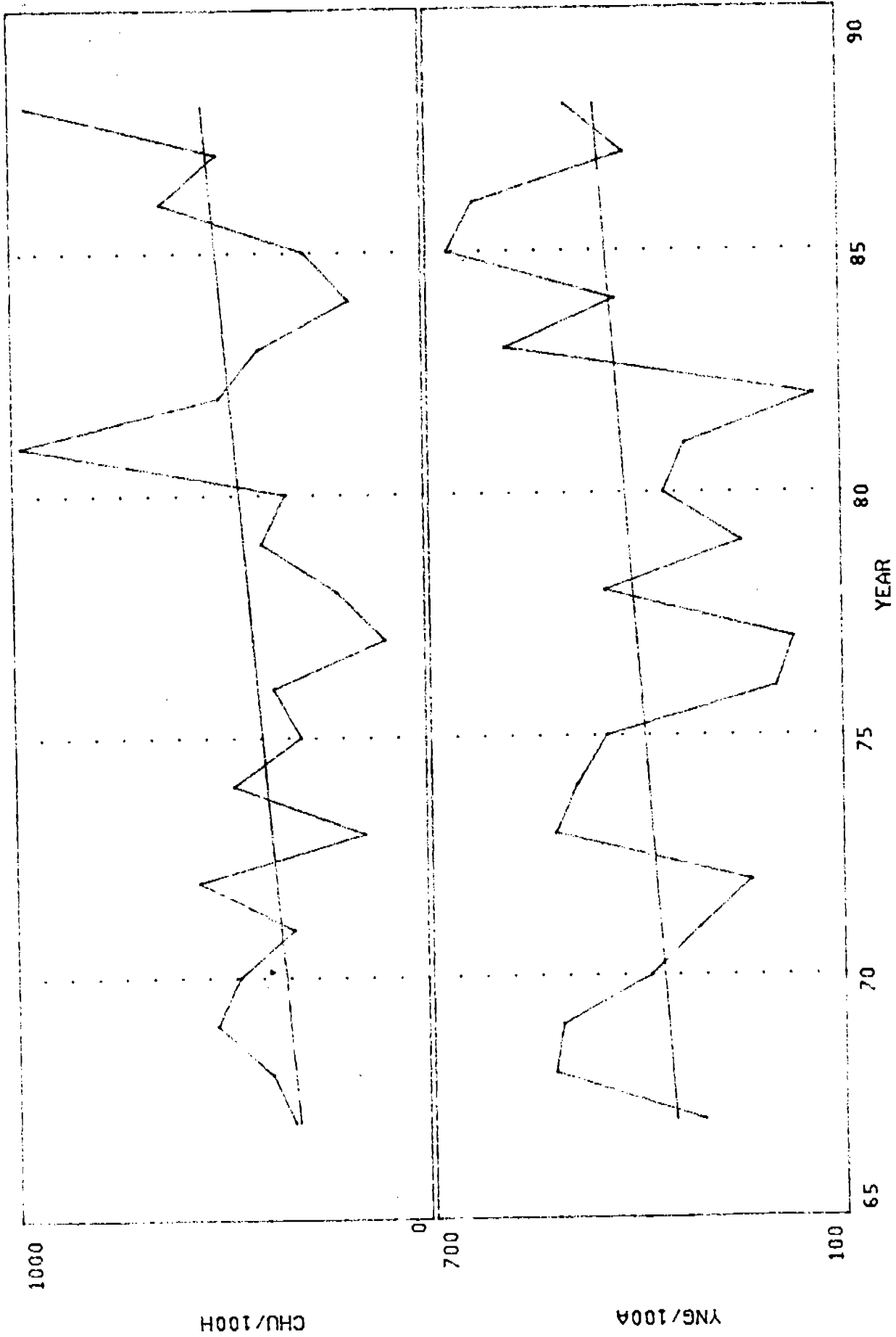


Figure 1. Statewide chukar production indices, 1967-88.

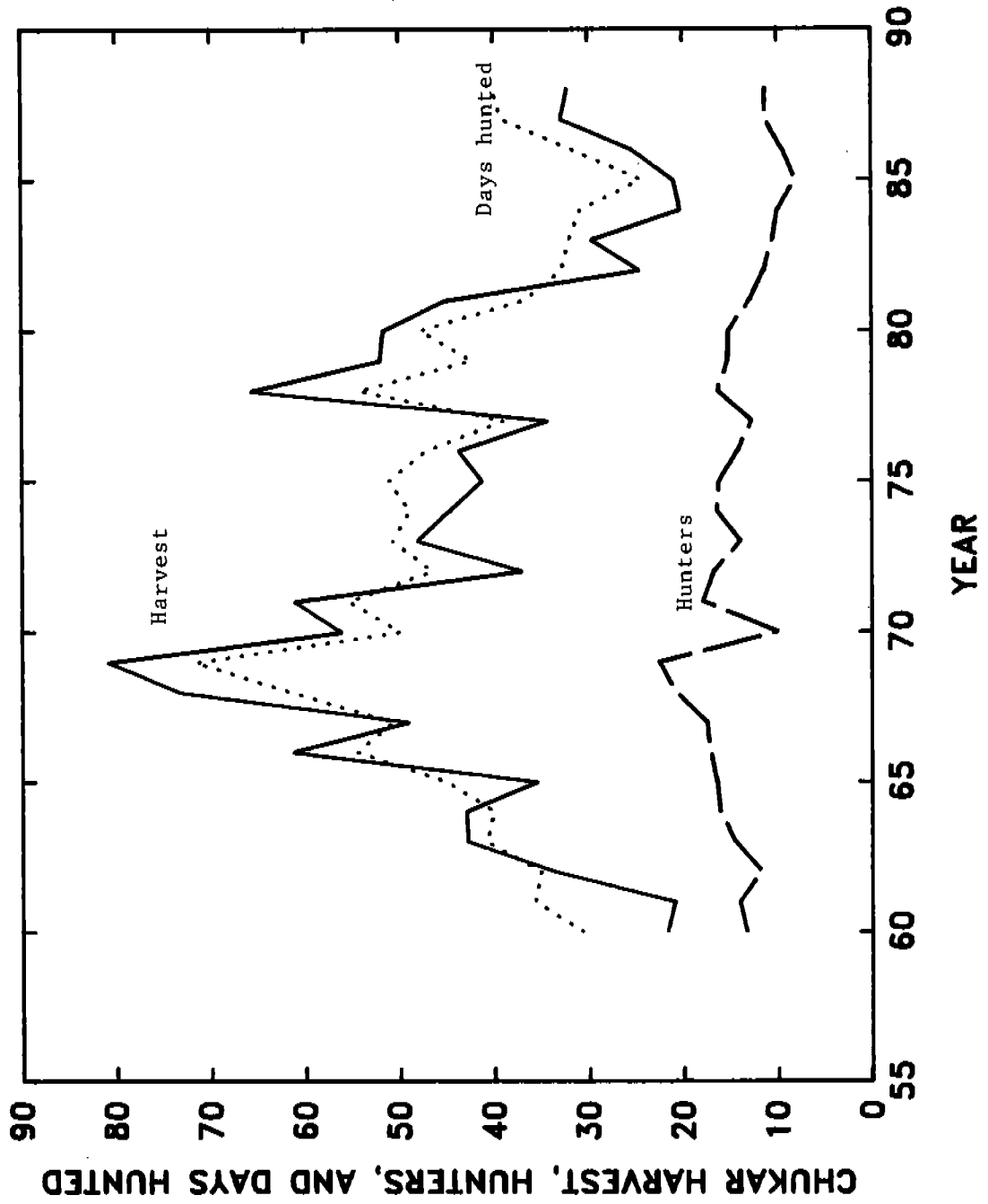


Figure 2. Statewide trends of chukar partridge harvest statistics.

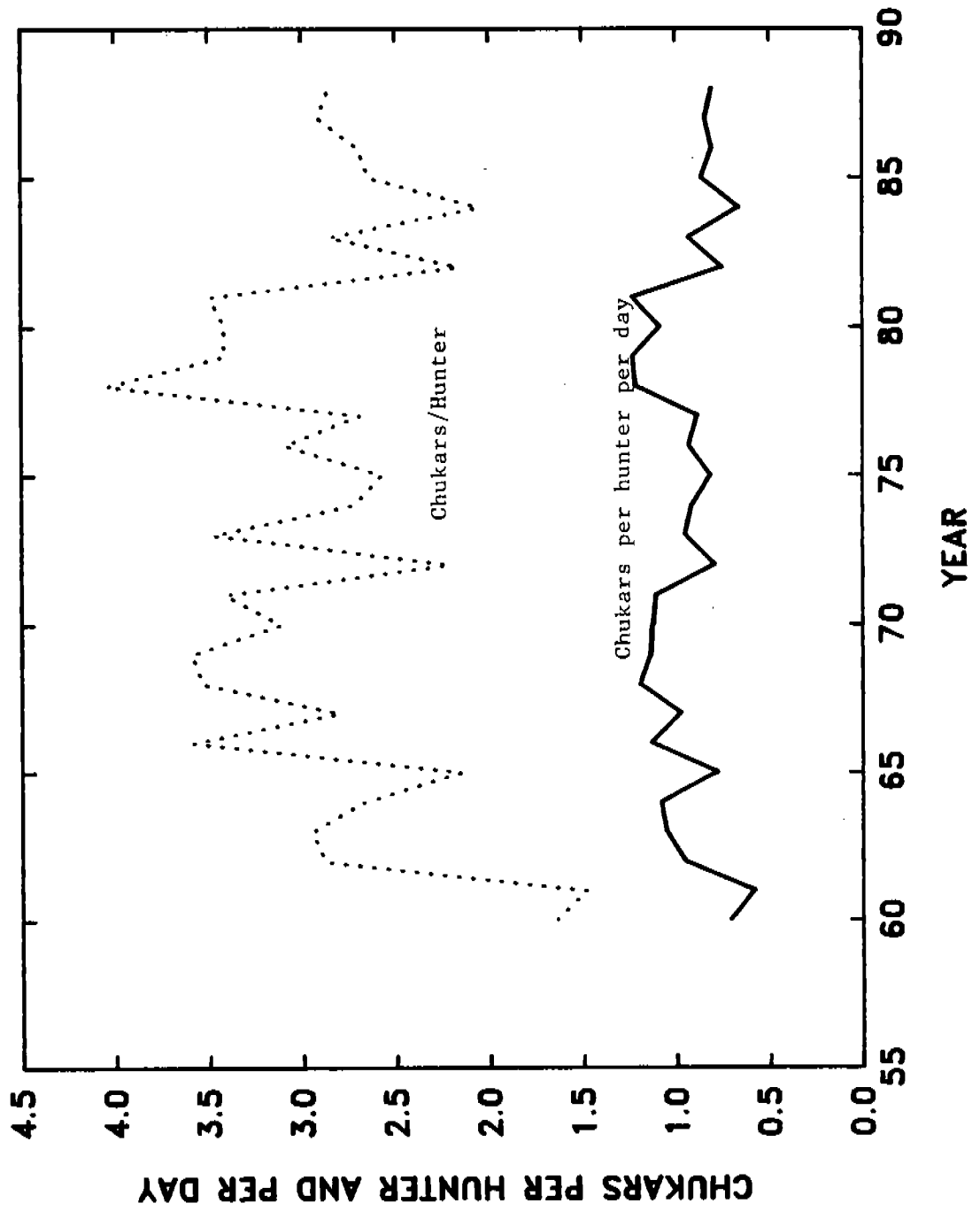


Figure 3. Statewide trends of chukar hunter success rates, 1968-88.

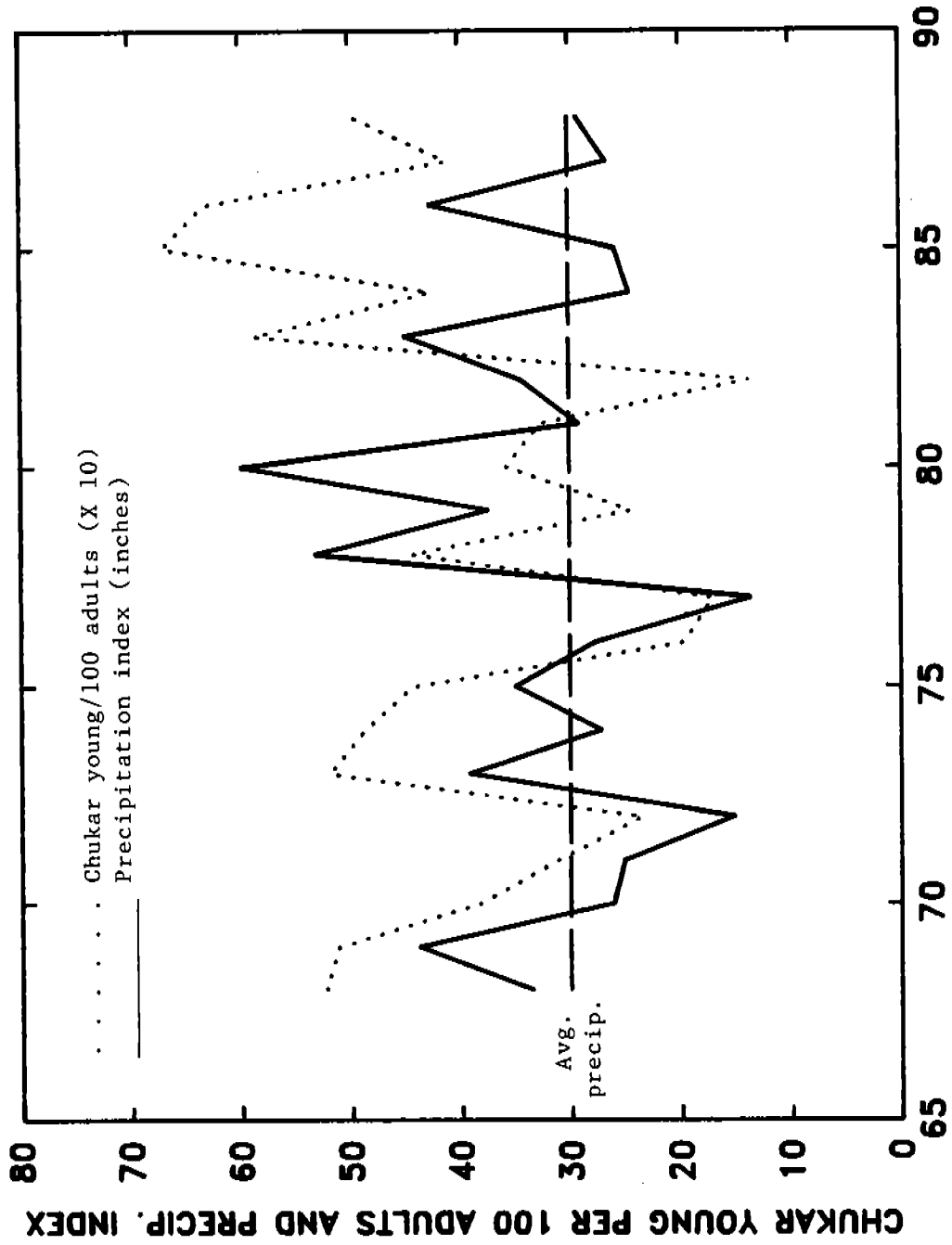


Figure 4. Relationship between late winter and early spring (Jan.-April) precipitation and chukar production.

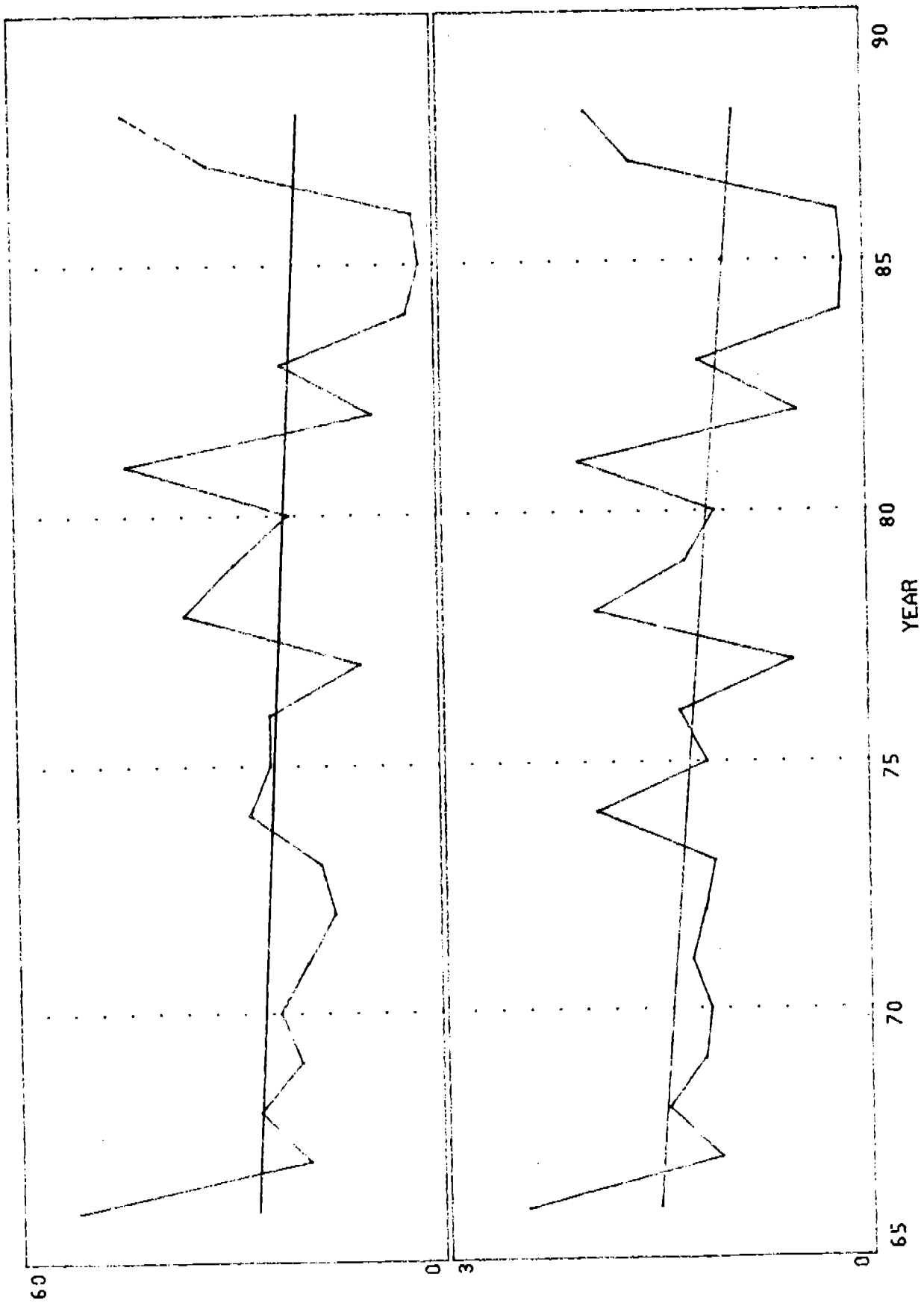


Figure 5. Statewide chukar field bag check indices, 1967-88.

Chukar hunters, hunter effort and success were virtually the same as last year. Chukars per hunter-day was 14 percent below the statewide average. The Central Region again had the highest percentage of the harvest (51%) in 1988, and also had the highest percentage of hunter pressure (49%).

Field Bag Check

A summary of field bag check data for 1988 is shown in Table 10. The hunter success trend determined by field bag checks since 1983 is shown in Table 11 and Figure 5. Data for the 1988 season compared to 1987 and the (1966-87) average follow:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Total hunters checked	139	+54	-71
Total hours hunted	458	+34	-79
Chukars per hunter (complete hunts)	1.63	+19	+66
Chukars bagged per 100 hours	44	+38	+100
Average hours per hunter-day (complete hunts)	3.7	-14	-20
Hours hunted per chukar bagged (complete hunts)	2.3	-28	-76

Field bag checks indicated hunter success on opening weekend was up substantially from 1987 and was well above average (66%). However, these data were significantly influenced by a larger sample from Tooele and Juab counties. Box Elder County check station hunter success rates were down 58 and 70 percent from 1987. A further reduction in hours hunted per chukar bagged and shorter hunter days also indicated improved chukar hunter success in 1988.

Table 1. Chukar summer inventory summary, 1988.

Region and County	Distinct Broods		Mixed Yng		Mean Brood	Ad Yng	Ad Yng	Adults w/o Yng	Total Adults	Total Yng	Young/100 Ad Miles	Hours of Effort		Birds/100 Hr
	#	Ad	Ad	Yng								Veh. Miles	Horse Walk	
Northern Region														
Box Elder	2	4	15	7.50	0	0	7	11	15	136	0	0	11	236
Cache	1	2	6	6.00	0	0	0	2	6	300	379	21	2	35
Davis	0	0	0	0.00	0	0	5	0	0	--	0	1	0	500
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	3	6	21	7.00	0	0	12	18	21	117	379	22	0	111
Central Region														
Juab	8	8	54	6.75	38	186	6	52	240	462	312	32	0	913
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sarpete	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	7	7	52	7.43	7	40	5	19	92	484	145	17	0	653
Utah	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	15	15	106	7.07	45	226	11	71	332	468	457	49	0	822
Southern Region														
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	4	4	31	7.75	10	57	2	16	88	550	60	7	--	1,486
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	4	4	31	7.75	10	57	2	16	88	550	60	7	--	1,486
Northeastern Region														
Daggett	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Southeastern Region														
Carbon	1	1	6	6.00	0	0	0	1	6	600	30	2	0	350
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grand	18	18	164	9.11	41	227	4	63	391	621	150	12	0	3,783
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	19	19	170	8.95	41	227	4	64	397	620	180	14	0	3,293
STATE TOTALS	41	44	328	8.00	96	510	29	169	838	496	1,076	92	0	959

Table 2. Trend of chukar young per 100 adults, 1978-88.

Region and County	Year											Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Northern Region												
Box Elder	562	198	111	326	120	--	--	4,200	700	283	136	
Cache	--	300	--	--	--	600	--	--	--	850	300	
Davis	--	3	43	65	7	--	--	--	--	24	--	
Morgan	--	--	--	--	--	750	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	750	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	562	81	53	193	27	262	--	4,200	560	125	117	674
Central Region												
Juab	1,100	--	557	315	600	--	800	--	739	600	462	
Salt Lake	--	283	--	400	50	--	--	--	--	--	--	
Sanpete	440	500	767	--	400	--	--	--	--	--	--	
Tooele	686	771	697	359	585	--	436	550	566	535	484	
Utah	0	205	243	--	--	--	--	300	--	875	--	
Wasatch	--	--	--	--	--	800	--	--	--	--	--	
REGIONAL TOTALS	386	518	572	348	512	800	481	457	642	591	468	531
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	
Garfield	--	350	--	--	122	--	--	--	125*	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	340	--	--	--	--	--	--	--	--	
Millard	150	450	550	200	--	--	--	--	--	--	550	
Piute	0	500	--	938	642	--	--	--	--	370	--	
Sevier	--	--	600	800	--	--	--	--	--	--	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	900	--	--	--	600	737	--	--	--	--	--	
REGIONAL TOTALS	233	420	425	410	389	737	--	--	370	550	426	
Northeastern Region												
Daggett	--	575	--	--	--	--	--	--	--	0	--	
Duchesne	0	--	--	163	--	--	--	--	--	0	--	
Uintah	--	--	--	--	--	--	--	--	--	267	--	
REGIONAL TOTALS	--	--	--	78	--	--	--	--	--	267	--	173
Southeastern Region												
Carbon	--	--	700	--	--	--	359	--	1,300	1,014	600	
Emery	500	--	--	--	220	--	--	--	--	500	--	
Grand	980	416	--	577	518	617	775	730	730	573	621	
San Juan	220	--	--	533	--	--	337	--	--	--	--	
REGIONAL TOTALS	591	416	700	575	426	617	392	408	287*	631	620	504
STATE TOTALS	444	245	358	326	138	586	426	670	631	411	496	424

Table 3. Trend of chukar mean brood size from 1978-88.

Region and County	Year											Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Northern Region												
Box Elder	14.60	9.57	--	8.33	12.00	--	--	9.00	--	8.50	7.50	--
Cache	--	3.00	--	--	--	6.00	--	--	--	--	6.00	--
Davis	--	2.00	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	7.50	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	7.50	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	14.60	8.00	--	8.33	3.00	7.00	--	9.00	--	8.50	7.00	8.35
Central Region												
Juab	11.00	--	7.70	5.45	6.00	--	8.00	--	7.45	8.00	6.75	--
Salt Lake	--	5.67	--	4.00	--	--	--	--	--	--	--	--
Sanpete	5.00	6.33	--	--	--	--	--	--	--	--	--	--
Tooele	6.50	14.07	9.91	8.92	10.60	--	6.00	8.43	7.86	8.00	7.43	--
Utah	0.00	6.00	4.00	--	--	--	--	10.00	--	10.50	--	--
Wasatch	--	--	6.00	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	6.50	11.38	8.16	7.13	10.14	--	6.80	8.63	7.68	8.23	7.07	8.29
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield*	--	--	--	--	--	--	--	--	2.00*	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	0.00	6.00	10.00	--	--	--	--	--	--	--	7.75	--
Piute	0.00	10.00	--	10.50	3.00	--	--	--	--	5.00	--	--
Sevier	--	--	--	8.00	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	9.00	--	--	--	9.00	--	--	--	--	--	--	--
REGIONAL TOTALS	9.00	8.00	10.00	9.67	7.00	--	--	--	5.00	7.75	8.11	--
Northeastern Region												
Daggett	--	--	--	9.00	--	--	--	--	--	--	--	--
Duchesne	0.00	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	10.00	--	--	--	10.00	--	--
REGIONAL TOTALS	--	--	--	9.00	--	10.00	--	--	--	10.00	--	9.67
Southeastern Region												
Carbon	--	--	--	--	--	--	5.50	--	12.50	9.67	6.00	--
Emery	--	5.00	--	--	--	--	--	5.00	--	5.00	--	--
Grand	--	0.00	12.50	--	11.90	8.25	7.75	9.00	--	8.57	9.11	--
San Juan	--	1.00	--	--	5.33	--	--	--	--	--	--	--
REGIONAL TOTALS	--	3.00	12.50	--	11.30	8.25	7.00	7.67	10.40*	8.25	8.95	8.55
STATE TOTALS	5.77	8.75	10.35	8.23	9.48	8.00	6.91	8.46	8.13	7.93	8.00	8.20

Table 4. Trend of chukars observed per 100 hours, 1978-88.

Region and County	Year											Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Northern Region												
Box Elder	307	438	43	645	90	--	--	239	168	40	236	
Cache	--	57	--	--	700	--	--	--	--	83	35	
Davis	--	608	760	810	1,127	100	--	--	22	313	500	
Morgan	--	--	--	--	850	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	307	430	140	502	479	227	--	155	102	91	111	270
Central Region												
Juab	109	1,500	206	692	363	--	200	--	2,611	850	913	
Salt Lake	--	209	--	500	43	--	--	--	--	--	--	
Sanpete	142	200	248	--	857	--	--	--	--	--	--	
Tooele	917	1,038	1,468	985	1,013	--	441	681	1,046	1,123	653	
Utah	133	1,220	533	--	38	--	--	578	--	1,950	--	
Wasatch	--	--	350	--	--	491	--	--	--	--	--	
REGIONAL TOTALS	243	623	440	722	578	164	291	542	1,424	844	822	587
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	
Garfield	--	1,200	--	--	500	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	182	220	236	1,467	--	--	--	--	--	--	1,486	
Piute	0	120	--	1,660	433	--	--	--	--	1,567	--	
Sevier	--	--	1,400	900	17	--	--	--	--	--	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	83	--	--	--	700	3,350	--	--	--	--	--	
REGIONAL TOTALS	115	242	525	1,436	266	3,350	--	--	--	1,567	1,486	1,072
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	0	0	--	300	790	--	--	--	--	--	--	
Uintah	--	0	--	614	454	86	--	--	0	856	--	
REGIONAL TOTALS	0	0	--	533	348	27	--	--	0	241	--	164
Southeastern Region												
Carbon	--	0	1,600	--	--	--	420	--	--	7,800	350	
Emery	200	--	--	--	--	--	--	833	--	771	--	
Grand	379	1,020	--	2,891	1,167	2,871	291	424	2,075	1,167	3,783	
San Juan	67	0	--	1,120	--	--	1,750	--	--	--	--	
REGIONAL TOTALS	185	230	160	2,338	1,578	2,871	858	530	2,075	1,335	3,293	1,216
STATE TOTALS	213	396	336	978	496	398	176	286	633	496	959	441

Table 5. Summary of chukar hunter success and distribution of harvest and hunting pressure by region and county, 1988.

Region and County	Sample Size*	Hunter-days Afield	Birds Bagged	Birds per Hunter-day	% of Pressure	% of Harvest
<u>Northern Region</u>						
Box Elder	133	5,192	3,255	.63	12.95	10.15
Cache	34	1,268	734	.58	3.16	2.29
Davis	8	333	550	1.65	.83	1.71
Morgan	7	200	217	1.08	.49	.67
Rich	4	116	166	1.43	.29	.52
Summit	8	417	283	.68	1.04	.88
Weber	6	183	83	.45	.45	.26
REGIONAL TOTALS	200	7,713	5,292	.69	19.24	16.51
<u>Central Region</u>						
Juab	42	2,571	2,304	.90	6.41	7.18
Salt Lake	18	868	601	.69	2.16	1.87
Sanpete	39	2,020	2,554	1.26	5.03	7.96
Tooele	174	9,650	7,897	.82	24.07	24.63
Utah	86	4,541	2,905	.64	11.32	9.06
Wasatch	3	66	66	1.00	.16	.20
REGIONAL TOTALS	362	19,718	16,329	.83	49.18	50.93
<u>Southern Region</u>						
Beaver	11	1,001	350	.35	2.49	1.09
Garfield	3	133	150	1.13	.33	.46
Iron						
Kane						
Millard	48	2,788	2,638	.95	6.95	8.22
Piute	9	550	166	.30	1.37	.52
Sevier	65	4,224	2,821	.67	10.53	8.80
Washington						
Wayne	5	100	183	1.83	.24	.57
REGIONAL TOTALS	141	8,799	6,311	.72	21.94	19.68
<u>Northeastern Region</u>						
Daggett**						
Duchesne	9	283	601	2.12	.70	1.87
Uintah	7	267	183	.69	.66	.57
REGIONAL TOTALS	16	550	784	1.42	1.37	2.44
<u>Southeastern Region</u>						
Carbon	7	233	300	1.29	.58	.93
Emery	37	2,421	2,304	.95	6.03	7.18
Grand	11	567	717	1.26	1.41	2.23
San Juan	1	33	16	.50	.08	.05
REGIONAL TOTALS	56	3,255	3,339	1.03	8.11	10.41
Unknown Counties	1	50			.12	
STATE TOTALS	776	40,088	32,057	.80	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 6. Summary of chukars bagged per hunter-day by region and county, 1981-88.

Region and County	Year							
	1981	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>								
Box Elder	1.55	0.75	1.00	0.30	0.55	0.49	0.62	0.63
Cache	0.42	0.38	0.42	0.43	0.13	0.14	0.85	0.58
Davis	0.33	0.47	0.17	0.53	0.43	0.50	0.20	1.65
Morgan	0.75	1.21	1.02	0.10	0.30	0.00	1.33	1.08
Rich	0.50	0.67	0.83	0.80	0.00	0.00	1.00	1.43
Summit	0.73	0.00	1.38	0.67	0.00	0.00	1.25	0.68
Weber	1.25	0.91	0.61	2.46	0.18	0.00	0.44	0.45
REGIONAL TOTALS	1.28	0.74	0.91	0.41	0.46	0.39	0.64	0.69
<u>Central Region</u>								
Juab	0.66	0.57	1.00	0.92	1.63	0.87	1.10	0.90
Salt Lake	1.32	0.96	0.95	1.59	0.96	1.08	1.16	0.69
Sanpete	1.72	0.57	0.77	1.14	1.28	0.88	0.58	1.26
Tooele	0.97	0.73	0.94	0.95	1.12	0.90	0.84	0.82
Utah	0.81	0.74	0.85	0.62	0.71	0.65	0.71	0.64
Wasatch	0.33	0.94	0.61	0.07	0.07	0.00	0.83	1.00
REGIONAL TOTALS	0.98	0.73	0.90	0.88	1.06	0.84	0.86	0.83
<u>Southern Region</u>								
Beaver	2.33	0.61	1.80	1.60	0.00	0.13	0.63	0.35
Garfield	1.11	1.00	0.38	1.83	0.00	0.33	0.40	1.13
Iron	1.00	0.17	--	2.00	0.00	0.00	0.00	0.00
Kane	0.00	0.00	0.38	0.67	0.00	0.00	0.00	0.00
Millard	1.92	1.57	1.28	0.80	1.55	1.88	1.09	0.95
Piute	1.78	0.59	0.68	0.50	0.71	0.13	0.81	0.30
Sevier	1.48	0.41	0.40	0.37	0.21	0.48	0.57	0.67
Washington	0.00	0.00	--	0.50	0.00	0.00	0.00	0.00
Wayne	2.29	0.83	0.50	0.00	1.00	0.00	2.00	1.83
REGIONAL TOTALS	1.71	0.68	0.71	0.63	0.72	0.92	0.82	0.72
<u>Northeastern Region</u>								
Daggett	0.00	0.00	--	--	0.00	0.00	3.00	0.00
Duchesne	1.30	0.43	0.50	0.22	2.00	0.00	0.20	2.12
Uintah	1.20	2.06	1.00	1.45	1.00	0.00	1.68	0.69
REGIONAL TOTALS	1.25	1.15	0.63	0.90	1.09	0.00	1.44	1.42
<u>Southeastern Region</u>								
Carbon	1.24	0.76	0.88	0.42	0.42	0.89	0.87	1.29
Emery	1.06	0.83	1.54	0.44	0.62	0.74	0.90	0.95
Grand	1.89	1.02	1.61	0.37	1.31	1.57	1.19	1.26
San Juan	0.67	2.20	1.82	0.25	0.00	0.86	1.67	0.50
REGIONAL TOTALS	1.42	0.90	1.43	0.40	0.65	1.05	1.07	1.03
Unknown Counties	1.83	1.00	1.27	0.00	0.00	0.00	0.00	0.00
STATE TOTALS	1.23	0.75	0.93	0.66	0.86	0.80	0.84	0.80

Table 7. Percentage distribution of chukar harvest by region and county, 1981-88.

Region and County	Year							
	1981	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>								
Box Elder	26.85	25.31	23.59	6.64	8.39	7.64	10.59	10.15
Cache	1.27	1.25	1.49	1.81	0.20	0.24	1.64	2.29
Davis	0.09	0.56	0.09	1.61	0.61	0.16	0.07	1.71
Morgan	1.98	3.20	2.16	0.30	0.31	0.00	0.29	0.67
Rich	0.05	0.13	0.22	0.41	0.00	0.00	0.07	0.52
Summit	0.52	0.00	1.31	0.20	0.00	0.00	0.37	0.88
Weber	0.94	1.94	1.40	3.22	0.41	0.00	0.59	0.26
<u>REGIONAL TOTALS</u>	<u>31.71</u>	<u>32.39</u>	<u>30.25</u>	<u>14.18</u>	<u>9.92</u>	<u>8.04</u>	<u>13.65</u>	<u>16.51</u>
<u>Central Region</u>								
Juab	2.31	2.07	3.16	7.24	11.67	7.89	12.68	7.18
Salt Lake	6.94	4.51	4.15	7.04	5.12	3.33	4.32	1.87
Sanpete	2.93	3.01	3.56	2.51	8.90	4.72	2.83	7.96
Tooele	14.11	18.23	20.34	26.66	32.85	27.07	20.44	24.63
Utah	7.69	13.97	12.76	11.97	10.75	9.02	9.77	9.06
Wasatch	0.05	1.07	0.63	0.10	0.10	0.00	0.37	0.20
<u>REGIONAL TOTALS</u>	<u>34.03</u>	<u>42.86</u>	<u>44.60</u>	<u>55.53</u>	<u>69.40</u>	<u>52.03</u>	<u>50.44</u>	<u>50.93</u>
<u>Southern Region</u>								
Beaver	0.99	1.07	0.40	0.80	0.00	0.16	1.41	1.09
Garfield	0.47	0.38	0.13	1.11	0.00	0.24	0.14	0.46
Iron	0.05	0.06	0.00	0.20	0.00	0.00	0.00	0.00
Kane	0.00	0.00	0.27	0.20	0.00	0.00	0.00	0.00
Millard	3.63	5.33	4.55	10.96	10.64	18.78	13.13	8.22
Piute	6.13	0.63	0.94	3.22	1.53	0.40	1.26	0.52
Sevier	5.10	4.07	2.34	3.72	0.72	5.93	5.67	8.80
Washington	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00
Wayne	0.76	0.31	0.09	0.00	0.31	0.00	0.14	0.57
<u>REGIONAL TOTALS</u>	<u>17.13</u>	<u>11.84</u>	<u>8.73</u>	<u>20.32</u>	<u>13.20</u>	<u>25.53</u>	<u>21.79</u>	<u>19.68</u>
<u>Northeastern Region</u>								
Daggett	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00
Duchesne	0.61	0.63	0.22	0.20	0.20	0.00	0.07	1.87
Uintah	0.57	2.32	0.31	1.61	1.02	0.00	2.38	0.57
<u>REGIONAL TOTALS</u>	<u>1.18</u>	<u>2.94</u>	<u>0.53</u>	<u>1.81</u>	<u>1.23</u>	<u>0.00</u>	<u>2.68</u>	<u>2.44</u>
<u>Southeastern Region</u>								
Carbon	2.64	2.82	1.94	2.51	1.33	2.60	0.97	0.93
Emery	4.29	3.38	8.12	2.72	3.17	4.15	3.20	7.18
Grand	8.31	3.01	4.28	2.81	1.74	7.15	6.86	2.23
San Juan	0.19	0.69	0.90	0.10	0.00	0.49	0.37	0.05
<u>REGIONAL TOTALS</u>	<u>15.43</u>	<u>9.90</u>	<u>15.24</u>	<u>8.15</u>	<u>6.24</u>	<u>14.39</u>	<u>11.41</u>	<u>10.41</u>
Unknown Counties	0.52	0.06	0.63	0.00	0.00	0.00	0.00	0.00
<u>STATE TOTALS</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>

Table 8. Percentage distribution of chukar hunting pressure by region and county, 1981-88.

Region and County	Year							
	1981	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>								
Box Elder	21.19	25.13	22.01	14.54	13.02	12.36	14.35	12.95
Cache	3.71	2.44	3.27	2.77	1.04	1.43	1.63	3.16
Davis	0.35	0.89	0.50	1.98	1.23	0.26	0.31	0.83
Morgan	3.24	1.97	1.97	1.98	0.88	0.91	0.18	0.49
Rich	0.12	0.14	0.25	0.33	0.09	0.07	0.06	0.29
Summit	0.87	0.70	0.88	0.20	0.09	0.07	0.25	1.04
Weber	0.93	1.59	2.14	0.86	1.93	1.50	1.12	0.45
REGIONAL TOTALS	30.40	32.86	31.01	22.67	18.66	16.59	17.93	19.24
<u>Central Region</u>								
Juab	4.28	2.72	2.93	5.15	6.16	7.22	9.65	6.41
Salt Lake	6.43	3.52	4.07	2.91	4.58	2.47	3.13	2.16
Sanpete	2.08	3.94	4.32	1.45	5.98	4.29	4.13	5.03
Tooele	17.83	18.71	20.16	18.44	25.26	24.14	20.50	24.07
Utah	11.70	14.16	13.87	12.62	13.02	11.13	11.53	11.32
Wasatch	0.17	0.84	0.96	0.99	1.32	0.20	0.37	0.16
REGIONAL TOTALS	42.50	43.88	46.31	41.57	56.34	49.45	49.34	49.18
<u>Southern Region</u>								
Beaver	0.52	1.31	0.21	0.33	1.85	0.98	1.88	2.49
Garfield	0.52	0.28	0.33	0.39	0.97	0.59	0.31	0.33
Iron	0.06	0.28	0.08	0.07	0.00	0.00	0.00	0.00
Kane	0.00	0.14	0.67	0.20	0.89	0.26	0.06	0.00
Millard	2.32	2.53	3.31	8.99	5.89	8.00	10.09	6.95
Piute	4.23	0.80	1.30	4.23	1.85	2.47	1.31	1.37
Sevier	4.23	7.36	5.45	6.61	2.99	9.95	8.33	10.53
Washington	0.00	0.05	0.00	0.13	1.06	0.00	0.12	0.00
Wayne	0.41	0.28	0.17	0.20	0.26	0.00	0.06	0.24
REGIONAL TOTALS	12.28	13.03	11.51	21.14	15.76	22.25	22.19	21.94
<u>Northeastern Region</u>								
Daggett	0.00	0.00	0.08	0.00	0.00	0.00	0.06	0.00
Duchesne	0.58	1.08	0.42	0.59	0.09	0.00	0.31	0.70
Uintah	0.58	0.84	0.29	0.73	0.88	0.78	1.19	0.66
REGIONAL TOTALS	1.16	1.92	0.79	1.32	0.97	0.78	1.56	1.37
<u>Southeastern Region</u>								
Carbon	2.61	2.77	2.05	3.90	2.73	2.34	0.94	0.58
Emery	4.98	3.05	4.90	4.10	4.40	4.49	3.00	6.03
Grand	5.39	2.20	2.47	5.02	1.14	3.64	4.82	1.41
San Juan	0.35	0.23	0.46	0.26	0.00	0.46	0.18	0.08
REGIONAL TOTALS	13.32	8.25	9.89	13.28	8.27	10.93	8.96	8.11
Unknown Counties	0.35	0.05	0.46	0.00	0.00	0.00	0.00	0.12
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 9. Statewide summary of chukar partridge harvest statistics, 1958-88.

Year	Total Hunters	Total Harvest	Hunter-days Afield	Chukars Per Hunter-day	Chukars Per Hunter
1958	11,124	19,578	25,100	0.78	1.76
1959	11,154	8,700	26,364	0.33	0.78
1960	13,252	21,733	30,610	0.71	1.64
1961	14,046	20,821	35,675	0.58	1.48
1962	11,638	33,500	35,010	0.95	2.88
1963	14,532	42,806	40,824	1.05	2.95
1964	16,090	42,974	39,971	1.08	2.67
1965	16,431	35,335	45,067	0.78	2.15
1966	17,133	61,370	54,448	1.13	3.58
1967	17,485	48,906	50,671	0.97	2.80
1968	20,744	73,218	61,402	1.19	3.53
1969	22,529	80,917	71,674	1.13	3.59
1970	18,013	56,053	49,911	1.12	3.11
1971	17,917	61,151	55,378	1.10	3.41
1972	16,685	36,925	46,502	0.79	2.21
1973	13,888	48,135	50,677	0.95	3.47
1974	16,412	44,658	48,856	0.91	2.72
1975	16,156	41,151	51,083	0.81	2.57
1976	14,171	43,726	47,143	0.93	3.09
1977	12,691	34,155	38,873	0.88	2.69
1978	16,291	65,747	54,239	1.21	4.04
1979	15,210	51,918	42,254	1.23	3.41
1980	15,100	51,511	47,778	1.08	3.41
1981	12,907	44,983	36,662	1.23	3.49
1982	11,326	24,460	32,691	0.75	2.16
1983	10,418	29,649	31,904	0.93	2.85
1984	9,846	20,179	30,715	0.66	2.05
1985	7,930	20,938	24,346	0.86	2.64
1986	9,397	25,346	31,672	0.80	2.70
1987	11,276	32,848	39,099	0.84	2.91
1988	11,237	32,057	40,088	0.80	2.85
<hr/>					
TOTALS (1958-88)	443,029	1,255,448	1,271,687	(28.56)	(85.51)
<hr/>					
AVERAGES (1958-87)	14,393	40,780	41,053	0.93	2.76

Table 10. Chukar field bag check summary, 1988.

Region and County	ALL HUNTS					COMPLETE HUNTS					
	Total Parties	Total Hunters	Total Hours	Total Birds/100 Hr	Total Complete Hunts	Total Hunters	Total Hours	Total Birds	Birds/100 Hr	Birds/Hunter	
<u>Northern Region</u>											
Box Elder	19	45	137	16	12	17	37	125	16	13	0.43
Cache	6	12	46	24	52	6	12	46	24	52	2.00
Davis	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	25	57	183	40	22	23	49	171	40	23	0.82
<u>Central Region</u>											
Juab	7	14	48	36*	75	7	14	48	36	75	2.57
Salt Lake	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--
Tooele	5	7	18	12	67	5	7	18	12	67	1.71
Utah	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	12	21	66	48	73	12	21	66	48	73	2.29
<u>Southern Region</u>											
Beaver	1	3	3	2	67	0	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--
Millard	8	17	41	16	39	0	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--
Sevier	1	1	2	0	0	0	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	10	21	46	18	39	0	--	--	--	--	--
<u>Northeastern Region</u>											
Daggett	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--
Uintah	3	7	30	26	87	3	7	30	26	87	3.71
REGIONAL TOTALS	3	7	30	26	87	3	7	30	26	87	3.71
<u>Southeastern Region</u>											
Carbon	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--
Grand	14	33	133	55	41	5	13	68	33	49	2.54
San Juan	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	14	33	133	55	41	5	13	68	33	49	2.54
STATE TOTALS	64	139	458	187	41	43	90	335	147	44	1.63

*Sixteen of these were banded.

Table 11. Chukar hunter success trend as determined by field bag checks, 1983-88.

Region and County	1983		1984		1985		1986		1987		1988	
	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter
Northern Region												
Box Elder	11	0.50	2	0.09	--	0.01	7	0.27	31	1.41	13	0.43
Cache	--	--	6	0.50	--	--	--	--	38	1.37	52	2.00
Davis	--	--	--	--	--	--	--	--	25	1.00	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	29	1.00	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	11	0.51	3	0.10	--	0.01	7	0.27	33	1.39	23	0.82
Central Region												
Juab	--	--	--	--	36	1.36	--	--	--	--	75	2.57
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	16	0.83	--	--	--	--	--	--	22	2.00	67	1.71
Utah	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	16	0.83	--	--	36	1.36	--	--	22	2.00	73	2.29
Southern Region												
Beaver	--	--	--	--	28	0.88	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	550	2.75	--	--	15	1.00	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	550	2.75	--	--	23	0.91	--	--	--	--	--	--
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	--	--	--	--	--	87	3.71
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	87	3.71
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	79	3.00	--	--	--	--	100	3.00	--	--	--	--
Grand	83	3.29	--	--	40	3.14	45	1.52	17	0.67	49	2.54
San Juan	--	--	25	1.50	--	--	--	--	--	--	--	--
REGIONAL TOTALS	81	3.17	12	0.38	40	3.14	51	1.69	17	0.67	49	2.54
STATE TOTALS	22	0.98	4	0.14	2	0.12	3	0.15	32	1.37	44	1.63

SAGE GROUSE

SUMMARY

Harvest data for 1987 indicated below average breeding populations of sage grouse for 1988. Strutting ground surveys indicated an increase in the average male grouse attendance from 1987 and populations were slightly above average.

Brood surveys showed decreased production throughout the state. Birds observed per 100 hours decreased 16 percent compared to 1987, but was about average. The ratio of young to adults decreased 9 percent.

The decrease in production, as indicated from brood counts, in 1988, was somewhat apparent in harvest statistics collected from questionnaires and from field bag checks. Hunter success rates declined. However, total statewide harvest increased 16 percent and was at the 25-year average. Age ratios derived from wings indicated a 37 percent decrease in young per 100 adults and was 52 percent below average.



Strutting Ground Counts

The status of the sage grouse breeding population for 1988, as indicated by strutting ground counts, is shown in Table 1 and Figure 1 of this section. Results of this survey for 1988 compared to 1987 and the 1967-87 average follow:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Number of grounds counted	137	+9	+28
Total male grouse counted	2,734	+50	+35
Average male grouse per ground	20	+43	+5
Percent change from previous year (comparable grounds)	+51	--	--

Access for spring 1988 strutting ground counts was generally good in all regions of the state. The numbers of grouse observed increased statewide. Harvest data for 1987 indicated below average populations going into the winter of 1987-88, and the numbers of juvenile birds observed during the summer indicated decreased production during 1988. Loss of habitat continues to be the trend in most areas of the state.

Brood Counts

Results of the summer inventory survey for 1988 are found in Table 2. Long-term trends of young-adult ratios, mean brood size and sage grouse observed per 100 hours are shown in Tables 3-5 and Figure 2. Indices for 1988 are compared to 1987 and the previous 10-year (1978-87) average as follows:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Total sage grouse counted	1,533	+15	-26
Young per 100 adults	145	-9	-9
Mean brood size	4.29	-12	-6
Sage grouse observed per 100 hours	347	-16	-6
Total hours effort	442	+2	-19

The effort devoted to sage grouse brood counts was 19 percent below average, and the total number of grouse counted was 26 percent below average.

Sage grouse density decreased 16 percent from 1987, production decreased 9 percent, and both were slightly below average. A decrease in young grouse was observed, and the average brood size was 6 percent below the 10-year average. It is possible that the hot, dry weather in June and July could have negatively influenced brood survival or caused a greater dispersal of birds or earlier dispersal of broods.

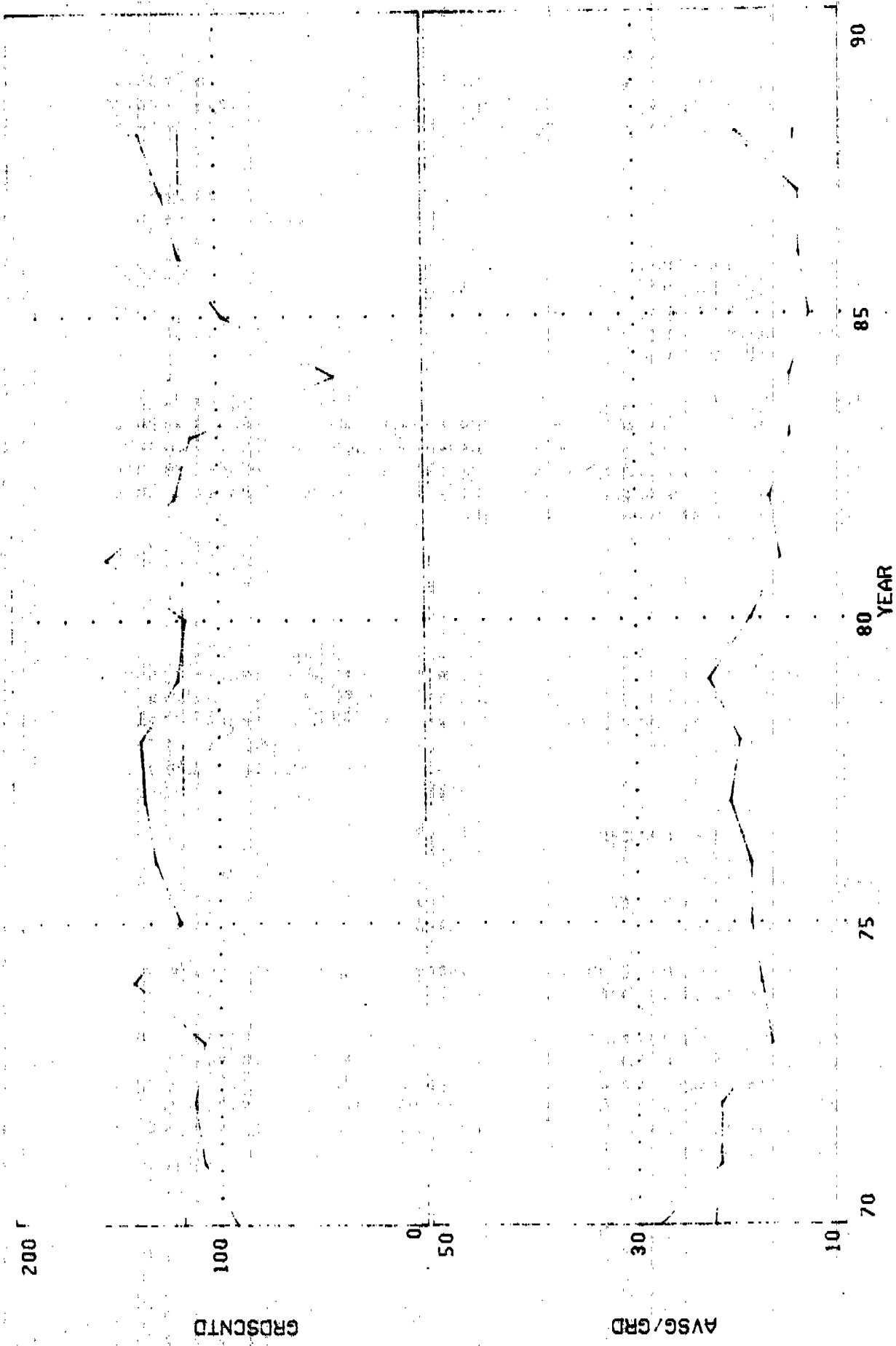


Figure 1. Statewide sage grouse strutting ground counts, 1970-88.

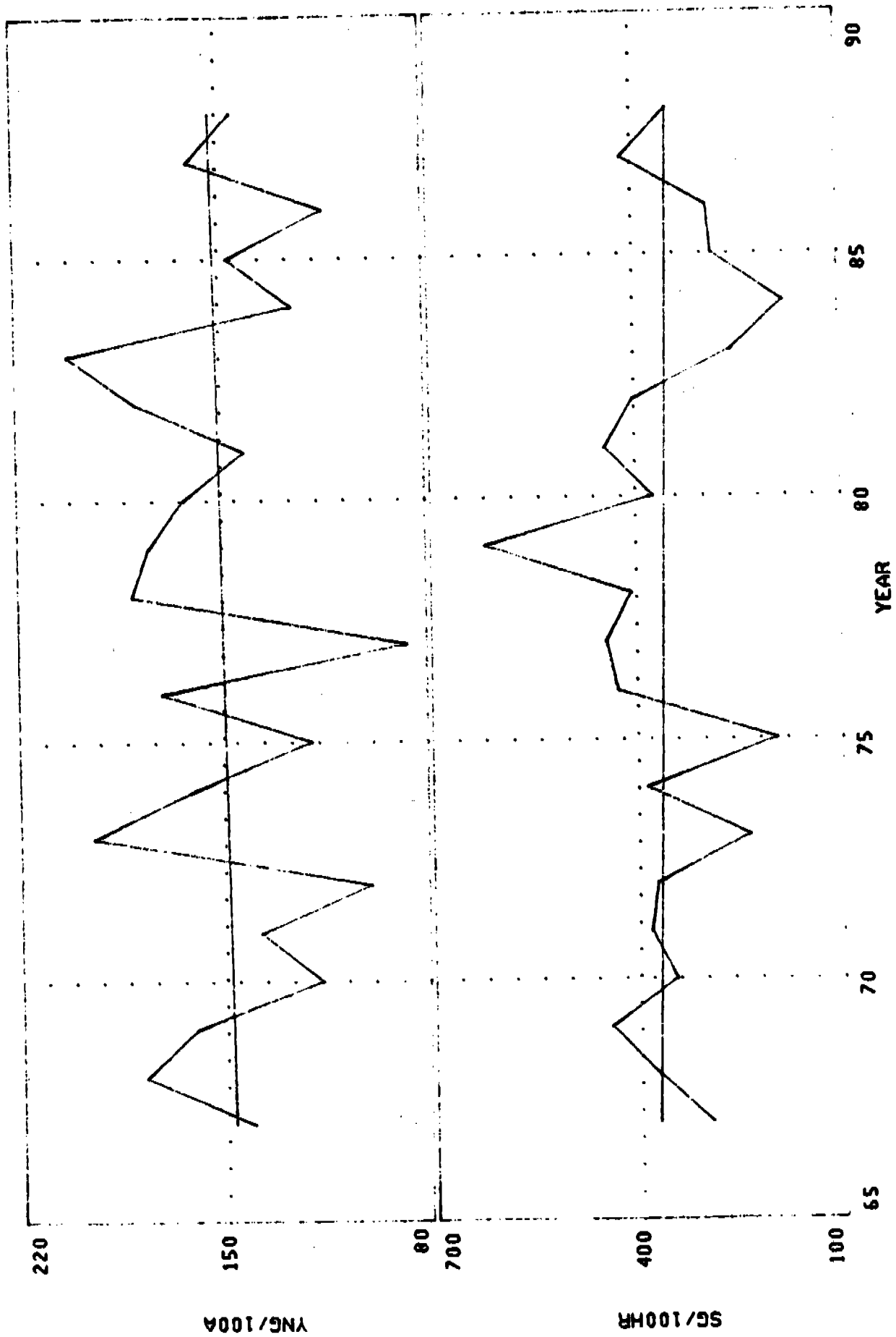


Figure 2. Statewide sage grouse production indices, 1967-88.

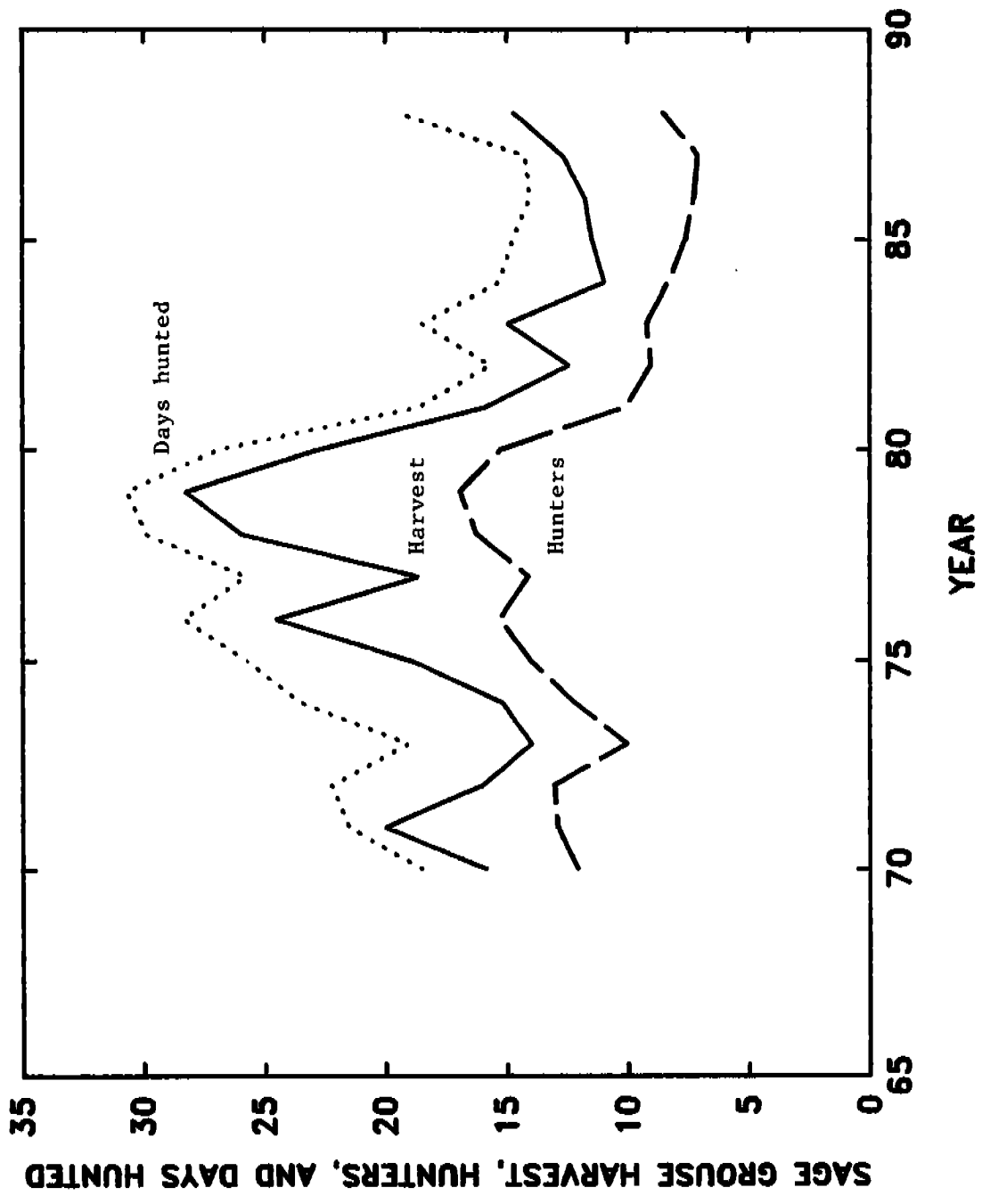


Figure 3: Statewide trend of sage grouse harvest statistics.

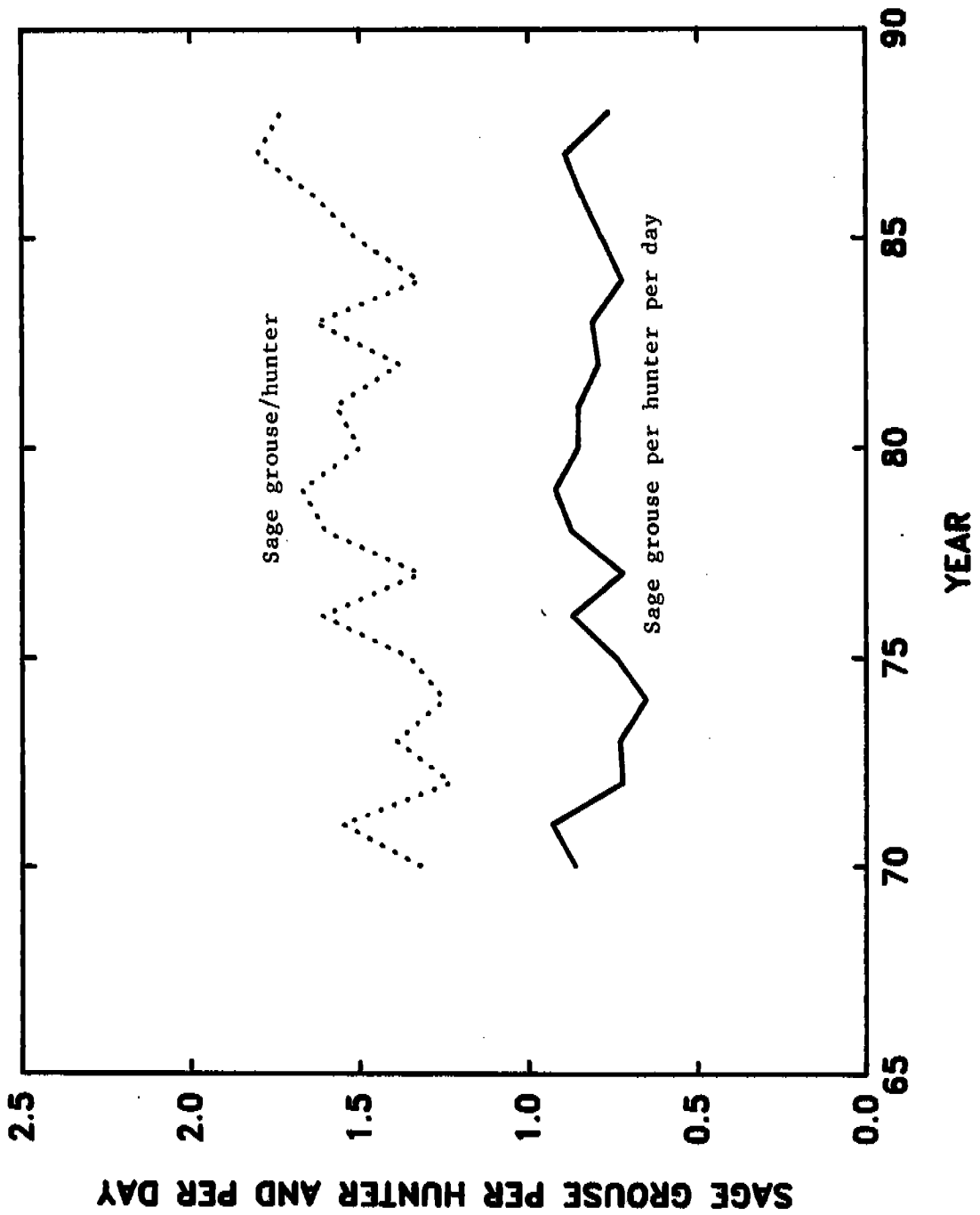


Figure 4. Statewide trend of sage grouse hunter success rates, 1968-88.

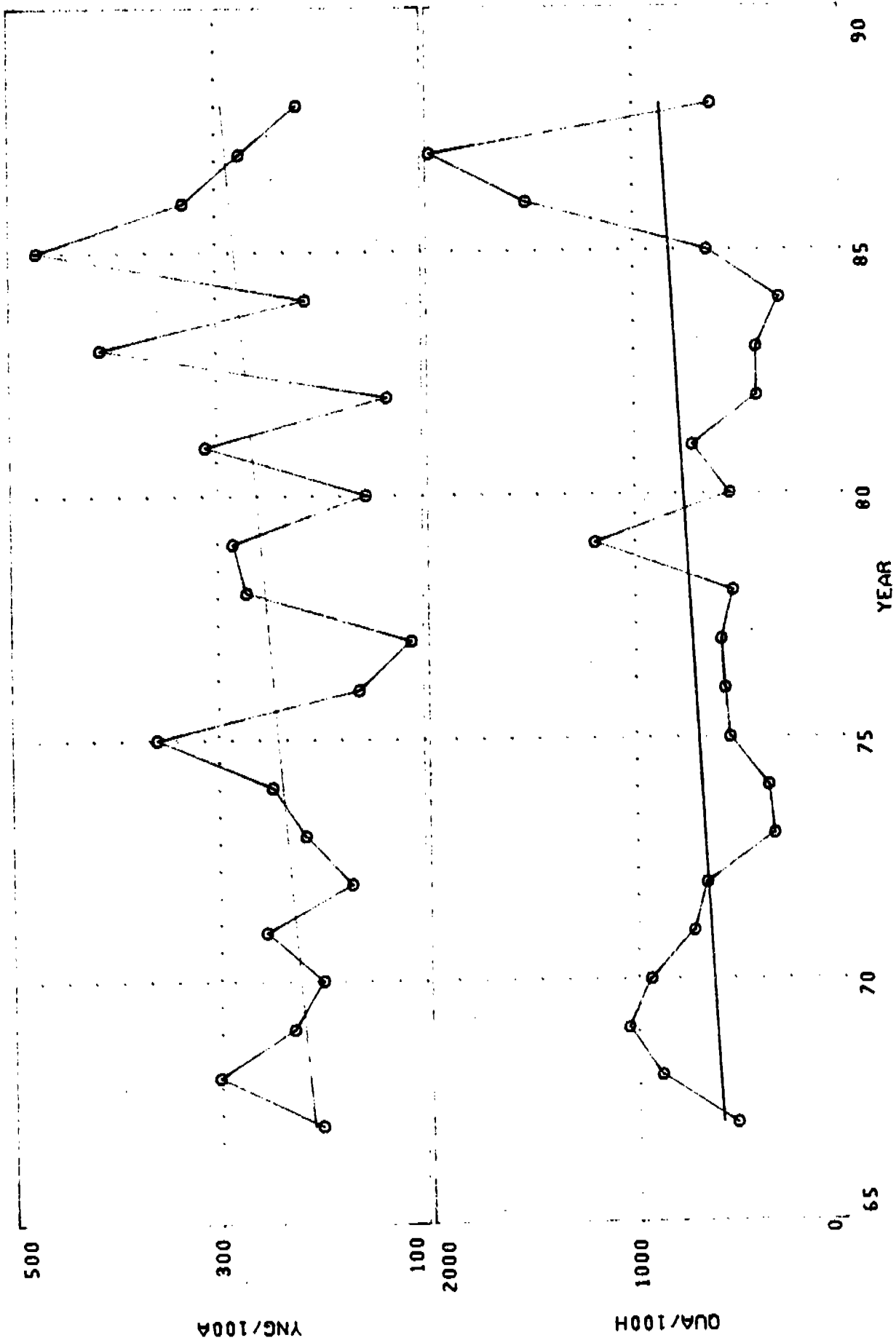


Figure 5. Statewide sage grouse field bag check indices, 1966-88.

Harvest

Hunter Questionnaire

Results of the 1988 hunter questionnaire are shown in Table 6. Long-term trends of sage grouse bagged per hunter-day, percent of harvest and percent of pressure (hunter-days) by county are found in Tables 7-9 and total statewide harvest statistics in Table 10. The results of the 1988 hunting season compared to 1987 and the 1963-87 average follow:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Sage grouse hunters	8,499	+20	-18
Sage grouse harvested	14,692	+16	0
Hunter-days afield	19,418	+36	+12
Sage grouse per hunter-day	0.76	-15	-10
Sage grouse per hunter	1.73	-4	+20

Sage grouse hunter per hunter-day success rates decreased 15 percent in 1988. Total statewide harvest increased 16 percent, and total sage grouse hunters increased 20 percent. Hunter success decreased 13 percent in the Northern Region where five of the seven counties were closed to sage grouse hunting. Nevertheless, 39 percent of the harvest and 45 percent of the hunting pressure still occurred in the Northern region.

Long-term sage grouse harvest trends are shown in Figures 3 and 4.

Field Bag Checks

A summary of field bag check data for 1988 is shown in Table 11. Hunter success trends determined via this method are shown in Table 12 and Figure 5. Results of the 1988 survey compared to 1987 and the 1978-87 average follow:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Total hunters checked	1,106	+7	-28
Total hours hunted	5,080	-2	-24
Sage grouse per hunter (complete hunts)	1.04	-10	+9
Sage grouse bagged per 100 hours	18	-14	+6
Average hours per hunter-day (complete hunts)	5.4	+35	+10
Hours hunted per grouse bagged	5.2	+6	-2

Much of Utah was dry with birds concentrated around available water. Hunter success rates from field bag checks were similar to mail questionnaire success rates. Both were down last year but near the long term average.

Sex and Age Composition of the Harvest

A summary of the sex and age composition of harvested sage grouse in 1988 is found in Table 13 and the trend from 1985-88 in Table 14.

Following are data derived from wing surveys in 1988 compared to 1987 and the 1973-87 average:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Sample size	942	+18	-20
Percent males	31	-26	-26
Percent females	69	+19	-19
Young per 100 adults	114	-37	-52
Young per 100 hens (adult)	166	-35	+8

Analysis of wings collected at checking stations during the 1988 season indicates that statewide production was down compared to 1987, and was below the previous 15-year average.

Table 1. Summary of sage grouse strutting ground counts by region and county, 1978-88.

Region and County	Year										
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
NORTHERN REGION											
BOX ELDER											
No. strutting grounds counted	18	24	28	35	15	17	8	32	10	18	15
Total male grouse counted	452	763	899	711	384	322	216	309	288	324	419
County average (all strutting grounds)	25	32	32	20	26	19	27	10	29	18	28
% change from previous year - comparable grounds	+3	+59	+9	-35	-24	-29	-8	+7	+17	-12	+33
CACHE											
No. strutting grounds counted	1	3	1	3	1	0	1	0	2	1	1
Total male grouse counted	15	32	18	18	19	0	5	--	8	0	9
County average (all strutting grounds)	15	11	18	6	19	--	5	--	4	0	9
% change from previous year - comparable grounds	-40	0	+20	-33	+58	--	--	--	--	--	+100
MORGAN											
No. strutting grounds counted	3	3	3	3	3	3	1	3	3	2	1
Total male grouse counted	111	75	131	57	65	31	2	33	22	26	19
County average (all strutting grounds)	37	25	44	19	22	10	2	11	7	13	19
% change from previous year - comparable grounds	+158	-32	+76	-57	+16	-31	-91	+1,000	-33	+18	-21
RICH											
No. strutting grounds counted	15	11	11	13	7	9	6	18	11	12	3
Total male grouse counted	417	382	236	259	153	188	103	399	296	431	319
County average (all strutting grounds)	28	35	21	20	22	21	17	22	27	36	53
% change from previous year - comparable grounds	+17	+11	-40	+5	-21	+2	-2	+49	-28	+53	-10
SUMMIT											
No. strutting grounds counted	6	8	1	7	2	7	1	0	7	7	10
Total male grouse counted	91	116	15	60	11	46	16	--	23	25	17
County average (all strutting grounds)	15	15	15	9	6	7	16	--	3	4	2
% change from previous year - comparable grounds	-29	+5	+15	+13	-50	-9	+78	--	--	-65	-32
REGIONAL TOTALS											
No. strutting grounds counted	43	49	44	61	28	36	17	53	33	40	33
Total male grouse counted	1,086	1,368	1,299	1,105	632	587	342	741	637	806	783
Average grouse per ground (all strutting grounds)	25	28	30	18	23	16	20	14	19	20	24
% change from previous year - comparable grounds	+10	+29	-2	-27	-20	-22	-9	+27	-8	+16	+11

Table 1 (continued)

Region and County	Year										
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
SOUTHERN REGION											
GARFIELD											
No. strutting grounds counted	11	9	8	11	9	8	7	--	8	9	8
Total male grouse counted	224	211	97	298	359	197	133	--	152	175	251
County average (all strutting grounds)	20	23	12	27	39	25	19	--	19	19	31
% change from previous year - comparable grounds	+24	0	-48	+114	+78	-12	-46	--	+13	0	+24
WAYNE											
No. strutting grounds counted	12	9	8	14	14	1*	(12)*	--	13	13	13
Total male grouse counted	166	221	32	284	300	123	(89)	--	120	182	326
County average (all strutting grounds)	14	25	4	20	21	123	(7)	--	9	14	25
% change from previous year - comparable grounds	-31	-59	--	--	--	--	--	--	-15	+52	+79
BEAVER											
No. strutting grounds counted	7	6	5	7	7	7	4	3	4	4	3
Total male grouse counted	66	134	113	140	131	117	48	45	55	52	46
County average (all strutting grounds)	9	22	23	20	19	17	12	15	14	13	15
% change from previous year - comparable grounds	-27	+137	+1	+6	-6	-11	+78	--	+22	-5	--
IRON											
No. strutting grounds counted	10	5	6	7	9	4	--	5	6	4	6
Total male grouse counted	87	83	84	101	111	105	--	81	131	64	111
County average (all strutting grounds)	9	17	14	14	12	26	--	16	22	16	19
% change from previous year - comparable grounds	+11	+48	+1	+20	-3	+27	--	--	+49	-11	-13
SEVIER											
No. strutting grounds counted	4	4	--*	2	4	--	--	--	2	--	2
Total male grouse counted	23	9	--	0	5	--	--	--	0	--	0
County average (all strutting grounds)	6	2	--	0	1	--	--	--	--	--	--
% change from previous year - comparable grounds	-11	60	--	--	--	--	--	--	--	--	--
MILLARD											
No. strutting grounds counted	1	--	--*	1	1	--	1	1	1	--	--
Total male grouse counted	14	--	--	22	22	--	4	2	3	--	--
County average (all strutting grounds)	14	--	--	22	22	--	4	2	3	--	--
% change from previous year - comparable grounds	+367	--	--	--	0	--	--	--	+33	--	--
REGIONAL TOTALS											
No. strutting grounds counted	45	33	27	42	44	23	12	21	34	30	32
Total male grouse counted	580	691	326	845	928	563	185	391	461	473	734
Average grouse per ground (all strutting grounds)	13	21	12	20	21	24	15	19	14	16	23
% change from previous year - comparable grounds	-13	-22	-32	+46	+33	-9	-33	--	+12	+13	+48

*No counts because of snow. Aerial count made in Wayne County only (not added to regional total).

Table 1 (continued)

Region and County	Year										
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
CENTRAL REGION											
SANPETE											
No. strutting grounds counted	2	2	2	2	2	2	2	2	2	2	2
Total male grouse counted	7	6	9	9	11	8	0	0	0	0	0
County average (all strutting grounds)	4	3	5	5	6	4	--	--	--	--	0
% change from previous year - comparable grounds	+75	-14	+17	0	+22	-27	-100	0	--	--	0
TOOELE											
No. strutting grounds counted	5	5	5	5	5	6	6	6	6	5	5
Total male grouse counted	37	116	131	46	28	28	23	55	82	96	89
County average (all strutting grounds)	7	23	26	9	6	5	4	9	16	19	18
% change from previous year - comparable grounds	-52	-38	+13	-64	-64	0	-18	+139	+149	+17	-5
WASATCH											
No. strutting grounds counted	2	2	2	2	2	2	2	2	2	2	2
Total male grouse counted	184	119	45	45	18	54	57	63	117	54	52
County average (all strutting grounds)	92	60	23	23	9	27	29	32	59	27	26
% change from previous year - comparable grounds	-11	-35	-62	0	-60	+200	+6	+11	+205	-54	-4
JUAB											
No. strutting grounds counted										1	1
Total male grouse counted										9	14
County average (all strutting grounds)										9	14
% change from previous year - comparable grounds										0	+56
REGIONAL TOTALS											
No. strutting grounds counted	9	9	9	9	9	10	10	10	10	9	10
Total male grouse counted	228	197	185	100	57	90	80	118	199	150	155
Average grouse per ground (all strutting grounds)	25	22	21	11	6	9	8	12	18	17	16
% change from previous year - comparable grounds	-21	-35	-24	-51	-43	+58	-11	+48	+170	-25	-3

Table 1 (continued)

Region and County	Year										
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
NORTHEASTERN REGION											
DAGGETT											
No. strutting grounds counted	3	3	5	6	6	6	--	5	6	6	6
Total male grouse counted	78	47	51	68	18	45	--	25	22	26	67
County average (all strutting grounds)	26	16	10	11	3	7	--	5	3	4	11
% change from previous year - comparable grounds	+42	-40	-19	+20	-57	+56	--	-43	--	+16	+205
DUCHESNE											
No. strutting grounds counted	14	10	16	16	15	15	--	13	14	14	12
Total male grouse counted	227	93	120	112	156	178	--	121	117	104	47
County average (all strutting grounds)	16	9	8	7	10	12	--	9	8	7	4
% change from previous year - comparable grounds	+37	-35	+5	0	+15	+17	--	-29	--	-12	-62
UINTAH											
No. strutting grounds counted	13	11	12	10	12	16	--	12	14	14	26
Total male grouse counted	454	338	126	174	242	273	--	190	216	159	699
County average (all strutting grounds)	35	31	11	17	20	17	--	16	15	11	27
% change from previous year - comparable grounds	+63	-18	-67	+56	+40	-21	--	-21	--	-26	+260
GRAND											
No. strutting grounds counted											2
Total male grouse counted											9
County average (all strutting grounds)											5
% change from previous year - comparable grounds											--
REGIONAL TOTALS (N.E.)											
No. strutting grounds counted	30	24	33	32	33	37	--	30	34	34	46
Total male grouse counted	759	478	297	354	416	396	--	336	339	289	822
Average grouse per ground (all strutting grounds)	25	20	9	11	13	13	--	11	10	9	18
% change from previous year - comparable grounds	+51	-25	-48	+27	+17	-3	--	-26	--	-18	+140

Table 1 (continued)

Region and County	Year										
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
SOUTHEASTERN REGION											
CARBON											
No. strutting grounds counted	5	--	--	6	1	1	--	--	2	7	10
Total male grouse counted	41	--	--	2	0	16	--	--	32	55	196
County average (all strutting grounds)	8	--	--	3	--	16	--	--	16	8	20
% change from previous year - comparable grounds	-64	--	--	--	--	+100	--	--	--	-27	+142
EMERY											
No. strutting grounds counted	1	--	--	--	2	--	--	1	1	2	2
Total male grouse counted	12	--	--	--	9	--	--	12	11	10	12
County average (all strutting grounds)	12	--	--	--	5	--	--	12	11	5	6
% change from previous year - comparable grounds	-25	--	--	--	--	--	--	--	-8	-18	+20
SAN JUAN											
No. strutting grounds counted	5	4	5	4	4	6	4	4	4	4	4
Total male grouse counted	96	67	41	63	47	59	57	39	29	35	32
County average (all strutting grounds)	18	17	8	16	12	10	14	10	7	9	8
% change from previous year - comparable grounds	-17	+1	-33	+65	-25	+52	-14	-29	-26	+28	-9
REGIONAL TOTALS											
No. strutting grounds counted	11	4	5	10	7	7	4	4	7	13	16
Total male grouse counted	149	67	41	65	56	75	57	39	72	100	240
Average grouse per ground (all strutting grounds)	14	17	8	7	8	11	14	10	10	8	15
% change from previous year - comparable grounds	-37	+1	-33	+58	-28	+34	-14	-29	-26	0	+74
STATE TOTALS											
No. strutting grounds counted	138	120	116	154	121	113	43	97	118	126	137
Total male grouse counted	2,802	2,808	2,148	2,469	2,089	1,711	664	1,234	1,708	1,818	2,734
Average grouse per ground (all strutting grounds)	20	23	19	16	17	15	15	13	14	14	20
% change from previous year - comparable grounds	-15	-13	-20	-9	-1	-8	-18	-1	+5	+2	+51

*No counts because of snow conditions.

Table 2. Sage grouse summer inventory summary, 1988.

Region and County	Distinct Broods		Mean Brood	Mixed Yng & Adults		Adults w/o Yng	Total Adults	Total Yng	Young/100 Ad	Veh. Miles	Hours of Effort		Birds/100 Hr	
	# Ad	Yng		Ad	Yng						Veh.	Horse Walk		Total
Northern Region														
Box Elder	10	10	3.80	16	27	34	60	65	108	0	2	15	18	694
Cache	0	0	--	0	0	1	1	0	--	562	31	0	5	3
Davis	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	37	37	4.27	23	48	75	135	206	153	1,480	73	0	46	119
Summit	1	1	4.00	0	0	7	8	4	50	50	1	0	3	300
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	48	48	4.17	39	75	117	204	275	135	2,092	107	15	55	177
Central Region														
Juab	3	3	6.33	0	0	2	5	19	380	216	16	0	0	150
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	10	10	3.50	5	10	30	45	45	100	328	20	34	4	58
Utah	0	0	0.00	2	3	0	2	3	150	40	4	0	0	4
Wasatch	1	1	6.00	0	0	1	2	6	300	94	11	7	12	30
REGIONAL TOTALS	14	14	4.29	7	13	33	54	73	135	678	51	41	16	108
Southern Region														
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	10	10	4.60	10	26	30	50	72	144	85	17	8	2	27
Iron	9	9	3.67	7	21	21	37	54	146	145	--	6	0	6
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	1,517
Millard	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	2	2	7.00	2	7	0	4	21	525	20	6	0	0	6
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	7	7	6.29	7	21	62	76	65	86	65	10	17	0	27
REGIONAL TOTALS	28	28	4.89	26	75	113	167	212	127	315	33	31	2	66
Northeastern Region														
Daggett	11	11	4.45	3	9	18	32	58	181	176	19	0	0	19
Duchesne	5	5	3.60	3	5	0	8	23	288	195	16	0	6	22
Uintah	38	38	4.05	47	104	72	157	258	164	319	28	17	5	50
REGIONAL TOTALS	54	54	4.09	53	118	90	197	339	172	690	63	17	11	91
Southeastern Region														
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	0	0	0.00	2	8	2	4	8	200	--	--	--	--	--
REGIONAL TOTALS	0	0	0.00	2	8	2	4	8	200	--	--	--	--	--
STATE TOTALS	144	144	4.29	127	289	355	626	907	145	3,775	254	104	84	442

[] Estimate

Table 3. Trend of sage grouse young per 100 adults, 1978-88.

Region and County	Year											Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Northern Region												
Box Elder	125	81	84	68	127	135	75	265	178	94	108	
Cache	--	0	300	122	--	--	--	--	--	--	--	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	414	66	89	120	--	240	--	300	--	500	--	
Rich	273	101	33	85	85	--	164	96	91	116	153	
Summit	316	221	74	114	80	67	--	--	400	167	50	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	194	99	67	82	91	145	126	130	103	115	135	115
Central Region												
Juab	46	262	204	245	--	--	--	--	--	--	380	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	224	154	267	348	314	305	--	--	--	--	--	
Tooele	283	449	143	101	107	176	100	125	106	207	100	
Utah	--	--	--	--	--	--	--	--	--	--	150	
Wasatch	93	163	170	236	166	157	175	43	200	209	300	
REGIONAL TOTALS	112	204	171	171	209	214	155	64	120	209	135	163
Southern Region												
Beaver	156	100	142	104	32	--	400	43	--	35	--	
Garfield	176	272	383	84	128	133	140	229	125	144	144	
Iron	313	229	269	113	148	150	63	--	250	198	146	
Kane	--	57	--	--	--	1,000	--	--	--	400	--	
Millard	--	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	38	--	--	
Sevier	625	--	--	--	--	--	--	--	--	--	525	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	308	288	291	263	193	104	411	152	44	455	86	
REGIONAL TOTALS	224	230	235	154	130	98	92	137	105	216	127	162
Northeastern Region												
Daggett	198	169	200	230	369	88	250	170	100	124	181	
Duchesne	199	127	248	235	305	240	145	297	180	137	288	
Uintah	269	279	401	253	183	375	67	261	127	192	164	
REGIONAL TOTALS	226	191	297	242	237	265	126	255	131	159	172	213
Southeastern Region												
Carbon	164	400	--	64	--	--	238	400	133	150	--	
Emery	--	--	--	--	--	--	--	--	--	--	--	
Grand	--	71	--	--	--	--	--	--	--	--	--	
San Juan	94	--	400	350	--	57	500	88	60	--	200	
REGIONAL TOTALS	142	223	450	83	--	57	267	122	81	150	200	175
STATE TOTALS	181	175	163	142	179	202	125	147	114	160	145	159

Table 4. Trend of sage grouse mean brood size, 1978-88.

Region and County	Year										Average 1978-87	
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987		1988
Northern Region												
Box Elder	4.76	4.32	3.36	3.97	3.92	5.00	5.75	5.31	3.57	3.88	3.80	
Cache	--	--	1.00	3.50	--	--	--	--	--	--	--	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	6.44	4.00	5.60	5.14	--	4.20	--	3.00	--	5.00	--	
Rich	5.24	4.58	3.36	3.67	4.45	--	3.92	3.96	5.08	5.00	4.27	
Summit	5.77	5.00	3.78	3.67	2.67	3.33	--	--	4.00	5.00	4.00	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	5.20	4.52	3.61	3.94	4.00	4.25	4.36	4.39	4.74	4.82	4.17	4.38
Central Region												
Juab	3.33	4.25	5.00	2.00	--	--	--	--	--	--	6.33	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	4.57	6.44	5.58	4.80	6.36	5.83	--	--	--	--	--	
Tooele	5.13	5.64	4.09	3.00	3.33	4.33	3.33	3.29	3.25	3.60	3.50	
Utah	--	--	--	--	--	--	--	--	--	--	--	
Wasatch	4.90	4.90	4.09	3.83	4.81	3.14	4.90	2.00	5.00	6.94	6.00	
REGIONAL TOTALS	4.82	5.18	4.41	3.44	5.32	4.37	4.54	2.56	3.60	5.42	4.29	4.37
Southern Region												
Beaver	4.29	4.00	4.14	5.50	4.00	--	4.00	5.00	--	5.00	--	
Garfield	4.00	4.39	5.00	4.50	3.43	3.43	4.00	4.50	2.00	4.00	4.60	
Iron	5.50	4.68	4.12	3.57	6.40	3.00	3.50	--	4.00	4.64	3.67	
Kane	--	--	--	--	--	5.00	--	--	--	4.00	--	
Millard	--	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	6.25	--	--	--	--	--	--	--	--	--	7.00	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	4.56	4.74	4.60	3.96	4.43	3.67	5.00	3.57	6.00	6.14	6.29	
REGIONAL TOTALS	4.55	4.61	4.48	3.93	4.52	3.62	4.27	4.00	4.29	4.89	4.89	4.32
Northeastern Region												
Daggett	5.05	5.10	4.75	4.11	5.13	5.80	4.63	3.00	1.00	4.00	4.45	
Duchesne	4.00	4.73	4.42	3.91	5.32	4.59	3.77	4.73	4.29	3.54	3.60	
Uintah	4.87	4.67	5.55	5.27	4.95	5.13	3.00	5.00	5.44	5.55	4.05	
REGIONAL TOTALS	4.94	4.79	5.05	4.50	5.10	5.00	3.96	4.43	4.94	4.59	4.09	4.73
Southeastern Region												
Carbon	5.17	4.67	--	--	--	--	4.33	4.00	4.00	1.50	--	
Emery	--	--	--	--	--	--	--	--	--	--	--	
Grand	--	5.00	--	--	--	--	--	--	--	--	--	
San Juan	--	--	--	3.50	--	4.00	5.00	3.50	3.00	--	--	
REGIONAL TOTALS	5.17	3.25	--	3.50	--	4.00	4.50	3.67	3.40	1.50	--	3.62
STATE TOTALS	4.97	4.77	4.51	4.05	4.85	4.58	4.27	4.04	4.53	4.86	4.29	4.54

Table 5. Trend of sage grouse observed per 100 hours, 1978-88.

Region and County	Year											Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Northern Region												
Box Elder	452	1,835	575	571	238	90	195	380	304	475	694	
Cache	--	0	154	232	--	--	11	--	--	0	3	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	160	412	427	471	77	93	--	19	--	19	--	
Rich	838	952	393	648	188	--	198	288	282	364	287	
Summit	369	226	111	135	100	81	--	--	21	480	300	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	400	545	315	440	144	82	110	186	198	251	271	267
Central Region												
Juab	255	588	206	380	--	--	--	0.00	--	--	150	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	594	743	319	303	426	214	--	--	--	--	--	
Tooele	265	776	710	627	207	203	105	242	746	742	150	
Utah	--	--	--	--	--	--	--	--	--	--	125	
Wasatch	767	652	360	147	362	41	122	267	92	792	27	
REGIONAL TOTALS	556	695	410	347	342	111	118	244	310	776	118	391
Southern Region												
Beaver	242	89	920	613	62	767	167	429	--	575	--	
Garfield	545	468	229	480	291	300	257	295	225	275	452	
Iron	220	1,315	342	1,085	315	71	260	--	466	1,331	1,517	
Kane	--	588	--	--	--	275	--	--	--	500	--	
Millard	--	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	316	--	--	
Sevier	207	--	--	--	--	--	--	--	--	--	417	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	444	494	338	538	783	612	381	358	344	793	542	
REGIONAL TOTALS	380	617	346	653	429	392	304	342	300	732	574	450
Northeastern Region												
Daggett	637	1,274	489	800	300	467	308	284	114	492	474	
Duchesne	392	258	446	574	845	433	454	325	165	382	141	
Uintah	397	705	474	398	1,036	866	314	888	813	642	830	
REGIONAL TOTALS	427	673	483	507	800	631	364	490	474	509	589	536
Southeastern Region												
Carbon	295	200	5	219	--	--	415	--	200	28	--	
Emery	0	--	--	--	--	--	--	--	--	--	--	
Grand	71	240	--	--	--	--	--	--	--	--	--	
San Juan	194	--	100	50	--	50	57	231	400	--	--	
REGIONAL TOTALS	237	210	36	141	--	50	194	235	271	28	--	156
STATE TOTALS	407	621	374	444	401	258	180	284	291	415	347	368

Table 6. Summary of sage grouse hunter success and distribution of harvest and hunter pressure by region and county, 1988.

Region and County	Sample Size*	Hunter-days Afield	Birds Bagged	Birds per Hunter-day	% of Pressure	% of Harvest
<u>Northern Region</u>						
Box Elder	99	3,105	2,421	.78	15.99	16.47
Cache**	37	1,485	701	.47	7.65	4.77
Davis**	8	317	0	0.00	1.63	0.00
Morgan**	10	550	200	.36	2.83	1.36
Rich	64	2,187	1,769	.81	11.26	12.04
Summit**	13	467	267	.57	2.40	1.81
Weber**	22	601	384	.64	3.09	2.61
REGIONAL TOTALS	253	8,715	5,743	.66	44.88	39.09
<u>Central Region</u>						
Juab**	4	133	116	.88	.68	.79
Salt Lake**	2	33	16	.50	.17	.11
Sanpete**	14	801	183	.23	4.12	1.25
Tooele	28	985	267	.27	5.07	1.81
Utah	24	751	317	.42	3.86	2.15
Wasatch**	11	550	267	.48	2.83	1.81
REGIONAL TOTALS	83	3,255	1,168	.36	16.76	7.95
<u>Southern Region</u>						
Beaver	9	350	267	.76	1.80	1.81
Garfield	13	484	567	1.17	2.49	3.86
Iron	10	384	233	.61	1.97	1.59
Kane	1	16	16	1.00	.08	.11
Millard**	0	0	0	0.00	0.00	0.00
Piute	12	317	300	.95	1.63	2.04
Sevier	28	1,101	734	.67	5.67	5.00
Washington**	2	83	0	0.00	.42	0.00
Wayne	32	951	1,235	1.30	4.90	8.40
REGIONAL TOTALS	107	3,689	3,356	.91	18.99	22.84
<u>Northeastern Region</u>						
Daggett	6	250	300	1.20	1.28	2.04
Duchesne	17	384	384	1.00	1.97	2.61
Uintah	65	2,320	2,587	1.12	11.95	17.61
REGIONAL TOTALS	88	2,955	3,272	1.11	15.21	22.27
<u>Southeastern Region</u>						
Carbon	16	417	434	1.04	2.14	2.95
Emery	5	217	166	.77	1.11	1.13
Grand	0	0	0	0.00	0.00	0.00
San Juan	1	33	333	10.00	.17	2.27
REGIONAL TOTALS	22	667	935	1.40	3.43	6.36
Unknown Counties	4	133	217	1.63	.68	1.47
STATE TOTALS	557	19,418	14,692	.76	100.00	100.00

**Closed to sage grouse hunting in 1988.

Table 7. Summary of sage grouse bagged per hunter-day by region and county, 1981-88.

Region and County	Year							
	1981	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>								
Box Elder	1.26	0.78	0.88	0.80	0.73	0.94	1.05	0.78
Cache	0.40	0.50	0.47	0.54	0.21*	0.18*	0.38*	0.47*
Davis	0.22*	0.36*	0.45*	0.18*	0.25*	0.25*	0.00*	0.00*
Morgan	0.74	0.30	0.15	0.32	0.25*	0.47*	1.25*	0.36*
Rich	0.53	0.51	0.44	0.50	0.30	0.58	0.88	0.81
Summit	0.38	0.32	0.50	0.23	0.20*	0.50*	0.55*	0.57*
Weber	0.16	0.39	0.47	0.67	0.43*	0.57*	0.56*	0.64*
REGIONAL TOTALS	0.76	0.56	0.58	0.55	0.49	0.67	0.76	0.66
<u>Central Region</u>								
Juab	1.14*	0.17	0.36*	0.33*	4.00*	3.00*	0.60*	0.88
Salt Lake	0.75*	2.08*	0.50*	0.25*	0.08*	2.54*	0.00*	0.50*
Sanpete	1.40*	0.31*	0.33*	0.64*	0.44*	0.38*	0.62*	0.23*
Tooele	0.54	0.86*	0.30*	0.53*	0.23*	1.54*	1.10*	0.27
Utah	0.64	0.50*	1.08*	0.77*	0.45*	0.42	0.62	0.42
Wasatch	0.50	0.54	0.65	0.28	0.19	0.65*	0.58	0.48*
REGIONAL TOTALS	0.68	0.62	0.63	0.51	0.46	0.85	0.70	0.36
<u>Southern Region</u>								
Beaver	1.06	1.24	0.95	1.29	0.33	0.90	1.08	0.76
Garfield	1.34	1.12	1.33	1.33	0.78	0.68	1.50	1.17
Iron	0.92	0.92	1.35	1.00	1.85	0.82	1.29	0.61
Kane	0.71	0.00	--	0.00	0.50	0.13	0.00	1.00
Millard	0.00	1.00*	1.88*	0.67*	2.00*	0.50*	1.00*	0.00*
Piute	2.00	0.93	1.30	1.44	0.95	0.50	0.58	0.95
Sevier	0.45	0.85	0.67	0.67	0.40	0.43	1.00	0.67
Washington	0.00	5.50*	--	0.00*	0.50*	0.00	0.00*	0.00*
Wayne	1.42	1.22	1.26	1.25	1.19	1.19	0.60	1.30
REGIONAL TOTALS	1.17	1.21	0.16	1.19	0.92	0.75	0.99	0.91
<u>Northeastern Region</u>								
Daggett	0.84	1.00	1.04	0.16	0.92	0.45	1.00	1.20
Duchesne	1.00	0.85	1.31	0.50	0.67	1.00	0.91	1.00
Uintah	1.01	1.16	1.15	0.98	1.08	1.30	1.25	1.12
REGIONAL TOTALS	0.97	1.04	1.17	0.76	0.95	1.16	1.17	1.11
<u>Southeastern Region</u>								
Carbon	0.19*	0.44*	0.27*	0.33*	0.60	1.24	1.09	1.04
Emery	1.00*	0.00*	0.08*	1.50*	0.63	2.71	1.00	0.77
Grand	0.38	0.25	--	0.00	1.00	0.40	2.00	0.00
San Juan	0.00	1.50*	1.00*	0.00*	0.00	1.33	0.00	10.00
REGIONAL TOTALS	0.28	0.47	0.26	0.90	0.60	1.44	1.13	1.40
Unknown counties	0.22	2.00	--	7.50	5.67	2.00	0.00	1.63
Illegal areas (Total)	0.00	(0.62)*	(0.60)*	(0.60)*	(0.46)*	(0.72)	0.00	0.00
STATE TOTALS	0.85	0.79	0.81	0.72	0.78	0.84	0.89	0.76

*Closed season.

Table 8. Percentage distribution of sage grouse harvest by region and county, 1981-88.

Region and County	Year							
	1981	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>								
Box Elder	23.29	18.19	15.56	18.95	14.20	19.61	16.63	16.47
Cache	1.87	3.84	4.56	4.83	1.31*	0.88*	5.02*	4.77*
Davis	0.27*	0.50*	2.86*	0.92*	0.18*	0.35*	0.00*	0.00*
Morgan	2.68	1.36	0.44	2.60	0.37*	2.45*	0.96*	1.36*
Rich	4.95	4.33	3.48	3.90	2.80	4.90	8.12	12.04
Summit	2.95	2.35	3.13	1.86	0.37*	0.88*	1.16*	1.81*
Weber	0.40	1.86	1.52	3.34	1.12*	2.80*	0.96*	2.61*
REGIONAL TOTALS	36.41	32.43	31.55	36.43	20.37	31.87	32.88	39.09
<u>Central Region</u>								
Juab	2.14*	0.12*	0.35*	0.37*	2.98*	2.10*	0.58*	0.79*
Salt Lake	1.61*	3.09*	0.71*	0.18*	0.18*	5.78*	0.00*	0.11*
Sanpete	0.94*	1.11*	1.42*	1.30*	1.49*	1.58*	3.48*	1.25*
Tooele	2.54	1.49*	0.62*	1.48*	0.56*	3.50*	4.25*	1.81
Utah	4.55*	2.85*	5.72*	5.02*	4.67*	3.85	4.64	2.15
Wasatch	1.74	3.22	1.34	1.86	0.75	2.63*	1.35	1.81*
REGIONAL TOTALS	13.52	11.88	10.17	10.22	10.65	19.44	14.31	7.95
<u>Southern Region</u>								
Beaver	4.55	2.60	1.87	1.67	1.12	1.58	5.41	1.81
Garfield	14.86	9.28	10.46	9.66	6.54	4.38	4.64	3.86
Iron	1.61	2.85	3.13	1.30	4.48	2.45	3.48	1.59
Kane	0.67	0.00	0.00	0.00	0.18	0.18	0.00	0.11
Millard	0.00	0.62*	2.68*	0.74*	1.87*	0.18*	0.38*	0.00*
Piute	0.80	1.73	2.32	4.27	3.36	0.35	1.35	2.04
Sevier	1.34	2.72	2.86	1.48	1.12	1.75	2.32	5.00
Washington	0.00	4.08*	0.00*	0.00*	0.37*	0.00*	0.00*	0.00*
Wayne	6.29	9.43	9.21	7.44	8.03	6.65	2.32	8.40
REGIONAL TOTALS	30.12	33.42	32.54	26.58	27.10	17.50	19.92	22.84
<u>Northeastern Region</u>								
Daggett	4.28	1.36	2.14	0.55	2.24	0.88	2.32	2.04
Duchesne	4.15	5.69	5.72	2.60	5.23	3.68	4.06	2.61
Uintah	10.31	13.49	16.99	15.98	19.43	18.21	23.21	17.61
REGIONAL TOTALS	18.74	20.55	24.85	19.15	26.91	22.78	29.59	22.27
<u>Southeastern Region</u>								
Carbon	0.40*	0.50*	0.53*	0.92*	1.12	3.68	2.32	2.95
Emery	0.13*	0.00*	0.09*	3.90*	0.93	3.33	0.19	1.13
Grand	0.40	0.12	--	0.00	0.18	0.35	0.77	0.00
San Juan	0.00	0.37*	0.27*	0.00*	0.00	0.70	0.00	2.27
REGIONAL TOTALS	0.94	0.99	0.89	4.83	2.24	8.06	3.28	6.36
Unknown counties	0.27	0.74	0.00	2.78	12.71	0.35	0.00	1.47
Closed areas	(10.04)	(17.95)	(15.25)	(14.83)	(11.47)	(23.09)	(16.79)	(14.51)
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

*Closed season; ()Percent of total harvest in closed areas.

Table 9. Percentage distribution of sage grouse hunting pressure by region and county, 1981-88.

Region and County	Year							
	1981	1982	1983	1984	1985	1986	1987	1988
Northern Region								
Box Elder	15.74	18.40	14.33	16.89	15.15	17.53	14.11	15.99
Cache	3.99	6.07	7.89	6.38	4.71*	4.12*	11.87*	7.65*
Davis	1.03*	1.08*	5.14*	3.72*	0.58*	1.18*	0.34*	1.63*
Morgan	3.08	3.62	2.39	5.85	1.16*	4.42*	0.68*	2.83*
Rich	7.98	6.75	6.44	5.58	7.28	7.07	8.26	11.26
Summit	6.61	5.77	5.07	5.71	1.46*	1.47*	1.89*	2.40*
Weber	2.17	3.72	2.60	3.59	2.04*	4.12*	1.54*	3.09*
REGIONAL TOTALS	40.59	45.40	43.87	47.74	32.51	39.91	38.72	44.88
Central Region								
Juab	1.60*	0.59*	0.79*	0.79*	0.58*	0.59*	0.86*	0.68*
Salt Lake	1.82*	1.17*	1.15*	0.53*	1.75*	1.91*	0.17*	0.17*
Sanpete	0.57*	2.84*	3.55*	1.46*	2.62*	3.53*	4.99*	4.12*
Tooele	3.99	1.37*	1.66*	1.99*	1.89*	1.91*	3.44*	5.07
Utah	6.04*	4.50*	4.27*	4.65*	8.01*	7.81	6.71	3.86
Wasatch	2.96	4.70	1.66	4.78	3.06	3.39*	2.06	2.83*
REGIONAL TOTALS	16.99	15.17	13.09	14.23	17.93	19.15	18.24	16.76
Southern Region								
Beaver	3.65	1.66	1.59	0.93	2.62	1.47	4.47	1.80
Garfield	9.46	6.56	6.37	5.18	6.56	5.45	2.75	2.49
Iron	1.48	2.45	1.88	0.93	1.89	2.50	2.40	1.97
Kane	0.80	0.00	0.65	0.00	0.29	1.18	0.00	0.08
Millard	0.00	0.49*	1.15*	0.79*	0.73*	0.29*	0.34*	0.00*
Piute	0.34	1.47	1.45	2.12	2.77	0.59	2.06	1.63
Sevier	2.51	2.54	3.47	1.59	2.18	3.39	2.06	5.67
Washington	0.00	0.59*	0.14*	0.13*	0.58*	0.00	0.34*	0.42*
Wayne	3.76	6.16	5.93	4.25	5.24	4.71	3.44	4.90
REGIONAL TOTALS	22.01	21.92	22.64	15.96	22.88	19.59	17.89	18.99
Northeastern Region								
Daggett	4.33	1.08	1.66	2.25	1.89	1.62	2.06	1.28
Duchesne	3.53	5.28	3.54	3.84	6.12	3.09	3.95	1.97
Uintah	3.67	9.20	11.95	11.70	13.99	11.78	16.52	11.95
REGIONAL TOTALS	16.53	15.56	17.15	17.95	22.01	16.59	22.54	15.21
Southeastern Region								
Carbon	1.82*	0.88*	1.59*	1.99*	1.46	2.50	1.89	2.14
Emery	0.11*	0.20*	0.94*	1.86*	1.16	1.03	0.17	1.11
Grand	0.91	0.39	0.00	0.00	0.14	0.74	0.34	0.00
San Juan	0.00	0.20*	0.22*	0.00*	0.14	0.44	0.17	0.17
REGIONAL TOTALS	2.85	1.66	2.75	3.85	2.91	4.71	2.57	3.43
Unknown counties	1.03	0.29	0.50	0.26	1.75	0.15	0.00	0.68
Closed areas	(12.99)	(13.91)	(20.60)	(17.91)	(26.21)	(26.90)	(26.46)	(25.82)
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

*Closed season; ()Percent of total pressure in closed areas.

Table 10. Statewide summary of sage grouse harvest statistics, 1951-88.

Year	Total* Hunters	Total* Harvest	Hunter-days Afield	Sage Grouse Per Hunter-day	Sage Grouse Per Hunter
1951	840	2,458	--	--	2.93
1952	678	2,230	--	--	3.29
1953	895	2,581	--	--	2.88
1954	802	2,510	--	--	3.13
1955	579	1,742	--	--	3.01
1956	495	1,375	--	--	2.97
1957	470	1,303	--	--	2.77
1958	567	1,797	--	--	3.17
1959	699	1,875	--	--	2.68
1960	861	2,246	--	--	2.61
1961	1,078**	1,918**	--	--	1.78**
1962***	2,382	5,352	5,097	1.05	1.89
1963	12,366	3,793	15,564	0.89	1.12
1964	4,362	6,827	5,807	1.18	1.56
1965	3,243	3,881	4,673	0.83	1.20
1966	2,612	3,962	4,006	0.99	1.52
1967	5,336	5,089	7,860	0.65	0.95
1968	9,115	11,109	13,601	0.82	1.22
1969	12,894	22,282	20,466	1.09	1.73
1970	12,036	15,877	18,506	0.86	1.32
1971	12,893	20,013	1,509	0.93	1.55
1972	13,040	15,983	22,232	0.72	1.23
1973	10,017	13,926	19,049	0.73	1.39
1974	12,214	15,215	23,516	0.65	1.25
1975	13,996	18,916	25,720	0.74	1.35
1976	15,283	24,541	28,342	0.87	1.61
1977	14,078	18,615	25,759	0.72	1.32
1978	16,231	25,938	29,861	0.87	1.60
1979	16,927	28,280	30,682	0.92	1.67
1980	15,219	22,770	26,893	0.85	1.50
1981	10,083	15,857	18,617	0.85	1.57
1982	8,997	12,383	15,663	0.79	1.38
1983	9,201	14,949	18,467	0.81	1.63
1984	8,283	10,921	15,266	0.72	1.32
1985	7,586	11,466	14,702	0.78	1.51
1986	7,233	11,766	13,992	0.84	1.63
1987	7,060	12,673	14,242	0.89	1.80
1988	8,499	14,692	19,418	0.76	1.73
<hr/>					
TOTALS					
(1963-1988)	268,804	381,724	454,413	(21.75)	(37.66)
<hr/>					
AVERAGES					
(1963-1987)	10,412	14,681	17,400	0.84	1.44

*The number of sage grouse hunters and consequently harvest was limited by permits available from 1951 through 1962.

**Estimated.

***Totals and indices based on indiscrete data.

Table 11. Sage grouse field bag check summary, 1988.

Region and County	ALL HUNTS					COMPLETE HUNTS				
	Total Parties	Total Hunters	Total Hours	Total Birds	Birds/100 Hr	Total Hunts	Total Hours	Total Birds	Birds/100 Hr	Birds/Hunter
Northern Region										
Box Elder	147	458	2,933	483	16	147	2,933	483	16	1.21
Cache	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--
Rich	71	165	508	86	17	62	445	80	18	0.60
Summit	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	218	623	3,441	569	17	209	3,378	563	17	1.06
Central Region										
Juab	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--
Tooele	42	99	222	42	19	21	97	39	40	0.83
Utah	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	42	99	222	42	19	21	97	39	40	0.83
Southern Region										
Beaver	--	--	--	--	--	--	--	--	--	--
Garfield	10	28	60	32	53	4	31	20	65	1.82
Iron	10	20	100	13	13	5	50	7	14	0.70
Kane	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--
Wayne	47	130	624	137	22	31	564	128	23	1.12
REGIONAL TOTALS	67	178	784	182	23	40	645	155	24	1.15
Northeastern Region										
Daggett	3	11	17	5	29	2	10	4	40	0.67
Duchesne	--	--	--	--	--	--	--	--	--	--
Uintah*	--	195	616	125	20	--	404	107	26	0.91
REGIONAL TOTALS	3	206	633	130	21	2	414	111	27	0.90
Southeastern Region										
Carbon	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--
STATE TOTALS	330	1,106	5,080	923	18	272	4,534	868	19	1.04

*Diamond Mtn. only

Table 12. Sage grouse hunter success trend determined by field bag checks, 1983-88.

Region and County	1983		1984		1985		1986		1987		1988	
	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter
Northern Region												
Box Elder	16	1.05	13	0.82	16	0.98	17	1.06	19	1.39	16	1.21
Cache	4	0.13	4	0.18	--	--	19	0.71	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	13	0.53	17	0.56	18	0.68	14	0.57	17	0.70	18	0.60
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	11	0.44	--	--	--	--	--	--
REGIONAL TOTALS	15	0.94	13	0.78	16	0.95	17	0.93	19	1.20	17	1.06
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	40	0.83
Utah	--	--	--	--	17	0.33	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	17	0.33	--	--	--	--	40	0.83
Southern Region												
Beaver	--	--	--	--	20	0.60	--	--	--	--	--	--
Garfield	--	--	--	--	25	1.10	8	0.20	50	1.71	65	1.82
Iron	--	--	--	--	--	--	--	--	0	0.00	14	0.70
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	25	1.35	11	0.94	137	0.74	22	1.23	21	0.95	23	1.12
REGIONAL TOTALS	25	1.35	11	0.94	62	0.78	22	1.20	22	0.97	24	1.15
Northeastern Region												
Daggett	33	1.00	33	0.67	23	1.09	47	1.78	80	1.67	40	0.67
Duchesne	60	1.25	45	0.83	25	0.33	94	2.00	75	1.50	--	--
Uintah	34	0.89	25	0.80	40	1.10	49	1.17	36	1.05	26	0.91
REGIONAL TOTALS	35	0.93	26	0.79	36	1.06	52	1.33	40	1.12	27	0.90
Southeastern Region												
Carbon	--	--	--	--	--	--	200	1.00	50	1.00	--	--
Emery	--	--	--	--	133	1.00	--	--	--	--	--	--
Grand	--	--	--	--	100	2.00	--	--	50	3.00	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	114	1.33	200	1.00	50	1.73	--	--
STATE TOTALS	18	0.99	14	0.81	20	0.93	20	1.02	21	1.15	19	1.04

Table 13. Sex and age composition of harvested sage grouse, 1988.

Region and County	Sample Size	Adults			Young			Young/100 Adults	Young/100 Hens
		M	F	Total	M	F	Total		
Northern Region									
Box Elder	232	39	84	123	45	64	109	89	130
Cache	---	---	---	---	---	---	---	---	---
Davis	---	---	---	---	---	---	---	---	---
Morgan	---	---	---	---	---	---	---	---	---
Rich	59	10	22	32	9	18	27	84	123
Summit	---	---	---	---	---	---	---	---	---
Weber	---	---	---	---	---	---	---	---	---
REGIONAL TOTALS	291	49	106	155	54	82	136	88	128
Central Region									
Juab	---	---	---	---	---	---	---	---	---
Salt Lake	---	---	---	---	---	---	---	---	---
Sanpete	---	---	---	---	---	---	---	---	---
Tooele	37	9	12	21	7	9	16	76	133
Utah	---	---	---	---	---	---	---	---	---
Wasatch	---	---	---	---	---	---	---	---	---
REGIONAL TOTALS	37	9	12	21	7	9	16	76	133
Southern Region									
Beaver	---	---	---	---	---	---	---	---	---
Garfield	---	---	---	---	---	---	---	---	---
Iron	---	---	---	---	---	---	---	---	---
Kane	---	---	---	---	---	---	---	---	---
Millard	---	---	---	---	---	---	---	---	---
Piute	---	---	---	---	---	---	---	---	---
Sevier	---	---	---	---	---	---	---	---	---
Washington	---	---	---	---	---	---	---	---	---
Wayne	335	34	83	117	117	101	218	186	263
REGIONAL TOTALS	335	34	83	117	117	101	218	186	263
Northeastern Region									
Daggett	---	---	---	---	---	---	---	---	---
Duchesne	---	---	---	---	---	---	---	---	---
Uintah*	146	31	45	76	30	40	70	92	156
REGIONAL TOTALS	146	31	45	76	30	40	70	92	156
Southeastern Region									
Carbon	133	14	57	71	25	37	62	87	109
Emery	---	---	---	---	---	---	---	---	---
Grand	---	---	---	---	---	---	---	---	---
San Juan	---	---	---	---	---	---	---	---	---
REGIONAL TOTALS	133	14	57	71	25	37	62	87	109
STATE TOTALS	942	137	303	440	233	269	502	114	166

FOREST GROUSE

SUMMARY

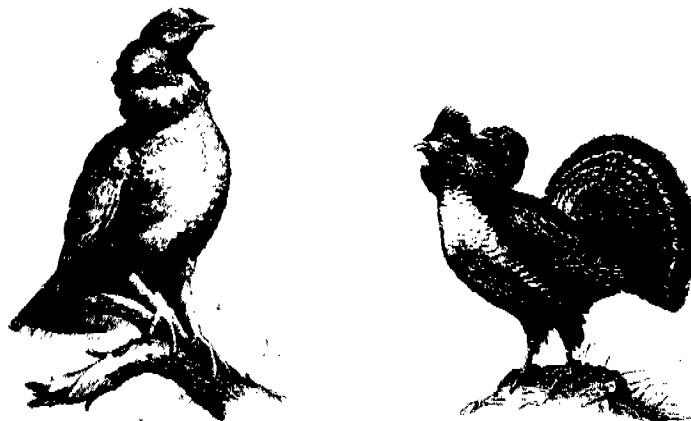
Judging from harvest statistics for the fall of 1987, the 1988 breeding populations of ruffed grouse were lower than average and blue grouse were above average for the second year in a row. However, production of ruffed grouse in 1988 dropped 48 percent.

Production of blue grouse decreased from 1987 and was below the 10-year average. However, blue grouse observed per 100 hours of effort was 66 percent above average. A total of 86 forest grouse broods were observed during 1988 compared with 134 in 1987, 53 in 1986, and 78 in 1985.

Harvest statistics indicated a higher density of forest grouse. Total harvest increased from 45,326 in 1987 to 53,562 in 1988, an 18 percent increase. Total hunters increased 14 percent in 1988 compared to 1987, and days afield increased from 41,428 to 51,726.

Field bag check data corroborated increased forest grouse numbers from the questionnaire. Blue grouse wing age sample size were insufficient to draw any conclusions.

These data indicate the potential for increase inherent in blue grouse population irrespective of hunting. Forest grouse season lengths and bag limits have remained essentially the same for 20 years and populations fluctuate with breeding conditions.



Brood Counts

Ruffed Grouse

Results of the annual random brood survey for 1988 are shown in Table 1 of this section. Long-term trends of young-adult ratios, mean brood size and ruffed grouse observed per 100 hours are found in Tables 2-4. A summary of effort expended on ruffed and blue grouse brood counts combined is shown in Table 9. Survey results for 1988 compared to 1987 and the previous 10-year average follow:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Total ruffed grouse observed	104	-17	-25
Young per 100 adults	160	-48	-53
Mean brood size	3.71	-1	-19
Ruffed grouse observed per 100 hours	46	+2	-31
Total hours effort	226	-20	-52

Harvest statistics for 1987 indicated an above average breeding population for 1988.

Effort on brood surveys decreased by 20 percent and was 52 percent below average.

Grouse observed per 100 hours was 31 percent below average, while mean brood size was 19 percent below average indicating poor production.

Blue Grouse

Results of the annual random brood survey for 1988 are shown in Table 5 of this section. Long-term trends of young-adult ratios, mean brood size and blue grouse observed per 100 hours are found in Tables 6-8. Survey results for 1988 compared to 1987 and the 10-year average follow:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Total blue grouse observed	455	-34	-13
Young per 100 adults	207	-23	-15
Mean brood size	3.22	-20	-17
Blue grouse observed per 100 hours	166	-16	+66
Total hours effort (forest grouse)	274	-22	-53

Harvest statistics for 1987 indicated the blue grouse breeding population for 1988 was again above average.

The 1988 summer surveys on blue grouse indicated that production decreased 23 percent from 1987 and was below average.

This may have resulted from April precipitation 0.77 inches above normal statewide and above average temperatures and below average precipitation May through August 1988.

Total observations decreased 34 percent, the result of decreased effort. The number of grouse observed per 100 hours of effort decreased from 1987 but was 66 percent above average. This should have indicated increased percentage adults in the harvest.

Harvest

Hunter Questionnaire

Results of the 1988 blue grouse, ruffed grouse and combined hunter questionnaire are shown in Table 10, 11 and 12 respectively. Long-term trends of forest grouse bagged per hunter-day, percent of harvest and percent of pressure (hunter-days) by county are found in Tables 13-15 and total statewide harvest statistics in Table 16 and Figure 1 and 2. Forest grouse season length, bag limits and harvest statistics, 1963-1988 are listed in Table 17. Harvest statistics for 1988 compared to 1987 and the 25-year (1963-87) average follow:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Forest grouse hunters	16,947	+14	+16
Forest grouse harvested	53,562	+18	+56
Hunter-days afield	51,726	+25	+48
Forest grouse per hunter-day	1.04	-5	+5
Forest grouse per hunter	3.16	+3	+34
Percent ruffed grouse	35.7	+2	-7
Percent blue grouse	58.9	-5	+7
Percent unidentified	5.4	+69	-16

Results from the harvest questionnaire confirmed rapidly increasing forest grouse populations again in 1988. This increase was in both blue and ruffed grouse. Ruffed grouse populations were 44 percent above average. Total harvest increased 18 percent from 1987 and was 56 percent above average. Hunter success (grouse per hunter-day) was 5 percent above average, and the number of grouse harvested per hunter was 34 percent above average. Hunter pressure increased from 1987, and was 48 percent above the 25-year average.

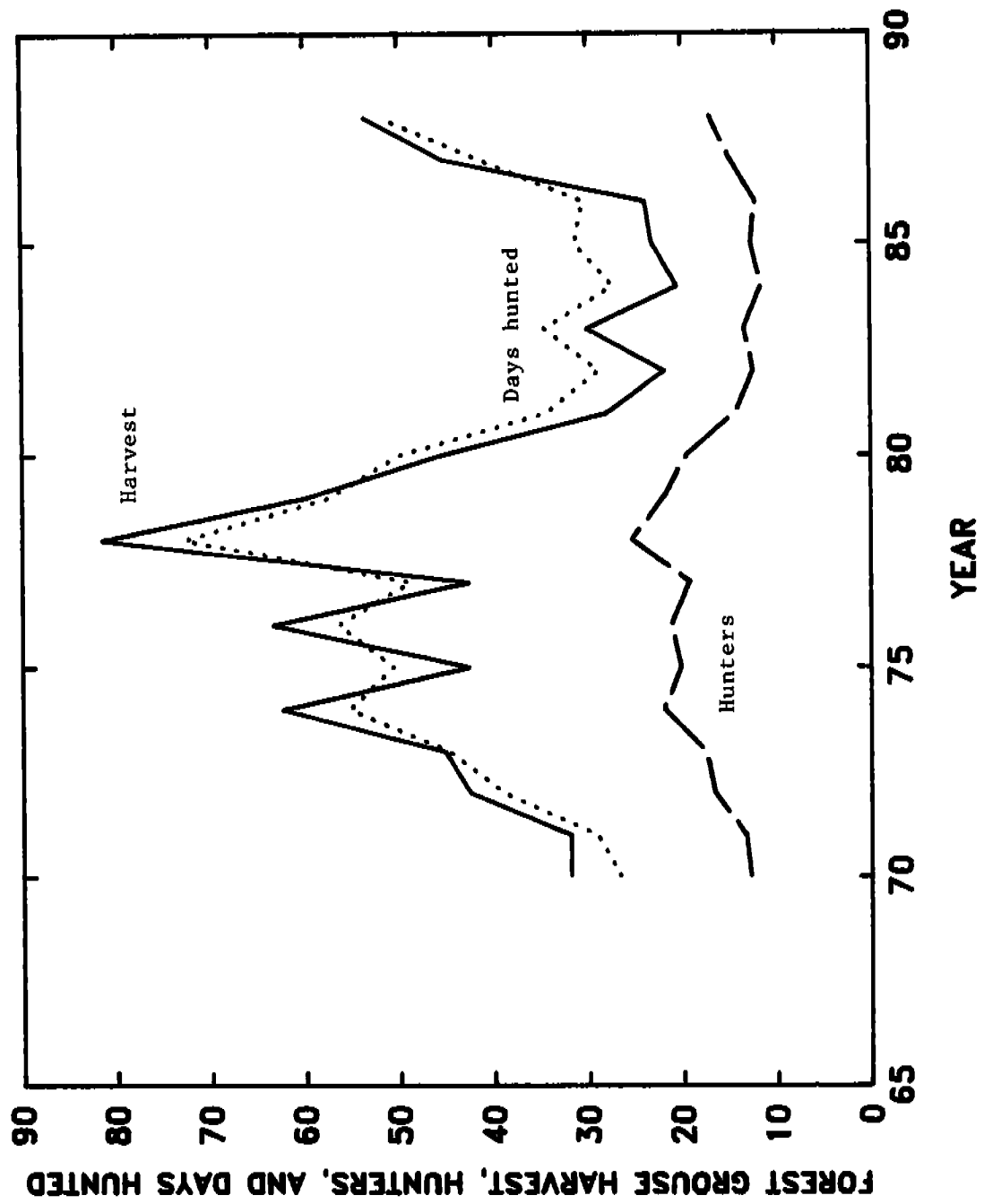


Figure 1. Statewide trends of forest grouse harvest statistics.

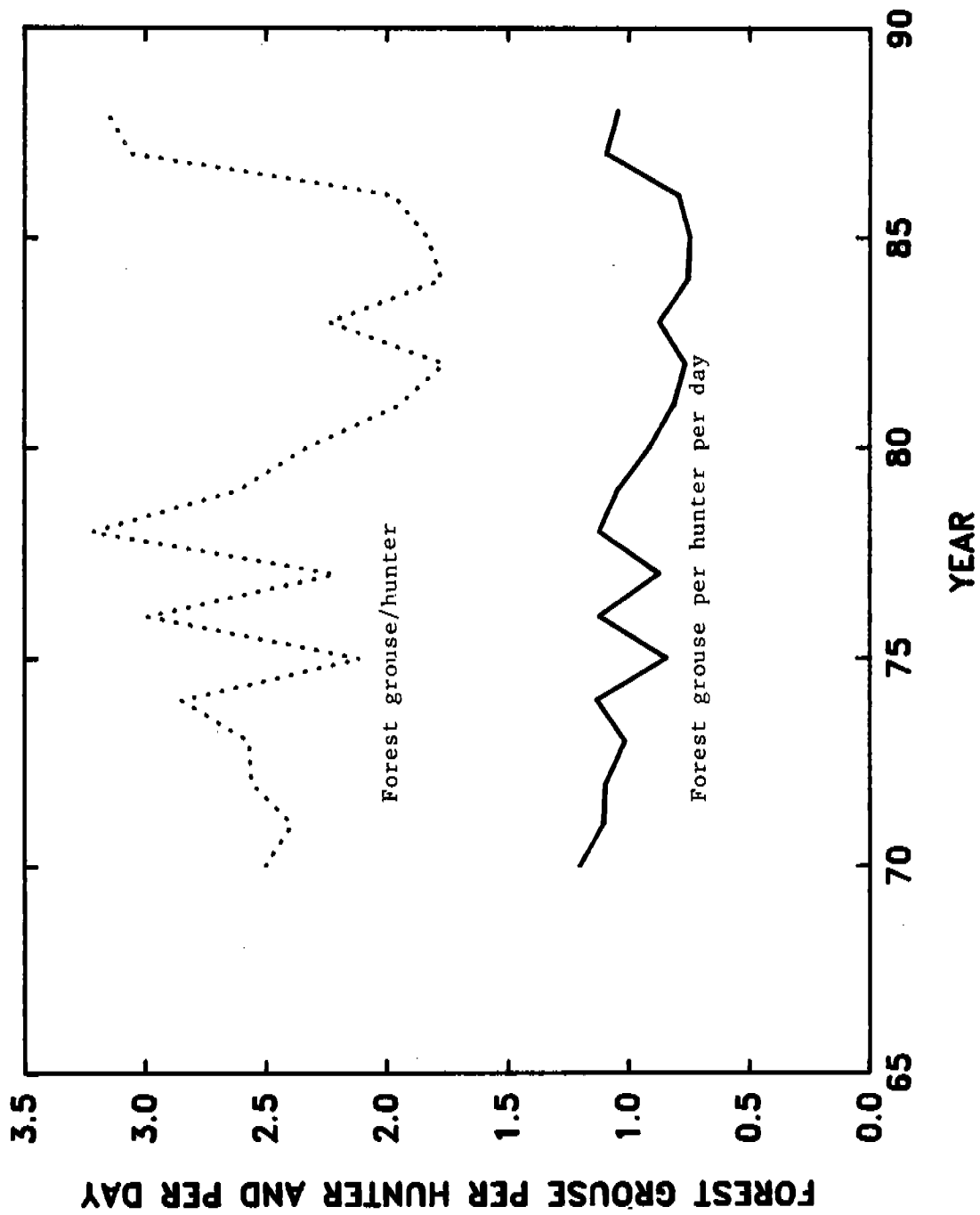


Figure 2. Statewide trends of forest grouse hunter success rates, 1968-88.

Field Bag Checks

A summary of field bag check data for 1988 is found in Table 18. Hunter success trends determined via this method are shown in Table 19. Sex and age composition of the harvest as determined from wings is shown in Table 20 and 21. Results of the 1988 survey compared to 1987 and the 10-year (1978-87) average follow:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Total hunters checked	748	-39	-32
Total hours hunted	2,711	-55	-35
Forest grouse per hunter (complete hunts)	0.94	+25	+71
Forest grouse bagged per 100 hours	25	+127	+79
Average hours per hunter-day (complete hunts)	3.76	-10	-5
Hours hunted per grouse bagged (complete hunts)	4.0	-27	-46

Table 1. Ruffed grouse summer inventory, 1988.

Region and County	Distinct Broods		Mixed Yng & Adults		Mean Brood	Total Adults	Total Yng	Total Young/100 Ad	Veh. Miles	Hours of Effort		Birds/100 Hr				
	# Ad	Yng	Ad	Yng						Veh.	Horse		Walk	Total		
<u>Northern Region</u>																
Box Elder	2	2	6	3.00	0	0	10	6	50	60	4	0	14	18	100	
Cache	2	2	8	4.00	0	0	1	3	267	745	49	9	8	66	17	
Davis	3	3	12	4.00	2	7	9	14	136	188	18	0	11	29	114	
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Rich	1	1	3	3.00	2	5	0	3	267	85	12	10	0	22	50	
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Weber	3	3	11	3.67	0	0	2	5	11	40	3	6	0	9	178	
REGIONAL TOTALS	11	11	40	3.64	4	12	22	37	52	141	1,118	86	25	33	144	62
<u>Central Region</u>																
Juab	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	0	0	0	--	0	0	0	0	0	25	3	0	0	3	--	--
Utah	1	1	3	3.00	0	0	0	1	3	300	3	0	0	3	133	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	1	1	3	3.00	--	--	--	1	3	300	30	3	0	0	3	133
<u>Southern Region</u>																
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	2	2	9	4.50	0	0	0	2	9	450	--	8	--	8	138	
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	2	2	9	4.50	0	0	0	2	9	450	--	8	--	8	--	138
<u>Northeastern Region</u>																
Daggett	0	0	0	--	0	0	0	0	0	227	20	0	0	20	--	--
Duchesne	0	0	0	--	0	0	0	0	0	250	20	0	4	24	--	--
Uintah	0	0	0	--	0	0	0	0	0	81	7	18	2	27	--	--
REGIONAL TOTALS	0	0	0	--	0	0	0	0	0	558	47	18	6	71	--	--
<u>Southeastern Region</u>																
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
STATE TOTALS	14	14	52	3.71	4	12	22	40	64	1,706	136	51	39	226	46	46

Table 2. Trend of ruffed grouse young per 100 adults, 1978-88.

Region and County	Year										Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	
<u>Northern Region</u>											
Box Elder	--	--	--	--	--	300	--	--	433	150	50
Cache	262	450	138	--	--	700	--	350	100	300	267
Davis	--	1,100	--	--	--	--	--	--	--	--	136
Morgan	100	400	600	--	--	200	--	0	--	--	--
Rich	--	--	--	--	--	--	--	667	200	--	267
Summit	400	500	200	200	--	--	--	200	400	500	--
Weber	--	500	500	267	--	--	--	150	--	380	220
REGIONAL TOTALS	260	460	217	250	--	286	--	308	300	337	141
<u>Central Region</u>											
Juab	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	200	92	--	--	--	--	150	0	--
Sanpete	462	506	373	390	476	475	--	700	--	--	--
Tooele	--	--	--	--	300	--	--	--	--	--	--
Utah	300	280	217	300	275	--	--	--	460	320	300
Wasatch	--	300	--	--	--	300	--	--	--	--	--
REGIONAL TOTALS	424	416	295	282	414	392	--	700	322	320	300
<u>Southern Region</u>											
Beaver	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--
Sevier	300	400	600	500	--	--	--	--	--	--	450
Washington	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	300	400	600	500	--	--	--	--	--	--	450
<u>Northeastern Region</u>											
Daggett	--	240	--	475	--	--	--	--	--	--	--
Duchesne	300	450	--	700	--	--	--	--	--	--	--
Uintah	600	--	300	--	--	--	--	--	--	400	--
REGIONAL TOTALS	343	300	300	520	--	--	--	--	--	300	353
<u>Southeastern Region</u>											
Carbon	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	300	--
Grand	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	336	312	306	160
STATE TOTALS	345	398	294	311	404	353	--	336	312	306	340

Table 3. Trend of ruffed grouse mean brood size, 1978-88.

Region and County	Year											Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Northern Region												
Box Elder	--	--	--	--	--	3.00	--	--	2.00	3.00	3.00	3.00
Cache	4.33	5.14	3.67	--	--	7.00	--	3.50	1.00	3.14	4.00	4.00
Davis	--	9.00	--	--	--	--	--	--	--	--	4.00	--
Morgan	1.00	4.89	6.00	--	--	5.00	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	6.67	3.00	--	3.00	--
Summit	4.00	5.00	4.00	2.00	--	--	--	3.33	4.00	5.00	--	--
Weber	--	5.00	5.00	4.00	--	--	--	3.00	--	4.75	3.67	--
REGIONAL TOTALS	3.88	5.20	4.33	3.33	--	5.00	--	4.44	2.60	3.93	3.64	4.09
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	2.00	2.20	--	--	--	--	--	--	--	--
Sanpete	5.11	5.79	5.14	5.47	5.47	4.75	--	7.00	--	--	--	--
Tooele	--	--	--	--	4.00	--	--	--	--	--	--	--
Utah	4.00	4.67	3.25	3.00	--	--	--	--	4.60	3.20	3.00	--
Wasatch	--	3.00	--	--	--	9.00	--	--	--	--	--	--
REGIONAL TOTALS	4.83	5.20	4.25	4.57	5.13	5.22	--	7.00	4.60	3.20	3.00	4.89
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	3.00	4.80	6.00	5.00	--	--	--	--	--	--	4.50	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	3.00	4.80	6.00	5.00	--	--	--	--	--	4.50	4.70	4.70
Northeastern Region												
Daggett	--	4.00	--	4.75	--	--	--	--	--	--	--	--
Duchesne	4.50	4.50	--	7.00	--	--	--	--	--	--	--	--
Uintah	6.00	--	6.00	--	--	--	--	--	--	4.00	--	--
REGIONAL TOTALS	4.80	4.20	6.00	5.20	--	--	--	--	4.00	--	--	4.84
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	3.00	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	3.00	--	3.00
STATE TOTALS	4.46	5.06	4.52	4.57	5.13	5.15	--	4.70	3.60	3.75	3.71	4.56

Table 4. Trend of ruffed grouse observed per 100 hours, 1978-88.

Region and County	Year											Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Northern Region												
Box Elder	--	--	--	--	--	29	--	--	80	31	100	
Cache	25	18	25	--	3	6	--	17	20	58	17	
Davis	--	60	--	--	--	--	--	--	--	--	114	
Morgan	8	149	20	--	--	57	--	2	--	--	--	
Rich	--	--	--	--	--	--	--	1,150	53	--	50	
Summit	61	600	21	--	--	--	--	52	36	900	--	
	--	16	17	31	--	--	--	21	--	267	178	
REGIONAL TOTALS	18	38	19	10	1	12	--	26	30	56	62	23
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	
Salt Lake	--	2	150	70	--	--	--	--	167	--	--	
Sanpete	203	270	200	515	293	271	--	160	--	--	--	
Tooele	--	--	--	--	880	--	--	--	--	--	--	
Utah	30	39	37	14	38	3	--	--	400	50	133	
Wasatch	--	--	48	3	--	--	86	--	--	25	--	
REGIONAL TOTALS	99	73	47	98	144	63	--	14	88	30	133	73
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	--	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	2	15	3	2	--	--	--	--	--	--	138	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	0	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	2	15	3	2	--	--	--	--	--	--	138	6
Northeastern Region												
Daggett	--	85	--	164	--	--	--	--	--	--	--	
Duchesne	46	48	--	12	--	--	--	--	--	4	--	
Uintah	0	11	--	350	--	--	--	--	--	68	--	
REGIONAL TOTALS	21	26	350	26	--	--	--	--	--	28	--	90
Southeastern Region												
Carbon	--	9	--	--	--	--	--	--	--	--	--	
Emery	--	33	--	--	--	--	--	--	0	400	--	
Grand	--	--	--	--	--	--	--	--	0	--	--	
San Juan	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	--	12	--	--	--	--	--	--	--	400	--	206
STATE TOTALS	29	37	20	27	66	19	--	22	47	45	46	35

Table 5. Blue grouse summer inventory summary, 1988.

Region and County	Distinct Broods		Mean Brood		Mixed Yng & Adults		Total Adults	Total Yng	Young/100 Ad Miles	Veh. Miles	Hours of Effort		Birds/100 Hr	
	# Ad	Yng	Brood	Yng	Ad	Yng w/o Yng					Veh.	Horse		Walk
Northern Region														
Box Elder	0	0	--	0	0	0	0	0	--	60	4	0	14	18
Cache	8	8	29	3.63	0	0	8	29	363	745	49	9	8	66
Davis	10	10	40	4.00	6	22	9	25	248	188	18	0	11	29
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	0	0	0	--	0	0	0	0	--	85	12	10	0	22
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Weber	1	1	4	4.00	0	0	1	4	400	40	3	6	0	9
REGIONAL TOTALS	19	19	73	3.84	6	22	9	34	95	1,118	86	25	33	144
Central Region														
Juab	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	2	2	12	6.00	2	14	0	4	26	25	3	0	0	3
Utah	1	1	5	5.00	0	0	2	3	267	30	3	0	0	3
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	3	3	17	5.67	2	14	2	7	34	486	55	6	0	6
Southern Region														
Beaver	3	3	12	4.00	0	0	8	11	12	40	4	0	10	14
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	1	1	4	4.00	2	6	1	4	10	30	9	0	2	11
Millard	4	4	6	1.50	0	0	6	10	60	70	13	3	0	16
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	12	12	28	2.33	0	0	19	31	28	0	0	8	0	738
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	4	4	15	3.75	0	0	0	4	15	20	2	2	0	4
REGIONAL TOTALS	24	24	65	2.71	2	6	34	60	71	118	160	28	13	53
Northeastern Region														
Daggett	5	5	16	3.20	4	19	2	11	35	227	20	0	0	230
Duchesne	4	4	10	2.50	4	9	2	10	19	250	20	0	4	24
Uintah	2	2	7	3.50	0	0	1	3	7	81	7	18	2	27
REGIONAL TOTALS	11	11	33	3.00	8	28	5	24	61	558	47	18	6	71
Southeastern Region														
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Emery	1	1	4	4.00	0	0	3	4	100	--	--	--	--	--
Grand	9	9	25	2.78	0	0	2	11	25	227	--	--	--	--
San Juan	5	5	15	3.00	2	2	1	8	17	213	--	--	--	--
REGIONAL TOTALS	15	15	44	2.93	2	2	6	23	46	200	--	--	--	--
STATE TOTALS	72	72	232	3.22	20	72	56	148	307	1,891	167	56	51	274

*Data from Southeastern Region and Southern Region

Table 6. Trend of blue grouse young per 100 adults, 1978-88.

Region and County	Year											Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Northern Region												
Box Elder	400	380	600	360	--	125	350	--	100	--	--	--
Cache	322	167	83	254	--	467	--	167	--	300	363	--
Davis	500	100	600	--	--	300	250	183	150	222	248	--
Morgan	230	0	233	200	--	--	300	900	--	433	--	--
Rich	--	--	300	--	--	--	--	--	350	--	--	--
Summit	560	325	400	389	--	--	500	450	--	500	--	--
Weber	425	280	425	221	400	--	--	400	--	380	400	--
REGIONAL TOTALS	357	205	217	271	400	220	300	269	222	300	279	276
Central Region												
Juab	200	200	124	300	--	400	400	0	180	--	--	--
Salt Lake	160	230	350	200	38	--	--	--	--	--	--	--
Sarpete	89	275	--	--	471	--	--	--	--	600	--	--
Tooele	108	225	141	138	--	138	--	168	167	218	650	--
Utah	266	169	279	88	100	200	--	175	--	256	267	--
Wasatch	800	214	--	--	200	250	--	--	--	--	--	--
REGIONAL TOTALS	156	200	167	153	317	156	400	157	169	273	486	200
Southern Region												
Beaver	--	200	--	200	214	700	250	200	267	133	109	--
Garfield	380	375	--	--	340	300	241	200	245	160	--	--
Iron	200	233	340	--	--	--	--	--	--	300	--	--
Kane	400	--	--	--	--	267	--	255	500	475	250	--
Millard	567	475	--	--	235	--	100	300	200	425	60	--
Piute	--	--	--	387	350	--	200	300	300	--	--	--
Sevier	214	100	179	155	238	100	80	417	--	150	90	--
Washington	600	400	--	500	--	367	--	--	233	533	--	--
Wayne	--	--	--	--	--	400	--	600	--	350	375	--
REGIONAL TOTALS	288	158	193	253	245	237	164	282	279	230	118	233
Northeastern Region												
Daggett	343	154	336	442	469	500	--	--	282	331	318	--
Duchesne	567	220	409	257	382	340	--	--	228	129	190	--
Uintah	500	460	354	380	238	311	--	--	140	500	233	--
REGIONAL TOTALS	486	202	366	371	381	402	--	--	235	305	254	344
Southeastern Region												
Carbon	225	100	350	200	--	700	300	150	500	--	--	--
Emery	--	--	--	--	--	--	--	--	--	400	100	--
Grand	--	--	--	100	--	--	25	200	260	--	227	--
San Juan	380	250	200	300	--	100	175	300	--	300	213	--
REGIONAL TOTALS	255	140	275	208	--	200	140	206	300	140	200	207
STATE TOTALS	278	188	219	274	297	272	190	229	225	268	207	244

Table 7. Trend of blue grouse mean brood size, 1978-88.

Region and County	Year											Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
<u>Northern Region</u>												
Box Elder	4.00	3.80	6.00	3.60	--	5.00	7.00	--	2.00	--	--	--
Cache	4.46	2.50	3.75	3.67	--	4.33	--	3.33	--	3.67	3.63	4.00
Davis	5.00	3.50	6.00	--	--	3.00	5.50	3.67	3.00	2.83	4.00	--
Morgan	3.83	--	3.00	2.00	--	--	3.00	9.00	--	4.33	--	--
Rich	--	--	3.00	--	--	--	--	--	--	--	--	--
Summit	5.60	4.33	4.00	3.89	--	--	5.00	4.50	--	5.00	--	--
Weber	4.25	3.50	4.25	3.57	4.00	--	--	5.33	4.00	4.75	4.00	--
REGIONAL TOTALS	4.55	3.63	3.90	3.65	4.00	4.20	4.83	4.73	3.25	3.88	3.84	4.06
<u>Central Region</u>												
Juab	4.00	2.00	3.67	4.00	--	4.00	4.00	0.00	--	--	--	--
Salt Lake	2.67	3.29	3.50	--	--	--	--	--	--	--	--	--
Sanpete	4.00	2.75	--	--	5.44	--	--	--	--	6.00	--	--
Tooele	4.40	4.20	3.58	3.20	--	3.83	--	3.38	3.20	3.43	6.00	--
Utah	3.13	3.13	3.00	7.00	3.00	4.00	--	3.50	--	3.45	5.00	--
Wasatch	8.00	5.00	--	--	3.00	5.00	--	--	--	--	--	--
REGIONAL TOTALS	3.61	3.30	3.37	3.89	5.05	4.00	4.00	3.43	3.20	3.62	5.67	3.75
<u>Southern Region</u>												
Beaver	--	5.00	--	4.00	2.60	7.00	3.33	2.00	2.67	4.00	4.00	--
Garfield	4.75	5.00	--	--	3.40	3.00	3.22	--	4.50	3.29	--	--
Iron	2.00	3.50	4.25	--	--	--	--	--	--	3.50	--	--
Kane	4.00	--	--	--	--	4.00	--	--	1.00	4.75	4.00	--
Millard	5.67	6.33	--	--	3.64	--	2.67	4.00	4.00	4.25	1.50	--
Piute	--	--	--	4.67	3.50	--	4.00	3.00	3.00	--	--	--
Sevier	4.50	3.29	4.95	3.44	4.04	2.50	2.00	4.16	--	4.57	2.33	--
Washington	6.00	4.00	--	5.00	--	3.67	--	--	3.50	5.33	--	--
Wayne	--	--	--	--	--	4.00	--	6.00	--	3.50	3.75	--
REGIONAL TOTALS	4.65	4.04	4.82	4.15	3.70	3.58	2.95	3.21	3.53	4.12	2.71	3.88
<u>Northeastern Region</u>												
Daggett	4.00	4.00	7.20	4.45	4.91	4.33	--	--	3.75	4.71	3.20	--
Duchesne	5.30	3.00	5.00	3.60	3.88	3.40	--	--	3.25	2.50	2.50	--
Uintah	5.00	5.75	3.70	4.75	2.71	5.60	--	--	4.00	5.00	3.50	--
REGIONAL TOTALS	4.83	3.95	4.90	4.35	4.00	4.63	--	--	3.56	4.52	3.00	4.34
<u>Southeastern Region</u>												
Carbon	4.50	2.00	3.50	2.00	--	7.00	3.00	3.00	5.00	--	--	--
Emery	--	--	--	--	--	--	--	--	--	4.00	4.00	--
Grand	--	--	--	2.50	--	--	--	3.00	3.25	--	2.78	--
San Juan	6.00	5.00	4.00	3.00	--	4.00	1.75	3.00	--	3.00	3.00	--
REGIONAL TOTALS	5.40	3.50	3.67	2.60	--	5.50	2.17	3.00	3.60	3.50	2.93	3.66
STATE TOTALS	4.44	3.69	4.20	3.97	4.06	4.29	3.18	3.56	3.44	4.00	3.22	3.88

Table 8. Trend of blue grouse observed per 100 hours, 1978-88.

Region and County	Year											Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Northern Region												
Box Elder	39	800	58	230	--	64	38	--	20	0	--	0
Cache	41	7	44	74	--	14	--	77	--	71	56	300
Davis	188	140	92	7	--	33	110	94	50	232	300	--
Morgan	127	--	86	30	--	4	200	23	4	59	--	0
Rich	--	--	--	--	--	--	--	--	53	0	--	0
Summit	400	850	18	293	--	--	12	38	--	900	--	--
Weber	42	51	58	174	71	4	--	167	100	267	56	53
REGIONAL TOTALS	65	30	57	121	20	15	28	58	27	109	90	53
Central Region												
Juab	86	38	336	73	--	29	125	30	156	0	--	--
Salt Lake	111	70	450	36	48	14	--	--	--	400	--	--
Sanpete	65	33	--	--	281	--	--	--	--	1,400	--	--
Tooele	1,080	557	248	271	--	344	--	536	444	206	1,000	367
Utah	96	176	104	52	36	32	--	165	--	229	0	--
Wasatch	46	88	3	--	53	50	--	--	--	0	--	--
REGIONAL TOTALS	113	109	122	55	127	94	17	183	254	194	683	127
Southern Region												
Beaver	--	107	--	46	220	133	233	33	137	175	164	--
Garfield	86	61	--	--	--	--	141	122	141	195	--	--
Iron	150	333	275	--	--	--	--	--	--	1,200	--	--
Kane	--	--	--	--	--	122	--	213	257	383	127	100
Millard	--	2,300	--	--	248	15	107	133	200	525	100	--
Piute	--	--	--	557	225	--	200	67	266	--	--	738
Sevier	38	46	68	20	48	50	72	155	--	275	950	--
Washington	--	125	--	800	--	117	--	--	333	450	475	--
Wayne	0	--	--	--	--	--	--	700	--	--	--	114
REGIONAL TOTALS	56	61	74	41	74	80	122	140	178	309	247	114
Northeastern Region												
Daggett	100	420	600	736	389	632	--	--	300	1,255	230	--
Duchesne	148	209	130	75	126	51	--	--	51	64	121	--
Uintah	19	44	256	308	54	239	--	--	600	55	37	--
REGIONAL TOTALS	83	150	220	228	138	232	--	--	126	286	120	183
Southeastern Region												
Carbon	46	19	35	17	--	80	53	33	60	--	--	--
Emery	--	33	--	--	--	--	--	--	--	500	--	--
Grand	6	--	--	--	--	--	50	360	120	300	--	--
San Juan	99	54	46	218	--	100	73	53	--	400	--	--
REGIONAL TOTALS	46	29	38	128	--	90	60	123	96	400	--	112
STATE TOTALS	106	68	93	93	91	83	55	101	110	197	166	100

Table 9. Summary of effort expended on forest grouse brood counts, 1988.

Region and County	Vehicle Miles Traveled	Hours Effort Expended			Total
		Vehicle	Horseback	Walking	
<u>Northern Region</u>					
Box Elder	60	4	0	14	18
Cache	745	49	9	8	66
Davis	188	18	0	11	29
Morgan	--	--	--	--	--
Rich	85	12	10	0	22
Summit	--	--	--	--	--
Weber	40	3	6	0	9
REGIONAL TOTALS	1,118	86	25	33	144
<u>Central Region</u>					
Juab	--	--	--	--	--
Salt Lake	--	--	--	--	--
Sanpete	--	--	--	--	--
Tooele	25	3	0	0	3
Utah	30	3	0	0	3
Wasatch	--	--	--	--	--
REGIONAL TOTALS	55	6	0	0	6
<u>Southern Region</u>					
Beaver	40	4	0	10	14
Garfield	--	--	--	--	--
Iron	--	--	--	--	--
Kane	30	9	0	2	11
Millard	70	13	3	0	16
Piute	--	--	--	--	--
Sevier	0	0	8	0	8
Washington	--	--	--	--	--
Wayne	20	2	2	0	4
REGIONAL TOTALS	160	28	13	12	53
<u>Northeastern Region</u>					
Daggett	227	20	0	0	20
Duchesne	250	20	0	4	24
Uintah	81	7	18	2	27
REGIONAL TOTALS	558	47	18	6	71
<u>Southeastern Region</u>					
Carbon	--	--	--	--	--
Emery	--	--	--	--	--
Grand	--	--	--	--	--
San Juan	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--
STATE TOTALS	1,891	167	56	51	274

*Estimated

Table 10. Summary of blue grouse hunter success and distribution of harvest and hunting pressure by region and county, 1988.

Region and County	Sample Size*	Hunter-days Afield	Birds Bagged	Birds per Hunter-day	% of Pressure	% of Harvest
<u>Northern Region</u>						
Box Elder	27	1,051	1,285	1.22	3.60	4.07
Cache	96	6,077	6,678	1.10	20.80	21.16
Davis	23	1,051	884	.84	3.60	2.80
Morgan	19	818	684	.84	2.80	2.16
Rich	28	1,385	1,101	.80	4.74	3.49
Summit	17	667	550	.83	2.28	1.74
Weber	54	3,840	2,871	.75	13.14	9.10
REGIONAL TOTALS	264	14,893	14,058	.94	50.97	44.55
<u>Central Region</u>						
Juab	10	267	367	1.38	.91	1.16
Salt Lake	8	233	183	.79	.80	.58
Sanpete	28	968	1,185	1.22	3.31	3.75
Tooele	34	1,101	1,719	1.56	3.77	5.44
Utah	59	2,971	3,422	1.15	10.17	10.84
Wasatch	20	684	667	.98	2.34	2.11
REGIONAL TOTALS	159	6,227	7,546	1.21	21.31	23.91
<u>Southern Region</u>						
Beaver	7	217	333	1.54	.74	1.05
Garfield	8	200	317	1.58	.68	1.00
Iron	16	550	734	1.33	1.88	2.32
Kane	1	33	50	1.50	.11	.15
Millard	7	333	717	2.15	1.14	2.27
Piute	14	651	851	1.31	2.22	2.69
Sevier	56	3,005	3,606	1.20	10.28	11.42
Washington	1	100	16	.17	.34	.05
Wayne						
REGIONAL TOTALS	110	5,092	6,628	1.30	17.42	21.00
<u>Northeastern Region</u>						
Daggett	12	584	550	.94	2.00	1.74
Duchesne	16	467	534	1.14	1.60	1.69
Uintah	30	1,068	1,285	1.20	3.65	4.07
REGIONAL TOTALS	58	2,120	2,370	1.12	7.25	7.51
<u>Southeastern Region</u>						
Carbon	2	50	33	.67	.17	.10
Emery	6	267	450	1.69	.91	1.42
Grand	5	450	367	.81	1.54	1.16
San Juan	2	50	66	1.33	.17	.21
REGIONAL TOTALS	15	818	918	1.12	2.79	2.91
Unknown Counties	1	66	33	.50	.22	.10
STATE TOTALS	607	29,219	31,556	1.08	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 11. Summary of ruffed grouse hunter success and distribution of harvest and hunting pressure by region and county, 1988.

Region and County	Sample Size*	Hunter-days Afield	Birds Bagged	Birds per Hunter-day	% of Pressure	% of Harvest
<u>Northern Region</u>						
Box Elder	14	717	667	.93	3.26	3.49
Cache	85	5,643	4,441	.79	25.64	23.25
Davis	17	884	684	.77	4.02	3.58
Morgan	14	667	601	.90	3.03	3.14
Rich	33	1,385	1,302	.94	6.29	6.81
Summit	31	1,302	1,402	1.08	5.91	7.34
Weber	36	2,170	1,853	.85	9.86	9.70
REGIONAL TOTALS	230	12,772	10,952	.86	58.03	57.34
<u>Central Region</u>						
Juab	5	183	200	1.09	.83	1.04
Salt Lake	9	384	217	.57	1.74	1.13
Sanpete	30	1,485	1,268	.85	6.75	6.64
Tooele	6	217	484	2.23	.98	2.53
Utah	42	2,153	1,485	.69	9.78	7.77
Wasatch	23	851	851	1.00	3.86	4.45
REGIONAL TOTALS	115	5,276	4,508	.85	23.97	23.60
<u>Southern Region</u>						
Beaver	1	66	16	.25	.30	.08
Garfield	0	0	0	0.00	0.00	0.00
Iron	1	33	100	3.00	.15	.52
Kane	1	16	50	3.00	.07	.26
Millard	3	66	116	1.75	.30	.61
Piute	7	300	517	1.72	1.36	2.70
Sevier	28	1,970	1,602	.81	8.95	8.39
Washington	0	0	0	0.00	0.00	0.00
Wayne	1	16	16	1.00	.07	.08
REGIONAL TOTALS	42	2,471	2,421	.98	11.22	12.67
<u>Northeastern Region</u>						
Daggett	1	33	50	1.50	.15	.26
Duchesne	8	267	300	1.13	1.21	1.57
Uintah	16	751	567	.76	3.41	2.97
REGIONAL TOTALS	25	1,051	918	.87	4.77	4.80
<u>Southeastern Region</u>						
Carbon	7	300	200	.67	1.36	1.04
Emery	3	66	66	1.00	.30	.34
Grand	0	0	0	0.00	0.00	0.00
San Juan	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	10	367	267	.73	1.66	1.39
Unknown Counties	2	66	33	.50	.30	.17
STATE TOTALS	424	22,006	19,100	.87	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 12. Summary of blue and ruffed grouse hunter success and distribution of harvest and hunting pressure by region and county, 1988.

Region and County	Sample Size*	Hunter-days Afield	Birds Bagged	Birds per Hunter-day	% of Pressure	% of Harvest
<u>Northern Region</u>						
Box Elder	49	1,986	2,053	1.03	3.84	3.83
Cache	167	9,133	11,303	1.24	17.65	21.10
Davis	44	1,719	1,686	.98	3.32	3.14
Morgan	34	1,435	1,419	.99	2.77	2.64
Rich	67	2,654	2,437	.92	5.13	4.55
Summit	59	2,203	1,903	.86	4.26	3.55
Weber	93	5,142	5,109	.99	9.94	9.53
REGIONAL TOTALS	513	24,276	25,913	1.07	46.93	48.37
<u>Central Region</u>						
Juab	25	701	601	.86	1.35	1.12
Salt Lake	22	868	751	.87	1.67	1.40
Sanpete	68	2,988	2,521	.84	5.77	4.70
Tooele	53	1,686	2,237	1.33	3.26	4.17
Utah	110	4,708	5,075	1.08	9.10	9.47
Wasatch	60	2,220	1,636	.74	4.29	3.05
REGIONAL TOTALS	338	13,173	12,822	.97	25.46	23.94
<u>Southern Region</u>						
Beaver	9	267	350	1.31	.51	.65
Garfield	13	400	400	1.00	.77	.74
Iron	28	884	951	1.08	1.71	1.77
Kane	3	66	100	1.50	.12	.18
Millard	18	701	951	1.36	1.35	1.77
Piute	22	1,118	1,502	1.34	2.16	2.80
Sevier	98	4,925	5,810	1.18	9.52	10.84
Washington	3	166	16	.10	.32	.03
Wayne	5	200	50	.25	.38	.09
REGIONAL TOTALS	199	8,732	10,134	1.16	16.88	18.92
<u>Northeastern Region</u>						
Daggett	16	768	500	.65	1.48	.93
Duchesne	26	851	834	.98	1.64	1.55
Uintah	53	2,137	1,953	.91	4.13	3.64
REGIONAL TOTALS	95	3,756	3,289	.88	7.26	6.14
<u>Southeastern Region</u>						
Carbon	11	484	233	.48	.93	.43
Emery	16	584	617	1.06	1.12	1.15
Grand	5	450	367	.81	.87	.68
San Juan	4	100	66	.67	.19	.12
REGIONAL TOTALS	36	1,619	1,285	.79	3.12	2.40
Unknown Counties	3	166	116	.70	.32	.21
STATE TOTALS	1,184	51,726	53,562	1.04	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 13. Summary of forest grouse bagged per hunter-day by region and county, 1982-88.

Region and County	Year						
	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>							
Box Elder	0.68	0.87	0.60	0.45	0.60	0.68	1.03
Cache	0.78	1.04	0.76	0.90	0.96	1.07	1.24
Davis	0.55	0.98	0.66	0.50	0.50	0.71	0.98
Morgan	0.73	1.01	0.44	0.88	0.64	1.00	0.99
Rich	0.66	0.65	0.86	0.75	0.39	1.56	0.92
Summit	0.81	0.75	0.54	0.70	0.63	1.25	0.86
Weber	0.81	0.84	0.60	0.60	0.85	1.41	0.99
<u>REGIONAL TOTALS</u>	<u>0.74</u>	<u>0.92</u>	<u>0.66</u>	<u>0.71</u>	<u>0.76</u>	<u>1.12</u>	<u>1.07</u>
<u>Central Region</u>							
Juab	0.71	0.77	0.43	1.00	0.14	1.14	0.86
Salt Lake	0.86	0.84	1.25	0.65	0.75	1.05	0.87
Sanpete	0.70	0.60	0.99	0.72	0.67	1.12	0.84
Tooele	1.07	0.97	0.40	1.00	0.89	1.24	1.33
Utah	0.77	0.85	0.84	0.86	0.59	1.04	1.08
Wasatch	0.55	0.76	0.43	0.59	0.51	.94	0.74
<u>REGIONAL TOTALS</u>	<u>0.75</u>	<u>0.78</u>	<u>0.78</u>	<u>0.75</u>	<u>0.62</u>	<u>1.07</u>	<u>0.97</u>
<u>Southern Region</u>							
Beaver	1.00	1.13	1.05	0.59	1.00	0.91	1.31
Garfield	0.50	1.09	0.67	0.79	0.27	0.57	1.00
Iron	0.73	1.03	0.59	0.94	1.21	0.74	1.08
Kane	0.53	0.05	0.67	0.78	0.14	2.33	1.50
Millard	0.78	0.54	0.64	0.50	1.14	0.75	1.36
Piute	0.70	1.16	1.27	0.94	1.42	1.19	1.34
Sevier	0.82	1.03	0.73	0.77	0.88	1.00	1.18
Washington	0.00	0.42	0.00	2.14	2.01	0.17	0.10
Wayne	0.56	0.46	0.34	1.09	0.33	0.90	0.25
<u>REGIONAL TOTALS</u>	<u>0.75</u>	<u>0.89</u>	<u>0.82</u>	<u>0.82</u>	<u>0.98</u>	<u>0.93</u>	<u>1.16</u>
<u>Northeastern Region</u>							
Daggett	1.15	1.00	0.47	0.94	1.19	1.10	0.65
Duchesne	0.75	0.99	0.67	0.60	1.07	1.29	0.98
Uintah	1.20	0.98	1.23	0.94	1.19	1.63	0.91
<u>REGIONAL TOTALS</u>	<u>0.91</u>	<u>0.98</u>	<u>0.96</u>	<u>0.83</u>	<u>1.16</u>	<u>1.43</u>	<u>0.88</u>
<u>Southeastern Region</u>							
Carbon	0.50	0.48	0.00	0.71	0.83	0.92	0.48
Emery	0.79	0.70	0.90	0.35	0.65	0.96	1.06
Grand	0.50	0.25	1.60	0.64	1.29	1.91	0.81
San Juan	1.00	0.25	0.67	0.20	0.67	1.00	0.67
<u>REGIONAL TOTALS</u>	<u>0.69</u>	<u>0.54</u>	<u>0.86</u>	<u>0.52</u>	<u>0.81</u>	<u>1.14</u>	<u>0.79</u>
Unknown Counties	0.67	1.33	1.00	1.00	0.00	0.55	0.70
<u>STATE TOTALS</u>	<u>0.76</u>	<u>0.87</u>	<u>0.75</u>	<u>0.74</u>	<u>0.79</u>	<u>1.09</u>	<u>1.04</u>

Table 14. Percentage distribution of forest grouse harvest by region and county, 1982-88.

Region and County	Year						
	1982	1983	1984	1985	1986	1987	1988
Northern Region							
Box Elder	4.79	4.31	3.38	2.23	2.59	1.62	3.83
Cache	18.02	22.58	15.72	17.35	21.23	14.98	21.10
Davis	3.03	5.73	4.48	5.66	2.50	1.83	3.14
Morgan	3.17	3.42	2.88	3.90	3.02	1.13	2.64
Rich	3.73	2.76	3.78	4.26	2.24	4.05	4.55
Summit	4.15	3.78	2.49	3.52	2.93	4.65	3.55
Weber	9.71	8.58	7.86	4.91	10.44	6.65	9.53
REGIONAL TOTALS	46.59	51.16	49.59	41.85	44.96	34.93	48.37
Central Region							
Juab	1.06	1.60	1.19	1.02	0.26	1.29	1.12
Salt Lake	2.53	2.80	4.48	2.41	1.81	1.18	1.40
Sanpete	4.57	4.89	6.97	5.84	4.57	6.43	4.70
Tooele	4.15	3.06	1.00	2.87	4.74	3.94	4.17
Utah	12.03	10.67	13.34	9.65	8.02	10.22	9.47
Wasatch	3.80	3.69	2.58	5.01	3.02	3.94	3.05
REGIONAL TOTALS	28.15	26.71	29.56	26.80	22.43	27.04	23.94
Southern Region							
Beaver	0.42	0.80	2.09	2.13	0.86	1.56	0.65
Garfield	0.21	1.64	1.39	1.39	0.26	0.64	0.74
Iron	1.69	1.64	1.59	2.87	3.53	1.40	1.77
Kane	0.70	0.04	0.59	0.65	0.08	0.37	0.18
Millard	0.99	0.31	0.70	0.65	3.45	1.13	1.77
Piute	2.18	0.98	5.57	1.48	2.33	2.05	2.80
Sevier	6.26	4.71	4.38	4.45	6.56	11.35	10.84
Washington	0.00	0.22	0.00	1.39	0.52	0.05	0.03
Wayne	0.35	0.27	0.40	1.11	0.17	0.48	0.09
REGIONAL TOTALS	12.81	10.61	16.72	16.14	17.77	19.09	18.92
Northeastern Region							
Daggett	2.67	0.84	0.89	1.48	3.19	1.73	0.93
Duchesne	3.24	3.78	1.59	2.50	2.67	4.75	1.55
Uintah	3.80	3.73	7.56	6.21	6.03	8.27	3.64
REGIONAL TOTALS	9.71	8.35	10.05	10.20	11.91	14.76	6.14
Southeastern Region							
Carbon	0.70	0.71	0.00	2.23	0.86	0.64	0.43
Emery	0.77	1.38	1.79	1.11	0.95	1.29	1.15
Grand	0.28	0.09	0.79	1.48	0.77	1.13	0.68
San Juan	0.84	0.13	0.40	0.18	0.34	0.43	0.12
REGIONAL TOTALS	2.60	2.30	2.99	5.01	2.93	3.51	2.40
Unknown Counties	0.14	0.89	0.10	0.00	0.00	0.64	0.21
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 15. Percentage distribution of forest grouse hunting pressure by region and county, 1982-88.

Region and County	Year						
	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>							
Box Elder	5.33	4.30	4.25	3.63	4.65	2.60	3.84
Cache	17.58	18.86	15.35	14.18	14.69	15.26	17.65
Davis	4.16	5.11	5.07	8.29	3.90	2.84	3.32
Morgan	3.30	2.94	4.91	3.29	3.15	1.24	2.77
Rich	4.26	3.72	3.28	4.18	4.05	2.84	5.13
Summit	3.89	4.41	3.42	3.70	4.50	4.08	4.26
Weber	9.11	8.87	9.69	6.02	9.00	5.14	9.94
<u>REGIONAL TOTALS</u>	<u>47.63</u>	<u>48.22</u>	<u>45.97</u>	<u>43.29</u>	<u>43.93</u>	<u>34.02</u>	<u>46.93</u>
<u>Central Region</u>							
Juab	1.12	1.82	2.08	0.75	1.50	1.24	1.35
Salt Lake	2.24	2.90	2.68	2.74	2.40	1.24	1.67
Sanpete	4.95	7.09	5.29	5.96	4.65	6.27	5.77
Tooele	2.93	2.75	1.86	2.12	3.90	3.49	3.26
Utah	11.77	10.96	11.84	8.29	10.49	10.76	9.10
Wasatch	5.22	4.22	4.54	6.23	4.50	4.61	4.29
<u>REGIONAL TOTALS</u>	<u>28.24</u>	<u>29.74</u>	<u>28.31</u>	<u>26.09</u>	<u>27.44</u>	<u>27.63</u>	<u>25.46</u>
<u>Southern Region</u>							
Beaver	0.32	0.62	1.49	2.67	1.05	1.89	0.51
Garfield	0.32	1.31	1.56	1.30	1.05	1.24	0.77
Iron	1.76	1.39	2.01	2.26	2.25	2.07	1.71
Kane	1.01	0.85	0.67	0.61	0.75	0.17	0.12
Millard	0.96	0.50	0.82	0.96	1.35	1.65	1.35
Piute	2.34	0.74	3.28	1.16	1.20	1.89	2.16
Sevier	5.75	3.99	4.47	4.24	6.30	12.48	9.52
Washington	0.05	0.46	0.00	0.48	0.30	0.35	0.32
Wayne	0.48	0.50	0.89	0.75	0.75	0.59	0.38
<u>REGIONAL TOTALS</u>	<u>13.00</u>	<u>10.38</u>	<u>15.20</u>	<u>14.45</u>	<u>15.00</u>	<u>22.36</u>	<u>16.88</u>
<u>Northeastern Region</u>							
Daggett	1.76	0.74	1.41	1.16	2.10	1.71	1.48
Duchesne	3.25	3.33	1.79	3.08	3.45	4.02	1.64
Uintah	3.09	3.33	4.62	4.86	4.35	5.56	4.13
<u>REGIONAL TOTALS</u>	<u>8.10</u>	<u>7.40</u>	<u>7.82</u>	<u>9.10</u>	<u>9.90</u>	<u>11.30</u>	<u>7.26</u>
<u>Southeastern Region</u>							
Carbon	1.07	1.20	0.30	2.33	0.45	0.76	0.93
Emery	0.75	1.70	1.49	2.33	1.80	1.47	1.12
Grand	0.43	0.31	0.37	1.71	0.75	0.65	0.87
San Juan	0.64	0.46	0.44	0.68	0.75	0.47	0.19
<u>REGIONAL TOTALS</u>	<u>2.88</u>	<u>3.67</u>	<u>2.61</u>	<u>7.05</u>	<u>3.75</u>	<u>3.37</u>	<u>3.12</u>
Unknown Counties	0.16	0.57	0.07	0.00	0.00	1.30	0.32
<u>STATE TOTALS</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>

Table 16. Statewide summary of forest grouse harvest statistics, 1963-88.

Year	Total			Total Harvest			Hunter-days		Grouse/Hunter-day		Grouse Per Hunter			
	Hunters	Ruffed	Blue	Percent	Unknown	Percent	Total	Afield	Ruffed	Blue	Total	Ruffed	Blue	Total
1963	7,425	5,470	7,372	(40.2)	766	(5.6)	13,608	12,313	0.44	0.66	1.11	0.74	0.99	1.83
1964	6,487	5,354	6,685	(42.2)	652	(5.1)	12,691	10,566	0.51	0.63	1.20	0.82	1.03	1.96
1965	6,005	3,225	4,924	(37.2)	520	(6.0)	8,669	10,504	0.31	0.47	0.83	0.54	0.82	1.44
1966	6,683	6,966	4,659	(56.6)	696	(5.7)	12,321	12,387	0.56	0.38	0.99	1.04	0.68	1.84
1967	9,420	8,476	6,773	(48.4)	2,277	(13.0)	17,526	17,773	0.48	0.38	0.99	0.87	0.69	1.86
1968	13,061	17,048	12,604	(52.6)	2,762	(8.5)	32,414	26,537	0.64	0.47	1.22	1.30	0.96	2.48
1969	12,523	9,490	10,419	(44.1)	1,589	(7.4)	21,498	24,572	0.38	0.42	0.87	0.76	0.83	1.72
1970	12,775	15,590	13,515	(48.9)	2,793	(8.7)	31,898	26,619	0.59	0.51	1.20	1.22	1.06	2.50
1971	13,363	15,759	13,749	(49.4)	2,393	(7.5)	31,901	29,100	0.54	0.47	1.10	1.18	1.03	2.39
1972	16,640	20,648	19,221	(48.6)	2,649	(6.2)	42,518	38,940	0.53	0.49	1.09	1.24	1.16	2.56
1973	17,588	7,153	36,846	(15.8)	1,233	(2.7)	45,232	44,738	0.16	0.82	1.01	0.41	2.09	2.57
1974	21,920	24,561	32,236	(39.3)	5,642	(9.0)	62,439	55,258	0.44	0.58	1.13	1.12	1.47	2.85
1975	20,102	15,750	23,138	(37.1)	3,573	(8.4)	42,461	50,579	0.31	0.45	0.84	0.78	1.15	2.11
1976	21,186	23,551	35,660	(37.1)	4,225	(6.7)	63,436	56,422	0.42	0.63	1.12	1.11	1.68	2.99
1977	19,188	15,766	23,455	(37.1)	3,256	(7.7)	42,477	48,746	0.37	0.48	0.87	0.82	1.22	2.21
1978	25,318	30,340	46,651	(37.2)	4,567	(5.6)	81,558	72,732	0.42	0.64	1.12	1.20	1.84	3.22
1979	21,993	23,156	33,070	(38.7)	3,625	(6.0)	59,851	57,404	0.40	0.58	1.04	1.05	1.50	2.61
1980	19,511	15,457	27,588	(34.0)	2,477	(5.4)	45,522	49,899	0.31	0.55	0.91	0.79	1.41	2.33
1981	14,329	8,557	17,852	(30.7)	1,485	(5.3)	27,894	34,305	0.25	0.52	0.81	0.60	1.25	1.95
1982	12,384	7,509	12,138	(34.5)	2,131	(9.8)	21,778	28,767	0.26	0.42	0.76	0.60	0.98	1.76
1983	13,414	11,366	16,955	(37.8)	1,767	(5.9)	30,088	34,530	0.33	0.49	0.87	0.84	1.26	2.24
1984	11,511	6,780	12,647	(33.2)	969	(4.8)	20,396	27,244	0.25	0.46	0.75	0.59	1.10	1.77
1985	12,646	8,701	13,416	(37.7)	980	(4.2)	23,097	31,290	0.28	0.43	0.74	0.69	1.06	1.83
1986	12,117	8,819	14,156	(36.9)	894	(3.7)	23,869	30,312	0.29	0.47	0.79	0.73	1.17	1.97
1987	14,831	15,811	28,068	(34.9)	1,447	(3.2)	45,326	41,428	0.82	1.04	1.09	1.07	1.89	3.06
1988	16,947	19,100	31,556	(35.7)	2,906	(5.4)	53,562	51,726	0.87	1.08	1.04	3.00	3.40	3.16
TOTALS	383,367	350,403	505,353	(38.3)	58,274	(6.4)	914,030	924,691	--	--	--	--	--	--
(1963-88)														
AVERAGES	14,657	13,252	18,952	(38.5)	2,215	(6.4)	34,419	34,919	0.38	0.54	0.99	0.90	1.29	2.35
(1963-87)														

Table 17. Blue and ruffed grouse harvest statistics and hunt regulations, 1963-1988.

Year	Total Ruffed Grouse Harvest		Total Blue Grouse Harvest		Total Forest Grouse Harvest		Total Hunter Afield		Total Hunter Days		Season Length		Aggregate Bag Limits	
	Harvest	Harvest	Harvest	Harvest	Harvest	Harvest	Afield	Afield	Open	Close	Days	Daily Possession	Daily Possession	
1963	5,470	7,372	13,608	7,425	12,313	?	?	4	8					
1964	5,354	6,685	12,691	6,487	10,566	9/26	10.16	4	8					
1965	3,225	4,924	8,669	6,005	10,504	9/25	10/22	4	8					
1966	6,966	4,659	12,321	6,683	12,387	9/24	10/21	4	8					
1967	8,476	6,773	17,526	9,420	17,773	9/23	10/31	4	8					
1968	17,048	12,604	32,414	13,061	26,537	9/28	10/29	4	8					
1969	9,490	10,419	21,498	12,523	24,572	9/27	11/2	4	8					
1970	15,590	13,515	31,898	12,775	26,619	9/26	11/6	4	8					
1971	15,759	13,749	31,901	13,363	29,100	9/25	11/30	4	8					
1972	20,648	19,221	42,518	16,640	38,940	9/23	11/30	4	8					
1973	7,153	36,846	45,232	17,588	44,738	9/22	11/30	4	8					
1974	24,561	32,236	62,439	21,920	55,258	9/28	11/30	4	8					
1975	15,750	23,138	42,461	20,102	50,579	9/20	11/30	4	8					
1976	23,551	35,660	63,436	21,186	56,422	9/18	11/30	4	8					
1977	15,766	23,455	42,477	19,188	48,746	9/17	11/30	4	8					
1978	30,340	46,651	81,558	25,318	72,732	9/16	11/30	4	8					
1979	23,156	33,070	59,851	21,993	57,404	9/15	11/30	4	8					
1980	15,457	27,588	45,522	19,511	49,899	9/20	11/30	4	8					
1981	8,557	17,852	27,894	14,329	34,305	9/19	11/30	4	8					
1982	7,509	12,138	21,778	12,384	28,767	9/18	11/30	4	8					
1983	11,366	16,955	30,088	13,414	34,530	9/17	11/30	4	8					
1984	6,780	12,647	20,396	11,511	27,244	9/15	11/30	4	8					
1985	8,701	13,416	23,097	12,646	31,290	9/14*	11/30	4	8					
1986	8,819	14,156	23,869	12,117	30,312	9/13	11/30	4	8					
1987	15,811	28,068	45,326	14,831	41,428	9/12	11/30	4	8					
1988	19,100	31,556	53,562	16,947	51,726	9/11	11/30	4	8					

**From 1950 to 1963 a grouse stamp was required to hunt any grouse. In 1964, the entire state was opened to hunting without a stamp.

*Season opener changed to the second Saturday in September from the third Saturday in September.

Table 18. Forest grouse field bag check summary, 1988.

Region and County	ALL HUNTS				COMPLETE HUNTS				Total Birds/ 100 Hr Hunter	
	Total Parties	Total Hunters	Total Hours	Total Birds/ 100 Hr	Total Complete Hunts	Total Hunters	Total Hours	Total Birds/ 100 Hr		
Northern Region										
Box Elder	3	6	34	17	3	6	34	17	50	2.83
Cache	156	293	1,209	332	151	286	1,175	328	28	1.15
Davis	17	31	92	14	12	22	67	11	16	0.50
Morgan	--	--	--	--	--	--	--	--	--	--
Rich	72	159	591	82	71	157	587	82	14	0.52
Summit	3	5	4	0	--	--	--	--	--	--
Weber	36	66	214	40	32	66	183	37	20	0.56
REGIONAL TOTALS	287	560	2,144	485	269	537	2,046	475	23	0.88
Central Region										
Juab	1	4	12	13	1	4	12	13	108	3.25
Salt Lake	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--
Tooele	1	4	9	12	1	4	9	12	133	3.00
Utah	48	90	351	68	40	76	326	65	20	0.86
Wasatch	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	50	98	372	93	42	84	347	90	26	1.07
Southern Region										
Beaver	2	8	34	3	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--
Iron	6	10	17	31	5	8	15	30	200	3.75
Kane	--	--	--	--	--	--	--	--	--	--
Millard	1	2	4	6	1	2	4	6	150	3.00
Piute	--	--	--	--	--	--	--	--	--	--
Sevier	11	25	45	25	1	1	2	4	500	4.00
Washington	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	20	45	100	65	7	11	21	40	190	3.64
Northeastern Region										
Daggett	6	17	22	12	1	4	8	3	38	1.50
Duchesne	2	7	32	2	--	--	--	--	--	--
Uintaha	7	21	41	10	5	17	34	8	24	0.47
REGIONAL TOTALS	15	45	95	24	6	21	42	11	26	0.52
Southeastern Region										
Carbon	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--
STATE TOTALS	372	748	2,711	667	324	653	2,456	616	25	0.94

aIncludes only Diamond Mountain

Table 19. Forest grouse hunter success trend determined by field bag checks, 1983-88.

Region and County	1983		1984		1985		1986		1987		1988	
	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter
<u>Northern Region</u>												
Box Elder	13	0.40	4	0.10	--	--	35	1.42	39	3.50	50	2.83
Cache	10	0.41	15	0.56	15	0.70	15	0.57	17	0.74	28	1.15
Davis	21	0.83	18	0.67	--	--	--	0.00	16	0.56	16	0.50
Morgan	29	2.00	--	--	--	--	--	--	--	--	--	--
Rich	2	0.09	13	0.57	6	0.23	6	0.2	10	0.44	14	0.52
Summit	--	--	--	--	--	--	200	2.00	--	--	--	--
Weber	7	0.28	2	0.08	26	0.86	10	0.38	29	0.93	20	0.56
REGIONAL TOTALS	11	0.45	13	0.47	14	0.58	14	0.50	16	0.71	23	0.88
<u>Central Region</u>												
Juab	--	--	22	0.59	--	--	--	--	--	--	108	3.25
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	17	0.50	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	46	1.50	--	--	13	0.51	133	3.00
Utah	15	0.62	9	0.39	4	0.13	10	0.39	--	--	20	0.86
Wasatch	15	0.70	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	15	0.63	11	0.43	7	0.27	10	0.39	13	0.51	26	1.07
<u>Southern Region</u>												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	9	0.33	--	--	10	0.33	25	1.00	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	200	3.75
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	3	0.14	89	1.33	0	0.00	16	0.60	82	2.00	150	3.00
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	50	1.50	--	--	--	--	500	4.00
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	5	0.20	89	1.33	10	0.40	17	0.63	82	2.00	190	3.64
<u>Northeastern Region</u>												
Daggett	55	1.75	--	--	20	1.10	--	--	46	1.20	38	1.50
Duchesne	--	--	26	1.15	0	0.00	16	0.55	33	1.00	--	--
Uintah	14	0.59	29	1.25	32	1.22	12	0.43	53	1.46	24	0.47
REGIONAL TOTALS	24	0.92	28	1.22	25	1.08	13	0.45	50	1.37	26	0.52
<u>Southeastern Region</u>												
Carbon	--	--	--	--	39	1.17	--	--	--	--	--	--
Emery	--	--	--	--	133	1.33	333	2.50	--	--	--	--
Grand	100	2.00	--	--	50	1.00	50	0.50	--	--	--	--
San Juan	--	--	--	--	--	--	33	1.00	--	--	--	--
REGIONAL TOTALS	100	2.00	--	--	52	1.20	54	1.40	--	--	--	--
STATE TOTALS	14	0.55	14	0.54	14	0.57	14	0.50	18	0.75	25	0.94

Table 20. Sex and age composition of harvested blue grouse, 1988.

Region and County	Sample Size	Adults			Young			Young/ 100 Adults	Young/ 100 Hens
		M	F	Total	M	F	Total*		
<u>Northern Region</u>									
Box Elder	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--
<u>Central Region</u>									
Juab	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--
Utah	98	23	13	36	12	50	62	172	477
Wasatch	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	98	23	13	36	12	50	62	172	477
<u>Southern Region</u>									
Beaver	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--
<u>Northeastern Region</u>									
Daggett	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--
<u>Southeastern Region</u>									
Carbon	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--
Grand	9	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	9	--	--	--	--	--	--	--	--
STATE TOTALS**	--	--	--	--	--	--	--	--	--

*Includes unclassified juveniles.

**Insufficient sample size to calculate.

Table 21. Sex and age composition of harvested ruffed grouse, 1988.

Region and County	Sample Size	Adults			Young			Young/ 100 Adults	Young/ 100 Hens
		M	F	Total	M	F	Total*		
<u>Northern Region</u>									
Box Elder	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--
<u>REGIONAL TOTALS</u>									
<u>Central Region</u>									
Juab	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--
<u>REGIONAL TOTALS</u>									
<u>Southern Region</u>									
Beaver	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--
<u>REGIONAL TOTALS</u>									
<u>Northeastern Region</u>									
Daggett	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	--	--	--	--
<u>REGIONAL TOTALS</u>									
<u>Southeastern Region</u>									
Carbon	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--
<u>REGIONAL TOTALS</u>									
<u>STATE TOTALS</u>									

*Includes unclassified juveniles.

QUAIL

SUMMARY

The 1988 breeding populations of California and Gambel's quail were higher than in 1987, but were still below average.

Production of Gambel's quail decreased from 1987, and was below average.

Statewide harvest statistics, when compared to 1987, showed an increase in total hunters and total harvest. Hunter success (birds per hunter-day) remained below average statewide. There was a 25 percent decrease in hunter days afield and total harvest of Gambel's quail reported in Washington County.

There has been a long-term decline in hunter success and total harvest in Washington County; however, there has been an increase in production trend indices. The 25-year average young/100 adults index is 290/100 which is about what is needed for population stability. Given the extensive urban development in the St. George-Hurricane areas since 1962, the decline in total harvest and hunter success is only partly attributable to habitat loss. There are areas that sustain quail populations that cannot be hunted because of urban expansion (i.e. Bloominton, Bloomington east, Santa Clara River below Santa Clara, north of St. George). These were popular hunting areas in the early 1960's (D. Nish personal communication).

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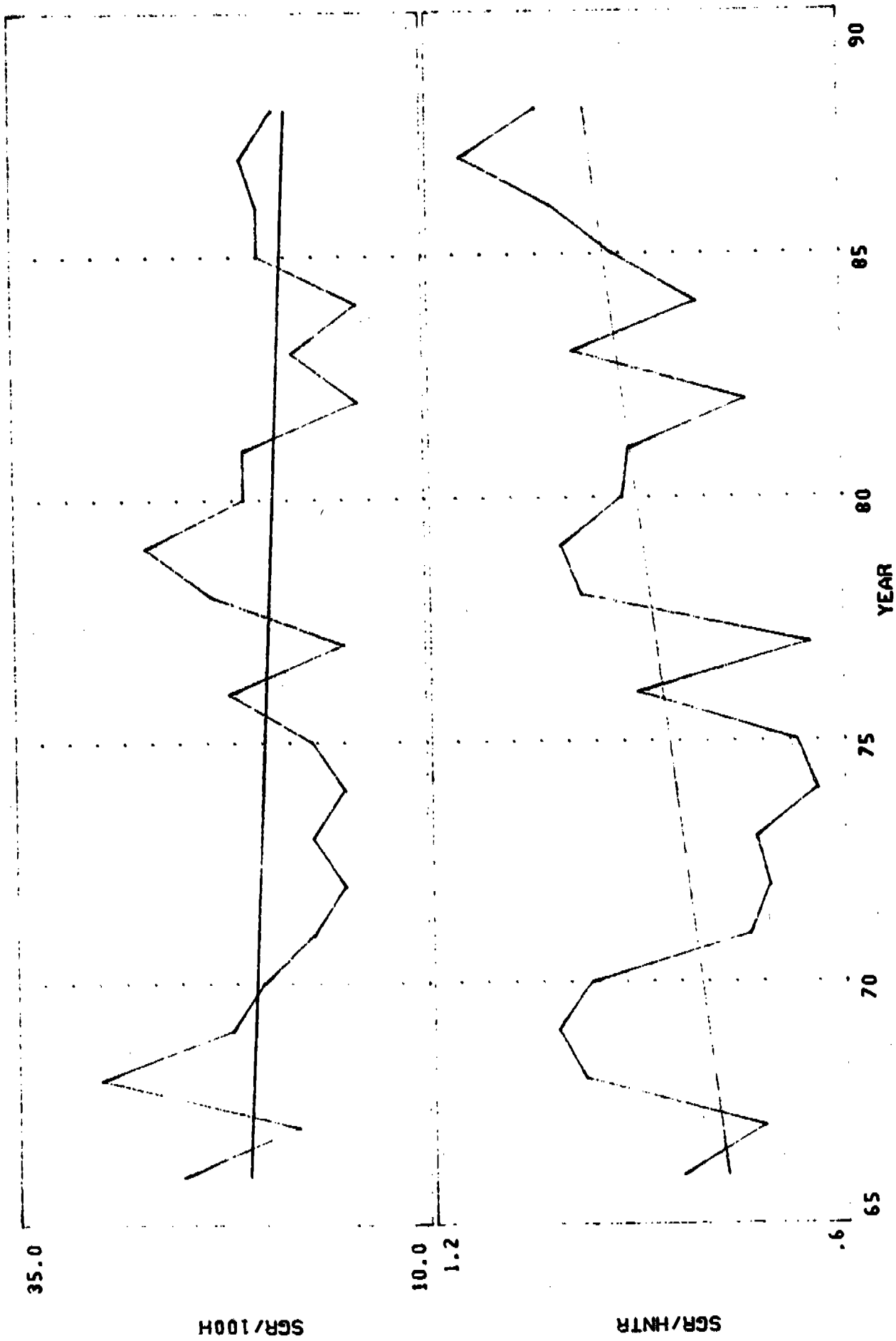


Figure 1. Statewide quail production indices, 1967-88.

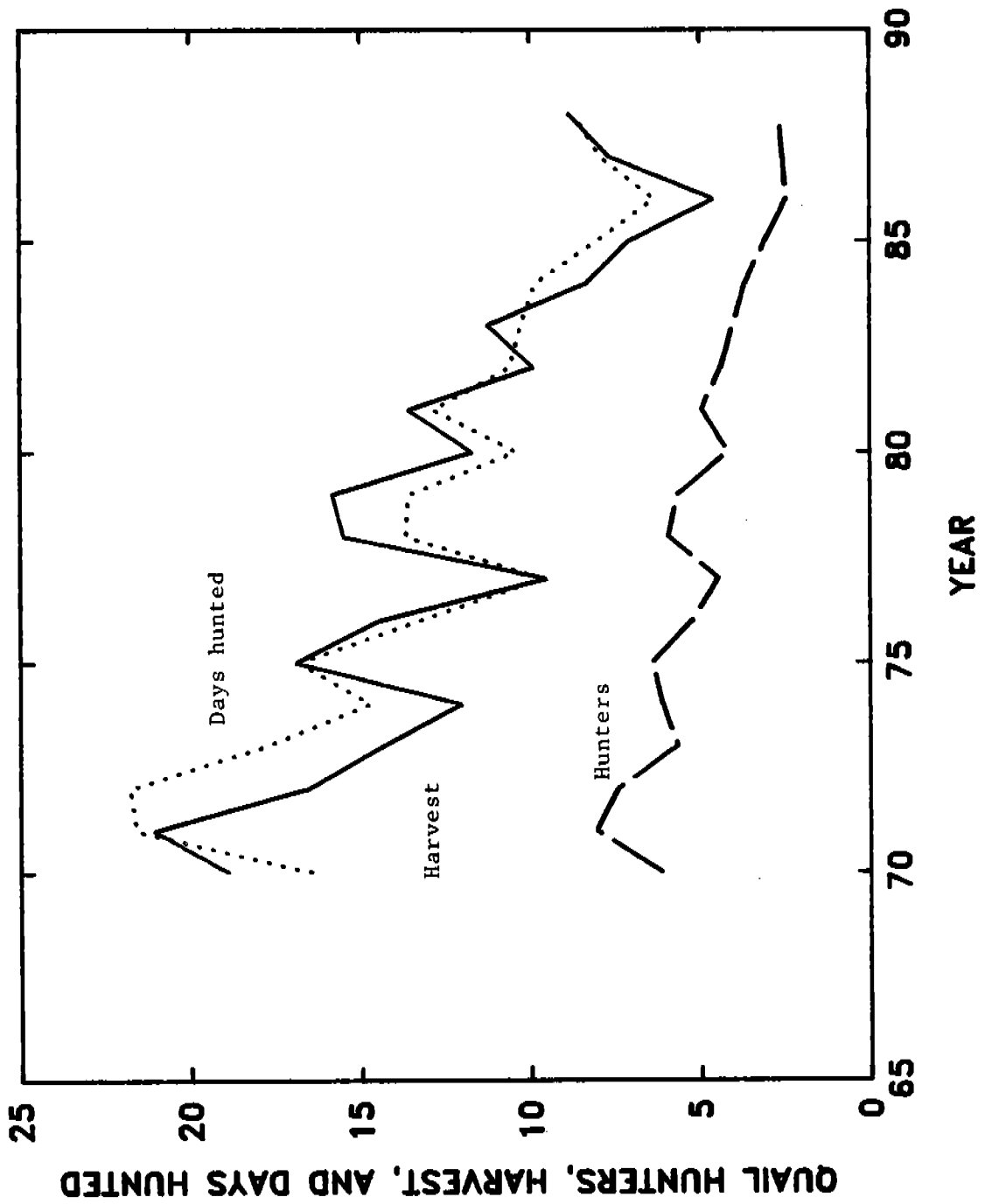


Figure 2. Statewide trend of quail harvest statistics.

Brood Counts

Results of the annual random brood counts for 1988 are shown in Table 1 of this section. Long-term trends of young-adult ratios, mean brood size and quail observed per 100 hours are shown in Tables 2-4 and Figure 1. Gambel's quail long period waterhole count trends are in Table 10. Survey results for 1988 compared to 1987 and the previous 10-year average follow:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Total quail observed	451	-25	-17
Young per 100 adults	220	-20	-23
Mean brood size	7.25	+94	+2
Quail observed per 100 hours	622	-69	-25
Total hours effort	54.0	+71	-33

Harvest statistics for 1987 indicated an increased breeding population of quail statewide, especially in Washington County where hunter success rates increased 83 percent from the previous year. Apparently, there was good overwinter survival.

Brood counts indicated lower production of both California and Gambel's quail. The production index of young per 100 adults for Gambel's quail was half what it was the previous year and was only slightly more than the adults, indicating production which barely replaced the adult population. Production declined from 1987 and was below average.

Temperatures were above average and precipitation below average in the Dixie climatic subdivision January through March. Precipitation was well above average in April. Dry and warm weather prevailed thereafter. This should have fostered good brood survival.

Harvest

Results of the annual hunter questionnaire for 1988 are shown in Table 5. Long-term trends of quail bagged per hunter-day, percent of harvest and percent of pressure (hunter-days) by county are found in Tables 6-8, and total statewide harvest statistics in Table 9.

Comparison of the 1988 season to 1987 and the previous 29-year average follow:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Quail hunters	2,671	+5	-57
Quail harvested	8,849	+16	-49
Hunter-days afield	8,682	+10	-44
Quail per hunter-day	1.02	+5	-7
Quail per hunter	3.31	+10	+22

Harvest for 1988 increased 16 percent from 1987 but was 49 percent below average. Since production apparently declined, this would indicate increased vulnerability of quail populations, perhaps due to drought.

In Washington County (Gambel's quail), hunter success remained the same but hunter days afield and total harvest decreased 25 percent from 1987. Only 28 percent of the statewide harvest of quail was taken in Washington County during 1988 compared to 43 percent in 1987, nearly 29 percent in 1986 and 36 percent in 1985.

Long-term quail harvest statistics are shown in Figures 2 and 3.

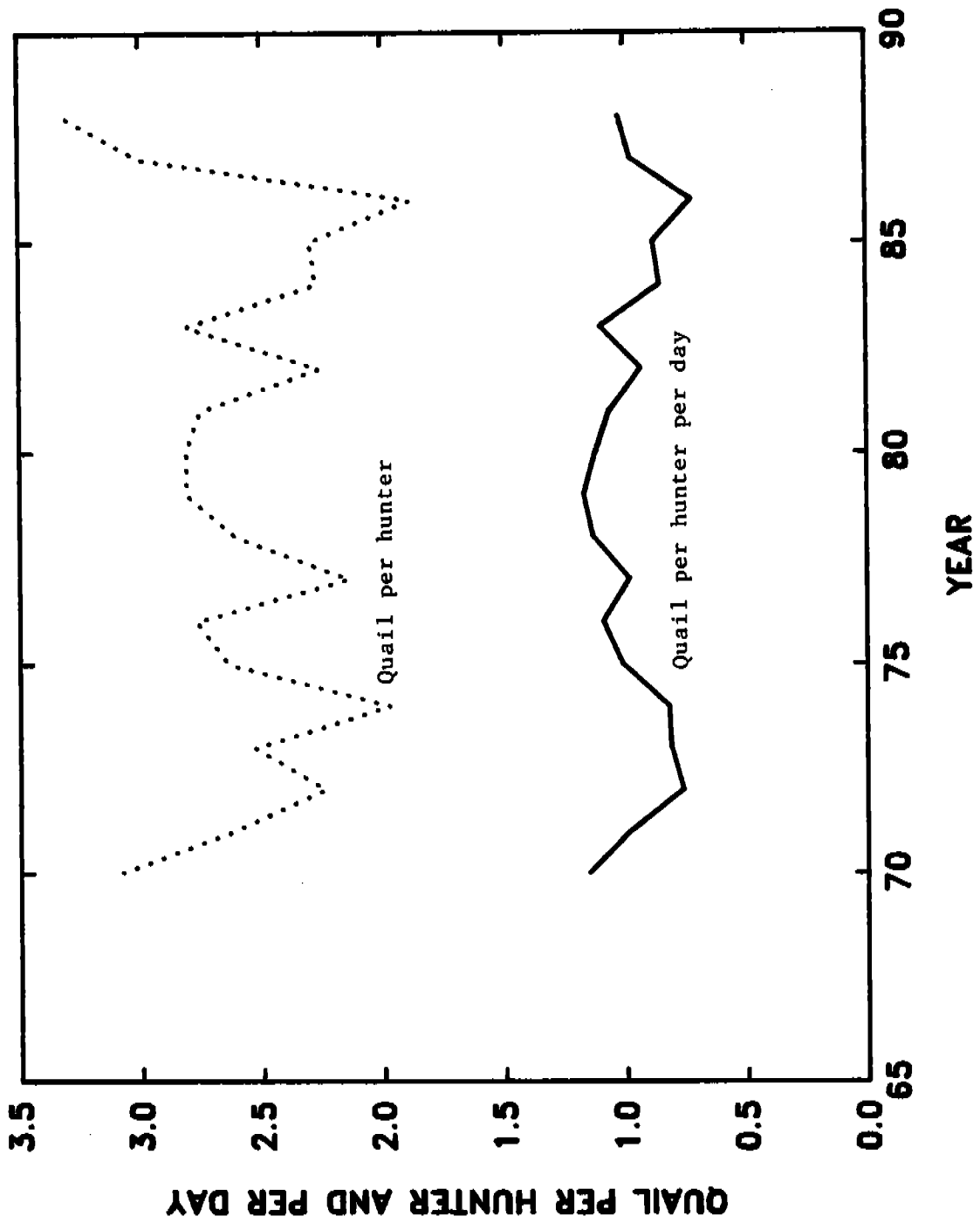


Figure 3. Statewide trend of quail hunter success rates, 1968-88.

Table 1. Quail summer inventory summary, 1988.

Region and County	Distinct Broods		Mean Brood	Mixed Yng & Adults		Total Adults w/o Yng	Total Adults	Total Yng	Young/100 Ad	Veh. Miles	Hours of Effort		Birds/100 Hr			
	# Ad	Yng		Ad	Yng						Veh.	Veh.		Horse Walk	Total	
<u>Northern Region</u>																
Box Elder	--	--	--	--	--	--	--	--	--	--	--	--	--			
Cache	--	--	--	--	--	--	--	--	--	--	--	--	--			
Davis	6	8	38	6.33	0	0	9	17	38	224	0	4	0	1	5	1,100
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	6	8	38	6.33	0	0	9	17	38	224	0	4	0	1	5	1,100
<u>Central Region</u>																
Juab	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<u>Southern Region</u>																
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	7	8	79	11.28	0	0	2	10	79	790	142	7	0	0	7	1,277
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Washington	11	21	51	4.64	8	8	18	47	59	126	135	12	0	8	20	530
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	18	29	130	7.22	8	8	20	57	138	242	277	29	0	8	37	527
<u>Northeastern Region</u>																
Daggett	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	2	3	18	9.00	3	6	2	8	24	300	96	9	--	--	9	356
Uintah	2	4	17	8.50	10	14	9	23	31	135	0	3	--	--	3	1,800
REGIONAL TOTALS	4	7	35	8.15	13	20	11	31	55	177	96	12	--	--	12	717
<u>Southeastern Region</u>																
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
STATE TOTALS	28	44	203	7.25	21	28	40	105	231	220	373	45	0	9	54	622

*Waterhole count

Table 2. Trend of quail young per 100 adults, 1978-88.

Region and County	Year											Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Northern Region												
Box Elder	--	--	--	440	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	196	94	35	--	--	--	--	--	--	224	--
Morgan	--	500	--	--	550	--	1,050	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	233	--	--	125	125	--	--	1,400	--	--	--
REGIONAL TOTALS	--	209	94	128	--	130	--	1,050	--	1,400	224	502
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	77	256	400	67	40	40	--	--	--	--	--	--
Sanpete	300	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	44	240	714	100	--	--	700	700	700	220	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	127	245	656	72	40	40	--	700	700	220	--	311
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
*Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	47	204	156	540	300	133	138	44	545	790	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	700	--	--	250	--	--	--	--	--	--	--
*Washington	555	301	93	226	152	624	224	571	412	250	126	--
*Wayne	1,250	--	--	550	--	--	--	--	--	--	--	--
REGIONAL TOTALS	317	283	114	439	162	544	213	434	456	272	242	323
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	190	340	114	583	600	--	--	--	--	--	300	--
Uintah	800	653	338	305	411	--	--	--	--	--	135	--
REGIONAL TOTALS	336	517	282	367	286	--	--	--	--	--	177	358
Southeastern Region												
Carbon	650	--	--	--	--	--	--	--	--	--	--	--
Emery	19	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	300	--	--	--	--	--	--	--	--
San Juan	41	--	40	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	89	40	--	300	--	--	--	--	--	--	--	143
STATE TOTALS	272	285	155	311	134	412	213	473	331	276	220	286

*Washington, Kane and Wayne counties, Gambel's quail; all others, California quail.

Table 3. Trend of quail mean brood size from 1978-88.

Region and County	Year											Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
<u>Northern Region</u>												
Box Elder	--	--	--	11.00	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	6.75	5.00	1.33	--	--	--	--	--	--	6.33	--
Morgan	--	5.00	--	--	11.00	--	10.50	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	3.75	--	--	--	--	14.00	--	--
REGIONAL TOTALS	--	6.40	5.00	6.85	5.20	--	10.50	--	14.00	6.33	7.99	--
<u>Central Region</u>												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	2.00	4.60	4.00	--	3.00	--	--	--	--	--	--	--
Sanpete	4.75	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	4.00	4.00	5.00	3.00	--	--	7.00	7.50	11.00	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	3.44	4.43	4.50	3.00	3.00	--	7.00	7.50	11.00	--	5.48	--
<u>Southern Region</u>												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
*Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	6.25	11.25	5.63	8.54	--	3.00	4.00	9.00	1.80	12.00	11.28	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	7.00	--	--	--	--	--	--	--	--	--	--
*Washington	11.80	8.51	5.22	6.42	6.00	13.50	5.09	8.43	7.85	5.59	4.64	--
*Wayne	--	--	--	5.50	--	--	--	--	--	--	--	--
REGIONAL TOTALS	10.21	8.86	5.45	7.97	6.00	11.17	5.06	8.56	6.64	6.16	7.22	7.61
<u>Northeastern Region</u>												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	6.86	6.00	4.00	9.00	--	--	--	--	--	--	9.00	--
Uintah	8.00	6.34	3.55	12.80	6.17	--	--	--	--	--	8.50	--
REGIONAL TOTALS	7.35	6.17	3.59	11.71	6.17	--	--	--	--	--	8.15	7.00
<u>Southeastern Region</u>												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	4.50	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	4.50	--	--	--	--	--	--	--	4.50
STATE TOTALS	7.55	8.08	4.52	8.09	6.05	9.71	5.06	8.62	6.70	6.62	7.25	7.10

*Washington, Kane and Wayne counties, Gambel's quail; all others, California quail.

Table 4. Trend of quail observed per 100 hours, 1978-88.

Region and County	Year											Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
<u>Northern Region</u>												
Box Elder	--	--	--	1,800	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	956	729	525	--	--	--	--	--	--	1,100	--
Morgan	--	600	--	--	222	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	1,000	--	--	825	--	--	--	--	1,500	--	--
REGIONAL TOTALS	--	927	729	891	511	--	--	--	1,500	1,100	912	--
<u>Central Region</u>												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	575	1,067	167	63	527	1,400	--	--	--	--	--	--
Sanpete	400	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	217	1,700	900	75	--	--	320	2,000	1,600	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	378	1,429	296	258	414	247	320	2,000	1,600	--	771	--
<u>Southern Region</u>												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
*Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	867	1,340	1,536	3,911	800	350	177	344	867	1,303	1,271	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	50	800	--	--	1,400	--	--	--	--	--	--	--
*Washington	750	2,741	675	275	771	605	380	783	1,604	2,029	530	--
*Wayne	333	--	--	650	--	--	--	--	--	--	--	--
REGIONAL TOTALS	667	1,951	867	1,053	691	580	357	663	1,484	1,958	527	1,027
<u>Northeastern Region</u>												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	310	209	79	205	27	42	--	--	--	--	356	--
Uintah	563	890	613	708	328	100	--	--	--	--	1,800	--
REGIONAL TOTALS	398	443	314	406	123	58	--	--	--	--	717	290
<u>Southeastern Region</u>												
Carbon	1,500	--	--	--	--	--	--	--	--	--	--	--
Emery	950	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	400	--	--	--	--	--	--	--	--
San Juan	0	127	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	425	127	--	400	--	--	--	--	--	--	--	317
STATE TOTALS	530	1,193	541	720	408	411	297	645	1,519	1,984	622	825

*Washington, Kane and Wayne counties, Gambel's quail; all others, California quail.

Table 5. Summary of quail hunter success and distribution of harvest and hunting pressure by region and county, 1988.

Region and County	Sample Size*	Hunter-Days Afield	Birds Bagged	Birds Per Hunter-Day	% of Pressure	% of Harvest
<u>Northern Region</u>						
Box Elder	6	166	133	.80	1.90	1.50
Cache**	4	150	33	.22	1.73	.37
Davis	20	834	617	.74	9.61	6.98
Morgan**	1	16	16	1.00	.19	.18
Rich**	1	16	16	1.00	.19	.18
Summit**	1	50	0	0.00	.57	0.00
Weber	8	333	116	.35	3.84	1.32
REGIONAL TOTALS	41	1,569	935	.60	18.07	10.56
<u>Central Region</u>						
Juab	2	267	367	1.38	3.07	4.15
Salt Lake	4	283	333	1.18	3.26	3.77
Sanpete**	2	83	66	.80	.96	.75
Tooele**	6	484	601	1.24	5.57	6.79
Utah	43	1,803	834	.46	20.76	9.43
Wasatch**	4	400	450	1.13	4.61	5.09
REGIONAL TOTALS	61	3,322	2,654	.80	38.26	30.00
<u>Southern Region</u>						
Beaver						
Garfield	1	50	250	5.00	.57	2.83
Iron	1	33	166	5.00	.38	1.88
Kane	0	0	0	0.00	0.00	0.00
Millard	4	217	0	0.00	2.50	0.00
Piute	0	0	0	0.00	0.00	0.00
Sevier	2	33	50	1.50	.38	.56
Washington	17	1,068	2,454	2.30	12.30	27.73
Wayne	1	33	66	2.00	.38	.75
REGIONAL TOTALS	26	1,435	2,988	2.08	16.52	33.77
<u>Northeastern Region</u>						
Daggett						
Duchesne	12	634	567	.89	7.30	6.41
Uintah	19	1,152	1,001	.87	13.26	11.32
REGIONAL TOTALS	31	1,786	1,569	.88	20.57	17.73
<u>Southeastern Region</u>						
Carbon	4	133	50	.38	1.53	.56
Emery	5	150	166	1.11	1.73	1.88
Grand	1	83	66	.80	.96	.75
San Juan	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	10	367	283	.77	4.22	3.20
Unknown Counties	2	200	417	2.08	2.30	4.71
STATE TOTALS	171	8,682	8,849	1.02	100.00	100.00

*Total hunter-trips from questionnaire returns.

**Closed to quail hunting in 1986.

Table 6. Summary of quail bagged per hunter-day by region and county, 1982-88.

Region and County	Year						
	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>							
Box Elder	0.25	0.50	0.21	0.50	0.00	0.23	0.80
Cache	1.67	1.40	0.00	0.00	1.00	0.43	0.22*
Davis	0.53	1.00	0.43	0.45	0.44	0.43	0.74
Morgan	0.00	2.50	0.00	1.00	1.00	2.00	1.00*
Rich	0.67	0.00	0.00	0.00	0.00	0.00	1.00*
Summit	0.00	0.29	0.00	0.00	0.40	0.00	0.00*
Weber	1.11	1.08	0.64	0.71	0.69	0.11	0.35
REGIONAL TOTALS	0.79	0.94	0.40	0.54	0.50	0.35	0.60
<u>Central Region</u>							
Juab	1.60	2.00	0.33	0.00	2.00	0.00	1.38
Salt Lake	1.13	1.00	0.32	1.88	0.43	0.83	1.18
Sanpete	0.00	0.75	0.00	1.50	1.00	0.86	0.80*
Tooele	0.00	2.00	0.22	1.50	0.33	1.00	1.24*
Utah	0.81	0.86	0.82	0.60	0.72	0.59	0.46
Wasatch	0.00	2.67	1.25	0.00	0.00	0.50	1.13*
REGIONAL TOTALS	0.86	0.96	0.65	0.85	0.69	0.63	0.80
<u>Southern Region</u>							
Beaver	0.00	0.00	0.00	1.83	0.00	0.00	5.00
Garfield	0.00	0.00	0.00	0.00	0.00	0.00	5.00
Iron	0.00	0.00	1.50	0.00	0.00	0.00	0.00
Kane	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Millard	1.97	1.33	1.00	0.63	1.55	0.96	0.00
Piute	0.00	0.00	0.50	0.00	1.00	2.25	0.00
Sevier	0.14	0.00	0.86	1.80	0.00	0.00	1.50
Washington	1.19	1.53	1.98	1.23	1.27	2.33	2.30
Wayne	1.00	3.00	0.00	0.00	0.00	0.00	2.00
REGIONAL TOTALS	1.27	1.50	1.64	1.21	1.15	1.93	2.08
<u>Northeastern Region</u>							
Daggett	0.00	4.50	0.00	0.00	0.00	0.50	0.00
Duchesne	1.05	1.46	0.08	0.70	0.44	1.86	0.89
Uintah	0.64	0.70	0.72	1.00	0.70	0.52	0.87
REGIONAL TOTALS	0.83	1.11	0.54	0.86	0.63	0.81	0.88
<u>Southeastern Region</u>							
Carbon	0.89	0.40	0.00	1.00	0.00	1.00	0.38
Emery	0.67	0.76	0.00	0.31	1.14	1.06	1.11
Grand	0.00	0.00	0.00	0.00	0.00	0.50	0.80
San Juan	1.33	0.00	0.00	0.00	0.00	0.00	0.00
REGIONAL TOTALS	0.85	0.67	0.00	0.62	0.29	0.85	0.77
Unknown counties	0.00	0.00	0.00	0.00	0.00	0.00	2.00
STATE TOTALS	0.93	1.10	0.85	0.88	0.72	0.97	1.02

*Closed Season

Table 7. Percentage distribution of quail harvest by region and county, 1982-88.

Region and County	Year						
	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>							
Box Elder	0.62	1.54	0.98	0.30	0.00	0.96	1.50
Cache	1.55	0.83	0.00	0.00	0.44	1.92	0.37*
Davis	2.95	9.03	6.11	5.16	3.59	1.92	6.98
Morgan	0.00	0.59	0.00	0.60	0.90	0.64	0.18*
Rich	0.31	0.00	0.00	0.00	0.00	0.00	0.18*
Summit	0.00	0.23	0.00	0.00	0.90	0.00	0.00*
Weber	9.47	4.87	2.19	6.07	4.94	0.32	1.32
REGIONAL TOTALS	14.91	17.09	9.29	12.15	10.80	5.76	10.56
<u>Central Region</u>							
Juab	1.24	0.23	0.48	0.00	0.90	0.00	4.15
Salt Lake	5.59	4.16	1.46	9.11	2.69	1.60	3.77
Sanpete	0.00	0.71	0.00	0.91	0.44	3.84	0.75*
Tooele	0.00	1.42	0.98	0.91	0.90	0.64	6.79*
Utah	22.98	13.66	18.33	12.45	34.24	18.58	9.43
Wasatch	0.00	0.94	1.22	0.00	0.00	0.64	5.09*
REGIONAL TOTALS	29.81	21.12	22.49	23.40	39.18	25.32	30.00
<u>Southern Region</u>							
Beaver	0.00	0.00	0.00	3.33	0.00	0.00	0.00
Garfield	0.00	0.00	0.00	0.00	0.00	0.00	2.83
Iron	0.00	0.00	0.72	0.00	0.00	0.00	1.88
Kane	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Millard	9.16	1.89	7.82	1.52	7.65	7.69	0.00
Piute	0.00	0.00	0.48	0.00	0.44	2.88	0.00
Sevier	0.16	0.00	1.46	2.72	0.00	0.00	0.56
Washington	20.81	24.37	46.45	35.56	29.27	42.62	27.73
Wayne	0.47	0.71	0.00	0.00	0.00	0.00	0.75
REGIONAL TOTALS	30.59	26.97	56.97	43.16	37.39	53.20	33.77
<u>Northeastern Region</u>							
Daggett	0.00	4.28	0.00	0.00	0.00	0.32	0.00
Duchesne	10.09	16.16	0.48	5.77	1.79	4.16	6.41
Uintah	7.30	12.24	10.76	9.11	7.19	3.84	11.32
REGIONAL TOTALS	17.39	32.68	11.24	14.89	9.00	8.33	17.73
<u>Southeastern Region</u>							
Carbon	3.88	0.23	0.00	4.85	0.00	0.32	0.56
Emery	2.17	1.89	0.00	1.52	3.59	5.44	1.88
Grand	0.00	0.00	0.00	0.00	0.00	1.60	0.75
San Juan	1.24	1.08	0.00	0.00	0.00	0.00	0.00
REGIONAL TOTALS	7.30	2.10	0.00	6.38	3.59	7.37	3.20
Unknown counties	0.00	0.00	0.00	0.00	0.00	0.00	4.71
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00

*Closed Season

Table 8. Percentage distribution of quail hunting pressure by region and county, 1982-88.

Region and County	Year						
	1982	1983	1984	1985	1986	1987	1988
Northern Region							
Box Elder	2.32	3.39	3.93	0.53	1.94	4.02	1.92
Cache	0.87	0.64	0.61	1.06	0.32	4.33	1.73*
Davis	5.22	9.93	12.00	10.18	5.85	4.33	9.61
Morgan	0.29	0.25	0.41	0.53	0.65	0.30	0.19*
Rich	0.43	0.00	0.00	0.00	0.00	0.00	0.19*
Summit	0.43	0.91	0.00	0.00	1.63	0.30	0.57*
Weber	7.97	4.96	2.90	7.51	5.20	2.78	3.84*
REGIONAL TOTALS	17.54	20.08	19.87	19.83	15.63	16.08	18.07
Central Region							
Juab	0.72	0.13	1.23	0.26	0.3	0.30	3.07
Salt Lake	4.64	4.57	3.93	4.28	4.55	1.85	3.26
Sanpete	0.00	1.04	0.61	0.53	0.32	4.33	0.96*
Tooele	0.58	0.78	3.72	0.53	1.94	0.61	5.57*
Utah	26.52	13.37	19.04	18.23	34.19	30.65	20.76
Wasatch	0.00	0.39	0.83	0.53	0.00	1.23	4.61*
REGIONAL TOTALS	32.46	24.28	29.39	24.39	41.37	38.99	38.26
Southern Region							
Beaver	0.14	0.00	0.00	1.60	1.63	0.00	0.00
Garfield	0.00	0.00	0.00	0.00	0.00	0.00	0.57
Iron	0.14	0.00	0.41	0.80	0.65	0.00	0.38
Kane	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Millard	4.35	1.56	6.62	2.14	3.57	7.73	2.50
Piute	0.00	0.00	0.83	0.00	0.32	1.23	0.00
Sevier	1.01	0.39	1.45	1.34	0.65	0.00	0.38
Washington	16.38	17.51	19.87	25.47	16.60	17.64	12.30
Wayne	0.43	0.25	0.20	0.00	0.00	0.00	0.38
REGIONAL TOTALS	22.46	19.72	29.39	31.36	23.44	26.62	16.52
Northeastern Region							
Daggett	0.00	1.56	0.00	0.00	0.00	0.61	0.00
Duchesne	8.99	12.14	4.97	7.23	2.92	2.16	7.30
Uintah	10.58	19.20	12.63	8.03	7.48	7.12	13.26
REGIONAL TOTALS	19.57	32.90	17.59	15.27	10.42	9.90	20.57
Southeastern Region							
Carbon	4.06	0.64	2.90	4.28	6.83	0.30	1.53
Emery	3.04	2.74	0.61	4.28	2.28	4.95	1.73
Grand	0.00	0.13	0.20	0.26	0.00	3.09	0.96
San Juan	0.87	0.00	0.00	0.26	0.00	0.00	0.00
REGIONAL TOTALS	7.97	3.51	3.72	9.11	9.11	8.34	4.22
Unknown counties	0.17	0.00	0.00	0.00	0.00	0.00	2.30
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00

*Closed Season

Table 9. Statewide summary of quail harvest statistics, 1951-1988.

Year	Total Hunters	Total Harvest	Hunter-days Afield	Quail Per Hunter-day	Quail Per Hunter
1951	3,856	6,362	7,069	0.90	1.65
1952	2,694	6,105	5,500	1.11	2.27
1953	2,676	5,753	4,494	1.28	2.15
1954	3,855	7,479	8,696	0.86	1.94
1955	--	--	--	0.17	2.10
1956	--	--	--	--	2.26
1957	--	--	--	--	1.85
1958	--	--	--	--	3.73
1959	8,554	22,854	18,174	1.26	2.67
1960	7,117	21,272	13,971	1.52	2.99
1961	9,980	27,362	25,746	1.06	2.74
1962	6,462	18,710	14,660	1.27	2.89
1963	8,059	28,088	16,383	1.71	3.49
1964	8,951	31,189	20,510	1.52	3.48
1965	6,163	17,532	16,528	1.06	2.45
1966	6,465	22,771	16,720	1.36	3.52
1967	8,455	26,187	23,806	1.10	3.10
1968	9,302	28,469	23,132	1.23	3.06
1969	9,160	26,119	22,529	1.16	2.85
1970	6,141	18,896	16,452	1.15	3.08
1971	8,039	21,082	21,595	0.98	2.62
1972	7,380	16,504	21,779	0.76	2.24
1973	5,654	14,324	17,777	0.81	2.53
1974	6,097	12,005	14,702	0.82	1.97
1975	6,397	16,903	16,805	1.01	2.64
1976	5,215	14,454	13,261	1.09	2.77
1977	4,446	9,496	9,646	0.98	2.14
1978	5,924	15,491	13,649	1.13	2.61
1979	5,632	15,821	13,550	1.17	2.81
1980	4,156	11,690	10,400	1.12	2.81
1981	4,946	13,586	12,843	1.06	2.75
1982	4,368	9,870	10,575	0.93	2.26
1983	4,012	11,248	10,232	1.10	2.81
1984	3,654	8,303	9,805	0.85	2.27
1985	3,065	7,051	7,994	0.88	2.30
1986	2,432	4,574	6,326	0.72	1.88
1987	2,549	7,648	7,918	0.97	3.00
1988	2,671	8,849	8,682	1.02	3.31
<hr/>					
TOTALS (1959-88)	181,446	508,332	456,150	(32.80)	(82.04)
<hr/>					
AVERAGES (1959-87)	6,165	17,224	15,430	1.10	2.71
<hr/>					

Table 10. Gambel's quail long period waterhole count trend on the west slope of the Beaver Dam Mountains, Washington County, 1975-88. These counts have been conducted since 1962.

Index	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Total young	145	61	--	67	253	72	37	85	114	166	47	163	348	59
Total adults	20	53	--	29	77	52	25	33	14	86	11	48	139	47
Total quail	165	114	17	86	330	124	62	118	128	252	58	211	487	106
Young per 100 adults	725	115	--	353	329	138	148	258	814	193	427	340	250	126

HUNGARIAN PARTRIDGE

SUMMARY

Harvest data for 1987 indicated that 1988 breeding population densities were again much improved. Limited brood data was collected in Box Elder, Cache and Wasatch counties and indicated decreased Hun production.

The 1988 hunt indicated increased hunting pressure on Huns when compared to 1987. The number of Huns harvested decreased in 1988. The hunter-days afield remained about the same as 1987. Total hunters, days afield and harvest remained significantly below the long-term average. However, hunter success was at the 29-year average.

We expected continued improvement in Hungarian partridge populations in Box Elder County due to the large quantity of agricultural land set aside in the Conservation Reserve Program. The reason for the decline in production and harvest in 1988 was possibly due to the hot, dry summer.



Brood Counts

Results of the annual random brood counts for 1988 are shown in Table 1 of this section. Long-term trends of young-adult ratios, mean brood size and Huns observed per 100 hours are shown in Tables 2-4. Results of the survey for 1988 compared to 1987 and the previous 10-year average follow:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Total Huns observed	77	-56	-14
Young per 100 adults	328	-42	-41
Mean brood size	7.83	-29	-26
Huns observed per 100 hours	248	-430	+28
Total hours effort	31	-23	-54

Harvest data for 1987 indicated a significant improvement over the previous year but still below average breeding population for 1988. Hungarian partridge should have overwintered well but this was not reflected in the 1988 production figures. Young per 100 adults declined 42 percent from the previous year and was 41 percent below average.

The hours of effort decreased 23 percent from 1987, and was 54 percent below average.

Harvest

Hunter Questionnaire

Results of the annual hunter questionnaire for 1988 are shown in Table 5. Long-term trends of Huns bagged per hunter-day, percent of harvest and percent of pressure (hunter-days) by county are found in Tables 6-8 and total statewide harvest statistics in Table 9. The 1988 season compared to 1987 and the previous 29-year average follow:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Hungarian partridge hunters	2,471	+23	-32
Hungarian partridge harvest	4,424	-23	-44
Hunter-days afield	5,392	+3	-41
Huns per hunter-day	0.82	-25	0
Huns per hunter	1.79	-29	-11

Hungarian partridge hunting pressure remained the same, while success decreased 25 percent during 1988 as compared to 1987. Harvest was 44 percent below the 29-year average.

Field Bag Checks

Results of the survey for 1988 are shown in Table 10. Hunter success trends determined via this method are shown in Table 11. Indices obtained for 1988 compared to 1987 and the previous 10-year average follow:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Total hunters checked	79	-23	-40
Total hours hunted	248	-42	-69
Huns per hunter (complete hunts)	1.04	-38	+46
Huns bagged per 100 hours	24	-23	+50
Average hours per hunter-day (complete hunts)	4.3	+2	-2
Hours hunted per Hun bagged (complete hunts)	4.1	+24	-72

Field bag check data submitted in 1988 was for Box Elder County only, and was collected at the game checking station at Snowville, Utah. Many of these hunters are hunting sagegrouse, but Huns are often found in the same areas.

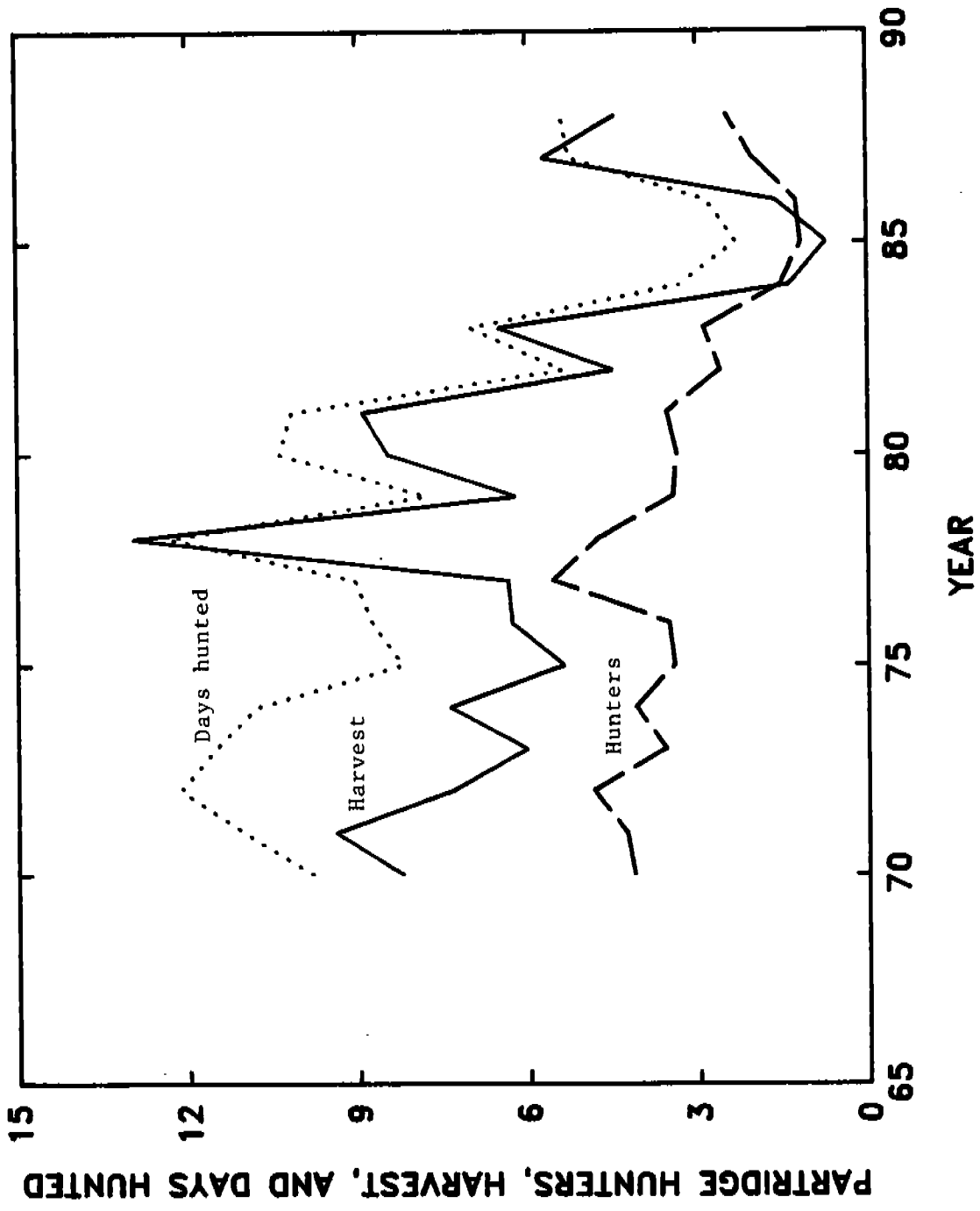


Figure 1. Statewide trend of Hungarian partridge harvest statistics.

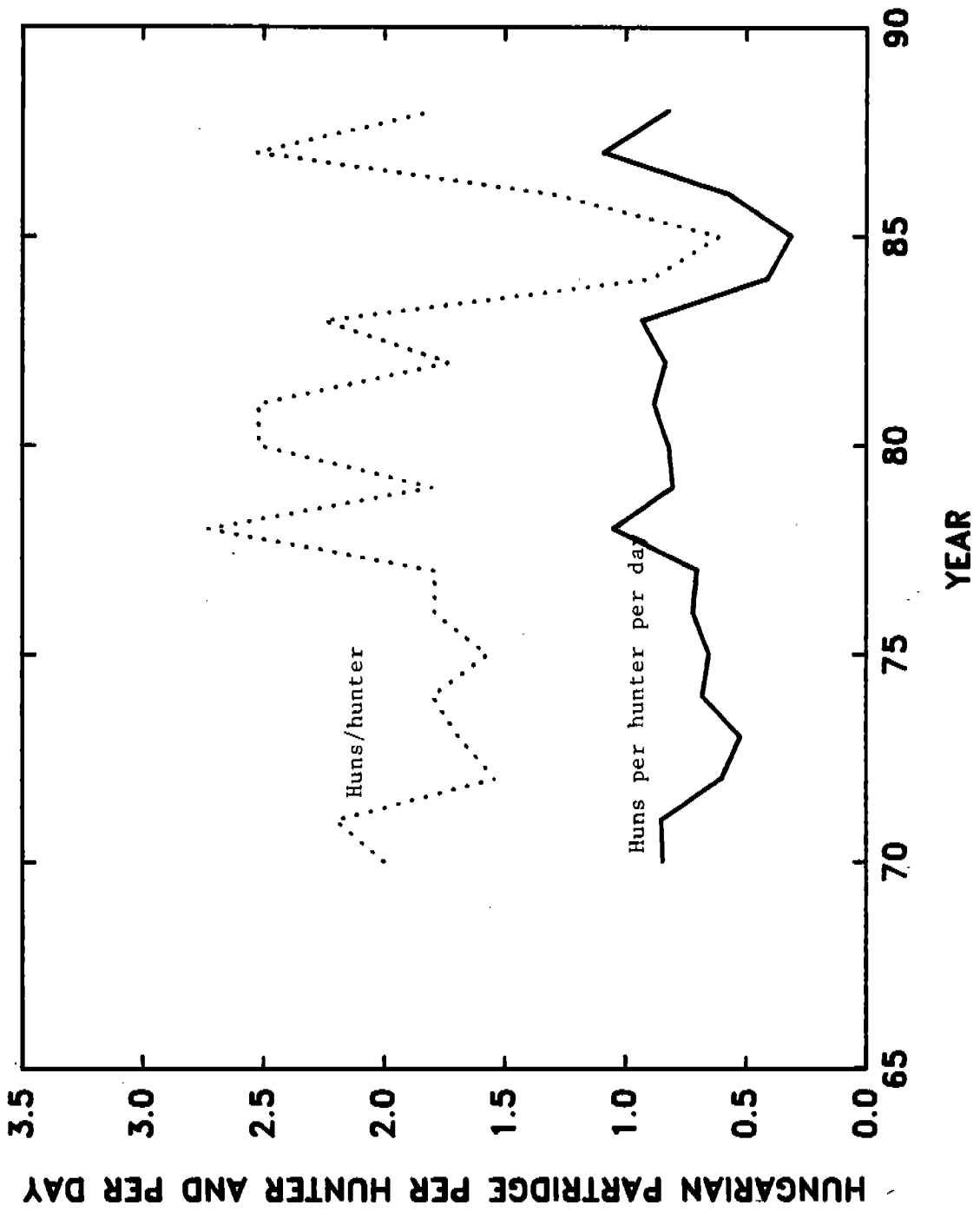


Figure 2. Statewide trend of Hungarian partridge hunter success rates, 1968-88.

Table 1. Hungarian partridge summer inventory summary, 1988.

Region and County	Distinct Broods		Mean Brood	Mixed Yng & Adults			Total Adults	Total Yng	Young/100 Ad	Veh. Miles	Hours of Effort			Birds/100 Hr		
	# Ad	Yng		Ad	Yng	Ad					Yng	WALK	VEH.		TOTAL	
<u>Northern Region</u>																
Box Elder	5	10	43	8.60	0	0	4	14	43	307	0	2	10	1	13	438
Cache	0	0	0	--	3	12	0	3	12	400	316	17	0	0	17	88
Davis	0	0	0	--	0	0	0	--	--	--	--	--	--	--	--	--
Morgan	0	0	0	--	0	0	0	--	--	--	--	--	--	--	--	--
Rich	0	0	0	--	0	0	0	--	--	--	--	--	--	--	--	--
Summit	0	0	0	--	0	0	0	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	5	10	43	8.60	3	12	4	17	55	324	316	19	10	1	30	240
<u>Central Region</u>																
Juab	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	1	1	4	4.00	0	0	0	1	4	400	10	1	0	0	1	500
REGIONAL TOTALS	1	1	4	4.00	0	0	0	1	4	400	10	1	0	0	1	500
<u>Southern Region</u>																
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	0	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0
<u>Northeastern Region</u>																
Daggett	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	0	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0
<u>Southeastern Region</u>																
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	0	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0
STATE TOTALS	7	11	47	7.83	3	12	4	18	59	328	326	20	10	1	31	248

NOT APPLICABLE

NOT APPLICABLE

NOT APPLICABLE

Table 2. Trend of Hungarian partridge young per 100 adults, 1978-88.

Region and County	Year										Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	
<u>Northern Region</u>											
Box Elder	580	840	688	671	409	400	--	--	45	569	307
Cache	--	--	--	--	--	--	--	--	--	--	400
Davis	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	700	300	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	580	840	691	600	409	400	--	--	450	569	324
<u>Central Region</u>											
Juab	--	500	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	0	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	400	--	--	400
REGIONAL TOTALS	--	500	--	--	--	--	--	400	--	--	400
<u>Southern Region</u>											
Beaver											
Garfield											
Iron											
Kane											
Millard											
Piute											
Sevier											
Washington											
Wayne											
REGIONAL TOTALS											
<u>Northeastern Region</u>											
Daggett											
Duchesne											
Uintah											
REGIONAL TOTALS											
<u>Southeastern Region</u>											
Carbon											
Emery											
Grand											
San Juan											
REGIONAL TOTALS											
STATE TOTALS	580	780	663	600	409	400	--	--	440	569	328
											555

Table 3. Trend of Hungarian partridge mean brood size from 1978-88.

Region and County	Year										Average 1978-87	
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987		1988
<u>Northern Region</u>												
Box Elder	11.60	8.40	11.00	12.00	11.25	10.67	--	--	18.00	11.88	8.60	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	7.00	6.00	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	11.60	8.40	9.50	10.80	11.25	10.67	--	18.00	11.88	8.60	11.51	--
<u>Central Region</u>												
Juab	--	5.00	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	4.00	--	4.00	--	4.00
REGIONAL TOTALS	--	5.00	--	--	--	--	--	4.00	--	4.00	--	4.50
<u>Southern Region</u>												
Beaver												
Garfield												
Iron												
Kane												
Millard												
Piute												
Sevier												
Washington												
Wayne												
REGIONAL TOTALS												
<u>Northeastern Region</u>												
Daggett												
Duchesne												
Uintah												
REGIONAL TOTALS												
<u>Southeastern Region</u>												
Carbon												
Emery												
Grand												
San Juan												
REGIONAL TOTALS												
STATE TOTALS	11.60	7.83	9.50	10.80	11.25	10.67	--	11.00	11.88	7.83	10.56	--

Table 4. Trend of Hungarian partridge observed per 100 hours, 1978-88.

Region and County	Year										Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	
<u>Northern Region</u>											
Box Elder	203	235	154	570	144	67	--	0	96	561	438
Cache	--	--	--	--	--	--	--	--	--	--	88
Davis	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	151	174	158	639	144	67	--	0	50	435	240
<u>Central Region</u>											
Juab	--	600	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	0	33	--	--	--	--	--	500	--	500
REGIONAL TOTALS	--	200	17	--	--	--	--	--	500	--	500
<u>Southern Region</u>											
Beaver											
Garfield											
Iron											
Kane											
Millard											
Piute											
Sevier											
Washington											
Wayne											
REGIONAL TOTALS											
<u>Northeastern Region</u>											
Daggett											
Duchesne											
Uintah											
REGIONAL TOTALS											
<u>Southeastern Region</u>											
Carbon											
Emery											
Grand											
San Juan											
REGIONAL TOTALS											
STATE TOTALS	151	177	144	565	144	67	--	0	60	435	248
											194

Table 5. Summary of Hungarian partridge hunter success and distribution of harvest and hunting pressure by region and county, 1988.

Region and County	Sample Size*	Hunter-days Afield	Birds Bagged	Birds per Hunter-day	% of Pressure	% of Harvest
<u>Northern Region</u>						
Box Elder	109	3,689	3,489	.95	68.42	78.86
Cache	17	534	267	.50	9.90	6.03
Davis	2	66	0	0.00	1.23	0.00
Morgan	1	16	0	0.00	.30	0.00
Rich	0	0	0	0.00	0.00	0.00
Summit	1	33	100	3.00	.61	2.26
Weber	4	100	116	1.17	1.85	2.64
REGIONAL TOTALS	134	4,441	3,973	.89	82.36	89.81
<u>Central Region</u>						
Juab**	0	0	0	0.00	0.00	0.00
Salt Lake**	2	183	16	.09	3.40	.37
Sanpete**	0	0	0	0.00	0.00	0.00
Tooele	10	250	83	.33	4.64	1.88
Utah**	2	267	83	.31	4.95	1.88
Wasatch**	2	66			1.23	
REGIONAL TOTALS	16	768	183	.24	14.24	4.15
<u>Southern Region</u>						
Beaver**	0	0	0	0.00	0.00	0.00
Garfield**	0	0	0	0.00	0.00	0.00
Iron**	0	0	0	0.00	0.00	0.00
Kane**	0	0	0	0.00	0.00	0.00
Millard**	0	0	0	0.00	0.00	0.00
Piute**	0	0	0	0.00	0.00	0.00
Sevier**	0	0	0	0.00	0.00	0.00
Washington**	1	116	250	2.14	2.15	5.66
Wayne**	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	1	116	250	2.14	2.15	5.66
<u>Northeastern Region</u>						
Daggett**	0	0	0	0.00	0.00	0.00
Duchesne**	1	16	0	0.00	.30	0.00
Uintah**	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	1	16	0	0.00	.29	0.00
<u>Southeastern Region</u>						
Carbon**	1	33	0	0.00	.61	0.00
Emery**	1	16	16	1.00	.30	.37
Grand**	0	0	0	0.00	0.00	0.00
San Juan**						
REGIONAL TOTALS	2	50	16	.33	.92	.37
Unknown Counties						
<hr/>						
STATE TOTALS	154	5,392	4,424	.82	100	100

**Closed to Hungarian partridge hunting in 1988.

Table 6. Summary of Hungarian partridge bagged per hunter-day by region and county, 1982-88.

Region and County	Year						
	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>							
Box Elder	0.83	0.99	0.44	0.25	0.60	1.28	0.95
Cache	1.03	0.80	0.15	2.00	0.00	1.05	0.50
Davis	5.00	0.29	0.00	0.00	0.00	0.00	0.00
Morgan	1.40	0.75	0.00	0.00	0.00	0.67	0.00
Rich	2.00	0.94	0.00	0.00	0.00	1.50	0.00
Summit	0.00	0.00	0.00	0.00	0.00	2.00	3.00
Weber	1.00	1.36	1.00	0.00	0.00	1.25	1.17
<u>REGIONAL TOTALS</u>	<u>0.89</u>	<u>0.93</u>	<u>0.41</u>	<u>0.26</u>	<u>0.59</u>	<u>1.23</u>	<u>0.89</u>
<u>Central Region</u>							
Juab	0.00	0.00	0.00	0.00	0.00	0.30	0.00*
Salt Lake	0.00	0.00	0.50	0.50	0.00	0.00	0.09*
Sanpete	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
Tooele	0.00	1.91	0.00	0.46	0.00	0.00	0.33
Utah	0.00	0.13	2.00	0.00	0.00	0.33	0.31*
Wasatch	0.00	1.77	1.00	1.50	0.00	0.00	0.00*
<u>REGIONAL TOTALS</u>	<u>0.00</u>	<u>0.96</u>	<u>0.55</u>	<u>0.48</u>	<u>0.00</u>	<u>0.20</u>	<u>0.24</u>
<u>Southern Region</u>							
Beaver	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
Garfield	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
Iron	1.00	0.00	0.00	0.00	0.00	0.00	0.00*
Kane	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
Millard	0.00	1.00	0.00	0.00	2.00	0.00	0.00*
Piute	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
Sevier	0.00	0.50	0.00	0.00	0.20	2.00	0.00*
Washington	0.13	2.00	0.00	0.00	0.00	0.00	2.14*
Wasatch	0.00	1.77	1.00	0.00	0.00	0.00	0.00*
<u>REGIONAL TOTALS</u>	<u>0.00</u>	<u>0.96</u>	<u>0.55</u>	<u>0.00</u>	<u>0.78</u>	<u>1.33</u>	<u>2.14</u>
<u>Northeastern Region</u>							
Daggett	0.00	0.00	0.00	1.00	0.00	0.00	0.00*
Duchesne	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
Uintah	1.00	0.00	0.00	0.00	0.00	0.00	0.00*
<u>REGIONAL TOTALS</u>	<u>1.33</u>	<u>0.00</u>	<u>0.00</u>	<u>0.50</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>
<u>Southeastern Region</u>							
Carbon	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
Emery	0.00	0.00	0.00	0.00	0.00	0.00	1.00*
Grand	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
San Juan	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
<u>REGIONAL TOTALS</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.33</u>
Unknown Counties	0.00	0.00	0.00	0.00	0.00	0.30	0.00
<u>STATE TOTALS</u>	<u>0.83</u>	<u>0.93</u>	<u>0.41</u>	<u>0.31</u>	<u>0.57</u>	<u>1.09</u>	<u>0.82</u>

*Closed Season

Table 7. Percentage distribution of Hungarian partridge harvest by region and county, 1982-88.

Region and County	Year						
	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>							
Box Elder	74.66	67.61	79.04	60.34	91.14	80.25	78.86
Cache	11.64	14.39	2.94	5.94	0.00	9.87	6.03
Davis	1.71	0.40	0.00	0.00	0.00	0.00	0.00
Morgan	7.19	1.23	0.00	0.00	0.00	0.85	0.00
Rich	1.37	3.27	0.00	0.00	0.00	1.28	0.00
Summit	0.00	0.00	0.00	0.00	0.00	0.85	2.26
Weber	1.71	3.07	8.90	0.00	0.00	2.14	2.64
REGIONAL TOTALS	98.29	89.97	91.03	66.62	91.14	95.27	89.81
<u>Central Region</u>							
Juab	0.00	0.00	0.00	0.00	0.00	1.28	0.00*
Salt Lake	0.00	0.00	1.47	2.97	0.00	0.00	0.37*
Sanpete	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
Tooele	0.00	4.30	0.00	18.10	0.00	0.00	1.88
Utah	0.00	0.40	5.96	0.00	0.00	0.42	1.88*
Wasatch	0.00	4.72	1.47	9.05	0.00	0.00	0.00*
REGIONAL TOTALS	0.00	9.42	8.90	30.27	0.00	1.71	4.15
<u>Southern Region</u>							
Beaver	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
Garfield	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
Iron	0.34	0.00	0.00	0.00	0.00	0.00	0.00*
Kane	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
Millard	0.00	0.40	0.00	0.00	7.59	0.00	0.00*
Piute	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
Sevier	0.00	0.20	0.00	0.00	1.27	1.71	0.00*
Washington	0.00	0.00	0.00	0.00	0.00	0.00	5.66*
Wayne	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
REGIONAL TOTALS	0.34	0.60	0.00	0.00	8.86	1.71	5.66
<u>Northeastern Region</u>							
Daggett	0.00	0.00	0.00	2.97	0.00	0.00	0.00*
Duchesne	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
Uintah	1.37	0.00	0.00	0.00	0.00	0.00	0.00*
REGIONAL TOTALS	1.37	0.00	0.00	2.97	0.00	0.00	0.00
<u>Southeastern Region</u>							
Carbon	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
Emery	0.00	0.00	0.00	0.00	0.00	0.00	0.37*
Grand	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
San Juan	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
REGIONAL TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.37
Unknown counties	0.00	0.00	0.00	0.00	0.00	1.28	0.00
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00

*Closed Season

Table 8. Percentage distribution of Hungarian partridge hunting pressure by region and county, 1982-88.

Region and County	Year						
	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>							
Box Elder	74.65	63.43	73.62	74.98	87.68	68.22	68.42
Cache	9.40	16.80	7.95	0.91	0.72	10.28	9.90
Davis	0.28	1.33	1.81	0.00	0.00	1.40	1.23
Morgan	4.27	1.51	3.66	1.82	0.00	1.40	0.30
Rich	0.57	3.24	0.60	0.00	0.72	0.93	0.00
Summit	1.14	1.14	0.00	0.00	0.00	0.46	0.61
Weber	1.42	2.10	3.66	0.00	0.00	1.86	1.85
REGIONAL TOTALS	91.75	89.56	91.39	77.79	89.13	84.57	82.36
<u>Central Region</u>							
Juab	0.00	1.14	0.00	0.00	0.72	4.67	0.00*
Salt Lake	0.28	0.00	1.21	1.82	0.00	0.00	3.40*
Sanpete	0.00	0.37	0.00	0.91	0.72	0.46	0.00*
Tooele	3.99	2.10	3.66	12.01	0.72	2.80	4.64
Utah	1.99	3.04	1.21	2.77	1.44	1.40	4.95*
Wasatch	0.85	2.47	0.60	1.82	0.00	0.00	1.23*
REGIONAL TOTALS	7.12	9.13	6.74	19.45	3.62	9.34	14.24
<u>Southern Region</u>							
Beaver	0.00	0.19	1.21	0.00	0.72	0.00	0.00*
Garfield	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
Iron	0.28	0.00	0.00	0.00	0.00	0.00	0.00*
Kane	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
Millard	0.00	0.37	0.00	0.00	2.17	0.00	0.00*
Piute	0.00	0.00	0.16	0.00	0.00	0.00	0.00*
Sevier	0.00	0.37	0.00	0.00	3.62	0.93	0.00*
Washington	0.00	0.00	0.00	0.00	0.00	0.46	2.16*
Wayne	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
REGIONAL TOTALS	0.28	0.93	1.21	0.00	6.52	1.39	2.15
<u>Northeastern Region</u>							
Daggett	0.28	0.00	0.00	0.91	0.00	0.00	0.00*
Duchesne	0.00	0.00	0.00	0.00	0.00	0.00	0.30*
Uintah	0.57	0.00	0.60	0.91	0.72	0.00	0.00*
REGIONAL TOTALS	0.85	0.00	0.60	1.82	0.72	0.00	0.29
<u>Southeastern Region</u>							
Carbon	0.00	0.19	0.00	0.00	0.00	0.00	0.61*
Emery	0.00	0.00	0.00	0.00	0.00	0.00	0.30*
Grand	0.00	0.00	0.00	0.91	0.00	0.00	0.00*
San Juan	0.00	0.00	0.00	0.00	0.00	0.00	0.00*
REGIONAL TOTALS	0.00	0.19	0.00	0.91	0.00	0.00	0.92
Unknown counties	0.00	0.19	0.00	0.00	0.00	4.67	0.00
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00

*Closed Season

Table 9. Statewide summary of Hungarian partridge harvest statistics, 1955-88.

Year	Total Hunters	Total Harvest	Hunter-days Afield	Huns Per Hunter-day	Huns Per Hunter
1955	---	---	---	---	0.39
1956	---	---	---	---	0.89
1957	---	---	---	---	0.45
1958	---	---	---	---	1.34
1959	1,846	1,820	3,354	0.54	0.99
1960	2,847	4,877	4,929	0.99	1.71
1961	3,205	3,648	6,645	0.54	1.13
1962	3,440	8,970	9,153	0.98	2.61
1963	4,676	13,343	13,291	1.00	2.85
1964	4,249	11,812	9,688	1.22	2.78
1965	4,498	12,183	11,798	1.03	2.71
1966	4,549	15,348	11,473	1.34	3.37
1967	6,321	16,049	15,105	1.06	2.54
1968	6,935	17,089	16,674	1.02	2.46
1969	5,591	11,966	15,515	0.77	2.14
1970	4,128	8,236	9,818	0.84	2.00
1971	4,276	9,407	11,011	0.85	2.20
1972	4,754	7,335	12,135	0.60	1.54
1973	3,566	6,014	11,516	0.52	1.69
1974	4,103	7,389	10,789	0.68	1.80
1975	3,409	5,358	8,216	0.65	1.57
1976	3,517	6,287	8,753	0.72	1.79
1977	5,557	6,360	9,058	0.70	1.79
1978	4,743	12,969	12,328	1.05	2.73
1979	3,435	6,200	7,787	0.80	1.80
1980	3,359	8,466	10,366	0.82	2.52
1981	3,545	8,916	10,147	0.88	2.52
1982	2,590	4,475	5,379	0.83	1.73
1983	2,889	6,506	6,998	0.93	2.25
1984	1,523	1,360	3,309	0.41	0.89
1985	1,157	707	2,314	0.31	0.61
1986	1,257	1,627	2,843	0.57	1.30
1987	2,010	5,711	5,246	1.09	2.53
1988	2,471	4,424	5,392	0.82	1.79
<hr/>					
TOTAL (1959-88)	108,446	234,852	271,030	(24.56)	(60.34)
<hr/>					
AVERAGES (1959-87)	3,654	7,946	9,160	0.82	2.02

Table 10. Hungarian partridge field bag check summary, 1988.

Region and County	ALL HUNTS				COMPLETE HUNTS				
	Total Parties	Total Hunters	Total Hours	Total Birds/100 Hr	Total Complete Hunts	Total Hunters	Total Hours	Total Birds/100 Hr	Birds/Hunter
<u>Northern Region</u>									
Box Elder	37	79	248	62 25	28	47	202	49 24	1.04
Cache	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	37	79	248	62 25	28	47	202	49 24	1.04
<u>Central Region</u>									
Juab									
Salt Lake									
Sanpete				NO DATA					
Tooele									
Utah									
Wasatch									
REGIONAL TOTALS									
<u>Southern Region</u>									
Beaver									
Garfield									
Iron									
Kane									
Millard				NOT APPLICABLE					
Piute									
Sevier									
Washington									
Wayne									
REGIONAL TOTALS									
<u>Northeastern Region</u>									
Daggett									
Duchesne				NOT APPLICABLE					
Uintah									
REGIONAL TOTALS									
<u>Southeastern Region</u>									
Carbon									
Emery									
Grand				NOT APPLICABLE					
San Juan									
REGIONAL TOTALS									
STATE TOTALS	37	79	248	62 25	28	47	202	49 24	1.04

Table 11. Hungarian partridge hunter success trend determined by field bag checks, 1983-88.

Region and County	1983		1984		1985		1986		1987		1988	
	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter
<u>Northern Region</u>												
Box Elder	17	0.62	--	--	3	0.16	2	0.16	31	1.69	24	1.04
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	17	0.62	--	--	3	0.16	2	0.16	31	1.69	24	1.04
<u>Central Region</u>												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
<u>Southern Region</u>												
Beaver												
Garfield												
Iron												
Kane												
Millard												
Piute												
Sevier												
Washington												
Wayne												
REGIONAL TOTALS												
<u>Northeastern Region</u>												
Daggett												
Duchesne												
Uintah												
REGIONAL TOTALS												
<u>Southeastern Region</u>												
Carbon												
Emery												
Grand												
San Juan												
REGIONAL TOTALS												
STATE TOTALS	17	0.62	--	--	3	0.16	2	0.16	31	1.69	24	1.04

WILD TURKEY

SUMMARY

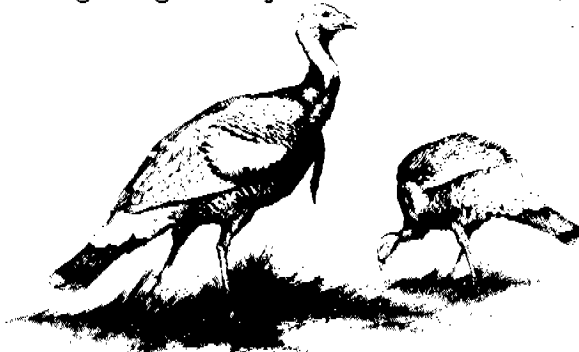
Turkey populations continued to improve on all units, and the increasing numbers are again reflected in the reported observations and the annual harvest.

Hunter success and turkey observation data for the 1988 spring season indicated that the East Zion area had another year of increasing turkey population. A new record of 44 birds harvest was reported for this unit. The Boulder Mountains and LaSal Mountains also indicated growing populations. However, the remaining units of the state were closed to hunting. Rio Grande turkeys were released on Pine Valley mountain in 1984, but the population was not considered to be huntable in 1988. A fall turkey hunting season was not held anywhere in 1988.

Spring hunting pressure was up again in 1988. Complaints about hunters interfering with each other due to over-crowding were common. Concern for hunter safety may require further restrictions in pressure. It is quite obvious that hunter interest in spring turkeys can outstrip supply. We need to continue to establish new populations, then cautiously promote safe ethical hunting practices.

Hunter success was down 6 percent. A total of 66 turkeys were harvested in the spring hunt of 1988 compared to 60 taken in 1987. This was a new record spring harvest. Observations of turkeys remained higher than average in 1988, but percent of hunters observing turkeys dropped on the East Zion area.

Temperatures in southcentral and southeastern Utah were at or above normal April through August, and precipitation was above normal in April. In the southcentral climatic subdivision (E. Zion turkey unit) precipitation was 1.24 inches above normal in April. This could have reduced hatching success, however above average temperatures and normal or slight below normal precipitation in May through August may have increased brood survival.



Harvest

Spring Gobbler Season

Results of the 1988 spring season are shown in Table 1 of this section. The trend of these data since the first spring season in 1967 is shown in Table 2 and Figures 1 and 2. Specific harvest information is listed in Table 3. Statewide summary of fall hunt statistics is in Table 4. The 1988 spring season compared to 1987 and the previous 20-year average follow:

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Permits sold	490	+28	+180
Hunters afield	421	+21	+190
Turkeys harvested	66	+10	+247
Hunter-days afield	1,267	+10	+197
Percent hunter success	16	-6	+23
Turkeys bagged per hunter-day	0.05	0	+25
Percent of hunters who observed turkeys	50	-12	+32

Permit sales and hunters afield increased substantially from 1987 and were well above average. Total harvest increased from 60 in 1987 to 66 in 1988, which is 247 percent above the 20-year average. This was the second year of record high harvest. Hunter success rates remained above average. The proportion of hunters who reported having observed turkeys was 32 percent above average. The East Zion unit accounted for 54 percent of the hunting pressure based on hunter-days afield, compared with 43 percent in 1987. The East Zion unit yielded two-thirds of the statewide harvest each of the last two years.

The trend of spring turkey harvest statistics is shown in Figures 1 and 2. All successful hunters, except one, claimed to have used shotguns in taking turkeys. Five percent of the hunters (16) used bows and 1 percent used rifles (4) which were illegal. Seven turkeys were reported crippled and not recovered. Seven of 54 known kills were suspected of being females and another eight are suspected of being jakes.

Thirty-three percent of the harvest (15 of 46) occurred on opening weekend, 13 percent the following weekend, 9 percent the following weekend and 2 percent the last weekend of the hunt. These weekends amounted to 8 days or 10.25 birds/weekend day. The remaining 56 percent of the harvest occurred on weekdays (15 days) or 1.33 birds per weekday. This indicates more weekday hunting in 1988 compared with 1987. This corresponds with increasing hunting pressure and the desire for isolation or separation from other hunters.

Seven of 343 hunters commented that there were too many hunters. Thirteen commented that there were not very many turkeys or they would like more turkeys. Five of 109 reports from the Boulder Mountains indicated that logging interfered with population distribution, habitat, or otherwise disturbed their hunt.

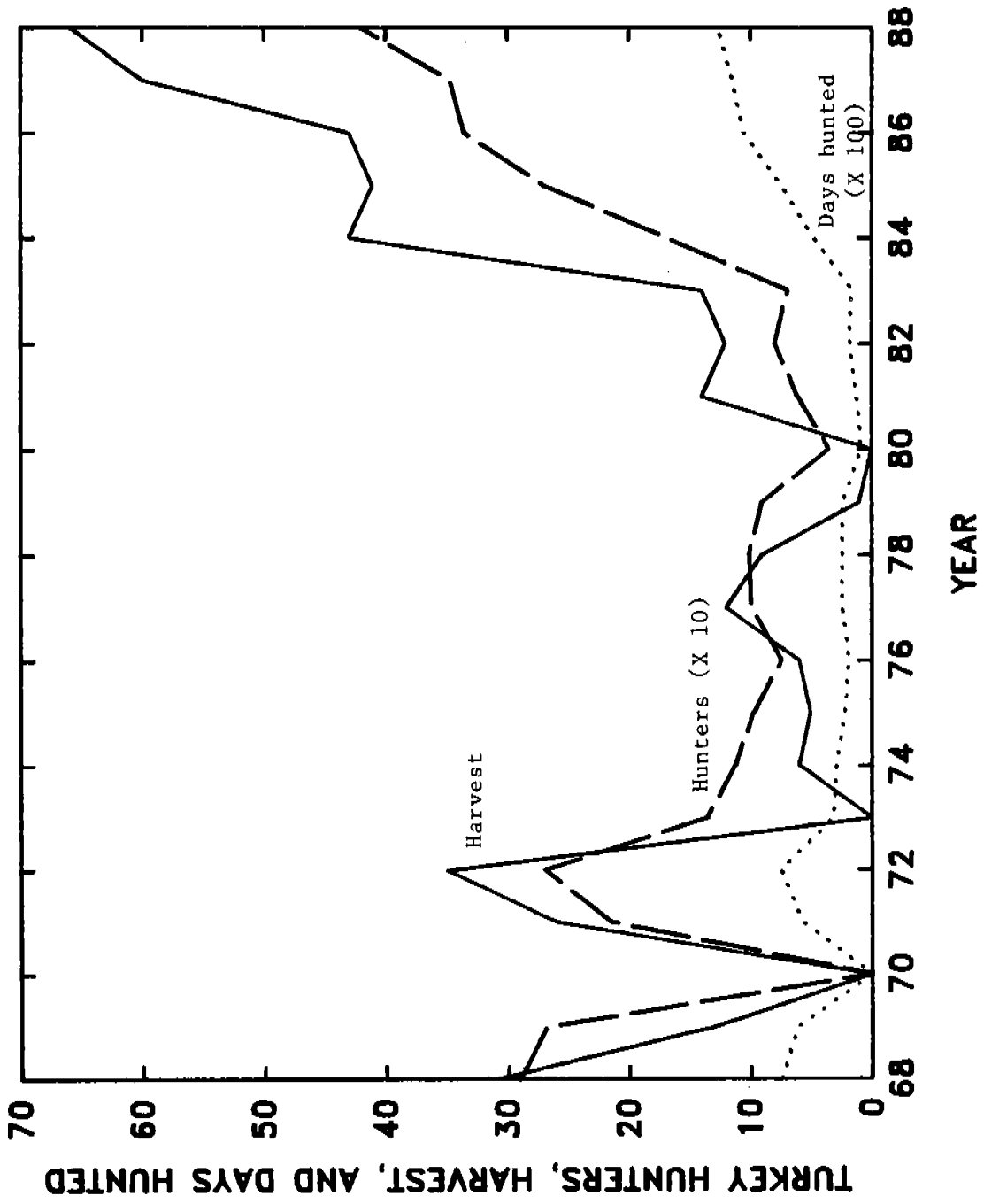
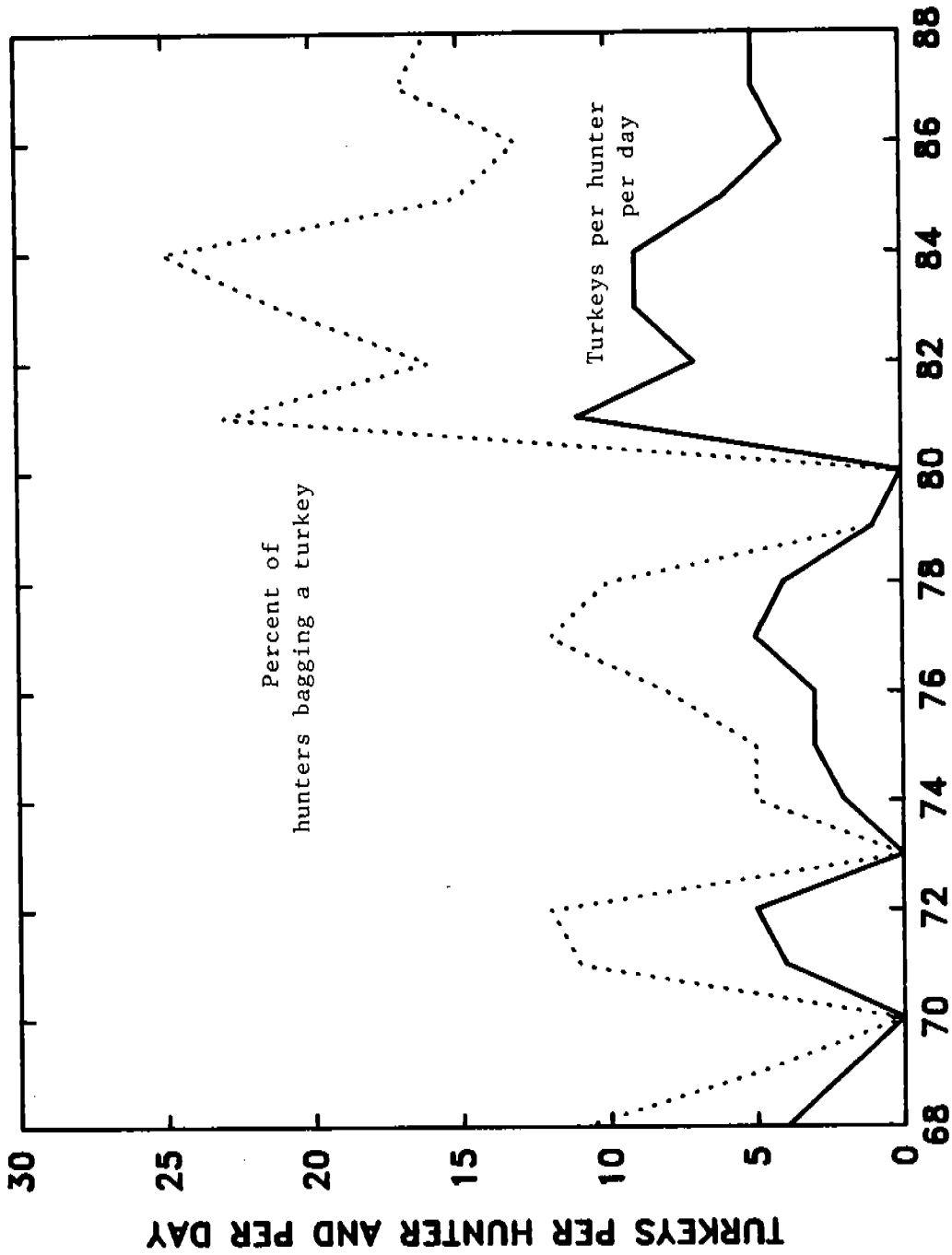


Figure 1. Spring wild turkey hunters, harvest, and days hunted, 1968-88.



YEAR

Figure 2. Spring wild turkey hunting success, 1968-88.

Table 1. Summary of the 1988 spring turkey season.

Data	Elk Ridge		East Zion		Boulder		LaSal		Beaver		Pine Valley		Mixed Units		STATE TOTALS	
	Rep't	Calc	Rep't	Calc	Rep't	Calc	Rep't	Calc	Rep't	Calc	Rep't	Calc	Rep't	Calc	Rep't	Calc
Permits sold															490	--
No hunts															56	68
Hunters afield	C	180	221	109	134	53	65		C				12 ^a	(15)	343	421
Hunter-days	L	554	680	312	383	162	199		L				(31)	(38)	1,032	1,267
Turkeys bagged	O	36	44	9	11	9	11		O				0	0	54	66
Percent success	S	20	--	8	--	16	--		S				0	--	16	--
Turkeys bagged per hunter-day	E	0.06	--	0.03	--	0.06	--		E				--	--	0.05	--
Reported crippling loss (loss/100 bagged)	D	17	--	11	--	0	--		D				--	--	13	--
Turkeys observed	S	980	--	227	--	156	--		S				32	--	1,366	--
Gobblers	E	292	--	84	--	64	--		E				8	--	440	--
Hens	A	595	--	115	--	65	--		A				15	--	778	--
Unidentified	S	93	--	28	--	27	--		S				9	--	148	--
Number of hunters who saw turkeys	O	81	--	54	--	37	--		O				1	--	172	--
Percent of hunters who saw turkeys	N	45	--	50	--	70	--		N				75	--	50	--

Projection factor = 490 permits sold/399 questionnaires returned = 1.2280701

() Hunters hunted more than one area; data included in specific area hunted.

^aFigures do not sum because these hunters hunted another unit as their primary hunting area and were not counted twice.

Hunters afield and days by unit were as follows: Boulder (8-19), 5 of these were from E. Zion as their primary unit, 3 from the LaSals; East Zion (1-3), from Boulder; LaSal (1-4), from East Zion; Pine Valley (1-1), from Boulder.

^bThis area was closed during 1988 spring turkey season.

Table 2. Summary of turkey harvest statistics for spring gobbler seasons, 1967-88.

Hunting Unit	Year	Hunters		Total Harvest	Hunter-days		Percent Success*	Turkeys per Hunter-day		Percent of Hunters Observing Turkeys	Total Permits**
		Afield			Afield			Hunter-day	Observing Turkeys		
EAST ZION	1967	24	9	59	38	0.15	58				
	1968	130	16	364	11	0.04	48				
	1969	77	4	210	6	0.02	35				
	1970				N O S E A S O N						
	1971	106	14	272	12	0.05	38				
	1972	113	20	321	14	0.06	47				
	1973	43	0	96	0	0.00	14				
	1974	34	2	73	7	0.03	23				
	1975	29	3	42	8	0.06	33				
	1976	31	5	74	16	0.05	38				
	1977	47	6	117	13	0.05	48				
	1978	36	4	80	13	0.06	56				
	1979	35	1	95	4	0.01	11				
	1980	35	0	84	0	0.00	17				
	1981	39	13	94	32	0.14	68				
	1982	62	11	134	18	0.08	70				
	1983	48	12	122	25	0.10	68				
	1984	108	30	313	27	0.09	70				
	1985	129	24	368	19	0.07	60				
1986	173	31	508	18	0.06	68					
1987	153	40	500	26	0.08	74					
1988	221	44	680	20	0.06	45					

Table 2. (continued)

Hunting Unit	Year	Hunters		Total Harvest	Hunter-days		Percent Success*	Turkeys per Hunter-day	Percent of Hunters	
		Afield			Afield				Observing Turkeys	Total Permits**
BOULDER MOUNTAINS	1967	17		2	43		12	0.05		75
	1968	134		15	330		10	0.05		33
	1969	141		6	300		4	0.02		16
	1970					N O S E A S O N				
	1971	27		1	64		4	0.02		13
	1972	42		3	107		8	0.03		28
	1973	22		0	52		0	0.00		6
	1974	23		0	56		0	0.00		25
	1975	16		1	34		7	0.04		8
	1976	12		0	25		0	0.00		10
	1977	6		0	13		0	0.00		40
	1978	16		1	31		0	0.00		14
	1979	5		0	10		0	0.00		0
	1980					N O S E A S O N				
	1981					N O S E A S O N				
	1982					N O S E A S O N				
	1983	6		1	7		20	0.17		40
	1984	33		9	85		27	0.11		73
	1985	73		7	187		10	0.04		46
1986	123		8	354		7	0.02		44	
1987	105		11	363		7	0.03		40	
1988	134		11	383		8	0.03		50	

Table 2. (continued)

Hunting Unit	Year	Hunters		Total Harvest	Hunter-days		Percent Success*	Turkeys per Hunter-day	Percent of Hunters Observing Turkeys	Total Permits**
		Afield			Afield					
LASAL MOUNTAINS	1967	6	0	0	16	0	0.00	0.00	33	
	1968	17	0	0	44	0	0.00	0.00	62	
	1969	39	3	3	102	9	0.03	0.03	24	
	1970				NO SEASON					
	1971	17	1	1	34	6	0.03	0.03	20	
	1972	50	3	3	129	7	0.03	0.03	29	
	1973	23	0	0	53	0	0.00	0.00	16	
	1974	20	0	0	66	0	0.00	0.00	11	
	1975	11	0	0	30	0	0.00	0.00	33	
	1976	8	0	0	25	0	0.00	0.00	14	
	1977	24	4	4	53	15	0.07	0.07	45	
	1978	32	2	2	78	7	0.03	0.03	38	
	1979	34	0	0	74	0	0.00	0.00	7	
	1980				NO SEASON					
	1981	18	1	1	31	6	0.03	0.03	24	
	1982	18	1	1	50	6	0.02	0.02	35	
	1983	12	1	1	27	10	0.10	0.10	30	
	1984	24	4	4	70	19	0.06	0.06	88	
	1985	72	10	10	194	14	0.05	0.05	42	
1986	51	4	4	192	7	0.02	0.02	45		
1987	74	6	6	218	9	0.03	0.03	50		
1988	65	11	11	199	16	0.06	0.06	70		

Table 2. (continued)

Hunting Unit	Year	Hunters		Total Harvest	Hunter-days		Percent Success*	Turkeys per Hunter-day	Percent of Hunters Observing Turkeys	Total Permits**
		Afield			Afield					
BEAVER MOUNTAINS	1971	27		2	54	8	0.04	39		
	1972	17		2	53	13	0.04	20		
	1973	17		0	34	0	0.00	7		
	1974	1		0	1	0	0.00	0		
	1975	5		0	7	0	0.00	0		
	1976	2		0	8	0	0.00	0		
	1977	4		0	14	0	0.00	0		
	1978	2		0	7	0	0.00	50		
	1979					NO SEASON				
	1980					NO SEASON				
1981					NO SEASON					
1982					NO SEASON					
1983					NO SEASON					
1984					NO SEASON					
1985					NO SEASON					
1986					NO SEASON					
1987					NO SEASON					
1988					NO SEASON					

Table 2 (continued)

Hunting Unit	Year	Hunters Afield	Total Harvest	Hunter-days Afield	Percent Success*	Turkeys per Hunter-day	Percent of Hunters Observing Turkeys	Total Permits**
PINE VALLEY MOUNTAINS	1971	23	4	92	15	0.04	70	
	1972	22	1	52	5	0.02	42	
	1973	17	0	38	0	0.00	7	
	1974	8	1	23	14	0.05	43	
	1975	6	0	12	0	0.00	0	
	1976		0	13	0	0.00	40	
	1977	2	0	7	0	0.00	0	
	1978	0	0	0	0	0.00	0	
	1979	3	0	15	0	0.00	0	
	1980	0	0	0	0	0.00	0	
	1981	2	0	2	0	0.00	0	
	1982	0	0	0	0	0.00	0	
	1983	3	0	5	0	0.00	0	
	1984***	0	0	0	0	0.00	0	
	1985***		NO SEASON					
	1986***		NO SEASON					
	1987	8	2	68	13	0.02	50	
	1988***		NO SEASON					

Table 2 (continued)

Hunting Unit	Year	Hunters		Total Harvest	Hunter-days		Percent Success*	Turkeys per Hunter-day	Percent of Hunters Observing Turkeys	Total Permits**
		Afield			Afield					
BLUE MOUNTAIN- ELK RIDGE	1974	17		2	34		13	0.07		27
	1975	19		1	62		6	0.02		56
	1976	11		0	23		0	0.00		33
	1977	7		1	14		17	0.08		17
	1978	12		2	39		18	0.06		36
	1979	8		0	17		0	0.00		0
	1980				NO		SEASON			
	1981				NO		SEASON			
	1982				NO		SEASON			
	1983				NO		SEASON			
	1984				NO		SEASON			
	1985				NO		SEASON			
	1986				NO		SEASON			
	1987				NO		SEASON			
	1988				NO		SEASON			

Table 2 (continued)

Hunting Unit	Year	Hunters		Total Harvest	Hunter-days		Percent Success*	Turkeys per Hunter-day	Percent of Hunters Observing Turkeys	Total Permits**
		Afield			Afield					
MIXED UNITS	1971	15		4	--		15	--	61	
	1972	25		5	89		18	0.05	50	
	1973	12		0	38		0	0.00	0	
	1974	9		0	36		0	0.00	12	
	1975	11		0	32		0	0.00	22	
	1976	4		1	17		25	0.07	100	
	1977	9		1	29		13	0.04	50	
	1978	3		0	11		0	0.00	67	
	1979	6		0	27		0	0.00	20	
	1980	0		0	0		0	0.00	0	
	1981	1		0	2		0	0.00	100	
	1982	0		0	0		0	0.00	0	
	1983	0		0	0		0	0.00	0	
	1984	4		0	15		0	0.00	33	
	1985	4		0	6		0	0.00	67	
	1986	12		0	36		0	0.00	60	
	1987	11		0	28		0	0.00	0	
	1988	12		0	31		0	0.00	75	

Table 2 (continued)

Hunting Unit	Year	Hunters		Total Harvest	Hunter-days Afield	Percent Success*	Turkeys per Hunter-day	Percent of Hunters		Total Permits**
		Afield	Harvest					Observing Turkeys	Hunters	
STATE TOTALS	1968	290	31	738	11	0.04	41	310		
	1969	267	13	612	5	0.02	22	276		
	1970			NO SEASON						
	1971	215	26	576	11	0.04	38	223		
	1972	269	35	751	12	0.05	39	285		
	1973	135	0	311	0	0.00	10	150		
	1974	112	6	289	5	0.02	22	121		
	1975	97	5	219	5	0.03	29	103		
	1976	74	6	185	8	0.03	32	81		
	1977	99	12	248	12	0.05	39	108		
	1978	101	9	246	10	0.04	42	116		
	1979	90	1	237	1	0.01	8	113		
	1980	35	0	84	0	0.00	17	40		
	1981	60	14	129	23	0.11	53	83		
	1982	80	12	184	16	0.07	62	91		
	1983	69	14	161	21	0.09	55	92		
	1984	169	43	482	25	0.09	72	190		
	1985	270	41	747	15	0.06	52	314		
	1986	335	43	1,054	13	0.04	57	362		
	1987	347	60	1,150	17	0.05	57	384		
	1988	421	66	1,267	16	0.05	50	490		
STATE TOTALS (1967-88)		3,314	448	9,788	---	---	(804)	3,984		
STATE AVERAGES (1967-87)		145	19	426	13	0.04	38	175		

*Based on the number of hunters bagging one or more turkeys.

**Total permits are sold on a statewide basis and not by unit.

***Note the Pine Valley Mountains Unit was closed by emergency action in 1984 and by amendment to the proclamation in 1985 to protect Rio Grande turkeys released on the area in February 1984. It was opened in 1987 and closed in 1988 by proclamation.

Table 3. Date of kill, beard and spur length of turkeys harvested during Spring 1988.

Hunting Unit	Date of Kill	Beard Length	Spur Length (Inches)
EAST ZION	4/30	4.00	0.25
	5/18	9.00	1.125
	5/18	9.00	1.125
	--	5.00	1.00
	5/8	6.00	1.125
	5/5	4.00	--
	5/5	4.00	--
	5/14	7.00	0.25
	5/8	5.00	0.25
	5/14	10.00	0.75
	4/30	8.00	0.75
	--	6.00	0.75
	4/30	2.00	0.50
	5/3	7.00	1.00
	5/28	5.00	0.75
	--	9.00	1.00
	5/20	8.00	1.00
	5/7	6.00	--
	5/7	6.00	0.50
	5/3	7.00	--
	5/3	8.00	--
	5/14	--	--
	5/22	10.00	0.75
	5/8	9.00	0.50
	5/2*	4.00	0.50
	--	10.00	1.00
	--	3.00	--
	4/30	6.00	--
	4/30	8.00	0.375
	4/30	9.00	8.00
5/22	5.00	--	
4/30	9.00	--	
4/30	6.00	0.875	
LA SAL	5/2	6.00	1.00
	5/12	9.00	--
	4/30	--	--
	4/30	7.00	0.625
	4/30	7.00	--
	5/4	9.00	--
	5/19	6.00	0.50
5/7	5.00	--	
BOULDER	4/30	8.00	0.625
	4/30	4.00	1.00
	4/30	8.00	0.50
	5/14	9.00	1.00
	5/6	5.00	0.625
	5/10	9.00	0.875
	5/12	6.00	0.25
	5/12	5.00	--
4/30	9.00	--	

*Possible violation of season date, sex, or weapon. All successful turkey hunters reported using shotguns except one who did not report. Four hunters did not report date of kill, beard length or spur length.

Table 4. Statewide summary of fall wild turkey harvest statistics, 1963-88.

Year	Permits Sold		Hunters		Hunter-days		Turkeys Bagged		Percent Success**		Turkeys/Hunter-Day		Crippling Loss/100 Bagged		Turkeys Observed		% Hunters Observing Turkeys	
	Afield		Afield		Afield		Bagged		Success**		Hunter-Day		100 Bagged	Observed		Hunters	Observing	
1963	297		248		--		75		30		--		15	--	--	48		
1964	229		211		362		81		38		0.22		15	1,158	60			
1965	214		207		406		50		24		0.12		8	730	29			
1966*	192		187		471		43		23		0.09		7	756	36			
1967	146		135		405		40		30		0.10		16	748	48			
1968*	368		344		883		183		38		0.21		15	2,321	54			
1969	223		210		549		36		11		0.06		19	466	17			
1970	197		174		418		58		24		0.14		6	564	31			
1971	184		174		444		60		21		0.14		8	451	28			
1972	124		118		303		12		7		0.04		10	173	21			
1973***	--		--		--		--		--		--		--	--	--	--		
1974	29		26		79		3		12		0.04		33	83	38			
1975	58		46		115		7		15		0.06		0	57	26			
1976	68		56		136		15		27		0.11		7	182	32			
1977	60		53		133		7		15		0.06		0	48	18			
1978*	102		88		223		7		9		0.03		33	335	38			
1979	46		36		71		3		9		0.05		0	61	19			
1980	43		35		69		11		32		0.16		38	127	44			
1981	63		55		114		12		22		0.11		56	141	32			
1982	56		50		136		11		23		0.08		10	185	47			
1983	61		49		112		15		28		0.13		0	303	49			
1984	97		86		193		28		32		0.14		14	380	49			
1985***	--		--		--		--		--		--		--	--	--	--		
1986***	--		--		--		--		--		--		--	--	--	--		
1987***	--		--		--		--		--		--		--	--	--	--		
1988***	--		--		--		--		--		--		--	--	--	--		
TOTALS (1963-84)	2,801		2,538		5,486		746		(470)		0.14		(310)	9,084	(764)			
AVERAGES (1963-84)	133		121		261		36		22		0.14		15	433	36			

*Some hunters hunted more than one area or failed to designate areas hunted. This accounts for the difference between totals given above and combined tables of separate units in Tables 5, 6 and 7.

**During 1968, the Boulder Mountain and East Zion units had two-bird season limits and the LaSalle Mountains a one-bird limit; from 1969 through 1972, all areas had a two-bird limit. Hunter success was based on the number of successful hunters rather than total turkeys bagged.

***Closed Season

Table 5. Turkey summer inventory summary, 1988.

Region and County	Distinct Broods		Mean		Mixed Yng & Adults		Total Adults	Total Yng	Total Young/100 Ad	Veh. Miles	Hours of Effort		Birds/100 Hr
	# Ad	Yng	Brood	Ad	Yng	Ad					Yng	Veh. Horse	
<u>Northern Region</u>													
Box Elder													
Cache													
Davis													
Morgan													
Rich													
Summit													
Weber													
REGIONAL TOTALS													
<u>Central Region</u>													
Juab													
Salt Lake													
Sanpete													
Tooele													
Utah													
Wasatch													
REGIONAL TOTALS													
<u>Southern Region</u>													
Beaver													
Garfield													
Iron													
Kane													
Millard													
Piute													
Sevier													
Washington													
Wayne													
REGIONAL TOTALS													
<u>Northeastern Region</u>													
Daggett													
Duchesne													
Uintah													
REGIONAL TOTALS													
<u>Southeastern Region</u>													
Carbon													
Emery													
Grand (LaSal Mt)	1	1	7	7.00	5	41	9	15	48	320			
San Juan	1	1	9	9.00				1	9	900			
REGIONAL TOTALS													
2	2	16	8.00	5	41	9	16	57	356				
STATE TOTALS													

NOT APPLICABLE

NOT APPLICABLE

NOT APPLICABLE

SHARP-TAILED GROUSE

SUMMARY

The Columbian sharp-tailed grouse is one of four species of grouse native to Utah. Sharp-tails were formerly abundant in the valley and foothill areas of northern and central Utah. Sharp-tailed grouse habitats were the most attractive areas for agricultural development and grazing. As a result, 'sharp-tail' habitat was directly converted to farmland or was seriously impacted by heavy grazing.

There was no legal harvest of sharp-tailed grouse from 1980 through 1988. In 1988, the number of birds present on active dancing grounds was substantially greater than in recent year (Table 1.). Two grounds, White's Valley and North White's Valley, which had been inactive for several years prior to 1987 were active again in 1988. It appears sharp-tailed grouse have made a mild recovery. Concurrent with the upswing in sharp-tailed populations has been a succession of mild winters. Since the catastrophic winter of 83-84, all winters have been normal or milder than normal. This certainly must be a factor in the population resurgence (Grandison 1988 personal communications).

In Box Elder County, habitat associated with existing populations of sharp-tailed grouse has been relatively unchanged since 1983 except that about 100,000 acres in Box Elder County have entered into CRP. This may be benefitting sharp-tailed grouse populations by providing undisturbed nesting cover. The value of CRP to wildlife in Utah is being studied.

We have almost no recent data on sharp-tailed grouse populations in the Cache, Weber, and Morgan county areas. By 1984, populations in these areas were at or below minimum viable population levels. Since that time, we have not recognized any sign of significant recovery. Habitats in all these areas remain marginal. Land use patterns have not shown any sign of reversing the trend of gradual loss of habitat (Grandison 1988 personal communication).

SHARP
TAILS

Table 1. Summary of sharp-tailed grouse dancing ground counts, 1976-88.

County	No.	Name	Dancing Ground															
			1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988			
Box Elder	1.	West Hills #1 (located 1977)	21	--	12	3	12	0	12	0	0	0	0	0	0	0	0	
	2.	West Hills #2 (located 1977)	7	--	3	1	0	0	2	0	18	40	40	33				
	3.	West Hills #3 (located 1977)	13	--	0	0	0	0	0	0	0	6	0	0				
	4.	Hunsaker's Field (located 1977)	13	16	3	0	0	0	0	0	0	18	0	3				
	5.	Whites Valley (located 1977)	12	--	0	0	0	6	0	0	2	0	6	7				
	6.	North Whites Valley (located 1977)	10	15	--	0	0	0	0	0	0	--	18	11				
	7.	Pocatello Valley #1 (located 1978)	7	4	1	9	19*	6	2	0	3	--	--	3				
	8.	Pocatello Valley #2 (located 1978)	25	3	6	10	0	8	3	9	20	20	16					
	9.	Pocatello Valley #3 (located 1978)	4	0	0	0	0	0	0	0	--	--	--	--				
	10.	Pocatello Valley #4 (located 1978)	6	0	0	0	0	--	0	0	0	--	--	--				
	11.	Ag. Station					3	0	0	0	0	--	--	--				
	12.	Microwave Tower (located 1987)										6	6	7				
Cache	1.	Bankhead Well (relocated 1975)	6	8	7	2	2	0	0	--	--	--	--					
	2.	Baxter Ridge (relocated 1975)	0	0	--	--	3	5	3	--	--	--	--					
	3.	Crow Mtn. #1 (located 1979)		0	7	4	6	3	--	--	--	--	--	0				
	4.	Crow Mtn. #2 (located 1979)			6	0	5	0	--	--	--	--	--	0				
	5.	High Creek (located 1981)					7	--	--	--	--	--	--	0				
Morgan	1.	Cottonwood #1 (located 1975)	9	14	6	3	--	--	--	--	--	--	--					
	2.	Cottonwood #2 (located 1975)	9	6	16	25	--	--	--	--	--	--	--					
	3.	Deep Creek #2				4	--	--	--	--	--	--	--					
Weber	1.	Monastery (located 1969)	10	Active	Active	3	0	0	0	--	--	--	--					
Total grounds counted			5	10	9	15	16	17	15	11	2	11	6	8	12			
Total grouse counted			34	104	102	71	24	57	31	28	5	29	84	90	80			
Average number of grouse/ground			6.8	10.4	11.3	4.7	1.5	3.4	2.1	2.5	2.5	2.6	14.0	11.3	6.7			

*Counts for Pocatello Valley #1 and #2 were combined.

PTARMIGAN

SUMMARY

The white-tailed ptarmigan (Lagopus leucurus) was introduced into the Uinta Mountains of northern Utah in 1976 with the release of birds captured in Colorado. The initial transplant consisted of 22 paired birds released in June 1976. A second release of 35 mixed young and adults was accomplished in September of that same year.

Surveys on the ptarmigan population continue to document habitat expansion. Two survey techniques are used. A breeding territory survey is conducted from mid- to late June. A brood survey is conducted from mid- to late August. Results of the last 10 years of survey data are located in Tables 1 and 2.

The 1986-87 and 1987-88 winters were relatively mild in northern Utah.

No spring survey of breeding territories was made in 1988.

Brood surveys were made in August 1987, on Flat Top Mountain in Henry's Fork and Joulious Creek. Six brood were observed. Average brood size was 3.33 young.

Hunter Success

Twenty-eight hunters bought \$2.00 permits to hunt ptarmigan in Utah in 1988 (Table 3). An estimated 15 hunters actually pursued ptarmigan and 22 birds were killed. Hunter success was 1.47 birds bagged per hunter-day indicating good production last year and that populations are doing fine.

Some of the hunters hunted in areas where it was unlikely they would see ptarmigan. These were not included in the total hunters afield. Many permits are obtained by sportsmen who think they might hunt during a fishing or elk hunting trip, but don't seriously plan on the ptarmigan hunt.

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Table 1. Summary of white-tailed ptarmigan breeding territories (pairs), 1978-88.

County	Location	1978	1979	1980	1981	(6/12-14)	(6/16-17)	1982	1983	1984	(6/18-19)	1985	1986	1987	1988
Summit	Lake Blanchard				2										
Duchesne	Painter Basin	10 ²													
Duchesne	Gilbert Basin	2							C ⁴			C ⁴	C ⁴		
Duchesne	Atwood Basin								A			A	A		
Duchesne	Yellowstone River			2					N			N	N		
Summit	Henry's Fork		4						C			C	C		
Summit	Flat Top Mtn.								E			E	E		
Summit	Beaver Creek		3	0	0	0			L			L	L		
Summit	Smith's Fork			1					L			L	L		
Utah	Leidy Peak			0 ³					E			E	E		
									D	1		D	D	3	

¹Three territorial males were yearling birds, the result of successful reproduction by released birds in 1976. Two were spring-released birds and two were fall-released.

²An additional 4 males and 1 female were located. Birds from the June 1976 transplant are well represented in the population while only two September released birds have been located. Recruitment from the 1976 and 1977 nesting seasons was evident in the 1978 population.

³A sighting of ptarmigan was reported by a hunter in October 1979. Division Biologists reported droppings at the base of Leidy in the willow on June 25, 1981.

⁴Excessive snow cover precluded access to trail-heads during the June breeding period.

Table 2. Ptarmigan brood inventory, 1979-88.

Area:	DATE									
	8/14-24/79	8/17-29/80	8/18-31/81	8/17-30/82	8/23-30/83	8/26-28/84	8/14-22/85	8/86	8/87	8/25-31/88
<u>Painter Basin</u>										
n	7	7	12	0 ^c	2 ^d	3				
mean brood	3.29	4.71	3.67		4.50					
young/100 adult hens	329	471	314		450					
hens w/o broods	0	0	2		0					
adult males	5	0	14		0					
<u>Henry's Fork</u>										
n	1	0	4	0	0			4	3	3
mean brood	4.00		4.50					3.75	4.00	2.33
young/100 adult hens	400		450					375	217	233
hens w/o broods	0		0					0	3	6 ^f
adult males	1		0							
<u>Yellowstone</u>										
n	0	4	4							
mean brood			4.50	4.25						
young/100 adult hens			450							
hens w/o broods			0							
adult males			0							
<u>Smith's Fork</u>										
n	0	0	0	2 ^e	1 ^e			1		
mean brood	0				3.50			6.00		6.00
young/100 adult hens	0				350			300		120
hens w/o broods	0				0			1		4
adult males	2				0			0		
<u>Atwood Basin</u>										
n	1	1								
mean brood	4.00	5.00								
young/100 adult hens	400	500								
hens w/o broods	0	0								
adult males	3	0								

Table 2. (continued)

Area:	D A T E									
	8/14-24/79	8/17-29/80	8/18-31/81	8/17-30/82	8/23-30/83	8/26-28/84	8/14-22/85	8/86	8/87	8/25-31/88
Flat Top Mountain										
n						1			1	3
mean brood						6.00			6.00	4.33
young/100 adult hens									900	433
hens w/o broods						1			0	9f
adult males									0	0
Little E. Fork - Black's Fork										
n										
Mean brood										
young/100 adult hens										
hens w/o broods										
adult males										
Rainbow Basin										
n						1				
mean brood						4.0				
young/100 adult hens						400				
hens w/o brood						0				
adult males						0				
Gilbert Basin										
n						3				
mean brood						5.00				
young/100 adult hens						500				
hens w/o broods						0				
adult males						3				
Samuel's Draw										
n									1	
mean brood									4.00	
young/100 adult hens									400	
hens w/o broods									0	
adult males									0	
Leidy Peak										
n										1
mean brood										2.00
young/100 adult hens									200	
hens w/o broods									0	
adult males									0	

Table 2. (continued)

Area:	D A T E									
	8/14-24/79	8/17-29/80	8/18-31/81	8/17-30/82	8/23-30/83	8/26-28/84	8/14-22/85	8/86	8/87	8/25-31/88
<u>East F. Black's Fork</u>										
n	0									
mean brood										
young/100 adult hens										
hens w/o broods										
adult males										
<u>Joullious Creek</u>										
n										
mean brood										
young/100 adult hens										
hens w/o broods										
adult males										
TOTAL										
n	12 ^a	11 ^b	20	5	4	4	4	4	7	6.
mean brood	4.50	4.73	4.00	4.20	4.00	4.00	3.50	3.75	3.86	3.33
young/100 adult hens	450	473	364	400	400	350	350	375	236	333
hens w/o brood	0	0	2	0	0	0	0	0	7	19 ^f
adult males	18	0	14	0	0	0	0	0	0	0
Total birds observed	84	63	116	20	20	18	19	19	47	45

^aNot included is observation of 2 hens with brood from Leidy Peak, some 43 miles distant from release site.

^bConsiderably more time spent this year than in previous years.

^cAfter 4 days of searching.

^dOnly 3 days of searching, suspect a minimum of 5 broods present on Trail Rider Pass this year.

^eFlat Top Mountain between Henry's Fork and Smith's Fork.

^fMixed adults

^gNumber of broods.

Table 3. Summary of ptarmigan harvest statistics, 1982-88.

Year	Permits Sold		Hunters		Hunter-days		Ptarmigan Bagged		Birds/Hunter		Ptarmigan/Hunter-Day		Crippling Loss/100 Bagged		Ptarmigan Observed		% Hunters Observing Ptarmigan		Immatures Per 100 Adults	
	Afield		Afield		Afield		Bagged		Hunter		Hunter-Day		Bagged		Observed		Observed			
1982	48	21	33	0	0.00	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0	0	0
1983	31	13	21	14	1.08	0.67	14	0	1.08	0.67	0.67	0	25	30	25	30	30	30	30	
1984	28	20	25	36	1.80	1.44	36	0	1.80	1.44	1.44	0	0	0	0	0	0	0	0	0
1985	55	10	13	7	0.70	0.54	7	14	0.70	0.54	0.54	14	9	14	9	14	14	14	14	
1986	49	14	21	8	0.57	0.36	8	0	0.57	0.36	0.36	0	8	22	8	22	22	22	22	
1987	45	9	9	8	0.89	0.89	8	0	0.89	0.89	0.89	0	0	0	0	0	0	0	0	0
1988	28**	15	15	22	1.47	1.47	22	0	1.47	1.47	1.47	0	59	0	59	0	59	59	59	4.5(11)

**For the first time a handling fee of \$2.00 per permit was charged.

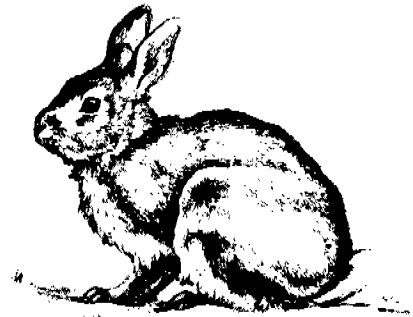
RABBITS AND HARES

SUMMARY

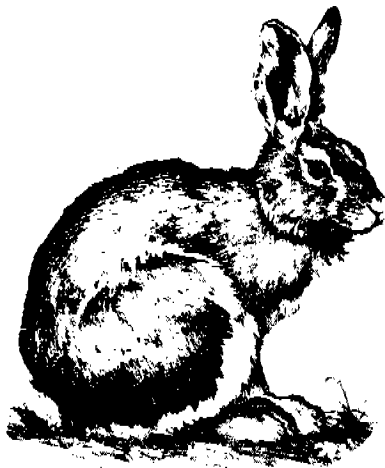
Cottontail populations again increased from a record low in 1985 and are above the 10 year average. An increased breeding population for 1988 was indicated by the 1987 harvest statistics.

Summer roadside counts again indicated an increased population density statewide. Harvest statistics indicated significant improvement in hunter success, with a total harvest increase of 36 percent. Harvest data from mail questionnaires indicate average hunter success while field bag checks on opening weekend indicated above average hunter success.

Cottontail Rabbits



Snowshoe Hares



The 1988 snowshoe hare hunting season indicated improved populations but they were still below the 10 year average.

Harvest statistics for 1988 indicated increased hunter participation but below average hunter success. Although efforts have been made to educate hunters in the identification of the snowshoe hare and the white-tailed jackrabbit, it is still a potential problem which could bias the snowshoe data.

COTTONTAIL RABBIT

Roadside Counts

Results of the annual roadside counts for 1988 are shown in Table 1 of this section. The trend of cottontails observed per mile and young per 100 adults since 1978 is shown in Tables 2 and 3, respectively. Indices for 1988 compared to 1987 and the 10-year average follow:

	1988	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Total miles driven	1,472	-5	-24
Total cottontails counted	825	+58	+13
Cottontails observed per mile	0.56	+65	+60
Young observed per 100 adults	67	-30	-29

An increased breeding population for 1988 was again indicated by 1987 harvest statistics for the third year in a row. The cottontail per mile index increased again and was well above average. However, production was 30 percent below 1987 and the average.

Harvest

Hunter Questionnaire

Results of the 1988 hunter questionnaire are found in Table 4. Trends of cottontails bagged per hunter-day, percent of harvest and percent of pressure (hunter-days) by county since 1981 are found in Tables 5-7. Trends of statewide harvest statistics are found in Table 8 and Figure 2. Results of the 1988 season compared to 1987 and the 21-year average follow:

	1988	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Cottontail hunters	24,076	+18	-4
Cottontail harvest	150,386	+36	-8
Hunter-days afield	97,190	+26	-3
Cottontails per hunter-day	1.55	+8	+7
Cottontails per hunter	6.25	+15	+5

Total hunters and effort increased again in 1988. Total harvest again increased significantly from 1987. Total harvest was 8 percent below average but success was 7 percent above average. Harvest data indicate a year of average populations of cottontails. The mild winters since 1984 may have influenced increased rabbit populations statewide. A population crash was apparent in the spring of 1984, and has been confirmed by the 1984, 1985 and 1986 harvest data. Populations are recovering rapidly. The winters of 1985-86, 1986-87, and 1987-88 have not been harsh.

Field Bag Checks

Results of the survey for 1988 are shown in Table 9. Trends of hunter success as determined by bag checks are shown in Table 10. Following is a comparison of the 1988 field bag check data to 1987 and the 10 year average.

	<u>1988</u>	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Total hunters checked	386	+302	+151
Total hours hunted	1,121	+513	+185
Cottontails per hunter (complete hunts)	2.69	+60	+44
Cottontails bagged per 100 hours	70	+11	+10
Hours per hunter-day (complete hunts)	3.2	-18	+3
Hours per cottontail bagged (complete hunts)	1.2	-48	-45

This data is consistent with mail questionnaire data. Data from the Central Region was not obtained.

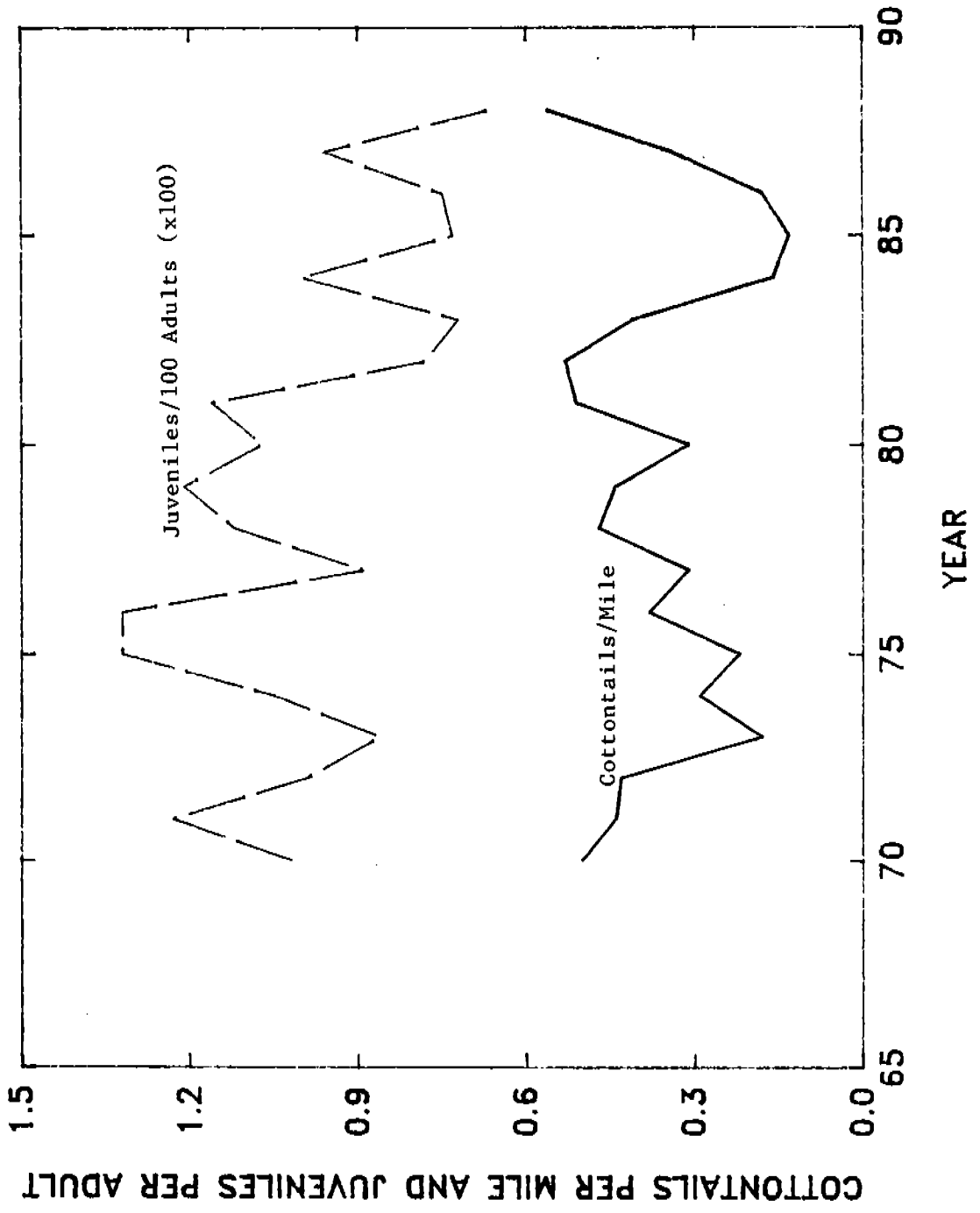


Figure 1. Cottontail rabbit population indices trend.

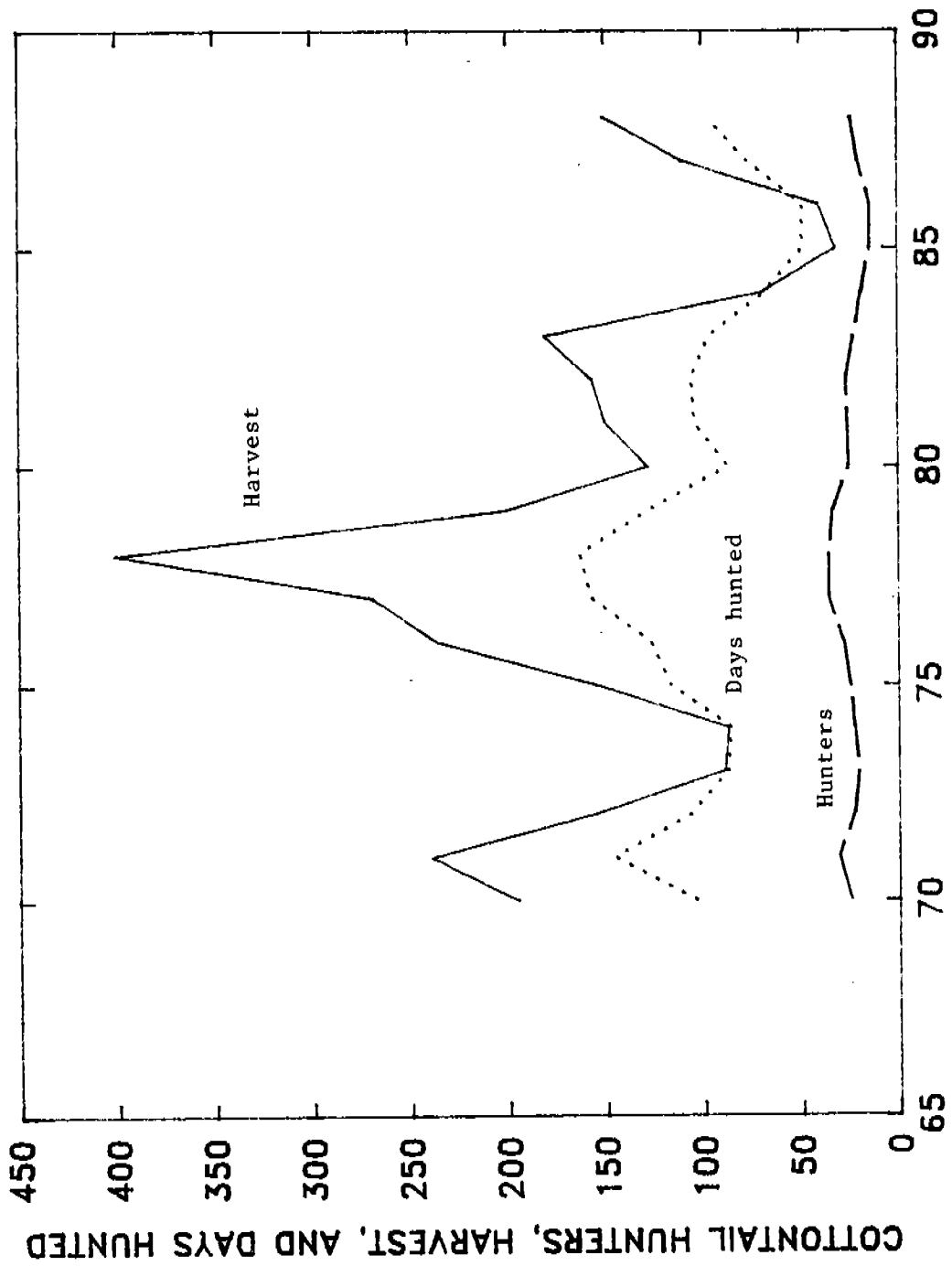


Figure 2. Cottontail rabbit harvest trend.

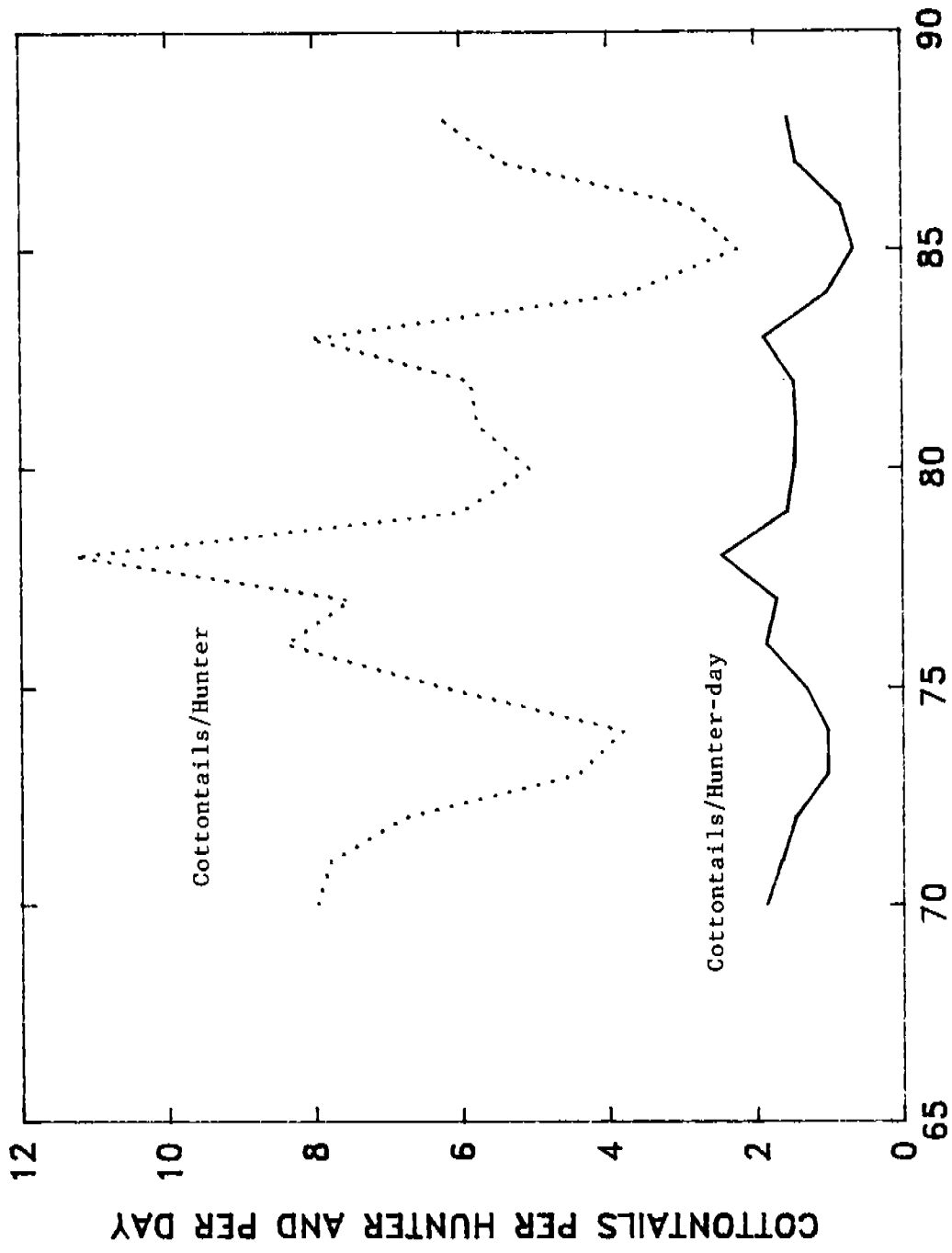


Figure 3. Cottontail rabbit harvest trend.

Table 1. Cottontail rabbit summer inventory summary, 1988.

Region and County	Miles Driven	Rabbits Observed				Young Per 100 Adults	Rabbits Per Mile
		Adults	Young	Unclass.	Total		
<u>Northern Region</u>							
Box Elder	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--
<u>REGIONAL TOTALS</u>							
<u>Central Region</u>							
Juab	37	15	3	2	20	20	0.54
Salt Lake	--	--	--	--	--	--	--
Sanpete	32	8	7	0	15	88	0.47
Tooele	60	5	6	0	11	120	0.18
Utah	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--
<u>REGIONAL TOTALS</u>							
	129	28	16	2	46	57	0.36
<u>Southern Region</u>							
Beaver	90	5	0	0	5	0	0.06
Garfield	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--
Kane	102	45	67	0	112	149	1.09
Millard	232	10	11	1	22	110	0.09
Piute	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--
Washington	90	16	16	0	32	100	0.36
Wayne	90	9	22	0	31	244	0.34
<u>REGIONAL TOTALS</u>							
	604	85	116	1	202	136	0.33
<u>Northeastern Region</u>							
Daggett	153	98	29	3	130	30	0.85
Duchesne	142	148	57	6	211	39	1.49
Uintah	84	23	39	44	106	170	1.26
<u>REGIONAL TOTALS</u>							
	379	269	125	53	447	46	1.18
<u>Southeastern Region</u>							
Carbon	90	1	5	31	37	500	0.41
Emery	90	20	10	1	31	50	0.34
Grand	90	0	4	5	9	--	0.10
San Juan	90	35	17	1	53	49	0.59
<u>REGIONAL TOTALS*</u>							
	360	56	36	38	130	64	0.36
<u>STATE TOTALS</u>							
	1,472	438	293	94	825	67	0.56

Table 2. Summary of cottontail rabbits observed per mile during summer inventory, 1978-88.

Region and County	Year										Average 1978-87	
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987		1988
Northern Region												
Box Elder	0.29	0.33	--	0.37	0.01	--	--	--	0.02	0.03	--	--
Cache	0.05	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	0.10	--	--	--	--	--	--	--	--	--	--	--
Rich	0.47	0.30	0.11	0.13	0.16	--	--	--	0.02	--	--	--
Summit	--	--	--	--	--	0.18	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	0.30	0.32	0.11	0.26	0.06	0.18	--	--	0.02	0.03	--	0.16
Central Region												
Juab	0.19	0.23	0.29	1.12	0.38	--	0.00	0.00	0.02	0.00	0.54	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sarpete	0.86	1.15	1.06	1.29	0.78	0.57	--	--	--	--	0.47	--
Tooele	0.21	0.51	0.26	0.13	0.10	--	0.02	0.00	0.01	0.02	0.18	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	0.43	0.64	0.54	0.85	0.43	0.57	0.01	0.00	0.01	0.02	0.36	0.35
Southern Region												
Beaver	0.22	0.22	0.06	0.19	0.12	0.04	0.01	0.03	0.10	0.04	0.06	--
Garfield	0.13	0.15	--	--	0.27	0.25	--	0.06	0.13	--	--	--
Iron	0.66	0.45	0.45	--	0.18	0.38	0.27	0.33	0.53	0.26	--	--
Kane	0.23	0.34	--	0.69	--	--	--	0.52	0.47	0.97	1.09	--
Millard	0.42	0.52	0.18	0.56	0.28	0.16	0.04	0.02	0.08	0.09	0.09	--
Piute	0.01	0.02	--	0.10	0.13	0.03	--	--	0.06	0.05	--	--
Sevier	0.90	0.55	0.27	0.83	0.27	0.23	--	--	--	--	--	--
Washington	0.16	0.35	0.10	0.24	0.32	0.38	--	0.23	0.12	0.12	0.36	--
Wayne	0.48	0.56	0.54	0.49	0.69	--	0.80	--	0.20	0.24	0.34	--
REGIONAL TOTALS	0.35	0.37	0.22	0.45	0.29	0.19	0.18	0.19	0.24	0.27	0.33	0.28
Northeastern Region												
Daggett	2.77	1.58	0.40	0.32	0.45	0.58	0.22	0.12	0.22	0.66	0.85	--
Duchesne	1.42	0.24	0.42	1.78	2.28	0.58	0.28	0.13	0.44	0.86	1.49	--
Uintah	1.22	0.53	0.27	0.48	1.97	2.97	0.11	0.00	0.02	0.36	1.26	--
REGIONAL TOTALS	1.75	0.84	0.36	0.81	1.46	1.21	0.21	0.09	0.25	0.65	1.18	0.76
Southeastern Region												
Carbon	0.12	0.12	0.15	0.12	0.10	0.11	--	0.05	0.08	0.33	0.41	--
Emery	0.21	0.28	0.16	0.41	0.18	0.23	0.18	0.20	--	0.40	0.34	--
Grand	0.33	0.21	0.11	0.32	0.67	0.15	0.13	0.67	0.08	--	0.10	--
San Juan	0.31	0.20	0.60	0.42	1.26	0.40	--	0.14	0.37	0.29	0.59	--
REGIONAL TOTALS	0.23	0.21	0.30	0.36	0.58	0.25	0.17	0.13	0.17	0.38	0.36	0.28
STATE TOTALS	0.47	0.44	0.31	0.51	0.53	0.41	0.16	0.13	0.18	0.34	0.56	0.35

Table 3. Summary of cottontail rabbits young per 100 adults, 1978-88.

Region and County	Year										Average 1978-87
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	
<u>Northern Region</u>											
Box Elder	126	100	--	77	--	--	--	--	0	25	--
Cache	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--
Rich	130	60	67	43	63	67	--	--	50	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	137	85	67	71	63	67	--	--	20	25	67
<u>Central Region</u>											
Juab	44	13	78	102	53	--	0	0	0	0	20
Salt Lake	--	--	--	--	--	--	--	--	--	--	--
Sanpete	217	312	352	197	209	225	--	--	--	--	88
Tooele	125	100	71	200	80	--	--	0	0	100	120
Utah	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	161	167	194	147	140	225	0	0	0	100	57
<u>Southern Region</u>											
Beaver	70	63	40	55	83	33	0	0	22	0	0
Garfield	64	250	--	--	38	120	--	33	38	--	--
Iron	33	44	23	--	57	35	40	82	75	--	--
Kane	56	82	--	106	--	--	--	100	71	111	149
Millard	88	190	96	170	94	125	75	200	170	114	110
Piute	--	--	--	--	--	200	--	--	--	--	--
Sevier	147	171	350	--	33	61	--	--	--	--	--
Washington	400	94	--	123	150	81	--	73	133	175	100
Wayne	282	214	308	287	343	--	380	--	360	2,100	244
REGIONAL TOTALS	96	139	114	184	145	82	215	85	100	137	136
<u>Northeastern Region</u>											
Daggett	98	123	58	104	140	66	33	46	136	116	30
Duchesne	167	200	61	42	37	16	22	15	26	24	39
Uintah	153	82	160	176	44	76	233	0	100	264	170
REGIONAL TOTALS	125	118	73	67	48	63	42	31	58	74	46
<u>Southeastern Region</u>											
Carbon	118	230	133	83	66	40	--	--	150	567	500
Emery	111	25	70	97	43	75	217	216	--	54	50
Grand	77	50	250	137	148	150	33	300	300	--	--
San Juan	35	30	68	105	72	43	--	43	61	47	49
REGIONAL TOTALS	71	46	79	103	82	54	156	88	69	100	64
STATE TOTALS	112	121	107	116	78	72	100	73	75	96	67

Table 4. Summary of cottontail rabbit hunter success and distribution of harvest and hunting pressure by region and county, 1988.

Region and County	Sample Size*	Hunter-days Afield	Cottontails Bagged	Cottontails/Hunter-day	% of Pressure	% of Harvest
<u>Northern Region</u>						
Box Elder	224	10,235	18,215	1.78	10.53	12.11
Cache	15	1,118	417	.37	1.15	.27
Davis	9	367	183	.50	.37	.12
Morgan	9	200	300	1.50	.20	.19
Rich	28	851	1,586	1.86	.87	1.05
Summit	22	1,268	1,168	.92	1.30	.77
Weber	19	1,035	634	.61	1.06	.42
REGIONAL TOTALS	326	15,077	22,506	1.49	15.51	14.96
<u>Central Region</u>						
Juab	119	5,977	9,099	1.52	6.15	6.05
Salt Lake	20	1,419	751	.53	1.46	.49
Sanpete	77	3,472	5,626	1.62	3.57	3.74
Tooele	262	15,010	20,636	1.37	15.44	13.72
Utah	216	12,472	12,956	1.04	12.83	8.61
Wasatch	15	1,402	1,385	.99	1.44	.92
REGIONAL TOTALS	709	39,754	50,457	1.27	40.90	33.55
<u>Southern Region</u>						
Beaver	14	717	1,035	1.44	.73	.68
Garfield	6	450	634	1.41	.46	.42
Iron	18	1,469	2,320	1.58	1.51	1.54
Kane	9	901	1,268	1.41	.92	.84
Millard	62	4,124	4,508	1.09	4.24	2.99
Piute	7	267	333	1.25	.27	.22
Sevier	43	2,370	3,439	1.45	2.43	2.28
Washington	21	1,369	2,871	2.10	1.40	1.90
Wayne	10	784	1,168	1.49	.80	.77
REGIONAL TOTALS	190	12,455	17,581	1.41	12.81	11.69
<u>Northeastern Region</u>						
Daggett	26	1,402	4,240	3.02	1.44	2.82
Duchesne	104	5,960	14,192	2.38	6.13	9.43
Uintah	116	8,565	19,852	2.32	8.81	13.20
REGIONAL TOTALS	246	15,928	38,285	2.40	16.38	25.45
<u>Southeastern Region</u>						
Carbon	71	5,443	6,995	1.29	5.60	4.65
Emery	64	5,008	8,899	1.78	5.15	5.91
Grand	10	550	1,118	2.03	.56	.74
San Juan	14	701	1,168	1.67	.72	.77
REGIONAL TOTALS	159	11,704	18,182	1.55	12.04	12.09
Unknown Counties	19	2,270	3,372	1.49	2.33	2.24
STATE TOTALS	1,649	97,190	150,386	1.55	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 5. Summary of cottontail rabbits bagged per hunter-day by region and county, 1981-88.

Region and County	Year							
	1981	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>								
Box Elder	1.99	1.12	1.44	0.72	0.46	0.73	2.25	1.78
Cache	0.68	0.61	0.77	0.71	0.93	0.18	1.78	0.37
Davis	0.07	0.00	1.05	0.57	0.00	4.00	0.67	0.50
Morgan	1.46	0.95	1.65	1.19	0.55	0.05	1.17	1.50
Rich	1.87	1.03	2.28	1.61	0.52	0.74	1.33	1.86
Summit	1.21	0.87	1.44	0.17	0.35	0.29	1.44	0.92
Weber	1.10	0.70	0.56	0.68	0.13	0.69	2.83	0.61
<u>REGIONAL TOTALS</u>	<u>1.65</u>	<u>1.00</u>	<u>1.43</u>	<u>1.76</u>	<u>0.40</u>	<u>0.57</u>	<u>2.14</u>	<u>1.49</u>
<u>Central Region</u>								
Juab	1.73	1.43	1.21	1.41	0.56	0.78	1.74	1.52
Salt Lake	0.71	1.07	1.74	0.88	0.21	1.06	1.26	0.53
Sanpete	1.44	0.86	1.12	0.48	0.35	0.60	1.25	1.62
Tooele	1.29	1.12	1.21	0.82	0.53	0.71	1.32	1.37
Utah	0.99	0.74	1.02	0.82	0.65	0.94	1.21	1.04
Wasatch	0.82	0.80	0.49	0.69	0.48	0.84	1.28	0.99
<u>REGIONAL TOTALS</u>	<u>1.26</u>	<u>1.06</u>	<u>1.16</u>	<u>0.88</u>	<u>0.53</u>	<u>0.78</u>	<u>1.32</u>	<u>1.27</u>
<u>Southern Region</u>								
Beaver	1.79	2.00	1.25	0.28	0.50	0.61	1.00	1.44
Garfield	1.05	1.86	0.98	0.84	1.00	1.25	0.71	1.41
Iron	1.03	0.77	0.80	1.48	0.60	0.87	0.44	1.58
Kane	0.81	1.84	0.58	2.19	2.07	1.12	0.58	1.41
Millard	1.57	1.58	1.04	0.89	0.86	0.70	0.82	1.09
Piute	1.52	0.38	0.80	0.67	1.00	1.00	1.00	1.25
Sevier	0.97	0.87	0.66	0.79	0.56	0.56	1.04	1.45
Washington	1.03	1.53	0.92	0.93	1.08	0.94	0.95	2.10
Wayne	2.69	1.41	1.52	1.93	1.45	1.53	1.22	1.49
<u>REGIONAL TOTALS</u>	<u>1.32</u>	<u>1.39</u>	<u>0.93</u>	<u>1.06</u>	<u>0.94</u>	<u>0.89</u>	<u>0.85</u>	<u>1.41</u>
<u>Northeastern Region</u>								
Daggett	1.12	1.38	1.77	1.19	1.00	1.96	3.16	3.02
Duchesne	1.80	2.17	3.41	1.62	0.63	1.01	1.63	2.38
Uintah	1.41	2.18	3.09	1.47	0.49	0.49	1.89	2.32
<u>REGIONAL TOTALS</u>	<u>1.53</u>	<u>2.13</u>	<u>3.12</u>	<u>1.51</u>	<u>0.59</u>	<u>0.96</u>	<u>1.95</u>	<u>2.40</u>
<u>Southeastern Region</u>								
Carbon	1.42	1.61	1.73	0.52	0.69	0.49	1.34	1.29
Emery	1.30	1.38	1.61	0.78	0.64	1.05	1.00	1.78
Grand	1.56	2.44	2.27	1.53	1.74	1.28	2.00	2.03
San Juan	1.87	2.93	2.09	1.51	0.89	1.27	2.57	1.67
<u>REGIONAL TOTALS</u>	<u>1.53</u>	<u>1.81</u>	<u>1.79</u>	<u>0.90</u>	<u>0.77</u>	<u>0.93</u>	<u>1.37</u>	<u>1.55</u>
Unknown counties	2.60	1.35	1.78	0.00	1.11	2.50	1.04	1.49
Mixed counties	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<u>STATE TOTALS</u>	<u>1.44</u>	<u>1.48</u>	<u>1.88</u>	<u>1.02</u>	<u>0.65</u>	<u>0.83</u>	<u>1.43</u>	<u>1.55</u>

Table 6. Percentage distribution of cottontail rabbit harvest by region and county, 1981-88.

Region and County	Year							
	1981	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>								
Box Elder	14.87	6.05	5.93	5.49	3.82	5.68	12.83	12.11
Cache	0.72	0.36	0.33	0.50	0.96	0.25	0.91	0.27
Davis	0.03	0.00	0.16	0.12	0.00	0.41	0.04	0.12
Morgan	0.82	0.38	0.64	0.73	1.16	0.10	0.15	0.19
Rich	0.80	0.36	0.96	2.08	0.89	1.98	0.53	1.05
Summit	1.66	0.65	0.83	0.29	1.16	0.56	0.57	0.77
Weber	0.62	0.38	0.11	0.56	0.27	0.56	1.44	0.42
REGIONAL TOTALS	19.50	8.19	8.95	9.77	8.26	9.53	16.49	14.96
<u>Central Region</u>								
Juab	6.79	5.76	1.95	5.28	2.04	2.84	5.17	6.05
Salt Lake	0.41	1.09	1.16	2.29	0.48	0.91	1.19	0.49
Sanpete	1.31	0.94	1.21	0.82	1.23	2.38	5.61	3.74
Tooele	10.58	10.04	6.53	9.18	10.51	9.99	11.67	13.72
Utah	5.63	3.55	3.44	5.43	8.26	7.66	11.07	8.61
Wasatch	0.59	0.73	0.17	0.91	1.57	1.83	1.73	0.92
REGIONAL TOTALS	25.32	22.10	14.44	23.91	24.09	25.61	36.47	33.55
<u>Southern Region</u>								
Beaver	0.72	0.76	0.30	0.32	1.30	1.12	0.95	0.68
Garfield	1.14	0.64	0.32	0.47	0.61	3.04	0.26	0.42
Iron	1.79	0.81	0.52	1.82	1.23	2.94	0.26	1.54
Kane	0.66	0.34	0.29	2.05	1.98	2.43	0.33	0.84
Millard	5.50	4.94	1.50	3.64	5.66	4.26	3.48	2.99
Piute	0.46	0.08	0.06	0.12	0.20	0.30	0.08	0.22
Sevier	1.94	0.79	0.48	0.56	1.23	0.91	1.22	2.28
Washington	2.06	2.99	1.49	5.05	10.99	6.09	0.77	1.90
Wayne	2.77	0.98	0.61	2.43	2.18	1.17	0.48	0.77
REGIONAL TOTALS	17.04	12.33	5.56	16.46	25.35	22.26	7.88	11.69
<u>Northeastern Region</u>								
Daggett	0.53	1.28	1.36	2.20	1.84	5.58	4.41	2.82
Duchesne	7.92	15.10	16.19	13.17	9.21	7.05	7.68	9.43
Uintah	7.13	14.70	29.37	14.23	5.87	3.35	7.03	13.20
REGIONAL TOTALS	15.58	31.08	46.93	29.61	16.93	15.97	19.13	25.45
<u>Southeastern Region</u>								
Carbon	6.96	9.98	9.60	4.90	7.30	4.87	6.26	4.65
Emery	4.68	5.47	6.98	4.69	9.76	9.53	5.63	5.91
Grand	2.96	2.79	2.15	5.99	4.16	5.07	2.53	0.74
San Juan	6.93	5.78	4.55	4.66	3.41	6.90	2.90	0.77
REGIONAL TOTALS	21.53	24.01	23.28	20.25	24.64	26.37	17.34	12.09
Unknown counties	0.19	2.28	0.84	0.00	0.68	0.25	2.66	2.24
Mixed counties	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 7. Percentage distribution of cottontail rabbit hunting pressure by region and county, 1981-88.

Region and County	Year							
	1981	1982	1983	1984	1985	1986	1987	1988
Northern Region								
Box Elder	10.75	8.04	7.73	7.77	5.40	6.52	8.17	10.53
Cache	1.50	0.88	0.79	0.72	0.66	1.18	0.73	1.15
Davis	0.55	0.15	0.29	0.21	1.42	0.08	0.09	0.37
Morgan	0.80	0.59	0.72	0.63	1.37	1.65	0.19	0.20
Rich	0.62	0.52	0.79	1.32	1.11	2.24	0.57	0.87
Summit	1.97	1.10	1.08	1.74	2.13	1.61	0.57	1.30
Weber	0.80	0.81	0.38	0.84	1.33	0.68	0.73	1.06
REGIONAL TOTALS	17.00	12.10	11.79	13.23	13.42	13.97	11.07	15.51
Central Region								
Juab	5.65	5.98	3.05	3.84	2.39	3.05	4.26	6.15
Salt Lake	0.84	1.51	1.25	2.67	1.46	0.72	1.36	1.46
Sanpete	1.32	1.61	2.03	1.74	2.26	3.30	6.45	3.57
Tooele	11.80	13.25	10.12	11.43	12.98	11.68	12.63	15.44
Utah	8.14	7.15	6.26	6.78	8.24	6.81	13.07	12.83
Wasatch	1.03	1.36	0.65	1.35	2.13	1.82	1.94	1.44
REGIONAL TOTALS	28.77	30.86	23.36	27.82	29.46	27.38	39.73	40.90
Southern Region								
Beaver	0.58	0.57	0.44	1.20	1.68	1.52	1.36	0.73
Garfield	1.56	0.51	0.61	0.57	0.40	2.03	0.54	0.46
Iron	2.49	1.57	1.22	1.26	1.33	2.84	0.85	1.51
Kane	1.17	0.28	0.93	0.96	0.62	1.82	0.82	0.92
Millard	5.06	4.64	2.73	4.20	4.30	5.08	6.07	4.24
Piute	0.43	0.30	0.14	0.18	0.13	0.25	0.12	0.27
Sevier	2.88	1.35	1.38	0.72	1.42	1.35	1.68	2.43
Washington	2.88	2.90	3.05	5.52	6.60	5.42	1.17	1.40
Wayne	1.48	1.03	0.75	1.29	0.97	0.63	0.57	0.80
REGIONAL TOTALS	18.52	13.14	11.25	15.91	17.46	20.95	13.23	12.81
Northeastern Region								
Daggett	0.68	1.38	1.45	1.89	1.19	2.37	2.00	1.44
Duchesne	6.31	10.33	8.93	8.34	9.44	5.80	6.74	6.13
Uintah	7.25	9.98	17.87	9.87	7.84	5.71	5.34	8.81
REGIONAL TOTALS	14.24	21.69	28.25	20.11	18.48	13.88	14.09	16.38
Southeastern Region								
Carbon	7.03	9.20	10.42	9.66	6.82	8.34	6.68	5.60
Emery	5.18	5.88	8.18	6.12	9.92	7.58	8.08	5.15
Grand	2.73	1.70	1.78	3.99	1.55	3.30	1.81	0.56
San Juan	5.34	2.93	4.09	3.15	2.48	4.53	1.62	0.72
REGIONAL TOTALS	20.28	19.70	24.46	22.93	20.78	23.74	18.19	12.04
Unknown counties	0.10	2.51	0.89	0.00	0.40	0.08	3.65	2.33
Mixed counties	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 8. Statewide summary of cottontail rabbit harvest statistics, 1967-88.

Year	Total Hunters	Total Harvest	Hunter-days Afield	Cottontails Per Hunter-day	Cottontails Per Hunter
1967	23,249	181,812	92,681	1.95	7.79
1968	26,889	225,450	93,126	2.42	8.38
1969	29,760	184,034	119,596	1.54	6.18
1970	24,486	195,248	103,725	1.86	7.97
1971	30,824	239,511	145,287	1.65	7.78
1972	22,835	155,102	105,941	1.46	6.79
1973	20,109	88,603	87,036	1.02	4.41
1974	22,737	86,506	85,499	1.01	3.80
1975	24,803	154,182	116,707	1.32	6.22
1976	28,239	235,952	126,737	1.86	8.39
1977	35,831	269,263	157,257	1.71	7.51
1978	35,590	401,071	163,019	2.46	11.27
1979	33,385	200,223	127,497	1.57	6.00
1980	25,156	127,652	87,051	1.47	5.07
1981	25,906	149,765	104,183	1.44	5.78
1982	26,714	156,696	105,644	1.48	5.87
1983	22,467	180,767	96,151	1.88	8.05
1984	18,616	69,186	67,643	1.02	3.72
1985	14,059	31,397	48,371	0.65	2.23
1986	13,992	40,636	48,694	0.83	2.90
1987	20,322	110,411	77,047	1.43	5.43
1988	24,076	150,386	97,190	1.55	6.25
TOTALS (1967-88)	550,045	3,578,674	2,203,949	(31.98)	(131.92)
AVERAGES (1967-87)	25,046	163,252	100,322	1.45	5.98

Table 9. Cottontail rabbit field bag check summary, 1988.

Region and County	ALL HUNTS					COMPLETE HUNTS					
	Total Parties	Total Hunters	Total Hours	Total Rabbits	Rabbits/100 Hr	Total Complete Hunts	Total Hunters	Total Hours	Total Rabbits	Rabbits/100 Hr	Rabbits/Hunter
<u>Northern Region</u>											
Box Elder	42	99	360	139	39	28	63	265	116	44	1.84
Cache	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--
Morgan	1	1	1	1	1	--	--	--	--	--	--
Rich	3	6	18	6	33	2	4	14	6	43	1.50
Summit	1	2	1	0	0	1	2	1	0	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	47	108	380	146	38	31	69	280	122	44	1.77
<u>Central Region</u>											
Juab	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
<u>Southern Region</u>											
Beaver	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--
Millard	1	5	2	0	0	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--
Sevier	1	2	4	2	50	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	2	7	6	2	33	--	--	--	--	--	--
<u>Northeastern Region</u>											
Daggett	7	16	41	87	212	4	9	19	72	379	8.00
Duchesne	56	129	459	265	58	18	33	93	97	104	2.94
Uintah	44	81	149	238	160	16	29	79	116	147	4.00
REGIONAL TOTALS	107	226	649	590	91	38	71	191	285	149	4.01
<u>Southeastern Region</u>											
Carbon	6	15	29	11	38	0	0	0	0	0	0.00
Emery	2	5	15	13	87	1	3	9	3	33	1.00
Grand	4	9	12	6	50	3	6	12	5	42	0.83
San Juan	8	16	30	14	47	3	6	10	2	20	0.33
REGIONAL TOTALS	20	45	86	44	51	7	15	31	10	32	0.67
STATE TOTALS	176	386	1,121	782	70	76	155	502	417	83	2.69

Table 10. Cottontail hunter success trend determined by field bag checks, 1983-88.

Region and County	1983		1984		1985		1986		1987		1988	
	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter
Northern Region												
Box Elder	17	0.60	--	--	--	0	0	28	1.43	44	1.84	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	29	1.33	--	--	--	--	--	--	--	43	1.50	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Heber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	24	1.00	--	--	0	0	0	0	1.43	44	1.77	--
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	21	0.80	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	21	0.80	--	--	--	--	--	--	--
Northeastern Region												
Daggett	172	4.43	107	3.20	--	--	--	0	3.33	379	8.00	--
Duchesne	148	3.70	100	0.75	--	0	0.00	63	3.33	104	2.94	--
Uintah	225	6.75	111	1.91	--	100	1.50	70	1.76	147	4.00	--
REGIONAL TOTALS	173	4.50	108	2.00	--	50	0.75	68	1.93	149	4.01	--
Southeastern Region												
Carbon	--	--	67	2.87	--	158	3.80	--	--	0	0.00	--
Emery	--	--	--	--	--	33	1.00	--	--	33	1.00	--
Grand	--	--	0	0.00	--	--	--	--	--	42	0.83	--
San Juan	57	3.43	50	1.33	--	--	--	--	--	20	0.33	--
REGIONAL TOTALS	57	3.43	61	2.13	--	133	3.33	--	--	32	0.67	--
STATE TOTALS	106	3.07	76	2.06	21	0.80	36	1.21	43	1.68	83	2.62

*Cottontails per hunter based on all hunts.

SNOWSHOE HARE

Harvest

Results of the 1988 hunter questionnaire are found in Table 11. Trends of snowshoe hares bagged per hunter-day, percent of harvest and percent of pressure (hunter-days) are found in Tables 12-14. Trend in statewide harvest statistics by year is shown in Table 15. The 1988 season compared to 1987 and the 13-year average follow:

	1988	<u>Percent change from</u>	
		<u>1987</u>	<u>Average</u>
Snowshoe hare hunters	4,725	+28	-11
Snowshoe hares harvested	8,231	+37	-28
Hunter-days afield	15,444	+73	-1
Snowshoes per hunter-day	0.53	-21	-21
Snowshoes per hunter	1.74	+7	-13

Significant misidentification of white-tailed jackrabbits as snowshoe hares was anticipated prior to mailing the harvest questionnaire following the first season in 1975. This proved to be the case as a significant harvest of snowshoe hares was reported for counties outside the known range of the species. It was assumed that the problem was statewide, not just confined to those counties.

The 1976 harvest questionnaire was modified in an attempt to better inform respondents concerning the potential for misidentification and aid them in distinguishing between these two varying hares. Comparative reported harvests between 1975 and 1976 suggest that this was accomplished, at least to a significant degree, but the relatively large harvest in counties outside of the snowshoe's range suggested continued confusion. Further refinement was made in the 1977 harvest questionnaire in an effort to more clearly define the snowshoe hare harvest.

In 1978, a leaflet containing pictures and descriptions of the different species of hares found in Utah was mailed with the questionnaire. As a result of the identification leaflet, it is assumed that the data have been more accurate. The 1988 questionnaire had drawings of the various rabbits with brief descriptions of each in an attempt to reduce misidentification.

Results of the 1988 questionnaire indicate a 28 percent increase in snowshoe hare hunters and a 37 percent increase in harvest compared to 1987. This corresponds to an increasing rabbit population statewide.

It is unknown what proportion of the reported snowshoe harvest is actually white-tailed jackrabbits that were incorrectly identified by the hunters. However, it is believed that identification has been improving as a result of efforts to educate the hunter on the differences between the various species of hares found in Utah.

Table 11. Summary of snowshoe hare hunter success and distribution of harvest and hunting pressure by region and county, 1988.

Region and County	Sample Size*	Hunter-days Afield	Snowshoes Bagged	Snowshoe/Hunter-day	% of Pressure	% of Harvest
<u>Northern Region</u>						
Box Elder	31	1,569	1,218	.78	10.16	14.80
Cache	19	1,953	400	.21	12.64	4.86
Davis	7	250	100	.40	1.62	1.21
Morgan	3	50	33	.67	.32	.40
Rich	18	801	267	.33	5.18	3.24
Summit	26	1,402	500	.36	9.08	6.08
Weber	9	601	150	.25	3.89	1.82
REGIONAL TOTALS	113	6,628	2,671	.40	42.91	32.45
<u>Central Region</u>						
Juab	7	400	66	.17	2.59	.81
Salt Lake	8	417	200	.48	2.70	2.43
Sanpete	24	1,235	834	.68	8.00	10.14
Tooele	19	968	267	.28	6.27	3.24
Utah	28	1,302	567	.44	8.43	6.89
Wasatch	16	884	684	.77	5.72	8.31
REGIONAL TOTALS	102	5,209	2,621	.50	33.72	31.84
<u>Southern Region</u>						
Beaver	1	283	0	0.00	1.83	0.00
Garfield	1	16	0	0.00	.10	0.00
Iron	0	0	0	0.00	0.00	0.00
Kane	0	0	0	0.00	0.00	0.00
Millard	3	83	100	1.20	.54	1.21
Piute	2	33	100	3.00	.21	1.21
Sevier	10	200	150	.75	1.29	1.82
Washington	1	16	33	2.00	.10	.40
Wayne	2	183	0	0.00	1.18	0.00
REGIONAL TOTALS	20	818	384	.47	5.29	4.66
<u>Northeastern Region</u>						
Daggett	11	400	784	1.96	2.59	9.53
Duchesne	24	818	517	.63	5.29	6.28
Uintah	12	467	417	.89	3.02	5.07
REGIONAL TOTALS	47	1,686	1,719	1.02	10.91	20.89
<u>Southeastern Region</u>						
Carbon	7	217	100	.46	1.40	1.21
Emery	14	567	534	.94	3.67	6.49
Grand	0	0	0	0.00	0.00	0.00
San Juan	1	116	116	1.00	.75	1.41
REGIONAL TOTALS	22	901	751	.83	5.83	9.12
Unknown Counties	3	200	83	.42	1.29	1.01
STATE TOTALS	307	15,444	8,231	.53	100.00	100.00

*Total hunter trips from questionnaire returns.

**Probable misidentification as snowshoe are not known to exist in this county.

Table 12. Summary of snowshoe hares bagged per hunter-day by region and county, 1982-88.

Region and County	Year						
	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>							
Box Elder	0.31	0.27	2.93	0.14	0.38	0.35	0.78
Cache	0.62	0.53	1.27	0.75	0.00	1.67	0.21
Davis	0.00	0.00	0.29	0.11	0.50	0.25	0.40
Morgan	0.50	0.45	0.14	0.00	0.03	0.00	0.67
Rich	0.53	0.67	0.58	0.06	0.56	1.27	0.33
Summit	0.77	0.94	0.61	0.63	0.29	0.50	0.36
Weber	0.32	0.39	0.31	0.17	1.00	0.38	0.25
REGIONAL TOTALS	0.46	0.47	1.30	0.33	0.29	0.76	0.40
<u>Central Region</u>							
Juab	1.83	1.20	0.33	0.00	1.44	0.00	0.17
Salt Lake	0.20	0.00	0.23	0.17	0.30	0.00	0.48
Sanpete	0.97	0.48	0.80	0.23	0.30	0.57	0.68
Tooele	1.01	0.94	0.68	0.24	0.21	0.75	0.28
Utah	0.39	0.38	0.71	0.64	0.53	0.39	0.44
Wasatch	0.84	0.65	0.44	0.32	0.68	0.56	0.77
REGIONAL TOTALS	0.88	0.60	0.55	0.33	0.54	0.48	0.50
<u>Southern Region</u>							
Beaver	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Garfield	0.00	0.00	0.00	0.40	0.11	0.00	0.00
Iron	0.00	0.17	3.00	0.50	0.00	0.00	0.00
Kane	0.00	0.00	0.00	0.75	0.00	0.00	0.00
Millard	1.00	0.00	0.00	0.00	1.00	2.80	1.20
Piute	0.50	1.45	0.20	0.00	0.00	0.00	3.00
Sevier	0.75	0.36	0.00	0.25	0.63	0.60	0.75
Washington	0.00	1.00	0.00	0.50	0.00	0.00	2.00
Wayne	0.58	0.81	1.22	1.00	0.38	1.14	0.00
REGIONAL TOTALS	0.65	0.67	0.65	0.46	0.45	0.88	0.47
<u>Northeastern Region</u>							
Daggett	0.47	0.60	0.33	1.00	0.50	1.00	1.96
Duchesne	0.79	0.89	0.43	0.30	0.41	0.65	0.63
Uintah	0.58	0.61	0.20	0.49	0.13	1.31	0.89
REGIONAL TOTALS	0.67	0.69	0.30	0.41	0.28	0.91	1.02
<u>Southeastern Region</u>							
Carbon	1.32	0.10	0.13	0.29	0.09	1.00	0.46
Emery	1.28	0.59	0.19	0.67	0.13	0.57	0.94
Grand	3.00	0.00	0.00	0.00	0.75	0.00	0.00
San Juan	0.00	0.00	2.00	0.00	1.00	5.00	1.00
REGIONAL TOTALS	1.30	0.36	0.17	0.37	0.16	0.81	0.83
Unknown counties	0.81	0.65	0.00	0.00	0.00	0.40	0.42
Mixed counties	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STATE TOTALS	0.71	0.57	0.60	0.36	0.37	0.67	0.53

Table 13. Percentage distribution of snowshoe hare harvested by region and county, 1982-88.

Region and County	Year						
	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>							
Box Elder	5.63	5.30	36.79	3.12	3.49	3.26	14.80
Cache	2.15	4.87	4.40	3.73	0.00	10.20	4.86
Davis	0.00	0.00	0.62	1.87	0.58	0.40	1.21
Morgan	2.32	2.75	0.31	0.00	0.58	0.00	0.40
Rich	2.98	2.11	2.20	0.61	5.80	7.75	3.24
Summit	5.96	7.00	7.85	24.99	6.98	4.89	6.08
Weber	1.49	1.90	1.25	1.22	5.23	1.22	1.82
REGIONAL TOTALS	20.53	23.93	53.46	35.61	22.67	27.75	32.45
<u>Central Region</u>							
Juab	7.28	1.27	0.62	0.00	13.37	0.00	0.81
Salt Lake	0.33	0.00	0.93	0.61	1.74	0.00	2.43
Sanpete	4.64	2.54	1.25	1.87	5.80	6.93	10.14
Tooele	13.74	10.17	4.07	5.60	3.49	4.89	3.24
Utah	3.48	6.36	6.91	9.97	14.53	8.57	6.89
Wasatch	7.62	4.67	5.02	3.73	14.53	8.16	8.31
REGIONAL TOTALS	37.09	25.01	18.87	21.87	53.49	28.57	31.84
<u>Southern Region</u>							
Beaver	0.33	0.00	0.00	0.00	0.00	0.00	0.00
Garfield	0.00	0.00	0.00	1.22	0.58	0.00	0.00
Iron	0.00	0.21	0.93	1.22	0.00	0.00	0.00
Kane	0.00	0.00	0.00	1.87	0.00	0.00	0.00
Millard	0.17	0.00	0.00	0.00	2.33	5.71	1.21
Piute	0.33	3.38	0.31	0.00	0.00	0.00	1.21
Sevier	0.50	1.68	0.00	1.22	2.91	2.44	1.82
Washington	0.00	0.84	0.00	2.48	0.00	0.00	0.40
Wayne	1.16	4.67	6.91	2.48	1.74	3.26	0.00
REGIONAL TOTALS	2.48	10.78	8.16	10.62	7.56	11.42	4.66
<u>Northeastern Region</u>							
Daggett	1.32	0.63	0.31	3.12	0.58	0.81	9.53
Duchesne	13.91	11.66	8.16	9.97	6.98	6.93	6.28
Uintah	10.43	19.09	5.34	11.87	2.33	8.57	5.07
REGIONAL TOTALS	25.66	31.39	13.83	24.99	9.88	16.32	20.89
<u>Southeastern Region</u>							
Carbon	5.46	0.84	3.45	4.37	2.33	5.71	1.21
Emery	6.13	5.73	0.93	2.48	1.16	6.53	6.49
Grand	0.50	0.00	0.00	0.00	1.74	0.00	0.00
San Juan	0.00	0.00	1.25	0.00	1.16	2.04	1.41
REGIONAL TOTALS	12.09	6.57	5.65	6.85	6.40	14.28	9.12
Unknown counties	2.15	2.33	0.00	0.00	0.00	1.63	1.01
Mixed counties	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 14. Percentage distribution of snowshoe hare hunting pressure by region and county, 1982-88.

Region and County	Year						
	1982	1983	1984	1985	1986	1987	1988
<u>Northern Region</u>							
Box Elder	12.66	11.21	7.49	8.34	3.46	6.30	10.16
Cache	2.46	5.19	2.06	1.80	2.81	4.10	12.64
Davis	0.59	0.00	1.31	6.09	0.43	1.09	1.62
Morgan	3.28	3.49	1.31	2.25	7.78	0.27	0.32
Rich	3.99	1.80	2.24	3.60	3.89	4.10	5.18
Summit	5.51	4.22	7.68	14.22	8.86	6.57	9.08
Weber	3.28	2.77	2.43	2.71	1.94	2.19	3.89
REGIONAL TOTALS	31.77	28.68	24.53	39.05	29.16	24.65	42.91
<u>Central Region</u>							
Juab	2.81	0.60	1.12	1.13	3.46	0.54	2.59
Salt Lake	1.17	0.36	2.43	1.35	2.16	2.19	2.70
Sanpete	3.40	3.01	0.93	2.93	7.13	8.21	8.00
Tooele	9.61	6.15	3.55	8.34	6.05	4.38	6.27
Utah	6.33	9.64	5.80	5.64	10.15	14.79	8.43
Wasatch	6.45	4.10	6.73	4.29	7.99	9.86	5.72
REGIONAL TOTALS	29.78	23.86	20.60	23.70	36.93	40.00	33.72
<u>Southern Region</u>							
Beaver	0.23	0.12	1.31	0.00	0.00	0.00	1.83
Garfield	0.00	0.12	0.18	1.13	1.94	0.27	0.10
Iron	0.00	0.72	0.18	0.90	0.00	2.19	0.00
Kane	0.00	0.00	0.00	0.90	0.00	0.00	0.00
Millard	0.12	0.48	0.18	0.90	0.86	1.36	0.54
Piute	0.47	1.33	0.93	0.00	0.00	0.27	0.21
Sevier	0.47	2.65	1.31	1.80	1.73	2.73	1.29
Washington	0.00	0.48	0.00	1.80	0.00	0.00	0.10
Wayne	1.41	3.26	3.37	0.90	1.73	1.91	1.18
REGIONAL TOTALS	2.70	9.15	7.49	8.34	6.26	8.76	5.29
<u>Northeastern Region</u>							
Daggett	1.99	0.60	0.55	1.13	0.43	0.54	2.59
Duchesne	12.54	7.48	11.42	12.19	6.26	7.12	5.29
Uintah	12.78	17.72	15.73	8.80	6.48	4.38	3.02
REGIONAL TOTALS	27.32	25.80	27.71	22.12	13.17	12.04	10.91
<u>Southeastern Region</u>							
Carbon	2.93	4.82	16.10	5.41	9.94	3.83	1.40
Emery	3.40	5.55	2.99	1.35	3.24	7.67	3.67
Grand	0.12	0.00	0.18	0.00	0.86	0.00	0.00
San Juan	0.12	0.12	0.37	0.00	0.43	0.27	0.75
REGIONAL TOTALS	6.57	10.48	19.66	6.76	14.47	11.78	5.83
Unknown counties	1.88	2.05	0.00	0.00	0.00	2.73	1.29
Mixed counties	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 15. Statewide summary of snowshoe hare harvest statistics, 1975-88.

Year	Total Hunters	Total Harvest	Hunter-days Afield	Hares Per Hunter-day	Hares Per Hunter
1975	5,961	12,072	19,770	0.61	2.03
1976	8,502	15,500	20,367	0.76	1.82
1977	9,752	21,232	26,535	0.80	2.18
1978	8,205	34,535	30,155	1.15	4.21
1979	6,787	14,641	18,115	0.81	2.16
1980	4,048	7,603	11,140	0.68	1.88
1981	3,554	7,750	12,782	0.61	2.18
1982	4,245	9,257	13,073	0.71	2.18
1983	3,544	6,302	11,088	0.57	1.78
1984	3,796	6,455	10,840	0.60	1.70
1985	3,365	3,429	9,494	0.36	1.02
1986	3,277	3,544	9,541	0.37	1.08
1987	3,702	6,005	8,947	0.67	1.62
1988	4,725	8,231	15,444	0.53	1.74
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TOTALS (1975-88)	73,463	156,556	217,291	9.23	27.58
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AVERAGES (1975-87)	5,288	11,410	15,527	0.67	1.99
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A P P E N D I X

APPENDIX A

WEATHER CONDITIONS

Weather information used in this report is from the office of the Utah State Climatologist and N.O.A.A. Climatological Data Periodical. (Table 1, 2 and Figures 1 and 2.)

The 1987-88 winter weather was mild again. Below average precipitation fell between November 1987 and March 1988 but December 1987 through February 1988 temperatures were below average. April precipitation was .77 inches above normal across all seven climatic subdivisions. The summer was dryer and warmer than normal. This should have led to good hatching success for most upland game.

Temperatures remained above average March through August. This warmer weather and below average precipitation may have reduced brood survival for some upland game populations.

Table 1. Comparison of 1988 monthly average temperatures (F) to the normal for each weather division and statewide.

Weather Division	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
No. 1 WESTERN												
Normal	26.9	32.7	38.7	47.0	56.5	65.7	74.4	72.0	62.4	50.5	37.2	28.4
1988	19.4	30.1	39.4	49.4	56.0	70.3	76.6	72.0	61.3	56.3	38.5	24.0
Departure (degrees)	-7.5	-2.6	+7	+2.4	-5	+4.6	+2.2	0.0	-1.1	+5.8	+1.3	-4.4
No. 2 DIXIE												
Normal	38.7	43.9	48.8	56.4	65.4	75.2	82.0	79.7	72.6	61.5	47.8	39.8
1988	38.8	46.5	50.1	57.7	66.2	78.4	84.4	79.8	71.8	67.9	48.9	40.5
Departure (degrees)	+1	+2.6	+1.3	+1.3	+8	+3.2	+2.4	+1	-8	+6.4	+1.1	+7
No. 3 NORTH CENTRAL												
Normal	27.0	31.9	38.6	47.4	57.1	65.9	74.6	72.2	63.1	51.3	38.0	28.9
1988	22.9	31.3	39.0	50.9	57.5	72.0	77.3	73.2	61.8	57.7	38.7	25.2
Departure (degrees)	-4.1	-6	+4	+3.5	+4	+6.1	+2.7	+1.0	-1.3	+6.4	+7	-3.7
No. 4 SOUTH CENTRAL												
Normal	27.1	31.6	37.0	44.9	54.0	63.1	70.4	68.0	60.2	49.8	37.1	28.8
1988	23.3	31.4	37.0	47.1	53.5	67.0	72.2	68.6	59.1	55.1	37.5	25.7
Departure (degrees)	-3.8	-2	0.0	+2.2	-5	+3.9	+1.8	+6	-1.1	+5.3	+4	-3.1
No. 5 NORTHERN MOUNTAINS												
Normal	21.2	24.7	30.6	40.0	49.6	57.6	65.3	63.1	55.0	44.9	32.0	23.6
1988	18.9	25.0	31.0	43.7	50.3	63.4	68.5	64.8	54.3	50.6	31.7	20.2
Departure (degrees)	-2.3	+3	+4	+3.7	+7	+5.8	+3.2	+1.7	-7	+5.7	-3	-3.4
No. 6 UINTAH BASIN												
Normal	17.2	24.1	35.5	46.2	56.2	64.9	72.1	69.3	60.3	48.5	33.5	21.2
1988	9.7	19.6	35.5	48.9	56.8	69.6	73.9	70.6	58.7	53.8	35.5	20.5
Departure (degrees)	-7.5	-4.5	0.0	+2.7	+6	+4.7	+1.8	+1.3	-1.6	+5.3	2.0	-7
No. 7 SOUTHEAST												
Normal	27.0	33.8	41.0	50.2	59.8	69.7	76.6	73.8	65.4	53.7	39.5	29.3
1988	22.9	32.9	40.7	51.4	59.8	73.2	78.2	75.3	64.1	58.6	40.7	29.5
Departure (degrees)	-4.1	-9	-3	+1.2	0.0	+3.5	+1.6	+1.5	-1.3	+4.9	+1.2	+2
STATE AVERAGES												
Normal	26.4	31.8	38.6	47.4	56.9	66.0	73.6	71.2	62.7	51.5	37.9	28.6
1988	22.3	31.0	39.0	49.9	57.2	70.6	75.9	72.0	61.2	57.1	38.8	26.5
Departure (degrees)	-4.1	-0.8	+0.4	+2.5	+0.3	+4.6	+2.3	+0.8	-1.5	+5.6	+0.9	-2.1

Table 2. Comparison of 1988 monthly average precipitation to the normal for each weather division and statewide.

Weather Division	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
No. 1 WESTERN												
Normal	0.59	0.57	0.74	0.81	0.91	0.67	0.63	0.72	0.55	0.65	0.62	0.54
1988	.98	.13	.56	1.22	1.02	.33	.30	.75	.57	.25	.86	.64
Departure (inches)	.39	-.44	-.18	+4.41	+1.11	-.34	-.33	+0.03	+0.02	-.40	+0.24	+1.10
No. 2 DIXIE												
Normal	1.35	1.36	1.42	0.82	0.66	0.36	0.78	1.01	0.76	0.78	0.99	0.96
1988	1.57	.44	.47	3.92	.49	.67	.82	1.62	.15	.11	.70	1.48
Departure (inches)	.22	-.92	-.95	+3.10	-.17	+0.31	+0.04	+0.61	-.61	-.67	-.29	+0.52
No. 3 NORTH CENTRAL												
Normal	1.56	1.39	1.60	1.96	1.60	1.19	0.65	0.95	0.99	1.31	1.34	1.41
1988	1.10	.14	1.06	1.84	1.92	.23	.19	.98	.52	.27	2.49	1.20
Departure (inches)	-.46	-1.25	-.54	-.12	+0.32	-.96	-.46	-.47	-.47	-1.04	+1.15	-.21
No. 4 SOUTH CENTRAL												
Normal	1.09	1.06	1.15	1.04	0.94	0.54	0.96	1.31	1.00	0.92	0.98	0.97
1988	1.38	.37	1.01	2.28	.94	.61	.60	1.62	.54	.52	.86	1.11
Departure (inches)	+0.29	-.69	-.14	+1.24	0.00	+0.07	-.36	+0.31	-.46	-.40	-.12	+0.14
No. 5 NORTHERN MOUNTAINS												
Normal	2.16	1.92	1.89	1.88	1.54	1.17	0.88	1.23	1.15	1.45	1.62	1.98
1988	1.63	.49	1.52	1.63	1.48	.44	.31	.64	.57	.22	3.01	1.55
Departure (inches)	-.53	-1.43	-.37	-.25	-.06	-.73	-.57	-.59	-.58	-1.23	+1.39	-.43
No. 6 UINTAH BASIN												
Normal	0.51	0.45	0.57	0.68	0.78	0.72	0.58	0.81	0.71	0.87	0.54	0.61
1988	.94	.05	.56	1.04	.72	.20	.15	.50	.90	.15	.44	.51
Departure (inches)	+0.43	-.40	-.01	+0.36	-.06	-.52	-.43	-.31	+0.19	-.72	-0.10	-.10
No. 7 SOUTHEAST												
Normal	0.72	0.61	0.64	0.61	0.67	0.40	0.77	1.05	0.78	1.09	0.73	0.74
1988	.92	.29	.51	1.22	0.90	.59	.33	1.12	.86	.29	.56	.53
Departure (inches)	+0.20	-.32	-.13	+0.61	+0.23	+0.19	-.44	+0.07	.08	-.80	-.17	-.21
STATE AVERAGES												
Normal	1.14	1.05	1.14	1.11	1.01	0.72	0.75	1.01	0.85	1.01	0.97	1.03
1988	1.22	0.27	0.81	1.88	1.07	0.44	0.39	0.96	0.59	0.26	1.27	1.00
Departure (inches)	+0.08	-0.78	-0.33	+0.77	+0.06	-0.28	-0.36	-0.05	-0.26	-0.75	+0.30	-0.03

APPENDIX B

LICENSE SALES

Small game license sales by type and cost are listed in Table 1. The number of licenses sold for all types, except nonresident and combination, decreased slightly in 1988 for the third straight year. We continue to lose juvenile hunters. However, a major portion of the decline in juvenile small game license sales this year was due to changing the age limit from 16 years to 14 years of age. Therefore, fewer youths were eligible for juvenile small game licenses this year. Likewise, the proportion of Utah's population hunting small game is declining (Table 2). In the early 1970's about 10 percent of Utah's population was hunting small game. By 2000, we project that only 5 percent will be hunting small game.

Table 3 identifies revenue generated to Utah Division of Wildlife Resources from small game license sales. Small game program budgets run about half the revenue generated, with the other half going to support services such as law enforcement, administration, accounting, and field service.

Table 1. Statewide small game license sales information, 1954-88.

Year	Adult Res. Small Game		Juv. Res. Small Game		Non. Res. Small Game		Combination	
	No.	Cost	No.	Cost	No.	Cost	No.	Cost
1954	12,990	3.50	5,170	2.00	561	15.00	79,574	6.00
1955	12,086	3.50	5,369	2.00	478	15.00	79,960	6.00
1956	12,102	3.50	5,735	2.00	524	15.00	80,968	6.00
1957	12,239	3.50	6,192	2.00	505	15.00	81,271	6.00
1958	14,290	3.50	6,563	2.00	696	15.00	85,198	6.00
1959	13,421	3.50	5,966	2.00	669	15.00	90,069	6.00
1960	12,020	3.50	5,022	2.00	576	15.00	90,085	6.00
1961	12,177	3.50	6,108	2.00	617	15.00	88,180	6.00
1962	12,953	3.50	6,536	2.00	607	15.00	91,412	6.00
1963	13,365	3.50	6,319	2.00	642	15.00	94,768	6.00
1964	13,073	3.50	6,453	2.00	681	15.00	98,556	6.00
1965	12,913	3.50	6,755	2.00	716	15.00	100,410	6.00
1966	13,854	3.50	7,477	2.00	725	15.00	103,849	6.00
1967	18,588	4.50	12,851	2.50	652	20.00	86,218	10.00
1968	20,647	4.50	15,205	2.50	703	20.00	91,020	10.00
1969	20,221	4.50	15,567	2.50	853	20.00	96,117	10.00
1970	19,564	4.50	15,827	2.50	1,009	20.00	100,467	10.00
1971	20,681	4.50	16,044	2.50	1,000	20.00	102,284	10.00
1972	19,796	4.50	16,523	2.50	1,075	20.00	107,414	10.00
1973	18,836	4.50	16,522	2.50	964	20.00	115,436	10.00
1974	17,434	4.50	16,334	2.50	974	20.00	117,770	10.00
1975	17,057	4.50	15,869	2.50	967	20.00	115,362	10.00
1976	33,078	6.00	16,261	3.00	1,141	20.00	76,587	18.00
1977	36,473	6.00	15,795	3.00	1,270	20.00	74,600	18.00
1978	37,082	6.00	15,419	3.00	1,449	20.00	81,227	18.00
1979	36,721	6.00	14,200	3.00	1,575	20.00	84,450	18.00
1980	30,189	8.00	14,042	4.00	1,330	30.00	100,177	23.00
1981	37,804	8.00	13,874	4.00	1,559	30.00	83,486	23.00
1982	36,850	8.00	14,040	4.00	1,637	30.00	82,970	23.00
1983	39,602	8.00	13,814	4.00	1,685	30.00	73,529	23.00
1984	36,070	8.00	13,170	4.00	1,633	30.00	73,081	23.00
1985	30,102	12.00	12,987	6.00	1,500	40.00	82,137	35.00
1986	29,202	12.00	11,921	6.00	1,274	40.00	67,187	35.00
1987	26,781	12.00	11,228	6.00	1,235	40.00	66,715	35.00
1988	25,733	12.00	9,498	6.00	1,428	40.00	72,846	35.00

Table 2. Actual (1971-1988) and projected (1990-2000) proportion of Utah population hunting small game based upon assumption of improved sportsman access to private lands and successful transplants of turkey, chukar, and hungarian partridge on public lands.

Year	Utah Population	Licenses Sold			Proportion Hunting Small Game
		RSG ¹	NRSG	Total	
1971	1,101,000	101,421	1,000	101,521	9.2
1972	1,135,000	110,691	1,075	111,766	9.8
1973	1,169,000	115,129	964	116,093	9.8
1974	1,197,000	112,963	974	113,937	9.4
1975	1,234,000	108,636	967	109,603	8.8
1976	1,272,000	85,268	1,141	86,409	6.7
1977	1,316,000	86,549	1,270	87,819	6.6
1978	1,364,000	95,637	1,449	97,086	7.0
1979	1,416,000	100,116	1,575	101,691	7.1
1980	1,461,037	110,039	1,330	111,369	7.5
1981	1,524,830	103,041	1,559	104,600	6.8
1982	1,588,622	99,744	1,637	101,381	6.3
1983	1,652,415	93,303	1,685	94,988	5.6
1984	1,716,207	88,084	1,633	89,717	5.2
1985	1,780,000	94,991	1,500	96,491	5.4
1986a	1,665,000	82,777	1,274	84,051	5.0
1987a	1,678,000	85,099	1,235	86,334	5.0
1988	1,695,000	92,677	1,428	94,105	5.6
1995	2,134,250	115,000	2,500	117,500	5.4
2000	2,258,450	120,000	3,000	123,000	5.3

¹Adjusted for waterfowl hunters subtracted from combination licenses, R.S.G. = Adjusted combination plus juvenile small game plus adult small game.

²Utah Statistical Abstracts 1984 - projections constitute the December 1982 official State of Utah baseline projections (Office of State Planning Coordinator and Bureau of Economic and Business Research, University of Utah).

^aUtah Population Estimate Committee Report for July 1

Table 3. Small game license sales and income, 1971-88 (JSG=juvenile small game, RSG=adult resident small game, CMB=combination license, NRSNG=nonresident small game).

Year	License Fees			Number of Licenses Sold			No. Federal			Total Gross Revenue Attributed to Small Game (\$)			
	JSG	RSG	CMB	JSG ⁴	RSG	CMB	NRSNG	Duck Stamp Sold ³	JSG ⁴	RSG	CMB ²	NRSNG	TOTAL ¹
1971	2.50	4.50	10.00	16,044	20,681	102,284	1,000	37,588	20,055	93,064	200,557	20,000	336,676
1972	2.50	4.50	10.00	16,523	19,796	107,414	1,075	33,042	20,653	89,082	230,553	21,500	361,789
1973	2.50	4.50	10.00	16,522	18,836	115,436	964	35,665	20,652	84,762	247,290	19,280	371,985
1974	2.50	4.50	10.00	16,334	17,434	117,770	974	38,575	20,417	78,453	245,504	19,480	363,855
1975	2.50	4.50	10.00	15,869	17,057	115,362	967	39,652	19,836	76,756	234,701	19,340	350,633
1976	3.00	6.00	18.00	16,261	33,078	76,587	1,141	40,658	24,391	198,468	184,675	22,820	430,355
1977	3.00	6.00	18.00	15,795	36,473	74,600	1,270	40,319	23,692	218,838	176,204	25,400	434,135
1978	3.00	6.00	18.00	15,419	37,082	81,227	1,449	38,091	23,128	222,492	221,719	28,980	556,320
1979	3.00	6.00	18.00	14,200	36,721	84,450	1,575	35,255	21,300	220,326	252,862	31,500	525,988
1980	4.00	8.00	23.00	14,042	30,189	100,177	1,330	34,369	28,084	241,512	425,120	39,900	734,616
1981	4.00	8.00	23.00	13,874	37,804	83,486	1,559	32,123	27,748	302,432	331,805	46,770	708,755
1982	4.00	8.00	23.00	14,040	36,850	82,970	1,637	34,116	28,080	294,800	315,597	49,110	709,087
1983	4.00	8.00	23.00	13,814	39,602	73,529	1,685	33,642	25,620	305,249	257,670	50,134	638,672
1984	4.00	8.00	23.00	13,170	36,070	73,081	1,633	34,237	26,340	288,560	250,544	48,990	614,434
1985	6.00	12.00	35.00	12,987	30,102	82,137	1,500	30,235	38,961	361,224	484,246	60,000	944,431
1986	6.00	12.00	35.00	11,946	29,567	67,435	1,274	25,533	35,838	354,804	395,973	50,960	837,575
1987	6.00	12.00	35.00	11,228	26,781	66,715	1,235	19,625	33,684	321,372	439,350	49,400	843,806
1988	6.00	12.00	35.00	9,498	25,733	72,846	1,428	15,400	28,494	308,796	535,971	57,120	930,381

¹Value does not include cougar, bear, turkey permits and commercial hunting area licenses.

²Combination license values are based on the assumption that all waterfowl hunters purchased only combination licenses. They may fish and hunt big game but they do not hunt any other small game. Therefore, duck stamp sales are subtracted from combination license sale when projecting revenue generated. The proportion of the combination license fee attributed to small game equals the resident small game license fee divided by the resident fishing license fee plus the resident big game license fee plus the resident small game license fee or \$9.33 for 1988.

³Total federal duck stamps sold does not include those sold during the second quarter, April-June, because persons purchasing stamps during this quarter tend not to be hunters.

⁴Half of the juvenile small game license sales were attributed to waterfowl hunters. Federal Duck Stamps are not required of juveniles less than 16 years of age.

APPENDIX C: Regional and statewide summary of effort expended on upland game summer surveys.

Generally hours spent and miles driven on upland game surveys in Utah have declined since 1971. This is the result of competing uses of time for biologists and conservation officers. In addition, the restriction on conservation officers to a 40 hour work week by the Fair Standards and Labor Act has further eroded survey effort. When effort and results have reached a lower critical sample size, surveys have been eliminated.

Table 1 (continued)

Species	R E G I O N												STATE TOTALS	
	Northern		Central		Southern		Northeastern		Southeastern		Miles		Hours	
	Miles	Hours	Miles	Hours	Miles	Hours	Miles	Hours	Miles	Hours	Miles	Hours	Miles	Hours
<u>Wild Turkey</u>														
1971	--	--	--	--	726	73	--	--	--	--	215	28	941	101
1972	--	--	--	--	73	62	--	--	--	--	290	54	363	116
1973	--	--	--	--	143	11	--	--	--	--	--	--	143	11
1974	--	--	--	--	0	0	--	--	--	--	799	64	799	64
1975	--	--	--	--	215	18	--	--	--	--	792	100	1,007	118
1976	--	--	--	--	125	16	--	--	--	--	362	45	487	61
1977	--	--	--	--	193	29	--	--	--	--	421	58	614	87
1978	--	--	--	--	--	--	--	--	--	--	204	55	204	55
1979	--	--	--	--	--	--	--	--	--	--	190	14	190	14
1980	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1981	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1982	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1983	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1984	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1985	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1986	--	--	--	--	--	--	--	--	--	--	41	15	41	15
1987	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1988	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<u>Cottontail</u>														
1971	338	--	330	--	1,054	--	410	--	570	--	570	--	2,702	--
1972	510	--	279	--	939	--	360	--	555	--	555	--	2,643	--
1973	337	--	242	--	849	--	270	--	270	--	270	--	1,968	--
1974	270	--	180	--	1,040	--	370	--	542	--	542	--	2,402	--
1975	330	--	231	--	1,237	--	340	--	712	--	712	--	2,850	--
1976	510	--	260	--	1,372	--	300	--	626	--	626	--	3,068	--
1977	360	--	262	--	1,329	--	400	--	556	--	556	--	2,907	--
1978	382	--	264	--	1,038	--	300	--	761	--	761	--	2,745	--
1979	270	--	264	--	1,174	--	388	--	390	--	390	--	2,486	--
1980	90	--	265	--	655	--	359	--	540	--	540	--	1,909	--
1981	270	--	270	--	903	--	400	--	580	--	580	--	2,423	--
1982	240	--	240	--	722	--	298	--	602	--	602	--	2,102	--
1983	90	--	90	--	822	--	340	--	590	--	590	--	1,932	--
1984	--	--	177	--	356	--	340	--	196	--	196	--	1,069	--
1985	--	--	175	--	631	--	400	--	450	--	450	--	1,656	--
1986	240	--	148	--	534	--	358	--	330	--	330	--	1,610	--
1987	150	--	120	--	669	--	373	--	240	--	240	--	1,552	--
1988	--	--	129	--	604	--	379	--	360	--	360	--	1,472	--

APPENDIX D: Season dates, bag limits and areas open by upland game species, 1988.

Species	Season Dates	Daily Bag Limit	Possession Limit	Area Open
Pheasant	Nov. 5-18	2 cocks	4 cocks	Statewide
	Nov. 5-Dec. 4	2 cocks	4 cocks	All state and federal lands (including private lands leased by the Division subject to restrictions and closures imposed by administering agencies) in Carbon, Duchesne, Emery, Grand, Juab, Millard, San Juan, Sanpete, Tooele, and Uintah counties.
Mourning dove	Sept. 1-30	10	20	Statewide.
Band-tailed pigeon	Sept. 1-30	5	10	Beaver, Garfield, Grand, Iron, Kane, Millard, Piute, San Juan, Sanpete, Sevier, Utah, Washington and Wayne counties.
Chukar	Sept. 10-Nov. 30	5	10	Cache, Davis, Morgan, Rich, Sanpete, Summit, Wasatch, and Weber counties and portions of the following counties lying east of Interstate 15: Box Elder, Juab, Millard, Salt Lake, and Utah; and those parts of Duchesne and Uintah counties south of Highway U-40; part of Sevier County.
	Sept. 10, 1988-Jan. 31, 1989	5	10	Beaver, Carbon, Emery, Garfield, Grand, Iron, Kane, Piute, Tooele, Washington, Wayne and those parts of Box Elder, Juab, Millard, Salt Lake, and Utah counties lying west of I-15. Also part of San Juan and Sevier County.

APPENDIX D (continued)

Species	Season Dates	Daily Bag Limit	Possession Limit	Area Open
Sage grouse	Sept. 10-18	3	6	Garfield (part), Piute, Sevier, and Wayne counties.
	Sept. 10-18	2	4	Beaver, Box Elder (part), Carbon, Daggett, Duchesne (part), Garfield (part), Grand, Iron, Kane, Uintah, Utah (part) counties.
	Sept. 10-18	1	2	Emery, Rich, San Juan (part) counties.

The following counties were closed to sage grouse hunting during 1988:

Box Elder (part) Cache, Daggett, Davis, Duchesne (part), Juab, Millard, Morgan, Salt Lake, San Juan (part), Sanpete, Summit, Utah (part), Wasatch, Washington and Weber.

Forest grouse	Sept. 10- Nov. 30	4 (aggregate)	8 (aggregate)	Statewide.
Quail	Nov. 5-18	5	10	Beaver, Box Elder, Carbon, Daggett, Davis, Duchesne, Emery, Garfield, Grand, Iron, Juab, Kane, Millard, Piute, Salt Lake, San Juan, Sevier, Uintah, Utah, Wayne and Weber counties.
	Nov. 5-Dec. 31	5	10	Washington County.

Cache, Morgan, Rich, Sanpete, Tooele, Summit, and Wasatch counties were closed to quail hunting in 1988.

Hungarian partridge	Sept. 10, 1988- Jan. 31, 1989	5	10	Part of Box Elder County west of I-15, Tooele County (part)
	Sept. 10- Nov. 30	5	10	Cache, Davis, Morgan, Rich, Summit and Weber counties; Box Elder County (part)

APPENDIX D (continued)

Species	Season Dates	Daily Bag Possession		Area Open
		Limit	Limit	
Wild turkey Spring hunt	May 1-21	Season limit 1 male turkey	1	Garfield, Grand (part), Iron (part), Kane, Washington (part), Wayne and San Juan (part) counties.
Ptarmigan	Sept. 10-Oct. 18	4	8	Summit, Daggett, Duchesne and Uintah counties.
Snowshoe hare	Sept. 10, 1988- Jan. 31, 1989	5	10	Statewide.
Cottontail rabbit	Sept. 10, 1988- Jan. 31, 1989	10	20	Beaver, Box Elder (part), Carbon, Daggett, Duchesne, Emery, Garfield, Grand, Iron, Kane, Millard, Piute, San Juan, Sevier, Uintah, Washington and Wayne counties
	Sept. 10, 1988- Jan. 31, 1989	5	10	Box Elder (part), Cache, Davis, Juab, Morgan, Rich, Salt Lake, Sanpete, Summit, Tooele, Utah, Wasatch and Weber counties.

APPENDIX E. Summary of upland game harvest questionnaire returns, 1962-1988

Year	Questionnaires Mailed	Total Returns	Percent	Useable Returns	Percent	Percent of Licensees who did not hunt
1962	10,068	4,122	41.0	3,433	34.0	22.0
1963	11,058	5,062	46.0	4,325	39.0	21.0
1964	10,718	4,840	45.0	4,180	39.0	23.0
1965	11,917	6,232	53.0	--	--	34.0
1966	13,131	5,734	43.7	5,734	43.7	34.6
1967	12,012	5,764	48.0	5,764	48.0	25.1
1968	14,068	6,138	43.6	6,138	43.6	25.6
1969	15,036	6,429	42.8	6,429	42.8	28.0
1970	14,730	6,639	45.1	6,639	45.1	38.8
1971	15,149	--	43.2	--	--	--
1972	15,272	--	--	6,399	41.9	--
1973	17,572	--	--	7,999	45.5	--
1974	27,379	9,157	38.6	8,027	29.3	--
1975	26,657	10,880	40.8	9,132	34.3	--
1976	21,250	7,889	37.1	6,226	29.3	--
1977	20,984	9,329	44.5	8,099	38.6	--
1978	24,733	7,575	30.6	6,529	26.4	--
1979	27,616	10,498	38.0	9,274	33.6	26.4
1980	27,952	9,857	35.3	8,496	30.4	33.1
1981	13,925	7,941	57.0	6,367	45.4	31.4
1982	22,609	10,167	45.0	8,734	38.6	27.0
1983	23,430	10,324	44.1	9,497	40.5	28.7
1984	12,026	6,455	57.2	6,324	56.0	31.1
1985	10,772	5,904	54.8	5,843	54.2	35.2
1986	11,103	5,329	48.0	5,256	47.3	34.2
1987	10,022	4,294	42.8	4,272	42.6	30.1
1988	15,350	6,650	43.3	6,527	42.5	35.6

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