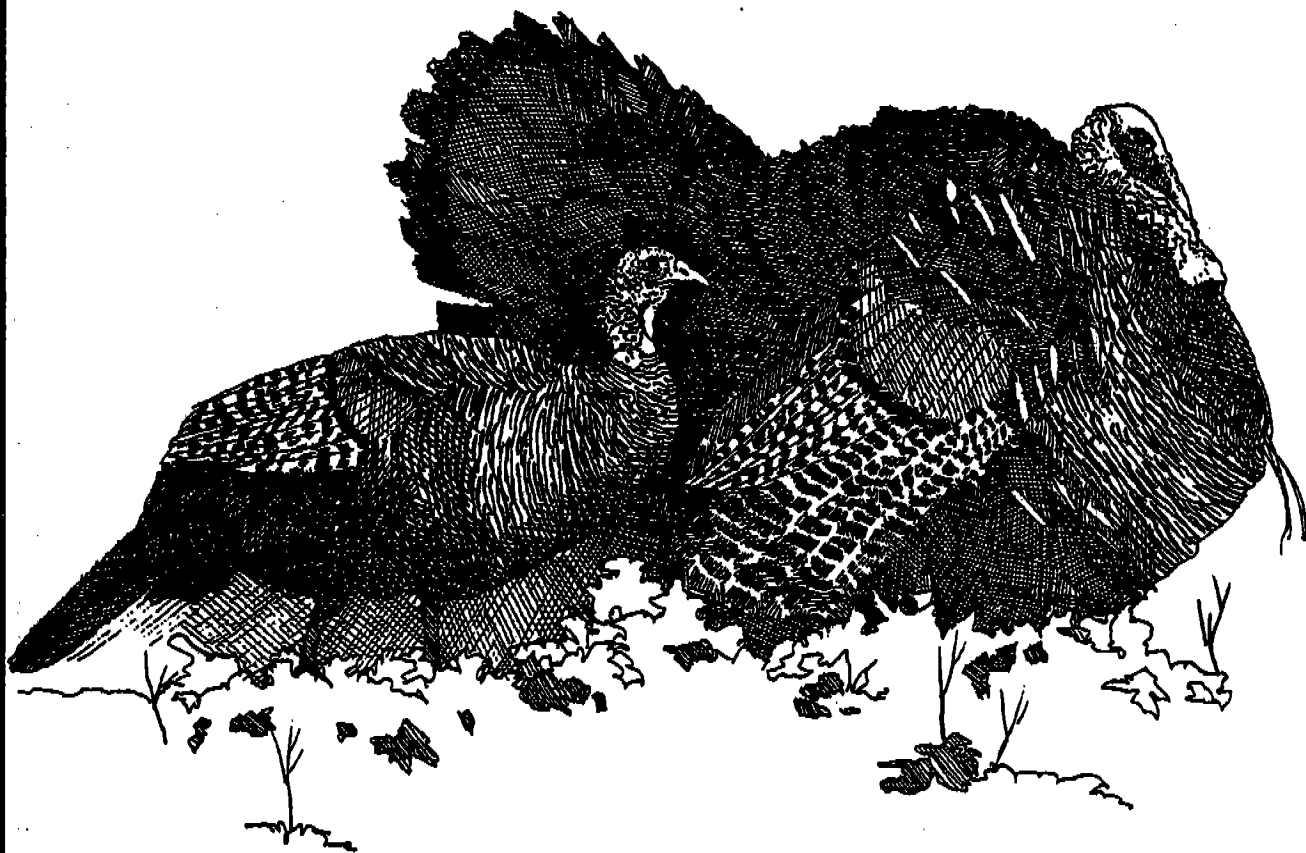


Utah Upland Game

Annual Report 1989



Utah Division of Wildlife Resources
Department of Natural Resources
Publication 90-5

U T A H
U P L A N D G A M E
Annual Report
1989

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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

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JOB PERFORMANCE REPORT
RESEARCH PROJECT SEGMENT
(Inventory)

State: U T A H Project Title: Statewide Wildlife
Project No.: Management Inventory
W-65-R-37
Job Title: Statewide Upland Game
Job No.: A-4 Inventory and Management

Period Covered: October 1, 1988 to September 30, 1989

Abstract: This report includes upland game inventory and harvest data collected during 1988-89. Results of annual inventory and harvest surveys and long-term trends of indices derived by each method are included in the final report. Data obtained in 1989 are compared to 1988 and long-term averages.

Objectives:

1. Conduct efficient breeding and production surveys.
2. Determine annual harvest, hunters, hunter-days and success rates.
3. Inventory critical seasonal habitat.

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, 1988 through February 10, 1989, 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 22-August 22 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 gray partridge, forest grouse (ruffed and blue), sage grouse, sharp-tailed grouse, wild turkey and quail from June 15-August 22. 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 1988 for comparable grounds were determined on a county basis.

The Gambel's quail long period waterhole counts were completed in July and August. Limited valley quail random brood counts were made in several counties.

Cottontail rabbit roadside counts were conducted over pre-established routes between July 15 and August 22. Indices derived include rabbits per mile and young per 100 adults.

Harvest questionnaires were mailed to determine the harvest of upland game birds, cottontail rabbit, and snowshoe hare. A sample of eligible licensees from the current year's (1989) resident small game license file and 1989 combination license file was used. The modified computerized pull-apart mailer was again used to obtain harvest data. Separate questionnaires were mailed to all band-tailed pigeon, 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. Band-tailed pigeon, wild turkey and ptarmigan questionnaires were analyzed separately by Game Management personnel.

Upland game hunters were checked at checking stations, and random field checks were 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.

During this segment, work continued on delineation of critical habitat for sage grouse in Strawberry Valley, Wasatch County, Randolph area in Rich County, and Diamond Mountain in Uintah County. Critical seasonal use areas were mapped from radio locations and observations. Results are being reported in master's thesis and peer-reviewed articles in scientific journals. Information on critical use areas is being added to our Geographic Information System. None of this work used Pittman-Robertson funds.

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 nineteenth 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 1989, a total of 66,976 Utah sportsmen spent 484,996 days afield in pursuit of various upland game species (Table 1). The harvest of upland game totaled 497,403 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 1989 upland game hunting seasons are shown in Appendix D.



Table 1. Summary of harvest statistics from the mail questionnaire for 1989.

Species	Hunters Afield	Total Harvest	Hunter Days	Bag per Hunter-day	Bag/Hunter For Season
Pheasant	50,382	80,769	177,364	0.46	1.60
Mourning dove	21,696	190,328	76,372	2.49	8.77
Chukar partridge	10,910	27,628	40,384	0.68	2.53
Sage grouse	9,002	13,710	19,373	0.71	1.52
Forest grouse	16,988	45,487	50,631	0.90	2.68
Quail	3,111	7,384	8,607	0.86	2.37
Hungarian partridge	2,136	3,920	6,035	0.65	1.83
Wild turkey	477	59	1,568	0.04	0.12
Band-tailed pigeon	23	24	159	0.80	1.00
Sharp-tailed grouse	0	0	0	--	--
Ptarmigan	3	13	6	2.16	4.33
Cottontail	22,878	120,075	91,264	1.32	5.25
Snowshoe	4,895	8,006	13,233	0.61	1.64

TOTAL	--	497,403	484,996	--	--
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Total hunters afield for all species of upland game = 66,976

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 12,894 upland game questionnaires, a 12.2 percent sample, were mailed. Of the total, 590 (4.6%) questionnaires were undeliverable. Of the 12,304 questionnaires delivered, 5,105 (39.6%) usable upland game questionnaires were returned. Of those, 1,876 purchased a license but did not hunt upland game. By dividing the total of 105,880 eligible licensees by the usable returns (5,105), a projection factor of 20.742018 is derived.

The 1989 hunter questionnaire sample size decreased from 1988, but 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 1983-89.

Species	Number of Hunters						Percent of Total							
	1983	1984	1985	1986	1987	1988	1989	1983	1984	1985	1986	1987	1988	1989
Pheasant	77,847	76,840	69,889	59,987	57,118	54,514	50,382	85.9	86.9	86.2	84.2	83.8	77.7	75.2
Chukar	10,418	9,846	7,930	9,397	11,276	11,237	10,910	11.5	11.1	9.8	13.2	16.5	16.0	16.3
Mourning dove	28,258	30,573	28,183	26,583	22,553	22,457	21,696	31.2	34.6	34.7	37.3	33.	32.0	32.4
Sage grouse	9,201	8,283	7,586	7,233	7,060	8,499	9,002	10.2	9.4	9.4	10.2	10.4	12.1	13.4
Forest grouse	13,414	11,511	12,645	12,117	14,831	16,947	16,988	14.8	13.0	15.6	17.0	21.8	24.2	25.4
Quail	4,012	3,654	3,065	2,432	2,549	2,671	3,111	4.4	4.1	3.8	3.4	3.7	3.8	4.6
Hungarian partridge	2,889	1,523	1,157	1,257	2,010	2,471	2,136	3.2	1.7	1.4	1.8	2.9	3.5	3.2
Wild turkey**	118*	255*	270	335	347	421	477	0.1	0.3	0.3	0.5	0.5	0.6	0.7
Sharp-tailed grouse**	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Band-tailed pigeon**	--	--	--	--	--	11	23	--	--	0.1	--	--	0.0	0.03
Ptarmigan**	13	20	14	14	9	15	3	0.01	0.02	0.02	0.02	0.01	0.02	0.004
Cottontail														
rabbit	22,467	18,616	14,059	13,992	20,322	24,076	22,878	24.8	21.1	17.3	19.6	29.8	34.3	34.2
Snowshoe hare	3,544	3,796	3,365	3,277	3,702	4,725	4,895	3.9	4.3	4.1	4.6	5.4	6.7	7.3
TOTAL HUNTERS***	90,592	88,431	81,119	71,259	68,174	70,142	66,976							

*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, 1961-89.

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
1989	1,126	2,985	38	184	1,184	16	263	614	43	183	468	39	257	961	27	68	160	43	53	108	49

AVERAGES	(875)	(376)	(1353)	(1046)	(988)	(1067)	(1261)
(1961-88)	29	12	45	35	33	35	42

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 1988 harvest data, the 1989 statewide breeding population decreased from the previous year. January and February 1989 were much colder than normal and may have affected survival of brood stock. Emergent vegetation still had not returned to inundated mud flats around the Great Salt Lake after the flooding of 1984.

Weather conditions during the nesting season were good in 1989. Statewide monthly average temperatures were above normal; average precipitation was below normal across several climatic subdivisions April through May. Temperatures were at or above normal and precipitation at or below normal through the rest of the year. Drought conditions in 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 1988. 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 strongly density dependent fashion. While they hunted fewer days or not at all, the reduction in hunters and days hunted was not in direct proportion to the reduction in harvest and the average number of hours hunted remained about the same.



Winter Sex Ratio Counts

Results of the survey for the winter of 1988-89 and long-term trends are shown in Tables 1, 2 and Figure 2 of this section. Statewide comparisons to the winter of 1987-88 and the 10-year average are as follows:

	<u>Winter of</u> <u>1988-89</u>	<u>Percent change from</u> <u>1987-88</u> <u>Average</u>	
Total pheasants counted (roadside)	1,076	-58	-78
Hens per cock	3.1	-24	-19
Pheasants observed per 100 hours	1,251	-27	-6
Total hours effort (roadside)	86	-43	-73

Winter sex ratio counts indicated a 27 percent decrease 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 decreased 24 percent from 1988 and was 19 percent below 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 1989 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 1989 survey results compared to 1988 and the previous 10-year average follow:

	<u>1989</u>	<u>Percent change from</u> <u>1988</u> <u>Average</u>	
Total pheasants observed	975	-38	-61
Total miles driven	1,464	-24	-37
Pheasants per mile	0.71	-12	-34
Average brood size	4.6	-13	-13
Young per hen	2.95	-20	-27
Percent of hens with young	64	-11	-16

December 1988 through February 1989 temperatures were well below normal. The average monthly temperature of all reporting stations in the seven climatic subdivisions in Utah were 5 and 6 degrees below normal in January and February, respectively (Appendix A). However, temperatures in March and April were 6 and 6.5 degrees above normal, respectively. Precipitation was at or below normal all year. Temperature was slightly above normal and precipitation slightly below 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 December, resulting in drought over most of the state. Average temperatures in both subdivisions were at or above average March through December. Brood survival may again have declined due to hot, dry weather May through August.

Pheasant production decreased from 1988 in Utah. Production and hunter success were down in all areas except central Utah. The statewide density index (pheasants per mile) decreased from 0.81 in 1988 to 0.71 in 1989, and is 34 percent below the 10-year average (1.07).

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 1989 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 1989 harvest statistics to 1988 and the 41-year average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Pheasant hunters	50,382	-8	-38
Pheasants harvested	80,769	-17	-64
Hunter-days afield	177,364	-4	-20
Pheasants per hunter-day	0.46	-13	-53
Pheasants per hunter	1.60	-11	-41

Hunters were told to expect poor hunting with success similar to 1988. Low breeding populations were noted and production was poor for those birds which made it through the winter. We predicted 55,000 hunters and 100,000 harvest.

Total hunters again decreased 8 percent from 1988 and remained below the long-term (1948-88) average. Total harvest decreased 17 percent from 1988. Hunter success (pheasants per hunter-day) decreased 13 percent from 1988. Pheasants per hunter also decreased 11 percent.

Long-term trends (1970-89) of total hunters, hunter-days, harvest and hunter success are shown in Figures 3 and 4. 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.

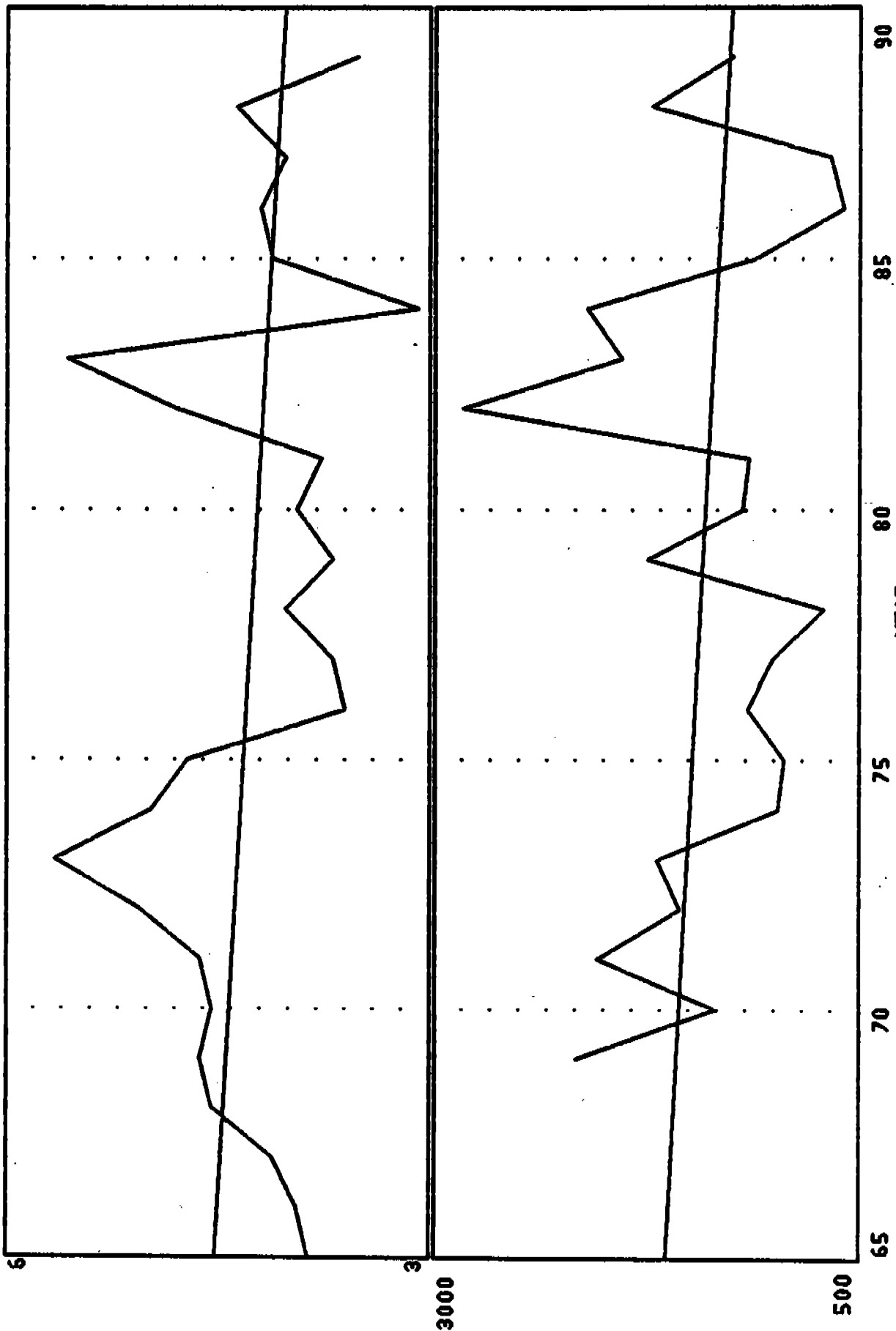


Figure 1. Pheasants winter sex ratio indices, 1965-89.

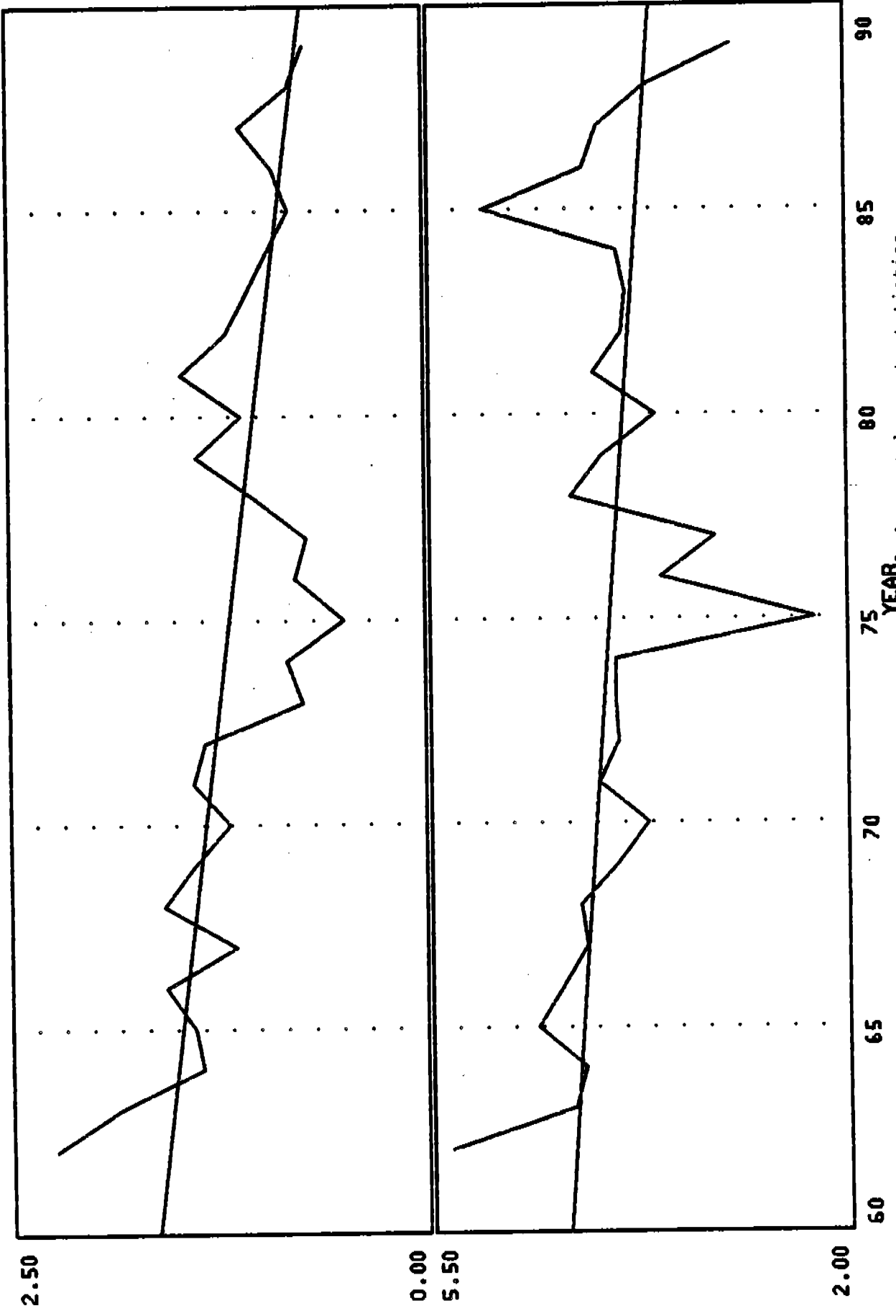


Figure 2. Statewide trend of pheasant harvest statistics.

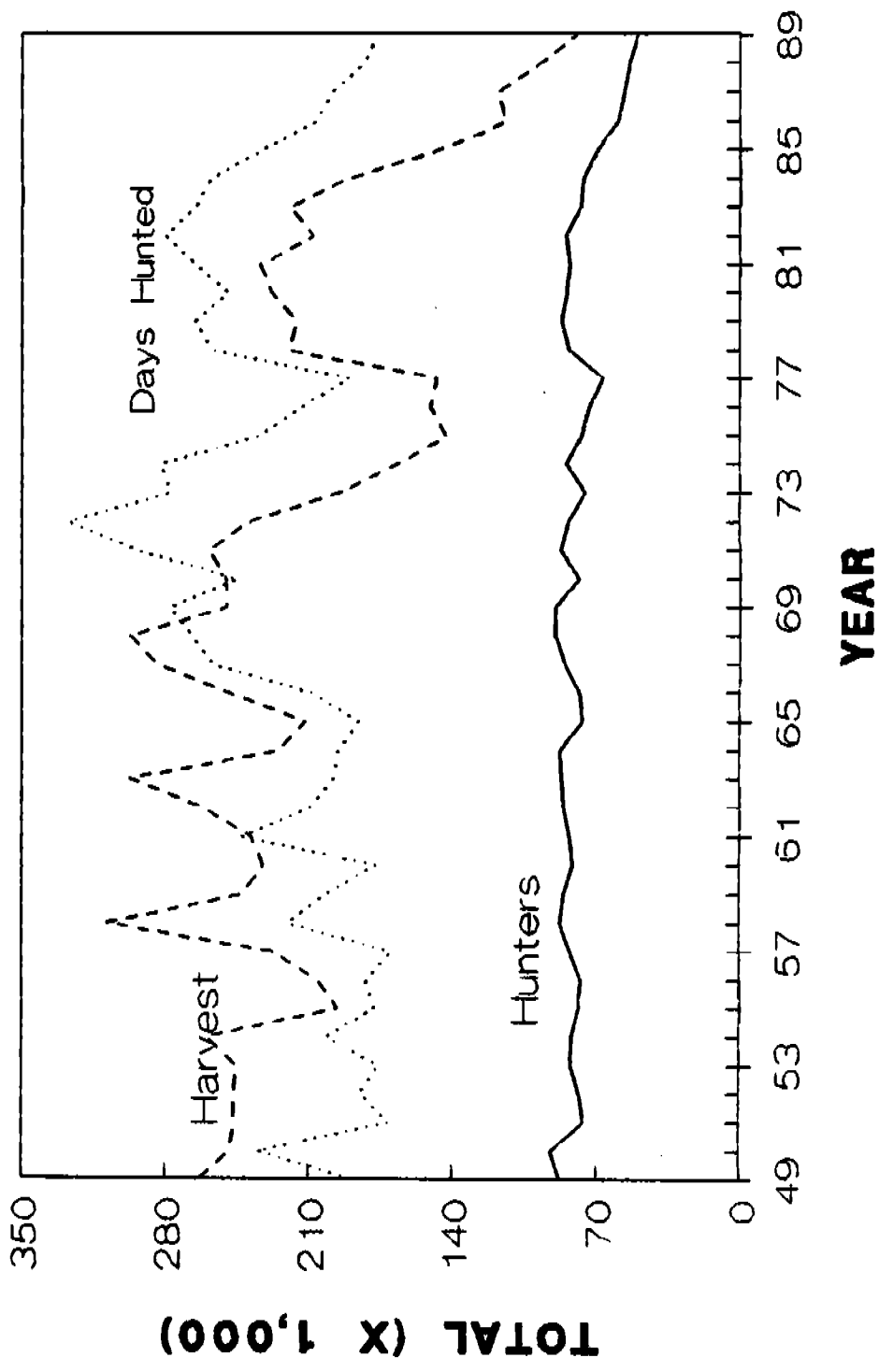


Figure 3. Statewide trend of pheasant harvest statistics, 1949-89.

PHEASANTS PER HUNTER AND PER DAY

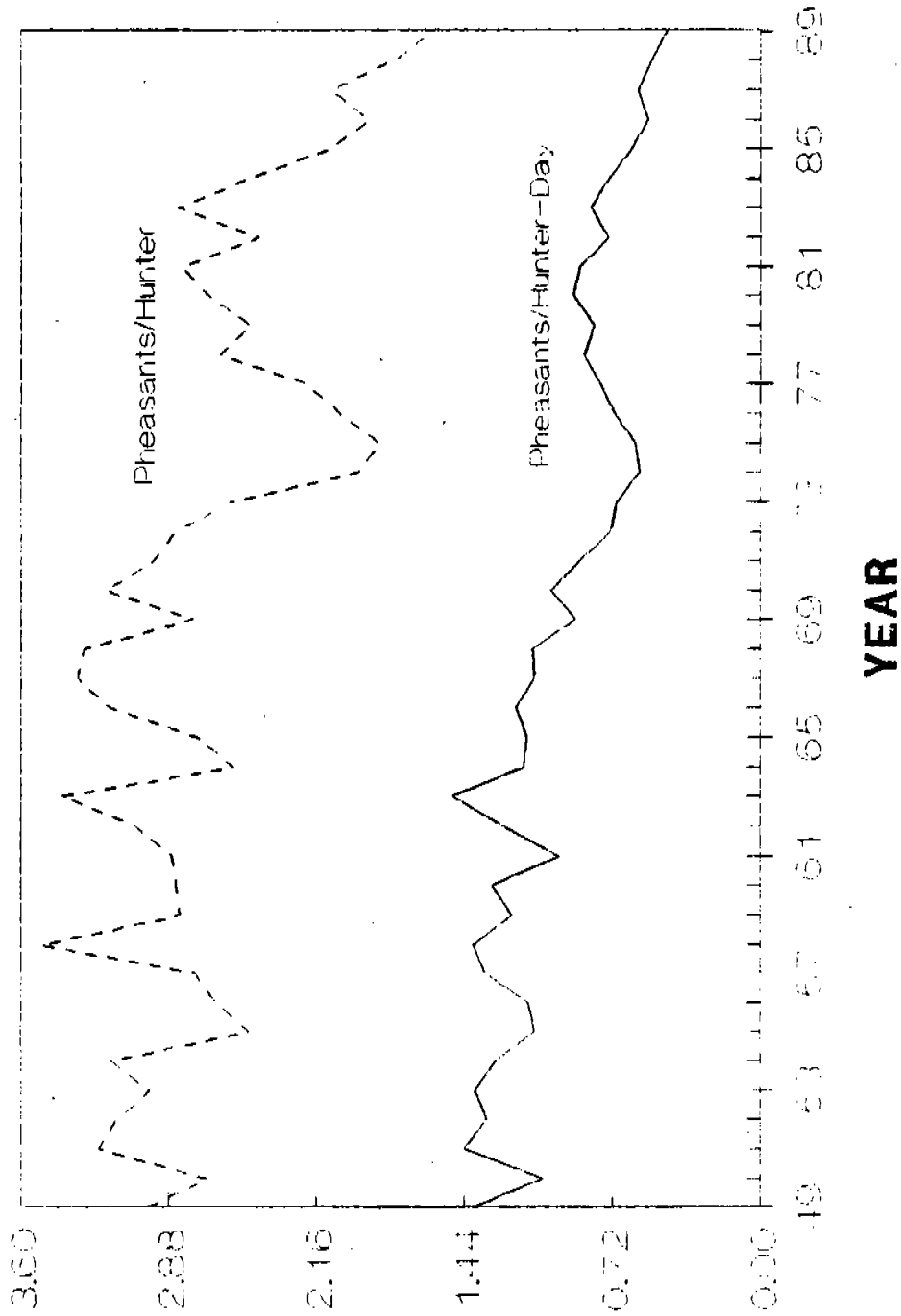


Figure 4. Statewide trend in pheasant number success rates, 1949-89.

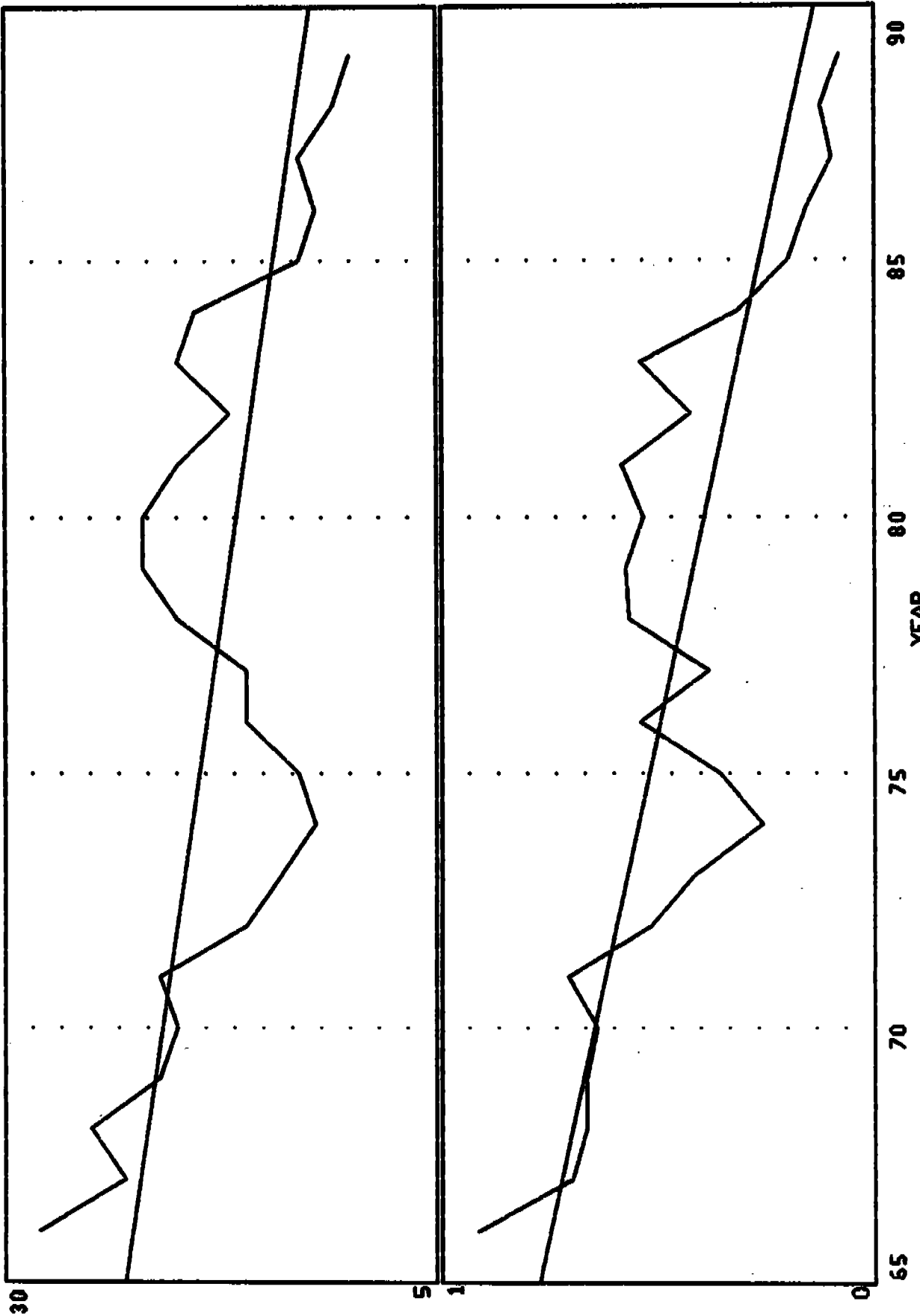


Figure 5. Statewide pheasant field bag check indices, 1962-89.

Field Bag Checks

A summary of pheasant field bag check data for 1989 is shown in Table 14. The hunter success trend determined via bag checks since 1984 is found in Table 15 and Figure 5. A comparison of 1989 data, on a statewide basis, to 1988 and the 10-year average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Total hunters checked	2,086	-19	-45
Total hours hunted	5,917	-19	-50
Pheasants per hunter (complete hunts)	0.30	-14	-52
Pheasants bagged per 100 hours	10	-9	-41
Average hours per hunter-day (complete hunts)	2.9	-6	-19
Hours hunted per pheasant bagged (complete hunts)	9.7	+9	+52

Checking Station Report

Storms late in the month of October (25th through the 28th) brought above normal accumulations to most stations along the Wasatch Front and to many stations in the west-central part of the state. On November 4th the area was dominated by high pressure. The first 24 days of November were dry with mostly clear skies. Temperatures averaged 1 to 3°F above normal. Our opening weekend, maximum daily temperatures were in the high 50's, low 60's, with only traces of precipitation in the mountains.

Hunting pressure was down in most of Utah. Pressure was up slightly in the northern part of the state. This is attributed to decreasing pheasant populations and to less land being accessible to hunters. Statewide hunter success was down compared with 1988 on opening weekend as well as the entire season. The pheasant season on Ute tribal trust lands opened on the same date as the state season, November 4, 1989, which precluded some of the boundary problems and feelings of resentment that existed the previous year.

Table 1. Summary of pheasant winter sex ratio counts, 1988-89.

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/ Cock	Cocks/ Hens	100 Miles Vehicle Walk		Hours of Effort				
<u>Northern Region</u>															
Box Elder	24	100	124	4.2	24	4	20	24	5.0	20	105	4	0	4	3,100
Cache	39	104	143	2.7	38	--	--	--	--	--	640	37	0	37	386
Davis	17	124	141	7.3	14	0	5	5	--	--	127	7	2	9	2,014
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Weber	8	34	42	4.2	23	--	--	--	--	--	125	6	0	6	700
REGIONAL TOTALS	88	362	450	4.1	24	4	20	24	5.0	20	997	54	2	56	833
<u>Central Region</u>															
Juab	23	54	77	2.4	43	--	--	--	--	--	91	7	0	7	1,100
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Utah	4	40	44	10.0	10	--	--	--	--	--	30	2	0	2	2,200
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	27	94	121	3.5	29	--	--	--	--	--	121	9	0	9	1,344
<u>Southern Region</u>															
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	44	70	114	1.6	63	0	9	9	--	--	122	9	2	11	900
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	10	126	136	12.6	8	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	54	196	250	3.6	28	0	9	9	--	--	122	9	2	11	2,778
<u>Northeastern Region</u>															
Daggett	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	67	104	171	1.6	64	13	24	37	1.8	54	181	12	2	14	1,425
Uintah	24	60	84	2.5	40	--	--	--	--	--	29	12	0	2	5,600
REGIONAL TOTALS	91	164	255	1.8	55	13	24	37	1.8	54	210	14	2	16	1,889
<u>Southeastern Region</u>															
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
STATE TOTALS	260	816	1,076	3.1	32	17	53	70	3.1	32	1,450	86	6	92	1,251

Table 2. Trend of pheasant winter sex ratio counts, 1983-89.

Region and County	1983-84		1984-85		1985-86		1986-87		1987-88		1988-89	
	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
Northern Region												
Box Elder	--	--	4.2	3,074	2.4	1,453	5.8	524	4.8	2,409	4.2	3,100
Cache	--	--	5.7	3,133	17.2	585	6.8	168	4.3	390	2.7	386
Davis	11.2	6,090	6.2	3,108	8.4	4,683	7.5	340	11.3	2,667	7.3	2,014
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	7.6	3,425	27.0	350	6.3	587	--	--	4.2	700
REGIONAL TOTALS	11.2	6,090	5.1	3,127	5.5	1,235	6.3	379	5.5	925	4.1	833
Central Region												
Juab	--	--	--	--	3.4	947	3.9	1,005	1.8	1,486	2.4	1,100
Salt Lake	--	--	--	--	0.0	0	4.5	--	2.5	233	--	--
Sanpete	--	--	--	--	0.0	0	6.1	3,900	6.4	1,920	--	--
Tooele	--	--	--	--	0.0	0	--	--	--	--	--	--
Utah	--	--	--	--	3.4	965	3.5	857	2.4	2,650	10.0	2,200
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	3.4	958	3.8	1,057	3.0	1,893	3.5	1,344
Southern Region												
Beaver	2.7	433	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	3.2	5,525	--	--	--	--	3.4	4,270	7.0	4,135	1.6	900
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	2.2	3,620	3.2	2,667	--	--	9.6	209	3.9	2,230	12.6	--
Washington	0.6	227	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	2.6	2,009	3.2	2,667	--	--	3.7	2,943	5.4	3,105	3.6	2,778
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	1.7	1,113	1.4	145	1.5	241	2.0	139	1.6	1,400	1.6	1,425
Uintah	2.1	3,180	3.9	1,645	1.7	285	0.6	145	1.8	1,627	2.5	5,600
REGIONAL TOTALS	1.9	1,526	2.3	282	1.5	255	1.2	141	1.8	1,556	1.8	1,889
Southeastern Region												
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	1.7	2,615	2.6	1,617	2.0	261	--	--	--	--	1.7	1,512
STATE TOTALS	2.6	2,104	3.8	1,116	3.9	594	3.7	673	4.1	1,724	3.1	1,251
STATE TOTALS												3.5 1,329

Table 3. Pheasant summer inventory, 1989.

Region and County	No. Routes	Total Miles	Distinct Broods		Mixed Obsrv.		Adults w/o Young		Total Hens	Total Yng	Total Cocks	Total Pheas/ Mile	Yng/ Mile Brood	Mean Ad Hens	Yng/ Ad Hens	% Hens w/Yng		
			No.	Yng	Hens	Yng	Hens	Cocks									Hens	Yng
<u>Northern Region</u>																		
Box Elder	2	170	3	24	1	4	1	4	0	4	28	1	33	.19	.16	8.0	7.00	100
Cache	2	162	5	20	0	3	6	4	4	9	23	6	38	.23	.14	4.0	2.60	56
Davis	1	92	2	9	5	11	3	8	15	20	3	38	.41	.22	4.5	1.30	47	
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Weber	1	75	4	22	2	7	4	0	6	29	4	39	.52	.39	5.5	4.8	100	
REGIONAL TOTALS	6	499	14	75	8	25	14	12	34	100	14	148	.30	.20	5.4	2.90	76	
<u>Central Region</u>																		
Juab	1	48	1	4	--	--	4	16	17	4	4	25	.50	.08	4.0	0.23	6	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	2	145	32	135	14	50	5	11	57	185	5	247	1.70	1.30	4.2	3.20	81	
Tooele	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Utah	3	233	35	183	24	119	7	19	80	302	7	389	1.00	1.00	5.1	3.80	66	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	6	427	68	322	38	169	16	46	154	491	16	661	1.50	1.10	4.4	4.70	51	
<u>Southern Region</u>																		
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Washington	3	45	0	0	0	0	2	1	1	0	2	3	0.06	--	--	--	--	
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	3	45	0	0	0	0	2	1	1	0	2	3	0.06	--	--	--	--	
<u>Northeastern Region</u>																		
Daggett	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	3	262	11	30	8	22	19	12	31	52	19	102	.39	.20	2.7	1.68	61	
Uintah	2	161	5	21	--	--	8	4	9	21	8	38	.24	.13	4.2	2.33	56	
REGIONAL TOTALS	5	403	16	51	8	22	27	16	40	73	27	140	.35	.18	3.2	1.83	59	
<u>Southeastern Region</u>																		
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Emery	1	90	6	34	1	30	10	11	18	64	10	92	1.00	.71	5.7	3.60	64	
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	1	90	6	34	1	30	10	11	18	64	10	92	1.00	.71	5.7	3.60	64	
STATE TOTALS	21	1,464	104	482	55	246	69	86	247	728	69	1,044	0.71	0.50	4.6	2.95	64	

Table 4. Trend of pheasants observed per mile during summer roadside counts, 1979-89.

Region and County	Year										Average 1979-88	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		1989
<u>Northern Region</u>												
Box Elder	0.41	1.03	1.40	0.74	1.43	0.46	0.91	0.44	0.81	.63	0.19	
Cache	0.34	0.08	0.92	0.17	0.04	0.19	0.03	0.01	0.29	.13	0.23	
Davis	1.47	1.77	1.38	0.83	1.07	0.34	0.71	1.04	1.30	.70	0.41	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	1.55	2.03	3.17	1.79	--	1.56	--	0.86	--	--	0.52	
REGIONAL TOTALS	0.76	1.23	1.56	0.78	0.63	0.48	0.50	0.43	0.71	.40	0.30	0.75
<u>Central Region</u>												
Juab	0.13	0.94	0.89	0.61	0.44	0.77	0.48	0.71	--	.38	0.50	
Salt Lake	0.64	0.60	1.09	1.24	--	1.80	0.46	2.10	1.08	--	--	
Sanpete	1.85	2.18	5.25	1.78	1.74	0.99	1.87	1.15	1.63	1.18	1.70	
Tooele	3.83	1.08	0.48	0.45	--	--	--	0.20	0.08	.15	--	
Utah	4.14	1.90	2.19	3.89	1.95	2.21	--	2.13	2.35	2.00	1.00	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	2.83	1.68	2.01	2.15	1.72	1.49	1.35	1.61	1.79	1.42	1.50	1.81
<u>Southern Region</u>												
Beaver	1.01	0.47	0.63	0.66	0.23	0.11	0.63	0.23	0.08	0.17	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	0.97	0.67	1.24	0.07	0.31	--	0.06	0.01	0.00	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	1.11	0.88	2.85	1.15	1.28	1.09	2.27	0.98	2.00	0.67	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	1.10	1.13	0.87	1.37	1.27	1.52	0.62	1.82	1.95	1.30	--	
Washington	1.36	0.70	1.41	0.62	1.09	--	0.13	1.30	0.47	0.22	0.06	
Wayne	0.21	--	1.04	0.40	0.26	--	0.39	0.38	--	--	--	
REGIONAL TOTALS	1.08	0.86	1.65	1.05	0.94	1.09	1.25	1.07	1.44	0.78	0.06	1.12
<u>Northeastern Region</u>												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	0.38	0.56	0.84	0.73	0.72	0.68	0.16	0.44	0.38	.58	0.39	
Uintah	1.90	1.60	1.05	1.27	2.97	1.33	0.35	0.46	0.55	.45	0.24	
REGIONAL TOTALS	0.90	0.93	0.91	0.90	1.39	0.91	0.22	0.45	0.45	.54	.32	0.76
<u>Southeastern Region</u>												
Carbon	0.40	0.37	1.22	0.28	0.42	--	0.12	0.26	0.00	--	--	
Emery	0.39	0.49	0.74	0.74	0.32	0.66	0.83	0.73	0.72	1.06	1.00	
Grand	--	--	--	--	1.70	--	--	--	--	--	--	
San Juan	0.35	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	0.38	0.45	0.86	0.61	0.39	0.66	0.59	0.51	0.72	1.06	1.00	0.62
STATE TOTALS	1.37	1.10	1.46	1.19	1.06	0.94	0.81	0.90	1.10	0.81	0.71	1.07

Table 5. Trend of young observed per mile during summer roadside pheasant counts, 1979-89.

Region and County	Year											Average 1979-88
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	
Northern Region												
Box Elder	0.03	0.69	1.07	0.44	0.63	0.26	0.65	0.29	0.62	.39	0.16	
Cache	0.20	0.07	0.70	0.11	0.00	0.13	0.02	0.00	0.25	.09	0.14	
Davis	0.99	1.27	0.81	0.43	0.78	0.16	0.35	0.85	0.98	.52	0.22	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	1.22	1.53	2.38	1.38	--	1.27	--	0.76	0.00	--	0.39	
REGIONAL TOTALS	0.55	0.88	1.15	0.52	0.35	0.32	0.33	0.32	0.55	.28	0.20	0.53
Central Region												
Juab	0.02	0.85	0.63	0.42	0.36	0.58	0.39	0.57	--	.17	0.08	
Salt Lake	0.44	0.32	0.57	0.84	--	1.26	0.31	1.62	0.79	--	--	
Sanpete	1.53	1.72	4.40	1.44	1.44	0.76	1.54	0.90	1.23	.96	1.30	
Tooele	2.95	0.76	0.28	0.22	--	--	--	0.08	0.07	.07	--	
Utah	3.00	1.30	1.68	2.52	1.34	1.26	--	1.68	1.81	1.57	1.00	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	2.11	1.21	1.51	1.63	1.31	0.99	1.09	1.26	1.37	1.11	1.10	1.36
Southern Region												
Beaver	0.87	0.37	0.54	0.48	0.17	0.08	0.51	0.14	0.07	0.10	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	0.74	0.53	1.07	0.04	0.23	--	0.05	--	0.00	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	0.89	0.69	2.27	0.83	1.00	0.89	1.98	0.76	1.55	0.50	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	0.93	0.90	0.67	1.07	0.94	1.19	1.25	1.48	1.54	0.95	--	
Washington	1.02	0.49	0.89	0.43	0.68	--	--	0.86	0.22	0.16	--	
Wayne	0.15	--	0.87	0.21	0.12	--	0.28	0.19	--	--	--	
REGIONAL TOTALS	0.87	0.67	1.30	0.76	0.68	0.86	1.03	0.84	1.12	0.57	--	0.97
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	0.27	0.37	0.52	0.54	0.55	0.46	0.07	0.29	0.25	.32	0.20	
Uintah	1.50	1.20	0.83	0.95	2.25	1.12	0.29	0.33	0.40	.30	0.13	
REGIONAL TOTALS	0.69	0.66	0.63	0.66	1.06	0.69	0.14	0.30	0.31	.32	0.17	0.55
Southeastern Region												
Carbon	0.30	0.22	0.93	0.18	0.27	--	0.02	0.15	--	--	--	
Emery	0.28	0.35	0.52	0.45	0.18	0.45	0.63	0.56	0.59	.86	1.00	
Grand	--	--	--	--	1.10	--	--	--	--	--	--	
San Juan	0.00	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	0.26	0.31	0.65	0.68	0.23	0.45	0.42	0.34	0.59	.86	1.00	0.48
STATE TOTALS	1.04	0.80	1.10	0.87	0.77	0.68	0.63	0.69	0.84	.59	0.50	0.80

Table 6. Trend of young per adult hen ratios found during summer roadside pheasant counts, 1979-89.

Region and County	Year										Average 1979-88	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		1989
<u>Northern Region</u>												
Box Elder	3.92	2.60	4.09	3.00	1.41	2.44	3.63	2.38	4.42	2.21	7.00	
Cache	2.40	4.00	4.18	3.43	0.00	3.40	1.50	0.00	7.17	2.33	2.60	
Davis	2.30	2.78	1.81	1.25	3.31	1.67	1.26	5.92	3.30	6.86	1.30	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	4.13	3.97	3.38	4.70	--	5.50	--	7.33	--	--	4.80	
REGIONAL TOTALS	3.14	3.07	3.39	3.00	1.98	3.23	2.60	3.92	4.18	3.44	2.90	3.20
<u>Central Region</u>												
Juab	1.00	9.67	4.29	3.75	6.50	4.20	4.33	4.00	--	2.00	0.23	
Salt Lake	3.27	1.70	2.04	2.73	--	3.58	3.13	5.10	3.88	--	--	
Sanpete	5.91	4.97	6.71	5.48	5.85	5.38	6.10	3.98	3.25	4.48	3.20	
Tooele	3.93	2.88	2.43	2.17	--	--	--	1.50	4.00	2.00	--	
Utah	3.20	2.65	3.80	3.53	2.51	1.66	--	4.16	4.18	3.94	3.80	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	3.59	3.23	4.08	3.95	3.69	2.59	5.61	4.18	3.89	4.00	4.70	3.88
<u>Southern Region</u>												
Beaver	6.00	6.29	7.00	4.89	3.75	2.33	5.11	2.60	6.00	1.80	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	4.25	5.14	8.56	3.00	5.33	--	3.00	--	0.00	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	5.52	6.00	4.65	4.48	6.37	6.24	8.95	4.04	3.99	3.64	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	5.96	4.44	4.18	3.94	3.49	4.64	4.58	5.22	5.14	3.77	--	
Washington	4.95	5.50	2.69	3.46	2.23	--	--	2.78	1.11	3.50	--	
Wayne	5.00	--	8.75	1.67	3.33	--	3.17	2.43	--	--	--	
REGIONAL TOTALS	5.44	5.16	4.66	3.93	3.69	5.05	5.92	4.43	4.32	3.61	--	5.13
<u>Northeastern Region</u>												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	5.82	4.22	2.94	6.10	5.03	3.81	3.00	3.73	3.40	2.36	1.68	
Uintah	5.25	3.22	5.50	4.96	5.16	13.00	11.50	4.13	3.65	3.67	2.33	
REGIONAL TOTALS	5.39	3.52	3.73	5.54	5.11	6.38	5.83	3.88	3.52	2.64	2.01	4.55
<u>Southeastern Region</u>												
Carbon	4.80	5.00	7.91	5.67	3.13	--	0.50	3.00	--	--	--	
Emery	4.29	3.37	3.97	2.56	2.93	3.75	4.17	5.15	6.63	6.42	3.60	
Grand	--	--	--	--	5.50	--	--	--	--	--	--	
San Juan	0.00	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	3.00	3.65	4.98	4.93	3.21	3.75	3.80	4.04	6.63	6.42	3.60	4.44
STATE TOTALS	4.05	3.60	4.12	3.88	3.85	3.92	5.04	4.20	4.08	3.68	2.95	4.04

Table 7. Trend of the percent of hens observed with broods during summer roadside pheasant counts, 1979-1989.

Region and County	Year											Average 1979-88
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	
Northern Region												
Box Elder	62	68	83	73	52	56	74	48	75	64	100	
Cache	60	100	77	71	0	100	50	--	83	50	56	
Davis	80	63	71	67	75	33	42	85	89	86	47	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	70	100	91	91	--	92	--	100	--	--	100	
REGIONAL TOTALS	71	76	80	76	57	66	60	62	82	67	76	70
Central Region												
Juab	--	100	100	100	100	80	100	100	--	50	6	
Salt Lake	64	71	57	62	--	79	63	90	88	--	--	
Sanpete	100	83	97	92	92	90	92	76	85	88	81	
Tooele	96	75	71	67	--	--	--	50	100	50	--	
Utah	57	64	66	71	60	63	--	86	94	81	66	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	66	82	72	76	71	70	56	84	91	82	51	75
Southern Region												
Beaver	77	71	86	89	50	33	89	80	100	40	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	83	86	100	100	100	--	100	--	0	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	88	87	83	73	94	100	84	98	86	86	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	96	96	82	83	76	91	88	87	86	69	--	
Washington	95	33	66	77	83	--	--	64	22	50	--	
Wayne	100	--	88	78	--	--	83	100	--	--	--	
REGIONAL TOTALS	90	87	81	80	83	91	85	88	82	74	--	84
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	88	77	68	66	82	67	75	73	96	39	61	
Uintah	87	92	100	86	75	86	75	73	91	75	56	
REGIONAL TOTALS	88	87	78	75	77	72	75	73	94	46	59	77
Southeastern Region												
Carbon	100	75	100	67	63	--	50	66	--	--	--	
Emery	43	68	72	58	64	65	67	92	100	100	64	
Grand	--	--	--	--	100	--	--	--	--	--	--	
San Juan	0	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	56	70	79	59	67	65	65	91	100	100	64	75
STATE TOTALS	73	77	79	75	74	75	62	83	87	72	64	76

Table 8. Trend of average brood size for pheasants, 1979-89.

Region and County	Year										Average 1979-88
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Northern Region											
Box Elder	6.38	3.40	4.90	4.13	4.00	4.63	5.77	5.33	6.0	4.8	8.0
Cache	3.50	4.00	5.93	6.50	0.00	3.40	3.00	0.00	4.8	4.0	4.0
Davis	4.00	5.13	3.64	2.00	5.40	3.33	3.50	5.12	4.4	6.6	4.5
Morgan	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--
Weber	6.00	4.37	3.70	5.66	--	6.00	--	6.33	--	--	5.5
REGIONAL TOTALS	5.22	4.21	4.48	4.88	4.58	4.72	5.11	5.41	5.1	5.4	4.91
Central Region											
Juab	--	4.00	3.80	3.75	6.50	6.00	4.33	4.67	--	4.0	4.0
Salt Lake	5.13	3.33	4.67	4.44	--	4.75	5.00	5.70	3.8	--	--
Sanpete	5.98	5.43	7.24	5.93	6.39	6.38	8.28	5.10	4.8	5.8	4.2
Tooele	8.93	3.83	3.67	3.50	--	--	--	3.00	4.0	4.0	--
Utah	5.45	4.09	5.38	4.99	4.02	2.95	--	4.75	4.9	4.8	5.1
Wasatch	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	5.81	4.46	5.66	5.15	5.01	3.75	7.42	4.89	4.8	5.0	4.4
Southern Region											
Beaver	7.10	7.25	6.50	5.00	6.50	7.00	5.75	3.25	6.0	4.5	--
Garfield	--	--	--	--	--	--	--	--	--	--	--
Iron	4.25	6.00	8.14	3.00	5.33	--	--	--	0.0	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--
Millard	6.31	6.38	6.30	6.30	6.40	6.00	10.63	3.72	5.3	4.9	--
Piute	--	--	--	--	--	--	--	--	--	--	--
Sevier	5.94	4.70	5.00	4.56	5.14	5.10	5.17	5.69	5.8	5.6	--
Washington	5.00	--	5.90	4.40	3.90	--	--	4.14	5.0	7.0	--
Wayne	5.00	--	1.00	2.00	--	--	3.33	2.25	--	--	--
REGIONAL TOTALS	5.96	5.49	6.14	4.98	5.18	5.42	7.35	4.70	5.6	5.3	5.61
Northeastern Region											
Daggett	--	--	--	--	--	--	--	--	--	--	--
Duchesne	6.60	5.50	4.58	7.31	4.50	5.87	4.00	5.75	3.9	5.3	2.7
Uintah	5.56	3.30	5.50	4.25	5.11	5.50	6.33	5.71	4.4	5.3	4.2
REGIONAL TOTALS	5.93	3.90	4.89	5.84	4.87	5.72	4.78	5.74	4.1	5.3	3.5
Southeastern Region											
Carbon	3.33	6.67	7.67	6.00	3.00	--	1.00	--	--	--	--
Emery	6.00	7.00	6.00	4.42	6.60	5.00	5.20	6.89	5.0	7.1	5.7
Grand	--	--	--	--	5.50	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	5.00	6.86	6.24	4.64	5.30	5.00	4.82	5.46	5.0	7.1	5.7
STATE TOTALS	5.79	4.58	5.45	5.11	5.03	4.78	6.71	4.94	5.1	5.3	4.6

Table 9. Summary of pheasant hunter success and distribution of harvest and hunting pressure by region and county, 1989.

Region and County	Sample Size*	Hunter-days Afield	Birds Bagged	Birds per Hunter-day	% of Pressure	% of Harvest
NORTHERN REGION						
BOX ELDER	277	15,556	6,181	0.40	8.77	7.65
CACHE	175	10,080	3,235	0.32	5.68	4.01
DAVIS	220	13,917	3,878	0.28	7.85	4.80
MORGAN	7	311	124	0.40	0.18	0.15
RICH	4	124	20	0.17	0.07	0.03
SUMMIT	3	62	41	0.67	0.04	0.05
WEBER	299	20,555	5,973	0.29	11.59	7.40
REGIONAL TOTALS	985	60,608	19,456	0.32	34.17	24.09
CENTRAL REGION						
JUAB	77	3,588	1,368	0.38	2.02	1.69
SALT LAKE	129	6,803	2,157	0.32	3.84	2.67
SANPETE	237	13,399	8,690	0.65	7.55	10.76
TOOELE	104	5,621	1,638	0.29	3.17	2.03
UTAH	614	37,937	22,090	0.58	21.39	27.35
WASATCH	4	311	414	1.33	0.18	0.51
REGIONAL TOTALS	1,165	67,660	36,360	0.54	38.15	45.02
SOUTHERN REGION						
BEAVER	17	746	290	0.39	0.42	0.36
GARFIELD	5	145	103	0.71	0.08	0.13
IRON	26	1,472	497	0.34	0.83	0.62
KANE	1	20	0	0.00	0.01	0.00
MILLARD	184	9,790	6,450	0.66	5.52	7.99
PIUTE	8	539	601	1.12	0.30	0.74
SEVIER	160	10,267	4,646	0.45	5.79	5.75
WASHINGTON	34	2,613	850	0.33	1.47	1.05
WAYNE	4	269	124	0.46	0.15	0.15
REGIONAL TOTALS	439	25,865	13,565	0.52	14.58	16.80
NORTHEASTERN REGION						
DAGGETT	1	20	0	0.00	0.01	0.00
DUCHESNE	132	7,570	4,729	0.62	4.27	5.86
UINTAH	98	6,056	2,551	0.42	3.41	3.16
REGIONAL TOTALS	231	13,648	7,280	0.53	7.70	9.01
SOUTHEASTERN REGION						
CARBON	68	3,920	1,534	0.39	2.21	1.90
EMERY	90	5,309	2,323	0.44	2.99	2.88
GRAND	3	186	62	0.33	0.11	0.08
SAN JUAN	2	62	124	2.00	0.04	0.15
REGIONAL TOTALS	163	9,479	4,044	0.43	5.34	5.01
UNKNOWN	2	103	62	0.60	0.06	0.08
STATE TOTALS	2,985	177,364	80,769	0.46	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 10. Summary of pheasants bagged per hunter-day by region and county, 1982-89.

Region and County	Year							
	1982	1983	1984	1985	1986	1987	1988	1989
<u>Northern Region</u>								
Box Elder	0.86	0.99	0.81	0.66	0.52	0.62	0.49	0.40
Cache	0.74	0.82	0.66	0.42	0.44	0.52	0.47	0.32
Davis	0.63	0.58	0.56	0.46	0.36	0.43	0.32	0.28
Morgan	0.64	0.58	0.44	0.05	0.18	0.70	1.71	0.40
Rich	0.00	(0.67)	(0.80)	(0.17)	0.00	(1.00)	(0.18)	(0.17)
Summit	0.00	(0.96)	(0.80)	0.00	0.00	(0.67)	0.00	(0.67)
Weber	0.63	0.72	0.69	0.55	0.39	0.40	0.34	0.29
<u>REGIONAL TOTALS</u>	0.71	0.78	0.68	0.53	0.42	0.49	0.40	0.32
<u>Central Region</u>								
Juab	0.76	1.00	0.86	0.70	0.64	0.66	0.49	0.38
Salt Lake	0.57	0.66	0.51	0.53	0.40	0.45	0.26	0.32
Sanpete	1.00	1.20	1.08	0.98	0.72	0.73	0.80	0.65
Tooele	0.43	0.60	0.58	0.60	0.44	0.56	0.31	0.29
Utah	0.73	0.81	0.82	0.65	0.64	0.68	0.64	0.58
Wasatch	0.00	(0.21)	(0.29)	(0.55)	(0.17)	(0.32)	(0.60)	(1.33)
<u>REGIONAL TOTALS</u>	0.71	0.83	0.79	0.69	0.60	0.65	0.58	0.54
<u>Southern Region</u>								
Beaver	0.77	0.72	0.66	0.52	0.56	0.37	0.41	0.39
Garfield	0.81	0.41	0.52	0.17	0.58	0.14	2.75	0.71
Iron	0.69	0.61	0.43	0.49	0.32	0.28	0.23	0.34
Kane	0.00	(1.00)	(0.50)	0.00	0.00	0.00	0.00	0.00
Millard	0.97	1.10	0.92	0.88	0.77	0.68	0.60	0.66
Piute	1.00	0.80	0.66	0.56	0.83	0.67	0.42	1.12
Sevier	0.89	0.96	0.87	0.71	0.68	0.65	0.57	0.45
Washington	0.39	0.43	0.24	0.42	0.40	0.21	0.39	0.33
Wayne	0.88	0.50	0.25	1.22	0.33	0.24	0.63	(0.46)
<u>REGIONAL TOTALS</u>	0.85	0.89	0.79	0.73	0.67	0.60	0.77	0.52
<u>Northeastern Region</u>								
Daggett	0.00	(0.67)	0.00	(0.50)	0.00	(0.50)	(0.20)	0.00
Duchesne	1.05	1.15	0.99	0.88	0.84	0.87	0.90	0.62
Uintah	0.93	0.98	0.86	0.62	0.79	0.80	0.64	0.42
<u>REGIONAL TOTALS</u>	0.99	1.06	0.92	0.75	0.81	0.83	0.56	0.53
<u>Southeastern Region</u>								
Carbon	0.54	0.59	0.44	0.42	0.39	0.47	0.51	0.39
Emery	0.57	0.60	0.65	0.58	0.46	0.48	0.68	0.44
Grand	0.94	2.44	0.38	(2.00)	(0.50)	(0.86)	(0.20)	(0.33)
San Juan	0.50	0.76	2.50	0.40	0.58	1.64	1.50	(2.00)
<u>REGIONAL TOTALS</u>	0.56	0.62	0.57	0.51	0.44	0.53	0.63	0.43
Unknown Counties	0.48	1.03	0.47	1.00	0.40	0.63	0.54	0.60
<u>STATE TOTALS</u>	0.74	0.83	0.74	0.63	0.55	0.60	0.53	0.46

()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, 1982-89.

Region and County	Year							
	1982	1983	1984	1985	1986	1987	1988	1989
Northern Region								
Box Elder	12.40	13.87	10.02	9.84	8.16	9.00	8.30	7.65
Cache	7.07	7.22	4.92	3.61	4.07	4.83	5.09	4.01
Davis	8.27	7.57	7.84	7.34	5.80	6.12	5.48	4.80
Morgan	0.20	0.13	0.08	0.01	0.05	0.14	0.20	0.15
Rich	0.00	(0.02)	(0.04)	(0.01)	0.00	(0.02)	(0.03)	(0.03)
Summit	0.00	(0.15)	(0.13)	0.00	0.00	(0.04)	0.00	(0.05)
Weber	10.18	10.66	12.82	12.28	8.81	5.46	7.42	7.40
REGIONAL TOTALS	38.12	39.46	35.69	33.08	26.90	25.63	26.55	24.09
Central Region								
Juab	2.10	1.87	1.80	2.13	2.95	3.47	1.94	1.69
Salt Lake	5.96	5.86	4.64	5.28	4.90	4.48	2.18	2.67
Sanpete	7.47	7.84	9.11	10.25	10.32	9.53	10.63	10.76
Tooele	1.83	2.08	2.29	2.61	2.63	2.79	2.20	2.03
Utah	16.54	15.73	18.69	17.24	22.25	23.70	25.83	27.35
Wasatch	0.00	(0.02)	(0.06)	(0.09)	(0.02)	(0.12)	(0.15)	(0.51)
REGIONAL TOTALS	33.90	33.38	36.52	37.52	43.07	44.12	42.96	45.02
Southern Region								
Beaver	0.68	0.40	0.58	0.51	0.65	0.45	0.56	0.36
Garfield	0.32	0.05	0.12	0.04	0.13	0.02	0.18	0.13
Iron	1.00	0.83	0.35	0.72	0.47	0.32	0.25	0.62
Kane	--	(0.01)	(0.04)	0.00	0.00	0.00	0.00	0.00
Millard	5.37	4.17	6.93	7.85	8.30	6.29	6.03	7.99
Piute	0.13	0.09	0.24	0.13	0.18	0.24	0.18	0.74
Sevier	5.86	5.04	6.06	6.58	7.42	7.07	6.34	5.75
Washington	0.48	0.50	0.35	0.70	0.61	0.24	0.22	1.05
Wayne	0.11	0.03	0.01	0.16	0.04	0.16	0.08	(0.15)
REGIONAL TOTALS	13.95	11.11	14.74	16.70	17.80	14.82	13.88	16.80
Northeastern Region								
Daggett	--	0.00	0.00	(0.03)	0.00	(0.08)	(0.05)	0.00
Duchesne	5.51	6.17	4.64	5.04	4.11	5.26	6.34	5.86
Uintah	5.13	6.03	4.87	3.72	4.16	4.74	3.91	3.16
REGIONAL TOTALS	10.64	12.20	9.74	8.76	8.27	10.09	10.30	9.01
Southeastern Region								
Carbon	1.51	1.40	1.01	1.26	1.37	1.37	1.48	1.90
Emery	1.46	1.80	2.13	2.44	2.32	3.00	3.93	2.88
Grand	0.13	0.13	0.05	0.06	0.11	0.37	(0.01)	(0.08)
San Juan	0.11	0.10	0.05	0.03	0.13	0.47	0.10	(0.15)
REGIONAL TOTALS	3.20	3.44	3.25	3.78	3.93	5.22	5.53	5.01
Unknown Counties	0.19	0.40	0.30	0.16	0.04	0.10	0.75	0.08
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, 1982-89.

Region and County	Year							
	1982	1983	1984	1985	1986	1987	1988	1989
<u>Northern Region</u>								
Box Elder	10.77	11.62	9.26	9.38	8.60	8.67	8.91	8.77
Cache	7.11	7.30	5.53	5.39	5.16	5.59	5.69	5.68
Davis	9.83	10.75	10.33	10.00	8.92	8.43	8.95	7.85
Morgan	0.23	0.19	0.14	0.20	0.17	0.12	0.06	0.18
Rich	--	--	(0.04)	(0.05)	0.00	0.01	0.09	(0.07)
Summit	--	--	(0.12)	(0.04)	(0.01)	0.03	0.09	(0.04)
Weber	11.92	12.20	13.93	14.05	12.36	8.19	11.42	11.59
<u>REGIONAL TOTALS</u>	39.86	42.06	39.20	39.03	35.22	31.06	35.24	34.17
<u>Central Region</u>								
Juab	2.05	1.55	1.55	1.91	2.54	3.15	2.11	2.02
Salt Lake	7.74	7.31	6.79	6.31	6.72	5.91	4.54	3.84
Sanpete	5.55	5.39	6.28	6.55	7.86	7.76	7.04	7.55
Tooele	3.18	2.85	2.93	2.76	3.29	2.99	3.80	3.17
Utah	16.94	16.00	16.90	16.81	19.12	20.72	21.42	21.39
Wasatch	--	--	(0.17)	(0.10)	(0.06)	(0.23)	(0.13)	(0.18)
<u>REGIONAL TOTALS</u>	35.46	33.10	34.46	34.34	39.59	40.78	39.06	38.15
<u>Southern Region</u>								
Beaver	0.66	0.46	0.65	0.66	0.64	0.73	0.72	0.42
Garfield	0.29	0.11	0.17	0.17	0.12	0.08	0.03	0.08
Iron	1.07	1.12	0.61	0.91	0.80	0.70	0.58	0.83
Kane	--	--	(0.06)	(0.02)	(0.02)	0.00	0.00	(0.01)
Millard	4.12	3.15	5.61	5.60	5.95	5.49	5.29	5.52
Piute	0.10	0.10	0.28	0.15	0.12	0.22	0.23	0.30
Sevier	4.90	4.34	5.17	5.83	6.00	6.48	5.91	5.79
Washington	0.91	0.95	1.10	1.04	0.84	0.71	0.29	1.47
Wayne	0.09	0.05	0.31	0.08	0.06	0.41	0.07	(0.15)
<u>REGIONAL TOTALS</u>	12.14	10.28	13.89	14.39	14.56	14.85	13.16	14.58
<u>Northeastern Region</u>								
Daggett	--	--	(0.06)	(0.04)	(0.02)	(0.09)	(0.13)	(0.01)
Duchesne	3.91	4.45	3.48	3.58	2.69	3.61	3.74	4.27
Uintah	4.10	5.08	4.24	3.77	2.91	3.56	3.22	3.41
<u>REGIONAL TOTALS</u>	8.01	9.53	7.72	7.34	5.62	7.27	7.10	7.70
<u>Southeastern Region</u>								
Carbon	2.08	1.97	1.71	1.90	1.92	1.76	1.54	2.21
Emery	1.89	2.51	2.43	2.66	2.79	3.71	3.05	2.99
Grand	0.10	0.04	0.10	0.02	0.12	0.25	0.04	(0.11)
San Juan	0.16	0.10	0.02	0.05	0.12	0.17	0.03	(0.04)
<u>REGIONAL TOTALS</u>	4.23	4.62	4.25	4.63	4.94	5.91	4.67	5.34
Unknown Counties	0.31	0.32	0.47	0.25	0.05	0.09	0.74	0.06
<u>STATE TOTALS</u>	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

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

Table 13. Statewide summary of pheasant harvest statistics, 1948-1989.

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
1989	50,382	80,769	177,364	0.46	1.60
TOTALS (1948-89)	3,364,924	9,162,915	9,250,456	(40.27)	(112.76)
AVERAGES (1948-88)	80,842	221,516	221,295	0.97	2.71

Table 14. Pheasant field bag check summary, 1989.

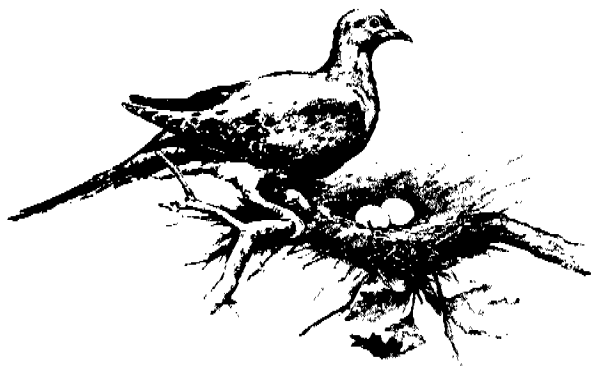
Region and County	ALL HUNTS				COMPLETE HUNTS					
	Total Parties	Total Hunters	Total Hours	Total Birds/100 Hr	Total Complete Hunts	Total Hunters	Total Hours	Total Birds	Birds/100 Hr Hunter	
Northern Region										
Box Elder	289	555	1,218	107	9	373	1,004	83	8	0.22
Cache	66	176	445	23	5	52	139	5	4	0.10
Davis	27	66	211	12	6	16	41	1	2	0.06
Morgan	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--
Weber	107	231	324	29	9	169	215	20	9	0.12
REGIONAL TOTALS	489	1,028	2,198	171	8	612	1,398	109	8	0.18
Central Region										
Juab	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	53	159	14	8	0.26
Sanpete	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--
Utah	192	408	941	148	15	150	340	80	24	0.53
Wasatch	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	192	408	941	148	15	203	499	94	19	0.46
Southern Region										
Beaver	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--
Millard	77	164	893	39	4	164	893	39	4	0.24
Piute	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	77	164	893	39	4	164	893	39	4	0.24
Northeastern Region										
Daggett	--	--	--	--	--	--	--	--	--	--
Duchesne	41	114	553	76	14	60	317	51	16	0.85
Uintah	21	60	714	18	10	20	69	3	4	0.15
REGIONAL TOTALS	62	174	1,267	94	7	80	386	54	14	0.68
Southeastern Region										
Carbon	13	26	32	5	16	4	8	2	25	0.50
Emery	119	286	586	112	19.1	92	188	49	26	0.53
Grand	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	132	342	618	117	18.9	96	196	51	26	0.53
STATE TOTALS	952	2,086	5,917	569	10	1,155	3,372	347	10	0.30

Table 15. Pheasant hunter success trend as determined by field bag check, 1984-89.

Region and County	1984		1985		1986		1987		1988		1989	
	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	15	0.38	9	0.31	5	0.14	11	0.29	7	0.21	8	0.22
Cache	16	0.47	5	0.13	--	--	31	1.25	2	0.08	4	0.10
Davis	13	0.34	16	0.46	6	0.19	18	0.80	8	0.20	2	0.06
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	15	0.35	7	0.18	12	0.21	9	0.13	11	0.21	9	0.12
REGIONAL TOTALS	15	0.38	9	0.27	7	0.16	11	0.23	28	0.20	8	0.18
<u>Central Region</u>												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	8	0.26
Utah	53	1.62	35	0.88	28	0.74	24	0.68	16	0.50	24	0.53
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	53	1.62	35	0.88	28	0.74	24	0.68	16	0.50	19	0.46
<u>Southern Region</u>												
Beaver	24	0.31	14	0.37	--	--	6	0.18	0	0.00	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	16	0.66	12	0.59	10	0.48	9	0.50	10	0.33	4	0.24
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	23	0.94	16	0.66	14	0.65	6	1.67	56	0.56	--	--
Washington	--	--	6	0.07	33	0.50	17	0.22	38	0.71	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	17	0.68	14	0.61	11	0.51	12	0.40	12	0.37	4	0.24
<u>Northeastern Region</u>												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	18	0.84	11	0.40	38	1.50	13	0.50	27	1.96	16	0.85
Uintah	25	0.77	15	0.37	17	0.50	--	--	8	0.53	4	0.15
REGIONAL TOTALS	21	0.80	21	0.38	24	0.79	13	0.50	20	1.41	14	0.68
<u>Southeastern Region</u>												
Carbon	4	0.09	--	--	7	0.33	0	0.00	25	0.71	25	0.50
Emery	9	0.29	23	1.80	14	0.35	6	0.33	--	0.43	26	0.53
Grand	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	38	1.00	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	9	0.24	23	1.80	13	0.35	5	0.32	25	0.71	26	0.53
STATE TOTALS	19	0.58	13	0.44	12	0.39	13	0.32	11	0.35	10	0.30

MIGRATORY UPLAND GAME BIRDS

SUMMARY



Mourning Doves

The breeding density index remained stable in 1989, but it was below average.

Harvest statistics derived from the questionnaire indicated the same number of hunters, but increased harvest compared to 1988. Hunter success for the season increased 10 percent.

Field bag checks also indicated an increase in hunter success on opening day. Hunters who participated hunted fewer hours than the previous year.

Aging of wings indicated the juvenile per 100 adult ratio decreased to 77 compared to 100 in 1989, and the 8-year average of 112. Either production was down or juvenile doves migrated earlier than previous years.

Band-tailed Pigeons

A band-tailed pigeon hunting permit was required again in 1988 to obtain mailing addresses for a questionnaire. Twenty-nine hunters purchased permits but only 11 went afield. In 1989, 41 permits were sold but only 23 hunters actually participated. Hunter interest and harvest remained small as during the 1970-82 period.



MOURNING DOVE

Call Count Survey

Results of the 1989 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 1989 survey to 1988 and the average for the period 1964-1988:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Average doves heard per route	9.3	-1	-28
Average calls heard per route	43.5	+3	-21
Average doves seen per route	19.9	+8	+38

Coo count data indicated similar breeding activity in late May compared to 1988, 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 1989 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 1989 compared to 1988 and the 10-year (1979-88) average:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Mourning dove hunters	21,696	-3	-25
Mourning dove harvest	190,328	+7	-30
Hunter-days afield	76,372	0	-23
Mourning doves per hunter-day	2.49	+6	-9
Mourning doves hunter	8.77	+10	-6

A decrease in dove hunter success was predicted due to no change in the spring dove call count index and summer drought. We predicted 22,500 hunters, 200,000 harvest and 80,000 hunter days. Hunter success increased slightly. Total harvest increased 7 percent compared to 1988. Numbers of dove hunters,

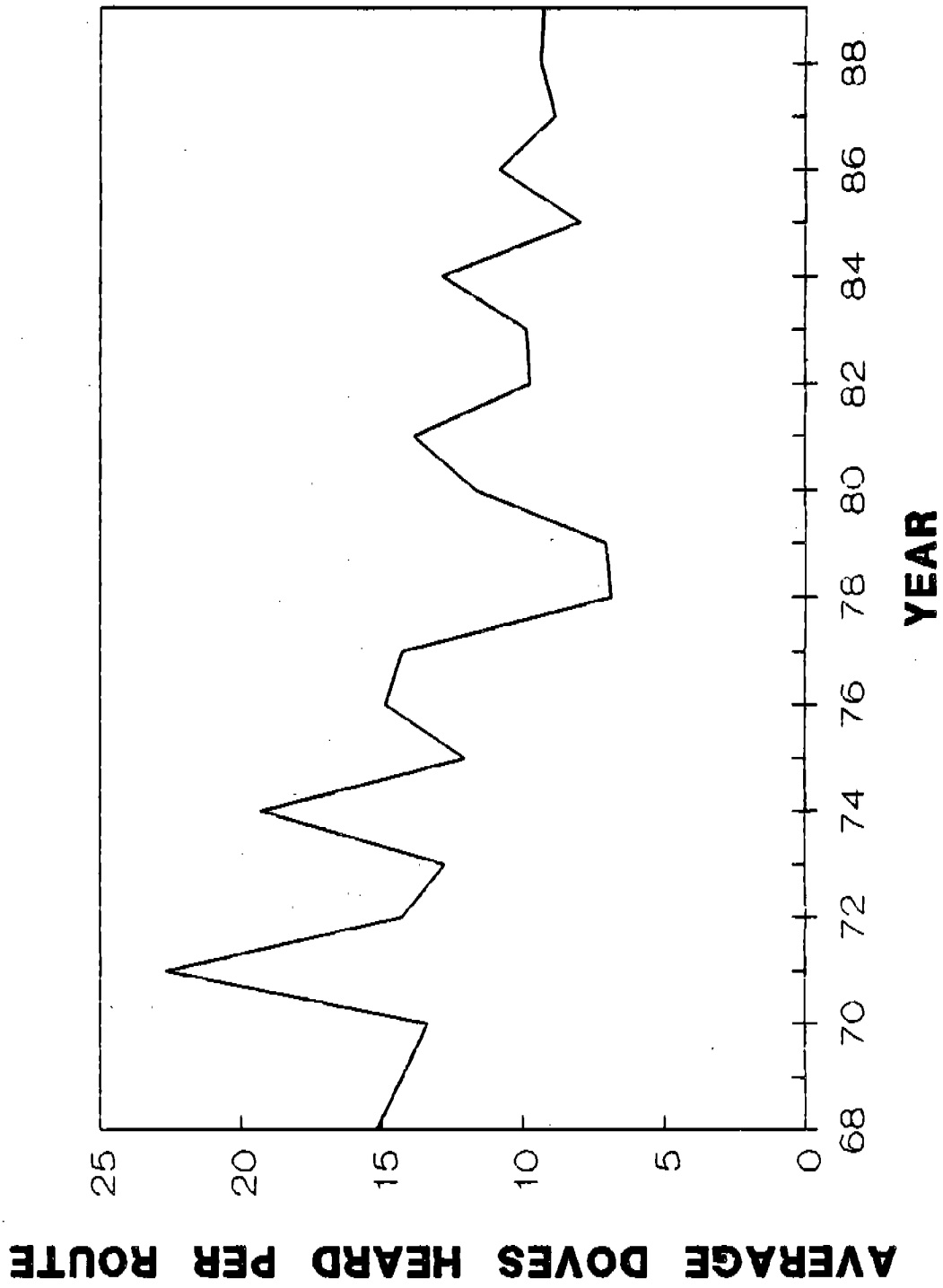


Figure 1. Mourning dove breeding density index trend, 1968-89.

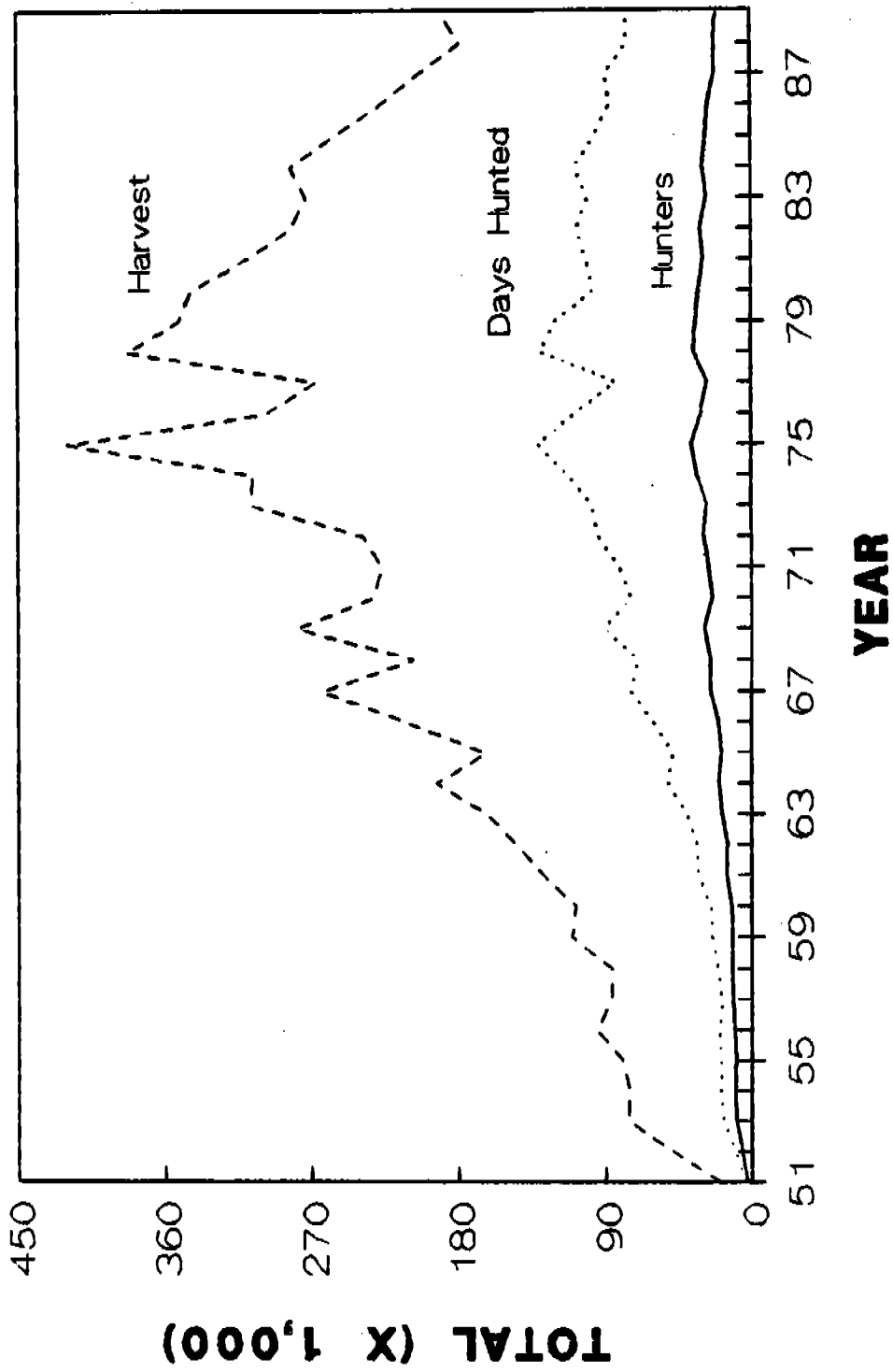


Figure 2. Statewide trends of mourning dove harvest statistics, 1951-89.

DOVES PER HUNTER AND PER DAY

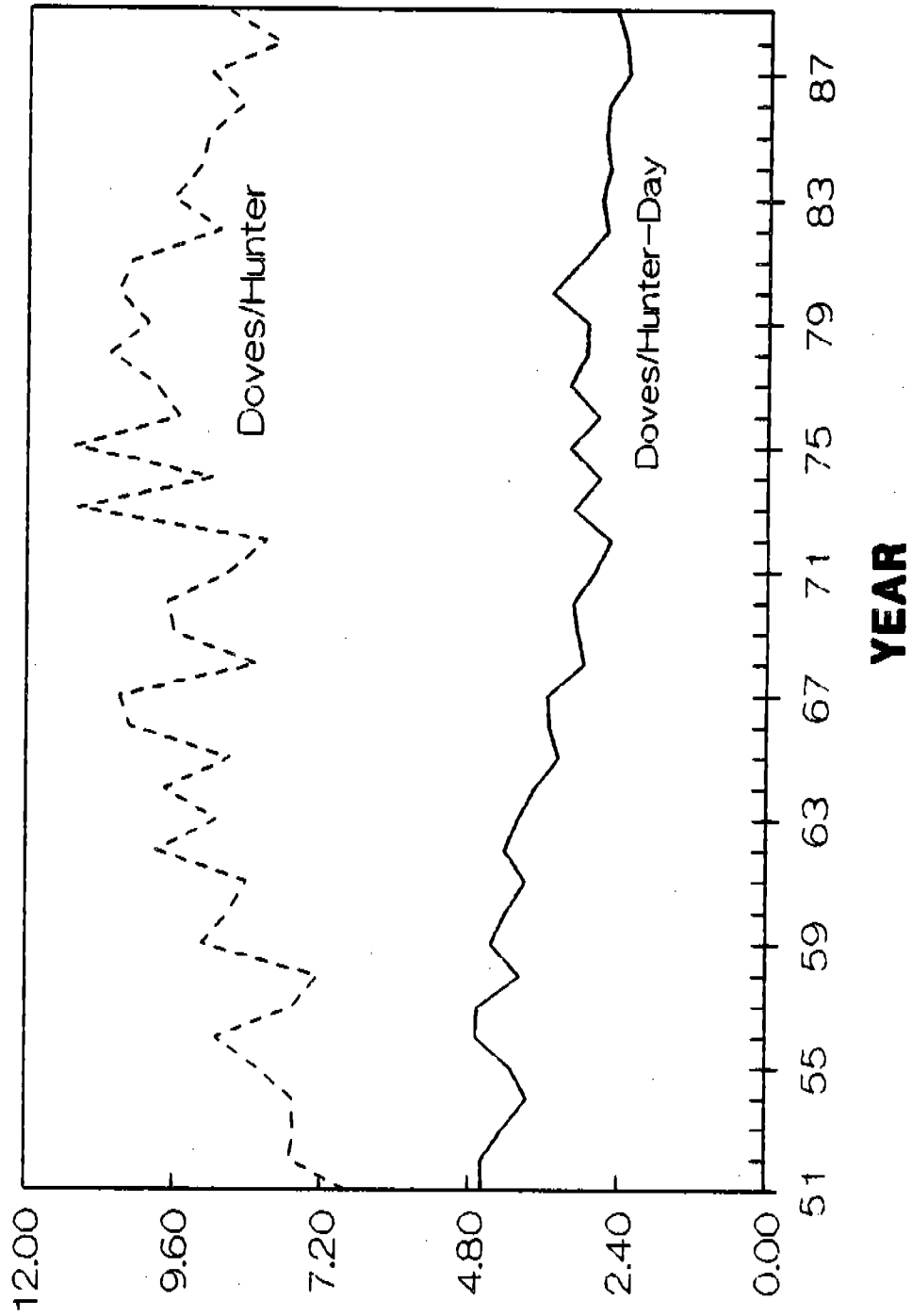


Figure 3. Statewide trends of mourning dove hunter success rates, 1951-89.

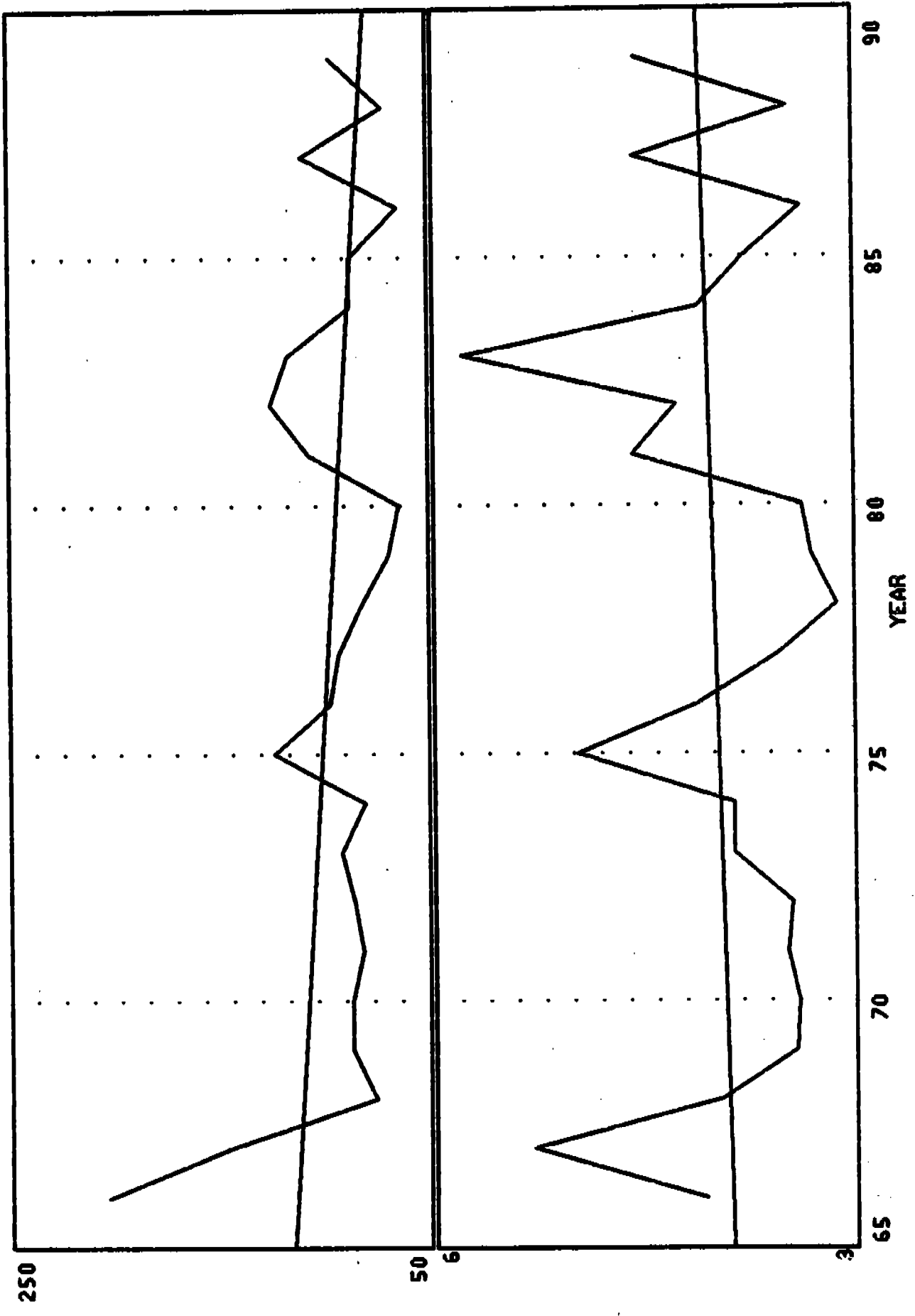


Figure 4. Statewide dove field bag check indices, 1966-89.

hunter-days afield and doves per hunter-day were significantly below the 10-year average. Increased success seemed to be due to reduced hunter participation. May through August were dryer and warmer than normal. Precipitation in August was below normal in major dove concentration areas. On the 25th of August temperatures dropped below freezing at numerous locations but daily minimum temperatures were rarely below 40°F in major dove concentration areas.

Long-term harvest trends are depicted in Figure 2.

Field Bag Checks

A summary of field bag check data for 1989 is shown in Table 8. Hunter success trends determined via this method are shown in Table 9. Results of the 1989 survey compared to 1988 and the 10-year average (1979-88) follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Total hunters checked	1,633	+39	-26
Total hours hunted	6,074	+33	-28
Doves per hunter (complete hunts)	4.31	+41	+14
Doves bagged per 100 hours	110	+67	+29
Average hours per hunter-day (complete hunts)	3.9	-9	-6
Hours hunted per dove bagged	1.0	-29	-11

September 1, 1989 was a Friday. Hunt conditions were good on opening day and weekend with dry and warm weather. Hunter participation should have been about the same as last year's Thursday opening. Field bag checks indicated an increase in hunter success. This agrees with the questionnaire results which also indicated a slight increase in hunter success. The total number of hunters checked was up 39 percent from 1988. Dove hunters spent less time afield per hunter-day than in 1988, and less 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 1980 through 1989 is contained in Table 10. Hatching dates for immature doves harvested in the Northern Region since 1980 are shown in Table 11. Hatching dates for immature doves harvested in Utah in 1989 are shown in Table 12.

Following is a comparison of data collected in 1989 to 1988 and long-term averages (1966-88):

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Sample size	881	-46	-73
Immatures/100 adults	77	-23	-34
Percent of immatures hatched on: (N. Region)			
August 3 or later	41.3	--	--
July 25 or later	89.8	--	--
Before July 25	10.2	--	--

Sample size was down by half. The 77 immatures per 100 adults in the harvest indicated lower production compared to the previous 23-year average.

Table 1. Summary of the mourning dove call-count survey for 1989.

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	3	14	2
Box Elder	R1500	0	0	18
REGIONAL TOTALS		3	14	20
<u>Central Region</u>				
Juab	R2830	13	79	18
REGIONAL TOTALS		13	79	18
<u>Southern Region</u>				
Sevier-Sanpete	R0370	2	5	12
Wayne-Sevier	R0660	7	54	0
Garfield	R1090	16	74	0
Millard	R3640	4	5	57
Beaver	R3820	14	63	14
Iron	R4000	10	79	2
Washington	R4310	6	16	10
REGIONAL TOTALS		59	296	95
<u>Northeastern Region</u>				
Duchesne	R0080	13	38	8
Uintah	R0220	0	0	9
REGIONAL TOTALS		13	38	17
<u>Southeastern Region</u>				
Emery	R0540	8	29	3
San Juan	R1171	43	196	130
San Juan	R1450	1	1	15
REGIONAL TOTALS		52	226	148
STATE TOTALS		140	653	298
STATE AVERAGE		9.3	43.5	19.9
PERCENT CHANGE (from previous year)		-1.1	+2.6	+7.6

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, 1976-89.

Region and County	Route Number	Number of Doves Heard Per Route													
		1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Northern Region															
Summit	R1020	11	10	5	6	5	4	5	--	1	4	5	3	5	3
Box Elder	R1500	1	4	2	9	4	8	--	1	0	0	1	2	0	0
REGIONAL TOTALS		12	14	7	15	9	12	5	1	1	4	6	5	5	3
Central Region															
Juab	R2830	28	25	31	15	31	22	9	25	19	20	19	16	23	13
REGIONAL TOTALS		28	25	31	15	31	22	9	25	19	20	19	16	23	13
Southern Region															
Sevier-Sanpete	R0370	0	2	0	0	3	0	0	3	5	4	4	3	3	2
Wayne-Sevier	R0660	5	8	1	2	5	14	4	--	17	3	2	0	3	7
Garfield	R1090	3	1	0	0	0	9	2	3	15	3	1	1	0	16
Millard	R3640	6	29	8	4	2	10	9	5	14	2	2	3	5	4
Beaver	R3820	0	0	0	5	9	7	13	3	6	6	4	17	13	14
Iron	R4000	45	27	12	14	40	36	21	19	31	41	26	23	20	10
Washington	R4310	19	15	1	4	3	6	0	14	1	0	6	7	1	6
REGIONAL TOTALS		78	82	22	29	62	82	49	47	89	53	45	54	45	59
Northeastern Region															
Duchesne	R0080	11	14	2	2	1	13	7	0	1	8	3	4	8	13
Uintah	R0220	27	7	4	--	49	19	1	9	10	5	20	12	6	0
REGIONAL TOTALS		38	21	6	2	50	32	8	9	11	13	23	16	14	13
Southeastern Region															
Emery	R0540	14	4	10	9	7	22	7	11	10	3	10	11	15	8
San Juan	R1170	51	67	24	28	14	38	26	30	57	25	60	31	37	43
San Juan	R1450	2	1	3	1	3	0	24	5	7	2	0	1	2	1
REGIONAL TOTALS		67	72	37	38	24	60	57	46	74	30	70	43	54	52
STATE TOTALS		223	214	103	99	176	208	128	128	194	120	163	134	141	140
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	9.3
PERCENT CHANGE (from previous year)		+23	-4	-52	+3	+65	+18	-38	0	+30	-38	+36	-18	+6	-1

Table 3. Summary of mourning dove hunter success and distribution of harvest and hunting pressure by region and county, 1989.

Region and County	Sample Size*	Hunter-days Afield	Birds Bagged	Birds per Hunter-day	% of Pressure	% of Harvest
NORTHERN REGION						
BOX ELDER	139	8,110	22,961	2.83	10.62	12.06
CACHE	51	4,148	9,271	2.24	5.43	4.87
DAVIS	38	2,903	3,816	1.31	3.80	2.01
MORGAN	10	808	829	1.03	1.06	0.44
RICH	9	394	497	1.26	0.52	0.26
SUMMIT	7	373	601	1.61	0.49	0.32
WEBER	58	3,588	6,741	1.88	4.70	3.54
REGIONAL TOTALS	312	20,327	44,719	2.20	26.62	23.50
CENTRAL REGION						
JUAB	101	4,189	18,626	4.45	5.49	9.79
SALT LAKE	55	3,111	6,782	2.18	4.07	3.56
SANPETE	55	3,443	8,255	2.40	4.51	4.34
TOOELE	111	5,662	16,323	2.88	7.41	8.58
UTAH	208	14,913	30,967	2.08	19.53	16.27
WASATCH	13	850	1,037	1.22	1.11	0.54
REGIONAL TOTALS	543	32,170	81,993	2.55	42.12	43.08
SOUTHERN REGION						
BEAVER	15	995	4,335	4.35	1.30	2.28
GARFIELD	8	912	2,074	2.27	1.20	1.09
IRON	24	2,011	5,849	2.91	2.63	3.07
KANE	6	394	1,223	3.11	0.52	0.64
MILLARD	84	5,330	18,875	3.54	6.98	9.92
PIUTE	3	41	0	0.00	0.05	0.00
SEVIER	58	4,314	11,636	2.70	5.65	6.11
WASHINGTON	35	2,343	4,978	2.12	3.07	2.62
WAYNE	3	394	1,389	3.53	0.52	0.73
REGIONAL TOTALS	236	16,738	50,361	3.01	21.92	26.46
NORTHEASTERN REGION						
DAGGETT	2	165	41	0.25	0.22	0.02
DUCHESNE	18	1,140	1,617	1.42	1.49	0.85
UINTAH	20	1,389	3,235	2.33	1.82	1.70
REGIONAL TOTALS	40	2,696	4,895	1.82	3.53	2.57
SOUTHEASTERN REGION						
CARBON	14	1,099	829	0.75	1.44	0.44
EMERY	24	2,406	4,252	1.77	3.15	2.23
GRAND	3	228	497	2.18	0.30	0.26
SAN JUAN	9	560	2,364	4.22	0.73	1.24
REGIONAL TOTALS	50	4,293	7,944	1.85	5.62	4.17
UNKNOWN	3	145	414	2.86	0.19	0.22
STATE TOTALS	1,184	76,372	190,328	2.49	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 4. Summary of mourning doves bagged per hunter-day by region and county, 1982-89.

Region and County	Year							
	1982	1983	1984	1985	1986	1987	1988	1989
<u>Northern Region</u>								
Box Elder	3.74	3.50	3.19	2.18	3.18	3.46	3.41	2.83
Cache	2.16	2.48	2.05	2.34	1.92	1.79	1.92	2.24
Davis	1.52	1.32	1.66	1.53	1.24	1.18	1.51	1.31
Morgan	4.78	2.65	1.91	1.72	2.04	3.00	2.36	1.03
Rich	1.57	3.08	6.69	2.28	3.72	0.00	2.63	1.26
Summit	2.34	2.08	3.89	1.92	1.08	2.50	2.19	1.61
Weber	1.93	1.81	1.55	1.68	1.63	1.15	1.21	1.88
REGIONAL TOTALS	2.50	2.43	2.27	1.92	2.26	2.19	2.09	2.20
<u>Central Region</u>								
Juab	3.64	5.35	4.44	5.16	4.54	2.95	3.25	4.45
Salt Lake	1.89	2.14	1.95	1.91	1.95	1.36	1.84	2.18
Sanpete	2.48	3.64	2.98	2.71	3.51	1.88	2.75	2.40
Tooele	2.54	2.74	2.90	2.55	2.87	2.17	2.31	2.88
Utah	2.10	2.10	2.21	2.50	2.14	2.30	1.97	2.08
Wasatch	1.39	0.83	2.20	1.50	1.97	0.82	1.20	1.22
REGIONAL TOTALS	2.33	2.64	2.60	2.71	2.72	2.11	2.23	2.55
<u>Southern Region</u>								
Beaver	4.78	5.62	3.45	3.43	2.02	1.72	3.50	4.35
Garfield	4.15	3.07	1.80	0.60	0.20	1.67	3.86	2.27
Iron	3.24	3.60	3.07	4.99	3.54	3.10	3.71	2.91
Kane	2.50	4.38	5.76	2.54	1.06	3.06	1.71	3.11
Millard	4.49	4.63	4.25	4.30	3.58	2.83	3.01	3.54
Piute	0.63	1.65	1.94	1.60	1.62	1.67	4.17	0.00
Sevier	2.51	2.73	2.11	2.33	1.82	2.15	2.03	2.70
Washington	2.92	4.34	2.62	3.17	3.90	2.68	3.37	2.12
Wayne	2.56	2.50	2.00	2.47	2.57	5.65	2.29	3.53
REGIONAL TOTALS	3.49	3.80	3.22	3.53	2.85	2.62	2.90	3.01
<u>Northeastern Region</u>								
Daggett	2.33	1.34	1.48	0.00	1.20	0.83	0.00	0.25
Duchesne	3.09	2.79	1.83	2.50	2.70	2.46	2.83	1.42
Uintah	2.51	2.33	2.61	2.39	1.91	2.82	2.68	2.33
REGIONAL TOTALS	2.74	2.39	2.20	2.39	2.05	2.55	2.68	1.82
<u>Southeastern Region</u>								
Carbon	3.13	2.06	2.13	2.76	2.76	1.94	2.06	0.75
Emery	2.37	2.00	2.24	3.28	1.62	2.41	2.87	1.77
Grand	2.99	2.85	2.46	2.00	4.28	2.41	2.00	2.18
San Juan	3.68	3.70	3.51	3.38	3.26	4.08	2.91	4.22
REGIONAL TOTALS	2.99	2.41	2.41	3.01	2.54	2.76	2.56	1.85
Unknown Counties	1.56	7.20	0.00	0.00	0.00	1.93	1.30	2.86
STATE TOTALS	3.05	2.62	2.71	2.59	2.65	2.61	2.28	2.49

Table 5. Percentage distribution of mourning dove harvest by region and county, 1982-89.

Region and County	Year							
	1982	1983	1984	1985	1986	1987	1988	1989
<u>Northern Region</u>								
Box Elder	10.36	11.40	9.96	5.48	10.36	11.51	10.31	12.06
Cache	2.85	4.85	4.71	3.85	2.46	2.99	2.94	4.87
Davis	2.73	2.71	3.35	2.91	2.08	1.93	3.27	2.01
Morgan	1.27	0.64	0.30	0.76	0.44	0.18	0.61	0.44
Rich	0.26	0.54	0.77	0.55	1.08	0.00	0.66	0.26
Summit	0.48	0.12	0.25	0.84	0.12	0.18	0.65	0.32
Weber	5.67	4.31	3.57	4.21	2.71	2.12	3.67	3.54
REGIONAL TOTALS	23.62	24.56	22.92	18.61	19.26	18.92	22.15	23.50
<u>Central Region</u>								
Juab	7.97	8.93	9.42	10.97	11.09	8.36	8.09	9.79
Salt Lake	7.12	7.34	7.90	5.59	5.50	5.39	4.37	3.56
Sanpete	2.65	3.44	3.49	4.08	5.54	2.88	4.30	4.34
Tooele	8.27	9.46	8.67	7.42	11.39	8.55	10.92	8.58
Utah	15.20	14.14	13.94	17.75	14.38	20.06	16.17	16.27
Wasatch	0.58	0.24	0.86	0.98	0.52	0.61	0.90	0.54
REGIONAL TOTALS	41.79	43.56	44.27	46.79	48.42	45.87	44.78	43.08
<u>Southern Region</u>								
Beaver	2.60	1.65	2.31	1.55	1.82	1.67	1.76	2.28
Garfield	1.17	0.90	0.26	0.02	0.01	0.12	0.25	1.09
Iron	2.64	2.71	1.68	4.05	3.82	3.24	3.22	3.07
Kane	0.11	0.84	1.41	0.28	0.30	0.66	0.33	0.64
Millard	6.80	6.17	10.20	10.25	9.42	9.80	11.73	9.92
Piute	0.03	0.41	0.45	0.56	0.19	0.24	0.46	0.00
Sevier	3.37	3.23	3.98	3.24	3.50	4.67	3.59	6.11
Washington	3.25	3.70	2.37	2.44	3.26	2.28	1.10	2.62
Wayne	0.35	0.12	0.11	0.35	0.33	1.35	0.14	0.73
REGIONAL TOTALS	20.42	19.74	22.77	22.75	22.64	24.05	22.63	26.46
<u>Northeastern Region</u>								
Daggett	0.15	0.21	0.42	0.00	0.16	0.12	0.00	0.02
Duchesne	2.30	1.53	0.99	1.42	1.05	0.76	1.27	0.85
Uintah	2.52	2.49	2.66	2.78	1.92	2.81	2.46	1.70
REGIONAL TOTALS	4.97	4.24	4.07	4.20	3.14	3.70	3.73	2.57
<u>Southeastern Region</u>								
Carbon	3.94	2.28	2.39	2.93	1.65	0.74	1.67	0.44
Emery	2.00	2.37	1.45	3.35	1.83	2.66	3.70	2.23
Grand	1.20	0.99	0.88	0.27	1.24	0.84	0.18	0.26
San Juan	1.90	2.08	1.24	1.10	1.81	2.54	0.59	1.24
REGIONAL TOTALS	9.04	7.73	5.97	7.65	6.54	6.80	6.16	4.17
Unknown counties	0.15	0.18	0.00	0.00	0.00	0.64	0.53	0.22
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, 1982-89.

Region and County	Year							
	1982	1983	1984	1985	1986	1987	1988	1989
Northern Region								
Box Elder	7.25	8.84	8.10	6.68	8.50	7.59	7.07	10.62
Cache	3.46	5.29	5.97	4.37	3.34	3.81	3.59	5.43
Davis	4.69	5.57	5.24	5.04	4.38	3.75	5.08	3.80
Morgan	0.70	0.65	0.41	1.18	0.57	0.13	0.61	1.06
Rich	0.43	0.48	0.30	0.64	0.76	0.00	0.59	0.52
Summit	0.54	0.16	0.17	1.15	0.28	0.16	0.70	0.49
Weber	7.71	6.45	5.97	6.66	4.35	4.22	7.11	4.70
REGIONAL TOTALS	24.78	27.45	26.16	25.74	22.17	19.69	24.77	26.62
Central Region								
Juab	5.73	4.53	5.50	5.64	6.37	6.47	5.82	5.49
Salt Lake	9.90	9.30	10.51	7.75	7.36	9.02	5.52	4.07
Sanpete	2.80	2.57	3.04	4.00	4.12	3.51	3.65	4.51
Tooele	8.52	9.39	7.76	7.73	10.36	8.99	11.08	7.41
Utah	18.92	18.28	16.38	18.88	17.53	19.93	19.18	19.53
Wasatch	1.08	0.78	1.01	1.73	0.69	1.70	1.77	1.11
REGIONAL TOTALS	46.95	44.85	44.21	45.73	46.43	49.64	47.09	42.12
Southern Region								
Beaver	1.48	0.80	1.74	1.20	2.34	2.22	1.18	1.30
Garfield	0.74	0.80	0.37	0.11	0.12	0.16	0.15	1.20
Iron	2.13	2.05	1.42	2.15	2.82	2.38	2.03	2.63
Kane	0.11	0.52	0.63	0.29	0.73	0.49	0.46	0.52
Millard	3.97	3.62	6.23	6.33	6.86	7.89	9.11	6.98
Piute	0.11	0.68	0.60	0.93	0.31	0.32	0.26	0.05
Sevier	3.51	3.20	4.89	3.69	4.99	4.96	4.14	5.65
Washington	2.92	2.31	2.35	2.04	2.18	1.94	0.76	3.07
Wayne	0.35	0.13	0.15	0.38	0.33	0.54	0.15	0.52
REGIONAL TOTALS	15.34	14.11	18.38	17.12	20.68	20.95	18.26	21.92
Northeastern Region								
Daggett	0.17	0.42	0.75	0.07	0.35	0.32	0.06	0.22
Duchesne	1.95	1.49	1.40	1.51	1.02	0.71	1.05	1.49
Uintah	2.63	2.90	2.65	3.09	2.63	2.27	2.14	1.82
REGIONAL TOTALS	4.75	4.81	4.80	4.66	4.00	3.31	3.26	3.53
Southeastern Region								
Carbon	3.30	3.00	2.91	2.82	1.56	0.87	1.90	1.44
Emery	2.21	3.23	1.68	2.71	2.96	2.52	3.02	3.15
Grand	1.05	0.94	0.93	0.35	0.76	0.79	0.21	0.30
San Juan	1.35	0.53	0.91	0.87	1.44	1.42	0.48	0.73
REGIONAL TOTALS	7.91	8.71	6.44	6.75	6.72	5.62	5.62	5.62
Unknown counties	0.26	0.07	0.02	0.00	0.00	0.76	0.96	0.19
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, 1951-89.

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
1989	21,696	190,328	76,372	2.49	8.77
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TOTALS					
(1951-89)	865,967	8,124,829	2,663,987	(131.93)	(354.31)
(1979-88)	287,953	2,708,083	986,108	(27.29)	(93.32)
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AVERAGES					
(1951-89)	22,204	208,329	68,307	3.38	9.08
(1979-88)	28,795	270,808	98,611	2.73	9.33

*Estimated.

**Bag Limit increased to 15.

***Bag Limit reduced to 10.

Table 8. Mourning dove field bag check summary, 1989.

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	
Northern Region										
Box Elder	130	292	1,174	1,042	89	163	675	742	110	4.55
Cache	9	19	31	20	66	—	—	—	—	—
Davis	7	14	33	56	170	8	40	40	160	5.00
Morgan	—	—	—	—	—	—	—	—	—	—
Rich	—	—	—	—	—	—	—	—	—	—
Summit	2	6	7	10	143	—	—	—	—	—
Weber	10	20	21	6	29	7	5	5	40	0.71
REGIONAL TOTALS	158	337	1,266	1,134	90	178	720	787	109	4.42
Central Region										
Juab	89	210	947	1,142	121	147	707	939	133	6.39
Salt Lake	14	30	54	17	31	26	17	17	37	1.30
Sanpete	—	—	—	—	—	—	—	—	—	—
Tooele	—	—	—	—	—	—	—	—	—	—
Utah	189	365	1,328	1,117	84	268	1,022	931	91	3.47
Wasatch	—	—	—	—	—	—	—	—	—	—
REGIONAL TOTALS	292	605	2,329	2,276	98	441	1,746	1,887	108	4.28
Southern Region										
Beaver	—	—	—	—	—	—	—	—	—	—
Garfield	—	—	—	—	—	—	—	—	—	—
Iron	9	20	6	28	467	20	6	28	467	1.40
Kane	—	—	—	—	—	—	—	—	—	—
Millard	—	—	—	—	—	—	—	—	—	—
Piute	—	—	—	—	—	—	—	—	—	—
Sevier	—	—	—	—	—	—	—	—	—	—
Washington	5	10	3	12	369	10	3	12	369	1.20
Wayne	—	—	—	—	—	—	—	—	—	—
REGIONAL TOTALS	14	30	9	40	444	14	9	40	444	1.33
Northeastern Region										
Daggett	—	—	0	—	—	—	—	—	—	—
Duchesne	—	—	—	—	—	—	—	—	—	—
Uintah	4	11	40	65	163	7	28	60	214	8.57
REGIONAL TOTALS	4	11	40	65	163	7	28	60	214	8.57
Southeastern Region										
Carbon	3	10	26	1	4	—	—	—	—	—
Emery	6	11	17	1	6	—	—	—	—	—
Grand	11	34	66	31	47	11	24	22	92	2.00
San Juan	8	20	46	36	78	—	—	—	—	—
REGIONAL TOTALS	28	75	155	69	45	11	24	22	92	2.00
LEHI CHECK STATION	189	365	1,328	1,117	84	136	1,022	931	91	3.47
NEPHI CHECK STATION*	89	210	947	1,142	121	147	707	939	133	6.39
STATE TOTALS	774	1,633	6,074	5,843	96	1,082	4,256	4,666	110	4.31

*Includes Millard

Table 9. Mourning dove hunter success trend determined by field bag checks, 1983-89.

Region and County	1983		1984		1985		1986		1987		1988		1989	
	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	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	110	4.55
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	160	5.00
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	109	4.42
Central Region														
Juab	--	--	--	--	--	--	68	4.30	--	--	--	--	133	6.39
Salt Lake	61	1.40	--	--	--	--	333	3.33	--	--	--	--	37	1.30
Sanpete	--	--	--	--	--	--	20	0.56	--	--	--	--	--	--
Tooele	133	3.33	--	--	--	--	241	8.09	--	--	--	--	--	--
Utah	172	7.86	62	1.33	40	2.00	53	1.80	--	--	--	--	91	3.47
Wasatch	0	0.00	--	--	23	1.00	--	--	--	--	--	--	--	--
REGIONAL TOTALS	122	3.90	62	1.33	34	1.63	75	3.84	--	--	--	--	108	4.28
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	467	1.40
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	369	1.20
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	148	6.80	94	6.09	397	7.94	203	6.41	126	5.23	213	3.68	444	1.33
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	214	8.57
REGIONAL TOTALS	108	1.93	90	1.93	925	12.33	87	1.61	111	3.33	111	3.33	214	8.57
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	--	--	--	--	--	--	--	--	--	--	--	--	92	2.00
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	92	2.00
NEPHI CHECK STATION	155	7.40	56	2.61	167	7.47	37	1.68	114	5.09	89	5.12	133	6.39
LEHI CHECK STATION	83	5.14	135	6.50	62	2.37	50	2.39	78	3.23	50	2.19	91	3.47
STATE TOTALS	117	5.76	87	3.80	87	3.42	64	2.94	110	4.33	71	3.05	110	4.31

*Doves per hunter index based on all hunts.

Table 10. Age composition (Immatures/100 Adults) of mourning doves harvested, 1980-89.

Region and County	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1980-88
	I/100A (n)	I/100A (n)	I/100A (n)	I/100A (n)	I/100A (n)	I/100A (n)	I/100A (n)	I/100A (n)	I/100A (n)	I/100A (n)	I/100A (n)
Northern Region											
Box Elder	121 (1454)	107 (700)	124 (716)	143 (515)	135 (1172)	146 (137)	131 (1086)	128 (770)	--	82 (435)	
Cache	151 (113)	--	--	67 (5)	--	181 (45)	--	325 (17)	--	--	
Davis	169 (43)	--	107 (56)	55 (17)	121 (42)	85 (74)	--	--	--	--	
Morgan	--	--	--	188 (46)	--	--	--	--	--	--	
Rich	--	--	4,200 (43)	--	53 (23)	600 (7)	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	
Weber	--	--	--	183 (34)	--	--	--	--	--	--	
REGIONAL TOTALS	124 (1610)	107 (700)	135 (815)	143 (617)	133 (1237)	138 (443)	131 (1086)	132 (787)	--	82 (435)	130 (9)
Central Region											
Juab	--	--	--	--	--	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	--	--	--	--	--	--	--	
Tooele	118 (96)	78 (71)	80 (137)	--	--	--	--	--	--	--	
Utah	45 (29)	--	100 (32)	--	--	--	--	--	--	--	
Wasatch	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	95 (125)	78 (71)	89 (169)	--	--	--	--	--	--	--	87 (1)
Southern Region											
Beaver	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	
Hillard	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	--	--	
Sevier	--	--	--	--	--	--	--	--	--	--	
Washington	--	--	--	--	--	--	--	--	--	--	
Wayne	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
Northeastern Region											
Daggett	--	--	--	--	--	--	--	--	--	--	
Duchesne	--	--	--	--	--	--	--	--	--	--	
Uintah	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
Southeastern Region											
Carbon	--	--	160 (138)	--	--	--	--	--	--	--	
Emery	--	260 (18)	76 (88)	--	--	--	52 (64)	80 (187)	70 (187)	85 (37)	
Grand	--	--	--	--	--	--	--	--	--	50 (10)	
San Juan	--	50 (84)	--	--	--	--	53 (227)	63 (275)	31 (42)	56 (39)	
REGIONAL TOTALS	281 (80)	65 (102)	119 (226)	--	--	--	53 (291)	69 (462)	61 (229)	72 (86)	108 (2)
NEPHI CHECK STATION	100 (862)	105 (1067)	62 (754)	108 (1239)	198 (1130)	107 (1678)	140 (1137)	180 (1004)	104 (671)	64 (955)	123 (1)
LEHI CHECK STATION	98 (1204)	75 (2075)	83 (1075)	84 (1021)	96 (1517)	107 (1391)	137 (1396)	130 (1283)	114 (741)	92 (978)	103 (1)
STATE TOTALS	111 (3881)	87 (4015)	91 (3143)	106 (2877)	131 (3884)	117 (3512)	127 (3910)	137 (3536)	100 (1641)^a	77 (881)	112 (3)

^a missing northern region data.

Table 11. Percent of harvest by hatching date of immature mourning doves in northern Utah, 1980-89.

Date Hatched	Age* (Days)	P	PERCENT OF HARVEST BY HATCH DATE																	S A M P L E										S I Z E			
			1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	
Aug 3	29	none	35.6	46.1	32.6	22.8	43.1	44.7	31.2	34.8	--	41.3	316	166	152	77	304	115	192	155	--	8											
Jul 31	32	1	26.9	33.6	24.9	21.3	29.4	26.8	35.0	21.8	--	30.1	239	121	116	72	207	69	215	97	--	5											
Jul 25	38	2	16.4	14.2	21.7	21.0	19.0	14.0	15.6	17.5	--	18.4	146	51	101	71	134	36	96	78	--	3											
Jul 18	45	3	11.6	5.0	7.7	14.8	6.0	3.9	8.6	10.6	--	6.6	103	18	36	50	42	10	53	47	--	1											
Jul 9	54	4	5.1	0.6	4.7	9.2	2.1	1.9	4.7	5.7	--	2.6	45	2	22	31	15	5	29	25	--												
Jun 30	63	5	2.4	--	4.1	6.2	0.4	1.6	2.8	4.3	--	0.5	21	0	19	21	3	4	17	19	--												
Jun 21	72	6	1.5	--	2.8	2.1	0.0	0.0	1.3	3.8	--	0.0	13	0	13	7	0	0	8	17	--												
Jun 8	85	7	0.3	--	1.3	2.4	--	0.0	0.5	1.1	--	0.5	3	0	6	8	0	0	3	5	--												
May 22	102	8	--	0.3	0.2	0.0	--	0.0	0.3	0.2	--	0.0	0	1	1	1	0	0	2	1	--												
Apr 27	127	9	0.2	0.3	--	--	--	0.0	0.0	0.2	--	0.0	2	1	0	0	0	0	0	1	--												
Apr 21	133	10	--	--	--	--	--	7.0	0.0	0.0	--	0.0	0	0	0	0	0	18	0	0	--												
			100	100	100	100	100	100	100	100	--	100	581	888	360	466	338	705	257	445	--	196											

*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, 1989.

Date Hatched (Days)	Age* P	PERCENT OF HARVEST BY HATCH DATE													
		N Region					SE Region								
		Nephi	CS	Lehi	CS	C Region	Total	Nephi	CS	Lehi	CS	C Region	Total		
Aug 3	29	none	--	--	--	--	61.1	--	--	--	--	--	--	22	
Jul 31	32	1	--	--	--	36.1	--	--	--	--	--	--	--	13	
Jul 25	38	2	--	--	--	0.0	--	--	--	--	--	--	--	0	
Jul 18	45	3	--	--	--	2.8	--	--	--	--	--	--	--	1	
Jul 9	54	4	--	--	--	0.0	--	--	--	--	--	--	--	0	
Jun 30	63	5	--	--	--	0.0	--	--	--	--	--	--	--	0	
Jun 21	72	6	--	--	--	0.0	--	--	--	--	--	--	--	0	
Jun 8	85	7	--	--	--	0.0	--	--	--	--	--	--	--	0	
May 22	102	8	--	--	--	0.0	--	--	--	--	--	--	--	0	
Apr 27	127	9	--	--	--	0.0	--	--	--	--	--	--	--	0	
Apr 21	133	10	--	--	--	0.0	--	--	--	--	--	--	--	0	
											100.00	--	--	--	36

*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 and 1989 band-tailed pigeon harvest are in Table 13 and Table 14 respectively. Permits were required in both 1988 and 1989, and a questionnaire was sent to participants. Only 29 hunters purchased the \$2.00 band-tailed pigeon permit in 1988 and 41 in 1989. Harvest trends since 1970 are shown in Table 15.

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Band-tailed pigeon hunters	23	+109	-56
Band-tailed pigeon harvest	24	-76	-83
Hunter-days afield	159	+46	+14
Pigeons per hunter-day	0.15	-84	-86
Pigeons per hunter	1.0	-89	-66

Total harvest and hunter success decreased in 1989 and was well below average. The majority of the 1989 harvest occurred in Utah County which may indicate misidentification.

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	3	3	45	51	47	54	1.0	47	53
Blue Mountain-Elk Ridge	4	5	36	41	30	34	0.8	38	34
Carbon County	*	*	*	*	*	*	*	*	*
Garfield County	*	*	*	*	*	*	*	*	*
Iron County	1	1	3	3	0	0	0.0	3	0
Kane County	*	*	*	*	*	*	*	*	*
LaSal Mountain	*	*	*	*	*	*	*	*	*
Willard County	1	1	2	2	10	11	5.0	2	11
Piute County	*	*	*	*	*	*	*	*	*
Utah County	1	1	10	11	2	2	0.2	10	2
Washington County	*	*	*	*	*	*	*	*	*
Wayne County	*	*	*	*	*	*	*	*	*
Mixed Counties (Washington and Iron)	*	*	*	*	*	*	*	*	*
Totals	10	11	96	109	89	101	0.93	100	100

**Based on hunter-days.

Projection Factor = 1.1381 (29 permits issued; 21 questionnaires returned).

Table 14. Band-tailed pigeon harvest statistics, 1989.

Area Hunted	Participating Hunters		Hunter Days		Harvest		Pigeons/ Hunter-Day	Percent of Pressure**	Percent of Harvest
	Reported	Calc.	Reported	Calc.	Reported	Calc.			
Beaver County	3	3	18	21	3	3	0.2	13	14
Blue Mountain-Elk Ridge	2	2	6	7	0	0	0.0	4	0
Carbon County	*	*	*	*	*	*	*	*	*
Davis County***	*	*	*	*	*	*	*	*	*
Garfield County	*	*	*	*	*	*	*	*	*
Iron County	5	6	35	40	5	6	0.1	25	24
Kane County	*	*	*	*	*	*	*	*	*
LaSal Mountain	*	*	*	*	*	*	*	*	*
Willard County	1	1	1	1	0	0	0.0	1	0
Piute County	*	*	*	*	*	*	*	*	*
Utah County	2	2	24	27	11	13	0.5	17	52
Washington County	7	8	56	64	2	2	0.0	40	10
Wayne County	*	*	*	*	*	*	*	*	*
Mixed Counties (Washington and Iron)	*	*	*	*	*	*	*	*	*
Totals	20	23	140	159	21	24	0.15	100	100

**Based on hunter-days.

***This county was closed to band-tailed pigeon hunting during 1989. Two hunters reported harvesting 25 birds. Birds harvested are suspected of being feral pigeons.

Projection Factor = 1.1389 (41 permits issued; 36 questionnaires returned).

Table 14. Band-tailed pigeon harvest trend, 1970-89.

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	11	101	109	0.93	9.2
1989	23	24	159	0.15	1.0
<hr/>					
TOTALS (1970-89)	780	2,161	2,055	1.04	2.95
<hr/>					
AVERAGES (1970-82)	52	144	137	1.04	2.95
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CHUKAR PARTRIDGE

SUMMARY

The statewide breeding population of chukars decreased in 1989 following a colder than normal winter in northwestern Utah. Late winter and early spring precipitation, critical to successful chukar production, was below average.

Results of the brood survey indicated that brood production was below average. However, dry and hot weather in May through July may have adversely affected brood survival. Chukar density decreased during 1989, and was about average.

Harvest statistics from mail questionnaires reflected a decrease in harvest. Hunter success (chukars per hunter-day) decreased 15 percent from 1988. Chukar hunters and time afield were virtually the same as the year before. Hunting success on opening weekend as measured by field bag checks indicated decreased hunter success.



Brood Counts

Results of the annual random brood survey for 1989 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 1989 compared to 1988 and the 10-year (1979-88) average:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Total chukars observed	350	-65	-53
Young per 100 adults	327	-34	-24
Mean brood size	5.65	-29	-33
Chukars observed per 100 hours	522	-46	+1
Total hours effort	67	-36	-57

Harvest data for 1988 indicated breeding populations for 1989 were still significantly below statewide averages. The 1988-89 winter weather was reasonably mild with below average precipitation but below normal temperatures statewide. Late winter and early spring precipitation (January-April) was below average over the entire state (Figure 4). However, above average temperatures and below normal precipitation were common through the remainder of the year.

Effort on chukar brood counts decreased again in 1989 and remained below average.

Brood count sample sizes were again small for all regions. The Central Region counted 11, the Northern Region counted 2, and the Southern Region counted 2 of the state total of 17 broods. Chukar density was at the 10-year average and production was down from 1988.

Harvest

Hunter Questionnaire

Results of the hunter questionnaire survey for 1989 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 1989 harvest statistics to 1988 and the 30-year average:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Chukar hunters	10,910	-3	-24
Chukars harvested	27,628	-14	-32
Hunter-days afield	40,384	+7	-2
Chukars per hunter-day	0.68	-15	-26
Chukars per hunter	2.53	-11	-8

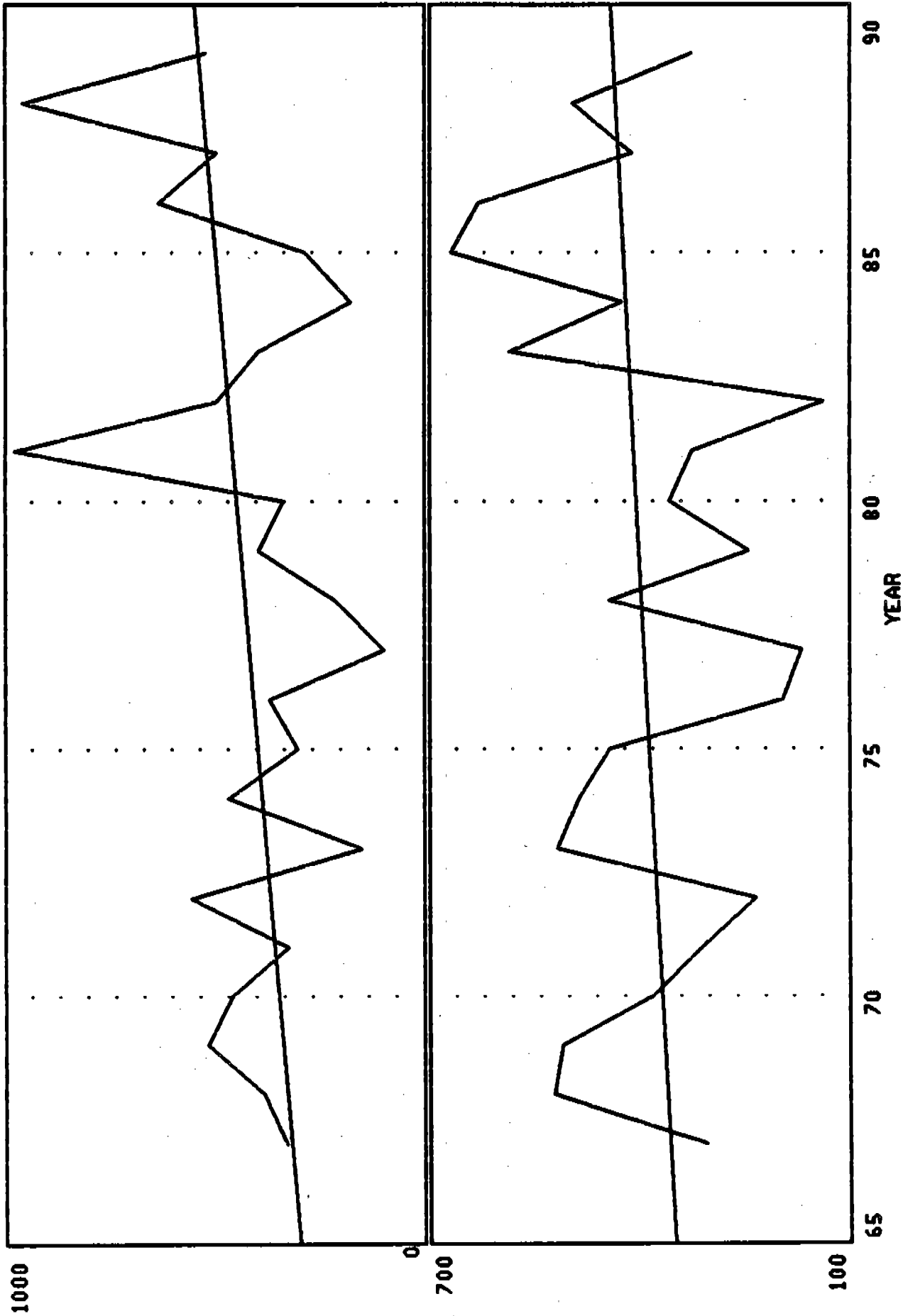


Figure 1. Statewide chukar production indices, 1967-89.

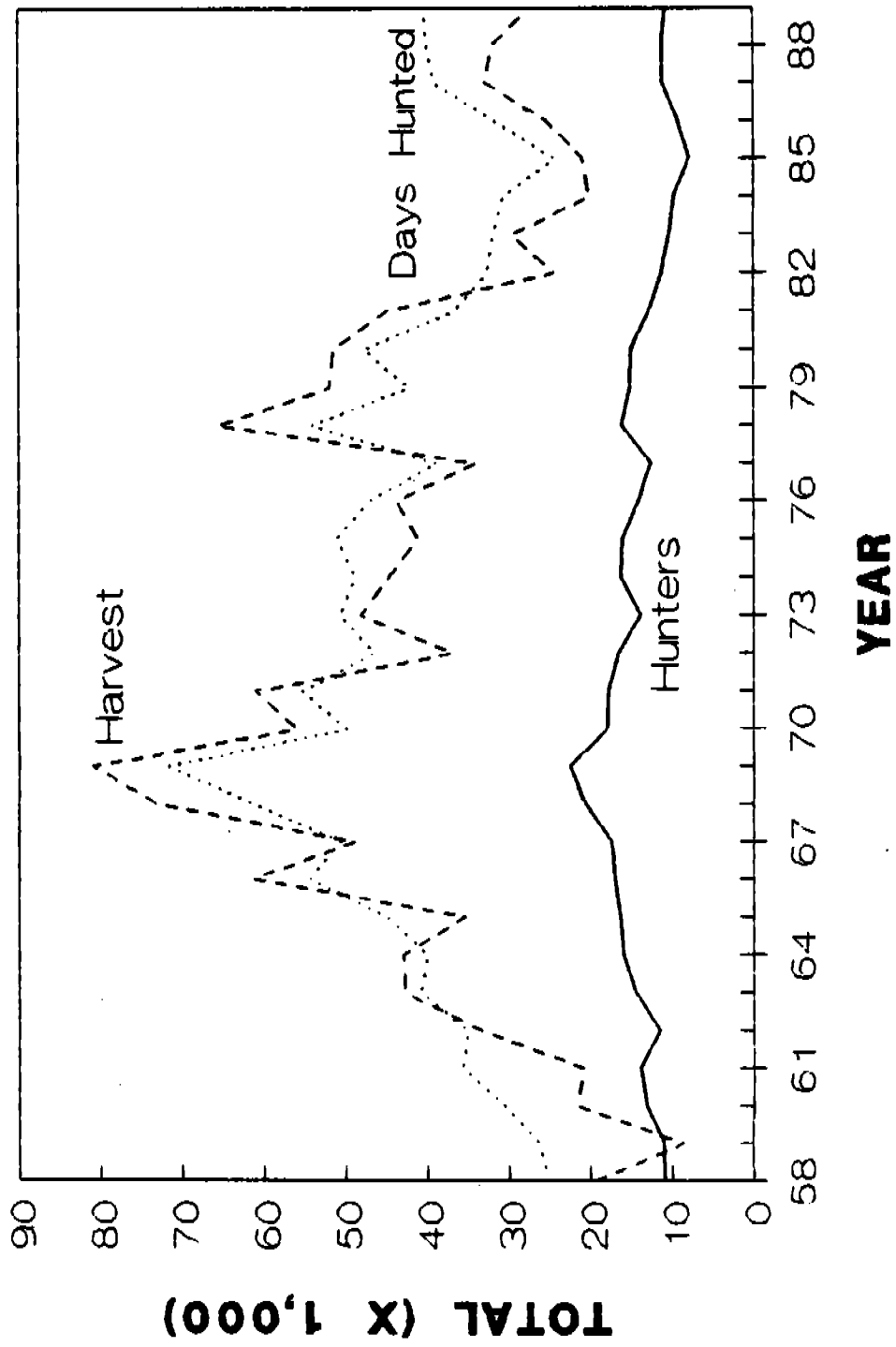


Figure 2. Statewide trends of chukar partridge harvest statistics, 1958-89.

CHUKKARS PER HUNTER AND PER DAY

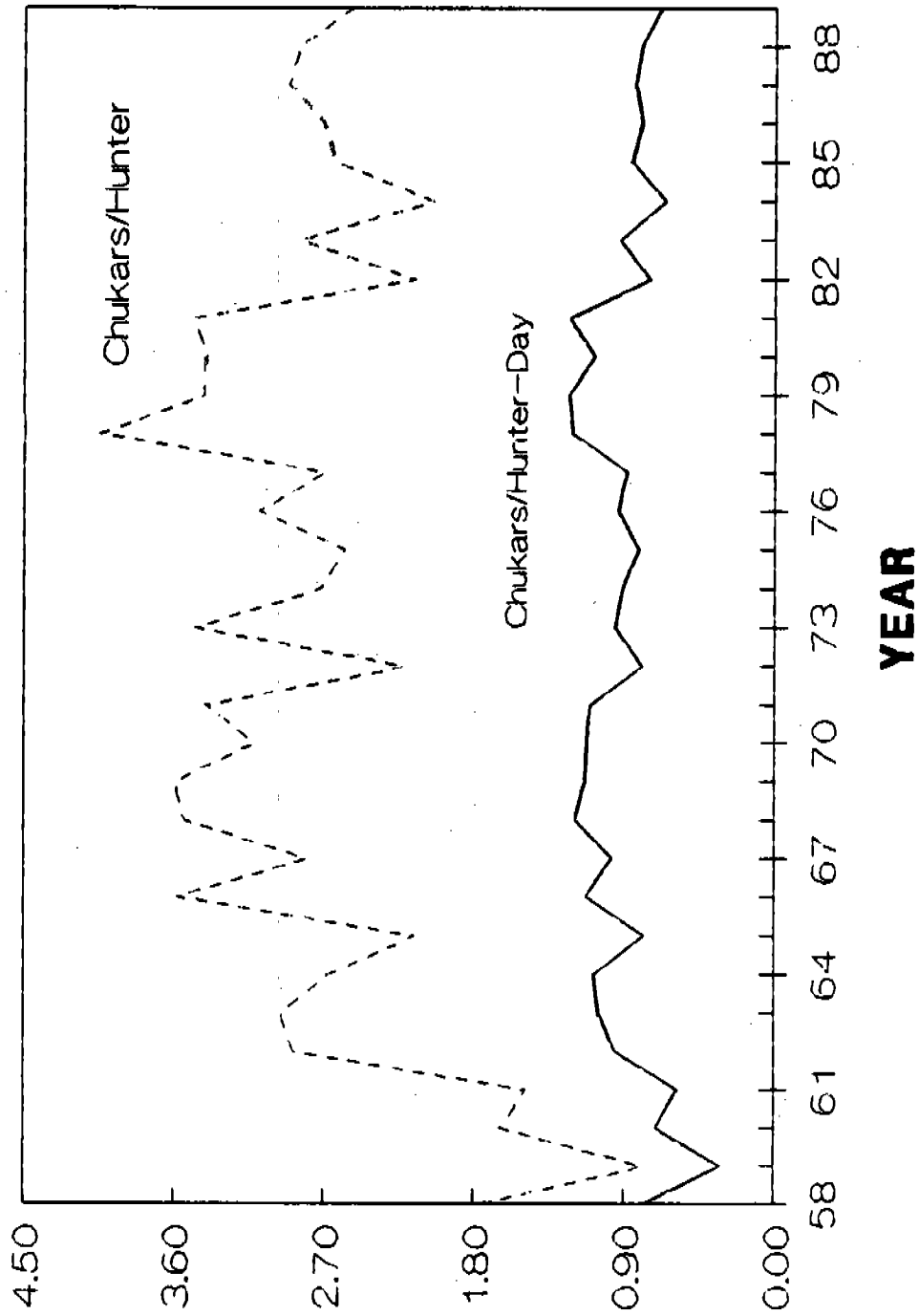
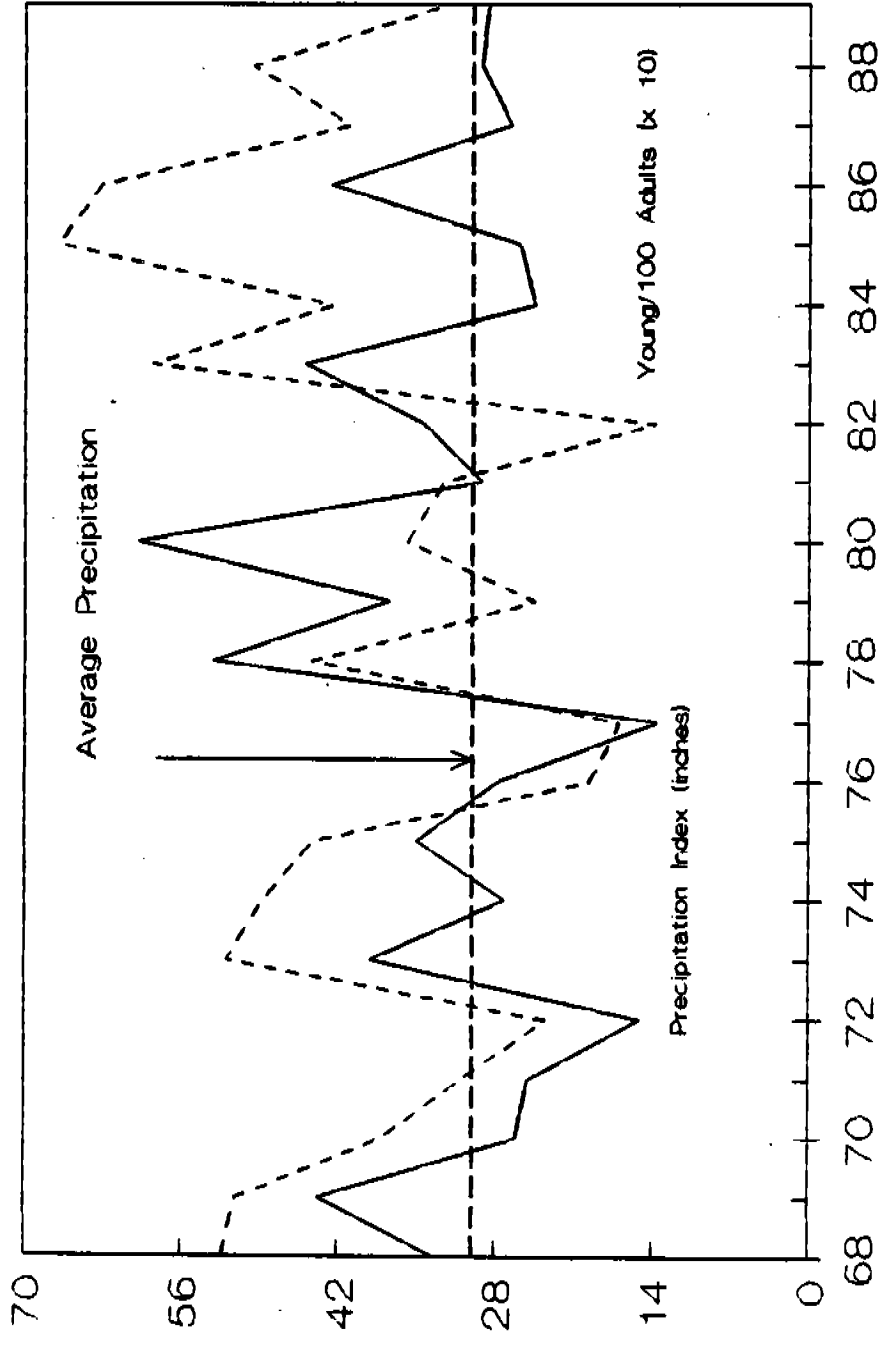


Figure 3. Statewide trends of chukar hunter success rates, 1958-89.

YOUNG/100 ADULTS & PRECIP. INDEX



YEAR

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

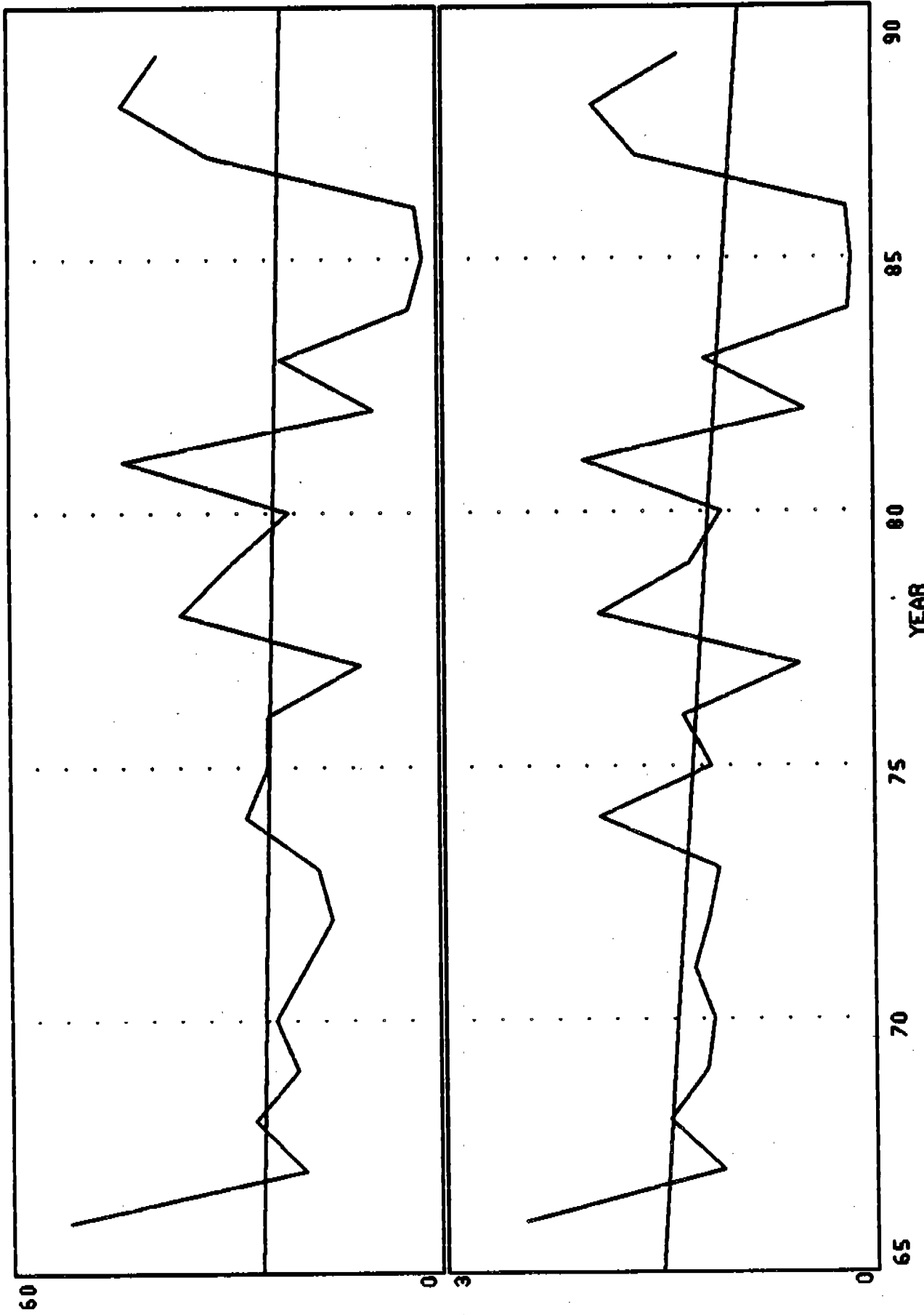


Figure 5. Statewide chukar field bag check indices, 1967-89.

Chukar hunters and hunter effort were virtually the same as last year. Chukars per hunter-day declined 15 percent and was 26 percent below the statewide average. Total harvest declined 14 percent. The Central Region again had the highest percentage of the harvest (53%) in 1989, and also had the highest percentage of hunter pressure (47%).

Field Bag Check

A summary of field bag check data for 1989 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 1989 season compared to 1988 and the (1966-88) average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Total hunters checked	42	-70	-85
Total hours hunted	146	-68	-89
Chukars per hunter (complete hunts)	1.13	-31	+34
Chukars bagged per 100 hours	39	-11	+83
Average hours per hunter-day (complete hunts)	2.9	-22	-35
Hours hunted per chukar bagged (complete hunts)	2.6	+13	-83

Field bag checks indicated hunter success on opening weekend was down from 1988 but was above average (34%). However, sample sizes were extremely small.

Table 1. Chukar summer inventory summary, 1989.

Region and County	Distinct Broods		Mixed Yng & Adults		Mean Brood	Total Adults w/o Yng	Total Adults	Total Yng	Young/100 Ad Miles	Veh. Miles	Hours of Effort		Birds/100 Hr
	# Ad	Yng	Ad	Yng							Veh. Horse Walk	Total	
Northern Region													
Box Elder	--	--	--	--	--	--	--	--	--	--	--	--	--
Cache	0	0	0	0	--	0	0	0	100	10	0	0	10
Davis	1	1	14	0	14.00	0	14	14	0	0	0	6	250
Morgan	1	1	7	0	7.00	0	7	7	5	1	0	0	500
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	2	2	21	0	10.5	0	21	21	105	11	0	6	17
Central Region													
Juab	2	2	11	14	5.50	9	25	30	120	35	5	0	5
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	5	5	32	8	6.40	6	19	50	263	450	18	0	22
Utah	4	4	12	6	3.00	1	11	52	472	20	3	0	3
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	11	11	55	28	5.00	16	55	132	240	505	26	0	30
Southern Region													
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	2	2	15	9	7.50	0	11	102	927	11	2	0	8
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	2	2	15	9	7.50	0	11	102	927	11	2	0	8
Northeastern Region													
Daggett	--	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--
Southeastern Region													
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--
Grand	1	1	1	8	1	2	11	7	64	90	8	0	8
San Juan	1	1	4	2	4	2	3	6	200	54	4	--	4
REGIONAL TOTALS	2	2	5	10	2.50	8	14	13	93	144	12	0	12
STATE TOTALS	17	17	96	47	5.65	18	82	268	327	765	51	0	67

Table 2. Trend of chukar young per 100 adults, 1979-89.

Region and County	Year										Average 1979-88	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		1989
<u>Northern Region</u>												
Box Elder	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	81	53	193	27	262	--	4,200	560	125	117	--	624
<u>Central Region</u>												
Juab	--	557	315	600	--	800	--	739	600	462	120	
Salt Lake	283	--	400	50	--	--	--	--	--	--	--	
Sanpete	500	767	--	400	--	--	--	--	--	--	--	
Tooele	771	697	359	585	--	436	550	566	535	484	263	
Utah	205	243	--	--	--	--	300	--	875	--	472	
Wasatch	--	--	--	--	800	--	--	--	--	--	--	
REGIONAL TOTALS	518	572	348	512	800	481	457	642	591	468	240	539
<u>Southern Region</u>												
Beaver	--	--	--	--	--	--	--	--	--	--	--	
Garfield	350	--	--	122	--	--	--	125	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	
Kane	--	340	--	--	--	--	--	--	--	--	--	
Millard	450	550	200	--	--	--	--	--	--	550	927	
Piute	500	--	938	642	--	--	--	--	370	--	--	
Sevier	--	600	800	--	--	--	--	--	--	--	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	--	--	--	600	737	--	--	--	--	--	--	
REGIONAL TOTALS	420	425	410	389	737	--	--	125	370	550	927	384
<u>Northeastern Region</u>												
Daggett	575	--	--	--	--	--	--	--	0	--	--	
Duchesne	--	--	163	--	--	--	--	--	0	--	--	
Uintah	--	--	--	--	--	--	--	--	267	--	--	
REGIONAL TOTALS	575	--	78	--	--	--	--	--	267	--	--	335
<u>Southeastern Region</u>												
Carbon	--	700	--	--	--	359	--	1,300	1,014	600	--	
Emery	--	--	--	220	--	--	--	--	500	--	--	
Grand	416	--	577	518	617	775	730	730	573	621	64	
San Juan	--	--	533	--	--	337	--	--	--	--	200	
REGIONAL TOTALS	416	700	575	426	617	392	408	287	631	620	93	507
STATE TOTALS	245	358	326	138	586	426	670	631	411	496	327	429

Table 3. Trend of chukar mean brood size from 1979-89.

Region and County	Year										Average 1979-88	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		1989
<u>Northern Region</u>												
Box Elder	9.57	--	8.33	12.00	--	--	9.00	--	8.50	7.50	--	--
Cache	3.00	--	--	--	6.00	--	--	--	--	6.00	--	--
Davis	2.00	--	--	--	--	--	--	--	--	--	14.00	--
Morgan	--	--	--	--	7.50	--	--	--	--	--	7.00	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	7.50	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	8.00	--	8.33	3.00	7.00	--	9.00	--	8.50	7.00	10.5	7.26
<u>Central Region</u>												
Juab	--	7.70	5.45	6.00	--	8.00	--	7.45	8.00	6.75	5.50	--
Salt Lake	5.67	--	4.00	--	--	--	--	--	--	--	--	--
Sanpete	6.33	--	--	--	--	--	--	--	--	--	--	--
Tooele	14.07	9.91	8.92	10.60	--	6.00	8.43	7.86	8.00	7.43	6.40	--
Utah	6.00	4.00	--	--	--	--	10.00	--	10.50	--	3.00	--
Wasatch	--	6.00	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	11.38	8.16	7.13	10.14	--	6.80	8.63	7.68	8.23	7.07	5.00	8.36
<u>Southern Region</u>												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield*	--	--	--	--	--	--	--	2.00	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	6.00	10.00	--	--	--	--	--	--	--	7.75	7.50	--
Piute	10.00	--	10.50	3.00	--	--	--	--	5.00	--	--	--
Sevier	--	--	8.00	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	9.00	--	--	--	--	--	--	--	--
REGIONAL TOTALS	8.00	10.00	9.67	7.00	--	--	--	5.00	7.75	7.50	7.50	7.90
<u>Northeastern Region</u>												
Daggett	--	--	9.00	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	10.00	--	--	--	10.00	--	--	--
REGIONAL TOTALS	--	--	9.00	--	10.00	--	--	--	10.00	--	--	9.67
<u>Southeastern Region</u>												
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	1.00	--
San Juan	1.00	--	--	5.33	--	--	--	--	--	--	4.00	--
REGIONAL TOTALS	3.00	12.50	--	11.30	8.25	7.00	7.67	10.40	8.25	8.95	2.50	8.59
STATE TOTALS	8.75	10.35	8.23	9.48	8.00	6.91	8.46	8.13	7.93	8.00	5.65	8.42

Table 4. Trend of chukars observed per 100 hours, 1979-89.

Region and County	Year											Average 1979-88
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	
<u>Northern Region</u>												
Box Elder	438	43	645	90	--	--	239	168	40	236	--	--
Cache	57	--	--	--	700	--	--	--	83	35	--	--
Davis	608	760	810	1,127	100	--	--	22	313	500	250	500
Morgan	--	--	--	--	850	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	430	140	502	479	227	--	155	102	91	111	135	258
<u>Central Region</u>												
Juab	1,500	206	692	363	--	200	--	2,611	850	913	500	--
Salt Lake	209	--	500	43	--	--	--	--	--	--	--	--
Sanpete	200	248	--	857	--	--	--	--	--	--	--	--
Tooele	1,038	1,468	985	1,013	--	441	681	1,046	1,123	653	314	--
Utah	1,220	533	--	38	--	--	578	--	1,950	--	2,100	--
Wasatch	--	350	--	--	491	--	--	--	--	--	--	--
REGIONAL TOTALS	623	440	722	578	164	291	542	1,424	844	822	623	678
<u>Southern Region</u>												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	1,200	--	--	500	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	220	236	1,467	--	--	--	--	--	--	1,486	1,596	--
Piute	120	--	1,660	433	--	--	--	--	1,567	--	--	--
Sevier	--	1,400	900	17	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	700	3,350	--	--	--	--	--	--	--
REGIONAL TOTALS	242	525	1,436	266	3,350	--	--	--	1,567	1,486	1,596	1,267
<u>Northeastern Region</u>												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	0	--	300	790	--	--	--	--	--	--	--	--
Uintah	0	--	614	454	86	--	--	0	856	--	--	--
REGIONAL TOTALS	0	--	533	348	27	--	--	0	241	--	--	456
<u>Southeastern Region</u>												
Carbon	0	1,600	--	--	--	420	--	--	7,800	350	--	--
Emery	--	--	--	--	--	--	833	--	771	--	--	--
Grand	1,020	--	2,891	1,167	2,871	291	424	2,075	1,167	3,783	240	225
San Juan	0	--	1,120	--	--	1,750	--	--	--	--	--	--
REGIONAL TOTALS	230	1,600	2,338	1,578	2,871	858	530	2,075	1,335	3,293	225	1,709
STATE TOTALS	396	336	978	496	398	176	286	633	496	959	522	515

Table 5. Summary of chukar hunter success and distribution of harvest and hunting pressure by region and county, 1989.

Region and County	Sample Size*	Hunter-days Afield	Birds Bagged	Birds per Hunter-day	% of Pressure	% of Harvest
NORTHERN REGION						
BOX ELDER	101	6,699	3,650	0.54	16.59	13.21
CACHE	22	1,534	1,120	0.73	3.80	4.05
DAVIS	8	539	228	0.42	1.34	0.83
MORGAN	15	705	394	0.56	1.75	1.43
RICH	4	207	145	0.70	0.51	0.53
SUMMIT	3	103	20	0.20	0.26	0.08
WEBER	7	290	311	1.07	0.72	1.13
REGIONAL TOTALS	160	10,080	5,869	0.58	24.96	21.25
CENTRAL REGION						
JUAB	42	2,240	1,472	0.66	5.55	5.33
SALT LAKE	13	829	871	1.05	2.05	3.15
SANPETE	36	2,572	2,717	1.06	6.37	9.83
TOOELE	127	7,923	5,434	0.69	19.62	19.67
UTAH	72	5,330	4,169	0.78	13.20	15.09
WASATCH	2	103	62	0.60	0.26	0.23
REGIONAL TOTALS	292	18,999	14,726	0.78	47.05	53.30
SOUTHERN REGION						
BEAVER	6	580	290	0.50	1.44	1.05
GARFIELD	4	331	207	0.63	0.82	0.75
IRON	3	145	0	0.00	0.36	0.00
KANE	0	0	0	0.00	0.00	0.00
MILLARD	33	2,260	1,286	0.57	5.60	4.65
PIUTE	10	580	311	0.54	1.44	1.13
SEVIER	40	3,069	1,451	0.47	7.60	5.26
WASHINGTON	0	0	0	0.00	0.00	0.00
WAYNE	4	311	82	0.27	0.77	0.30
REGIONAL TOTALS	100	7,280	3,629	0.50	18.03	13.14
NORTHEASTERN REGION						
DAGGETT	0	0	0	0.00	0.00	0.00
DUCHESNE	9	228	165	0.73	0.56	0.60
UINTAH	12	746	1,597	2.14	1.85	5.78
REGIONAL TOTALS	21	974	1,763	1.81	2.41	6.38
SOUTHEASTERN REGION						
CARBON	10	746	311	0.42	1.85	1.13
EMERY	18	1,286	373	0.29	3.18	1.35
GRAND	12	808	746	0.92	2.00	2.70
SAN JUAN	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	40	2,841	1,431	0.50	7.04	5.18
UNKNOWN	1	207	207	1.00	0.51	0.75
STATE TOTALS	614	40,384	27,628	0.68	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 6. Summary of chukars bagged per hunter-day by region and county, 1982-89.

Region and County	Year							
	1982	1983	1984	1985	1986	1987	1988	1989
Northern Region								
Box Elder	0.75	1.00	0.30	0.55	0.49	0.62	0.63	0.54
Cache	0.38	0.42	0.43	0.13	0.14	0.85	0.58	0.73
Davis	0.47	0.17	0.53	0.43	0.50	0.20	1.65	0.42
Morgan	1.21	1.02	0.10	0.30	0.00	1.33	1.08	0.56
Rich	0.67	0.83	0.80	0.00	0.00	1.00	1.43	0.70
Summit	0.00	1.38	0.67	0.00	0.00	1.25	0.68	0.20
Weber	0.91	0.61	2.46	0.18	0.00	0.44	0.45	1.07
REGIONAL TOTALS	0.74	0.91	0.41	0.46	0.39	0.64	0.69	0.58
Central Region								
Juab	0.57	1.00	0.92	1.63	0.87	1.10	0.90	0.66
Salt Lake	0.96	0.95	1.59	0.96	1.08	1.16	0.69	1.05
Sanpete	0.57	0.77	1.14	1.28	0.88	0.58	1.26	1.06
Tooele	0.73	0.94	0.95	1.12	0.90	0.84	0.82	0.69
Utah	0.74	0.85	0.62	0.71	0.65	0.71	0.64	0.78
Wasatch	0.94	0.61	0.07	0.07	0.00	0.83	1.00	0.60
REGIONAL TOTALS	0.73	0.90	0.88	1.06	0.84	0.86	0.83	0.78
Southern Region								
Beaver	0.61	1.80	1.60	0.00	0.13	0.63	0.35	0.50
Garfield	1.00	0.38	1.83	0.00	0.33	0.40	1.13	0.63
Iron	0.17	--	2.00	0.00	0.00	0.00	0.00	0.00
Kane	0.00	0.38	0.67	0.00	0.00	0.00	0.00	0.00
Millard	1.57	1.28	0.80	1.55	1.88	1.09	0.95	0.57
Piute	0.59	0.68	0.50	0.71	0.13	0.81	0.30	0.54
Sevier	0.41	0.40	0.37	0.21	0.48	0.57	0.67	0.47
Washington	0.00	--	0.50	0.00	0.00	0.00	0.00	0.00
Wayne	0.83	0.50	0.00	1.00	0.00	2.00	1.83	0.27
REGIONAL TOTALS	0.68	0.71	0.63	0.72	0.92	0.82	0.72	0.50
Northeastern Region								
Daggett	0.00	--	--	0.00	0.00	3.00	0.00	0.00
Duchesne	0.43	0.50	0.22	2.00	0.00	0.20	2.12	0.73
Uintah	2.06	1.00	1.45	1.00	0.00	1.68	0.69	2.14
REGIONAL TOTALS	1.15	0.63	0.90	1.09	0.00	1.44	1.42	1.81
Southeastern Region								
Carbon	0.76	0.88	0.42	0.42	0.89	0.87	1.29	0.42
Emery	0.83	1.54	0.44	0.62	0.74	0.90	0.95	0.29
Grand	1.02	1.61	0.37	1.31	1.57	1.19	1.26	0.92
San Juan	2.20	1.82	0.25	0.00	0.86	1.67	0.50	0.00
REGIONAL TOTALS	0.90	1.43	0.40	0.65	1.05	1.07	1.03	0.50
Unknown Counties	1.00	1.27	0.00	0.00	0.00	0.00	0.00	1.00
STATE TOTALS	0.75	0.93	0.66	0.86	0.80	0.84	0.80	0.68

Table 7. Percentage distribution of chukar harvest by region and county, 1982-89.

Region and County	Year							
	1982	1983	1984	1985	1986	1987	1988	1989
Northern Region								
Box Elder	25.31	23.59	6.64	8.39	7.64	10.59	10.15	13.21
Cache	1.25	1.49	1.81	0.20	0.24	1.64	2.29	4.05
Davis	0.56	0.09	1.61	0.61	0.16	0.07	1.71	0.83
Morgan	3.20	2.16	0.30	0.31	0.00	0.29	0.67	1.43
Rich	0.13	0.22	0.41	0.00	0.00	0.07	0.52	0.53
Summit	0.00	1.31	0.20	0.00	0.00	0.37	0.88	0.08
Weber	1.94	1.40	3.22	0.41	0.00	0.59	0.26	1.13
REGIONAL TOTALS	32.39	30.25	14.18	9.92	8.04	13.65	16.51	21.25
Central Region								
Juab	2.07	3.16	7.24	11.67	7.89	12.68	7.18	5.33
Salt Lake	4.51	4.15	7.04	5.12	3.33	4.32	1.87	3.15
Sanpete	3.01	3.56	2.51	8.90	4.72	2.83	7.96	9.83
Tooele	18.23	20.34	26.66	32.85	27.07	20.44	24.63	19.67
Utah	13.97	12.76	11.97	10.75	9.02	9.77	9.06	15.09
Wasatch	1.07	0.63	0.10	0.10	0.00	0.37	0.20	0.23
REGIONAL TOTALS	42.86	44.60	55.53	69.40	52.03	50.44	50.93	53.30
Southern Region								
Beaver	1.07	0.40	0.80	0.00	0.16	1.41	1.09	1.05
Garfield	0.38	0.13	1.11	0.00	0.24	0.14	0.46	0.75
Iron	0.06	0.00	0.20	0.00	0.00	0.00	0.00	0.00
Kane	0.00	0.27	0.20	0.00	0.00	0.00	0.00	0.00
Millard	5.33	4.55	10.96	10.64	18.78	13.13	8.22	4.65
Piute	0.63	0.94	3.22	1.53	0.40	1.26	0.52	1.13
Sevier	4.07	2.34	3.72	0.72	5.93	5.67	8.80	5.26
Washington	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00
Wayne	0.31	0.09	0.00	0.31	0.00	0.14	0.57	0.30
REGIONAL TOTALS	11.84	8.73	20.32	13.20	25.53	21.79	19.68	13.14
Northeastern Region								
Daggett	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00
Duchesne	0.63	0.22	0.20	0.20	0.00	0.07	1.87	0.60
Uintah	2.32	0.31	1.61	1.02	0.00	2.38	0.57	5.78
REGIONAL TOTALS	2.94	0.53	1.81	1.23	0.00	2.68	2.44	6.38
Southeastern Region								
Carbon	2.82	1.94	2.51	1.33	2.60	0.97	0.93	1.13
Emery	3.38	8.12	2.72	3.17	4.15	3.20	7.18	1.35
Grand	3.01	4.28	2.81	1.74	7.15	6.86	2.23	2.70
San Juan	0.69	0.90	0.10	0.00	0.49	0.37	0.05	0.00
REGIONAL TOTALS	9.90	15.24	8.15	6.24	14.39	11.41	10.41	5.18
Unknown Counties	0.06	0.63	0.00	0.00	0.00	0.00	0.00	0.75
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 8. Percentage distribution of chukar hunting pressure by region and county, 1982-89.

Region and County	Year							
	1982	1983	1984	1985	1986	1987	1988	1989
Northern Region								
Box Elder	25.13	22.01	14.54	13.02	12.36	14.35	12.95	16.59
Cache	2.44	3.27	2.77	1.04	1.43	1.63	3.16	3.80
Davis	0.89	0.50	1.98	1.23	0.26	0.31	0.83	1.34
Morgan	1.97	1.97	1.98	0.88	0.91	0.18	0.49	1.75
Rich	0.14	0.25	0.33	0.09	0.07	0.06	0.29	0.51
Summit	0.70	0.88	0.20	0.09	0.07	0.25	1.04	0.26
Weber	1.59	2.14	0.86	1.93	1.50	1.12	0.45	0.72
REGIONAL TOTALS	32.86	31.01	22.67	18.66	16.59	17.93	19.24	24.96
Central Region								
Juab	2.72	2.93	5.15	6.16	7.22	9.65	6.41	5.55
Salt Lake	3.52	4.07	2.91	4.58	2.47	3.13	2.16	2.05
Sanpete	3.94	4.32	1.45	5.98	4.29	4.13	5.03	6.37
Tooele	18.71	20.16	18.44	25.26	24.14	20.50	24.07	19.62
Utah	14.16	13.87	12.62	13.02	11.13	11.53	11.32	13.20
Wasatch	0.84	0.96	0.99	1.32	0.20	0.37	0.16	0.26
REGIONAL TOTALS	43.88	46.31	41.57	56.34	49.45	49.34	49.18	47.05
Southern Region								
Beaver	1.31	0.21	0.33	1.85	0.98	1.88	2.49	1.44
Garfield	0.28	0.33	0.39	0.97	0.59	0.31	0.33	0.82
Iron	0.28	0.08	0.07	0.00	0.00	0.00	0.00	0.36
Kane	0.14	0.67	0.20	0.89	0.26	0.06	0.00	0.00
Millard	2.53	3.31	8.99	5.89	8.00	10.09	6.95	5.60
Piute	0.80	1.30	4.23	1.85	2.47	1.31	1.37	1.44
Sevier	7.36	5.45	6.61	2.99	9.95	8.33	10.53	7.60
Washington	0.05	0.00	0.13	1.06	0.00	0.12	0.00	0.00
Wayne	0.28	0.17	0.20	0.26	0.00	0.06	0.24	0.77
REGIONAL TOTALS	13.03	11.51	21.14	15.76	22.25	22.19	21.94	18.03
Northeastern Region								
Daggett	0.00	0.08	0.00	0.00	0.00	0.06	0.00	0.00
Duchesne	1.08	0.42	0.59	0.09	0.00	0.31	0.70	0.56
Uintah	0.84	0.29	0.73	0.88	0.78	1.19	0.66	1.85
REGIONAL TOTALS	1.92	0.79	1.32	0.97	0.78	1.56	1.37	2.41
Southeastern Region								
Carbon	2.77	2.05	3.90	2.73	2.34	0.94	0.58	1.85
Emery	3.05	4.90	4.10	4.40	4.49	3.00	6.03	3.18
Grand	2.20	2.47	5.02	1.14	3.64	4.82	1.41	2.00
San Juan	0.23	0.46	0.26	0.00	0.46	0.18	0.08	0.00
REGIONAL TOTALS	8.25	9.89	13.28	8.27	10.93	8.96	8.11	7.04
Unknown Counties	0.05	0.46	0.00	0.00	0.00	0.00	0.12	0.51
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, 1958-89.

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
1989	10,910	27,628	40,384	0.68	2.53
<hr/>					
TOTALS (1958-89)	453,939	1,283,076	1,312,071	(29.24)	(88.04)
<hr/>					
AVERAGES (1958-88)	14,291	40,498	41,022	0.92	2.76

Table 10. Chukar field bag check summary, 1989.

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	Total Birds/100 Hr	Birds/Hunter
<u>Northern Region</u>										
Box Elder	1	2	10	5 50	1	2	10	5	50	2.50
Cache	1	2	1	1 100	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	2	4	11	6 55	1	2	10	5	50	2.50
<u>Central Region</u>										
Juab	--	--	--	--	--	10	20	19	95	1.90
Salt Lake	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	11	47	1	2	0.09
Utah	2	4	8	3 --	1	2	4	2	50	1.00
Wasatch	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	2	4	8	3 38	1	23	71	22	31	1.00
<u>Southern Region</u>										
Beaver	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--
Washington	1	2	--	0 --	1	2	--	0	--	--
Wayne	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	1	2	--	0 --	1	2	--	0	--	--
<u>Northeastern Region</u>										
Daggett	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--
<u>Southeastern Region</u>										
Carbon	--	--	--	--	--	--	--	--	--	--
Emery	4	7	36	8 22	1	1	3	4	133	4.00
Grand	12	25	81	13 16	1	2	4	3	75	1.50
San Juan	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	16	32	127	21 17	2	3	7	7	100	2.30
STATE TOTALS	21	42	146	30 21	5	30	88	34	39	1.13

Table 11. Chukar hunter success trend as determined by field bag checks, 1984-89.

Region and County	1984		1985		1986		1987		1988		1989	
	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	2	0.09	--	0.01	7	0.27	31	1.41	13	0.43	50	2.50
Cache	6	0.50	--	--	--	--	38	1.37	52	2.00	--	--
Davis	--	--	--	--	--	--	25	1.00	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	3	0.10	--	0.01	7	0.27	33	1.39	23	0.82	50	2.50
<u>Central Region</u>												
Juab	--	--	36	1.36	--	--	--	--	75	2.57	95	1.90
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	22	2.00	67	1.71	2	0.09
Utah	--	--	--	--	--	--	--	--	--	--	50	1.00
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	36	1.36	--	--	22	2.00	73	2.29	31	1.00
<u>Southern Region</u>												
Beaver	--	--	28	0.88	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	15	1.00	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	23	0.91	--	--	--	--	--	--	--	--
<u>Northeastern Region</u>												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	--	--	--	87	3.71	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	87	3.71	--	--
<u>Southeastern Region</u>												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	100	3.00	--	--	--	--	133	4.00
Grand	--	--	40	3.14	45	1.52	17	0.67	49	2.54	75	1.50
San Juan	25	1.50	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	12	0.38	40	3.14	51	1.69	17	0.67	49	2.54	100	2.30
STATE TOTALS	4	0.14	2	0.12	3	0.15	32	1.37	44	1.63	39	1.13

SAGE GROUSE

SUMMARY

Harvest data for 1988 indicated average breeding populations of sage grouse for 1989. Strutting ground surveys indicated a decrease in the average male grouse attendance from 1988 and populations were below average.

Brood surveys showed decreased production throughout the state. Birds observed per 100 hours decreased 17 percent compared to 1988, and was 20 percent below average. The ratio of young to adults remained the same as 1988 but was slightly below average.

The decrease in production, as indicated from brood counts, in 1989, was somewhat apparent in harvest statistics collected from questionnaires and from field bag checks. Hunter success rates declined. However, hunters and days hunted were similar to 1988. Harvest was at the 36-year average. Age ratios derived from wings indicated a 14 percent decrease in young per 100 adults and was 35 percent below average.



Strutting Ground Counts

The status of the sage grouse breeding population for 1989, as indicated by strutting ground counts, is shown in Table 1 and Figure 1 of this section. Results of this survey for 1989 compared to 1988 and the 1967-88 average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Number of grounds counted	119	-13	+9
Total male grouse counted	2,041	-25	-1
Average male grouse per ground	17	-15	-10
Percent change from previous year (comparable grounds)	-14	--	--

Access for spring 1989 strutting ground counts was generally good in most regions of the state. The numbers of male grouse observed decreased statewide. Harvest data for 1988 indicated below average populations going into the winter of 1988-89, but the numbers of juvenile birds observed during the summer indicated production similar to 1988. Loss of habitat continues to be the trend in most areas of the state. Notable examples are concessions made by the Soil Conservation Commission for the use of public funds for 90% removal of sagebrush within two miles of the Clover strutting ground, Tooele County.

Brood Counts

Results of the summer inventory survey for 1989 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 1989 are compared to 1988 and the previous 10-year (1979-88) average as follows:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Total sage grouse counted	772	-50	-59
Young per 100 adults	147	+1	-5
Mean brood size	4.37	+2	-2
Sage grouse observed per 100 hours	288	-17	-20
Total hours effort	268	-39	-47

The effort devoted to sage grouse brood counts was 47 percent below average, and the total number of grouse counted was 59 percent below average.

Sage grouse density decreased 17 percent from 1988, production of young per 100 adults remained the same. The average brood size was at the 10-year average. Drought conditions March through June may have negatively influenced brood survival or caused an earlier dispersal of broods.

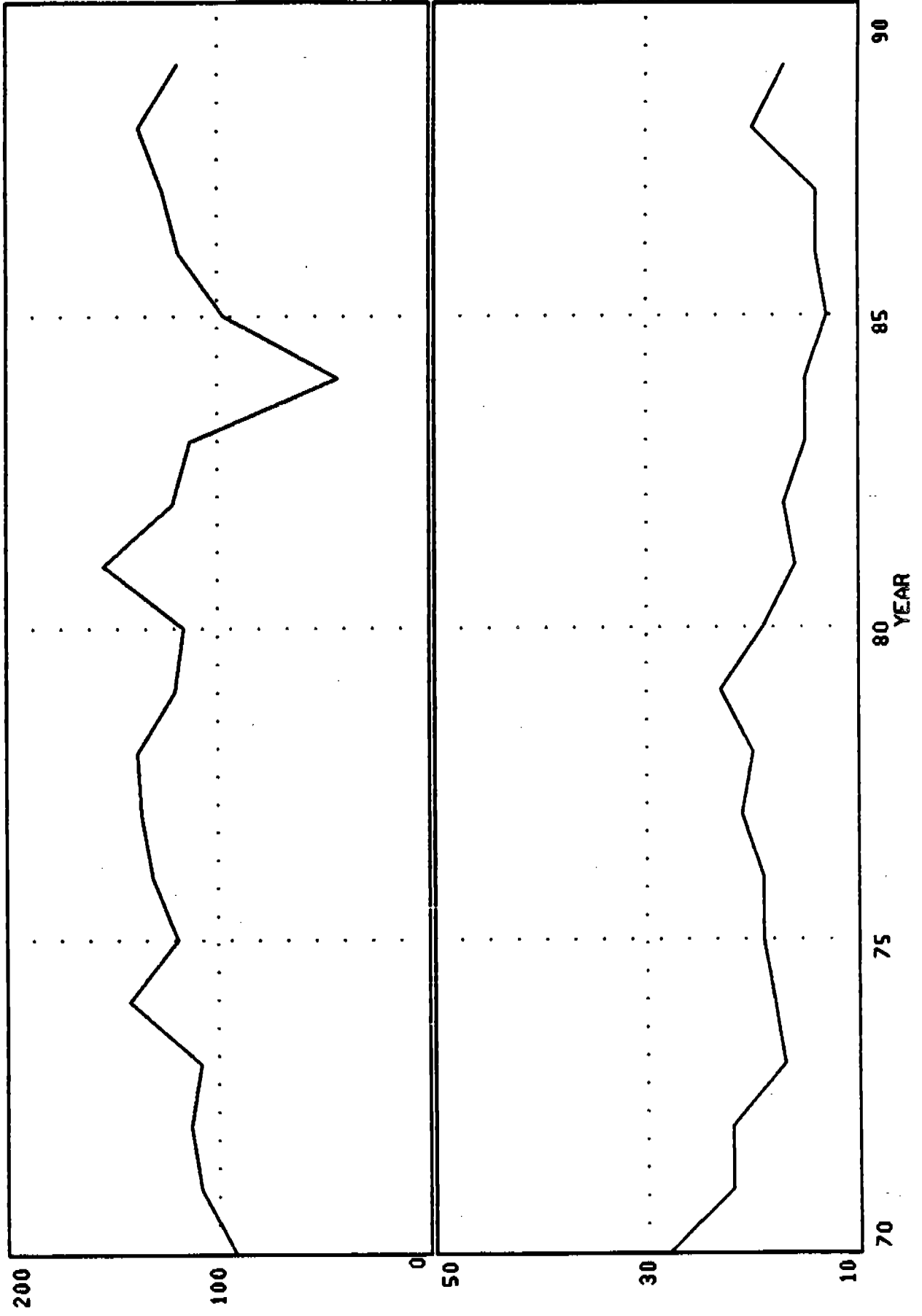


Figure 1. Statewide sage grouse strutting ground counts, 1970-89.

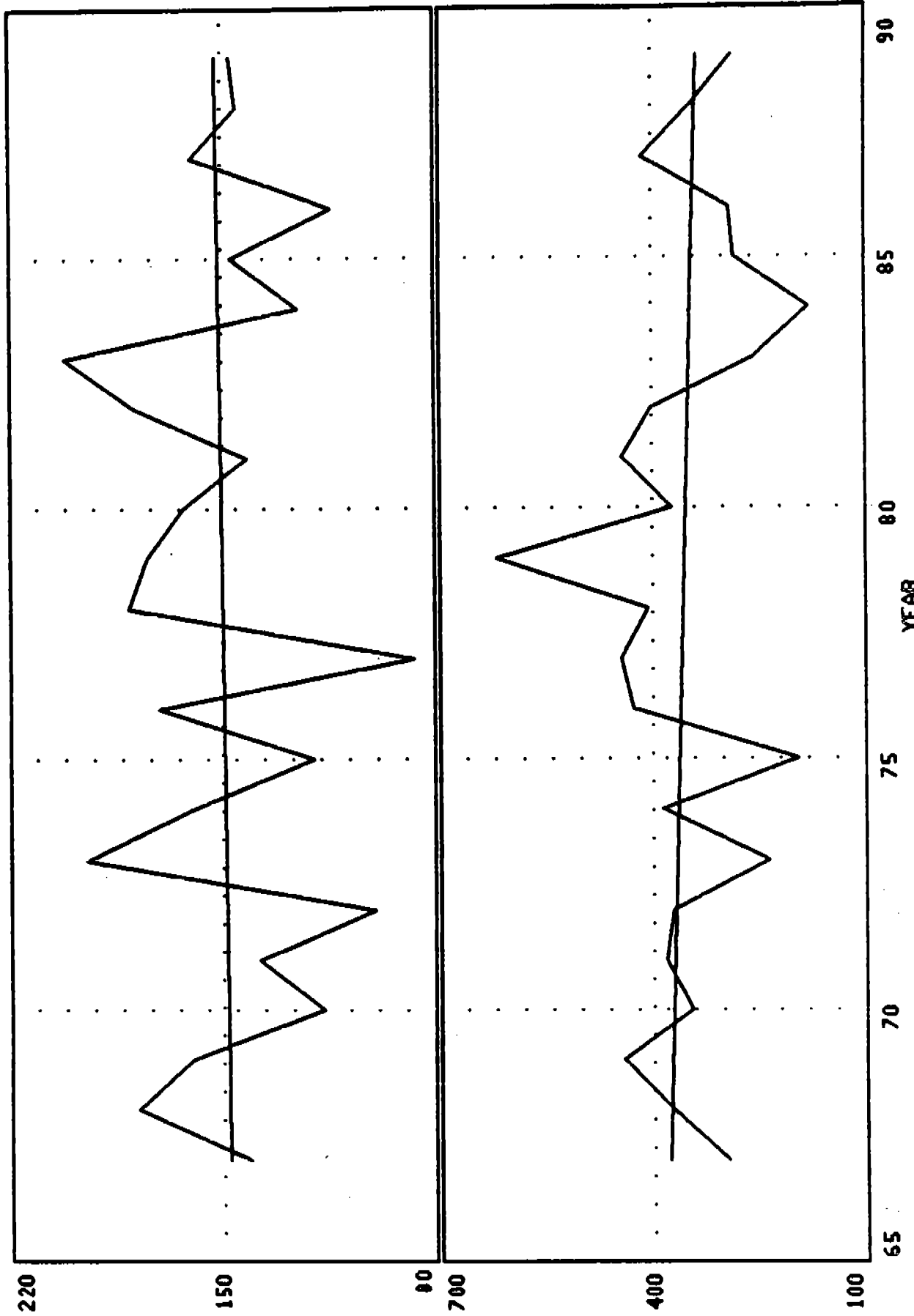


Figure 2. Statewide sage grouse production indices, 1967-89.

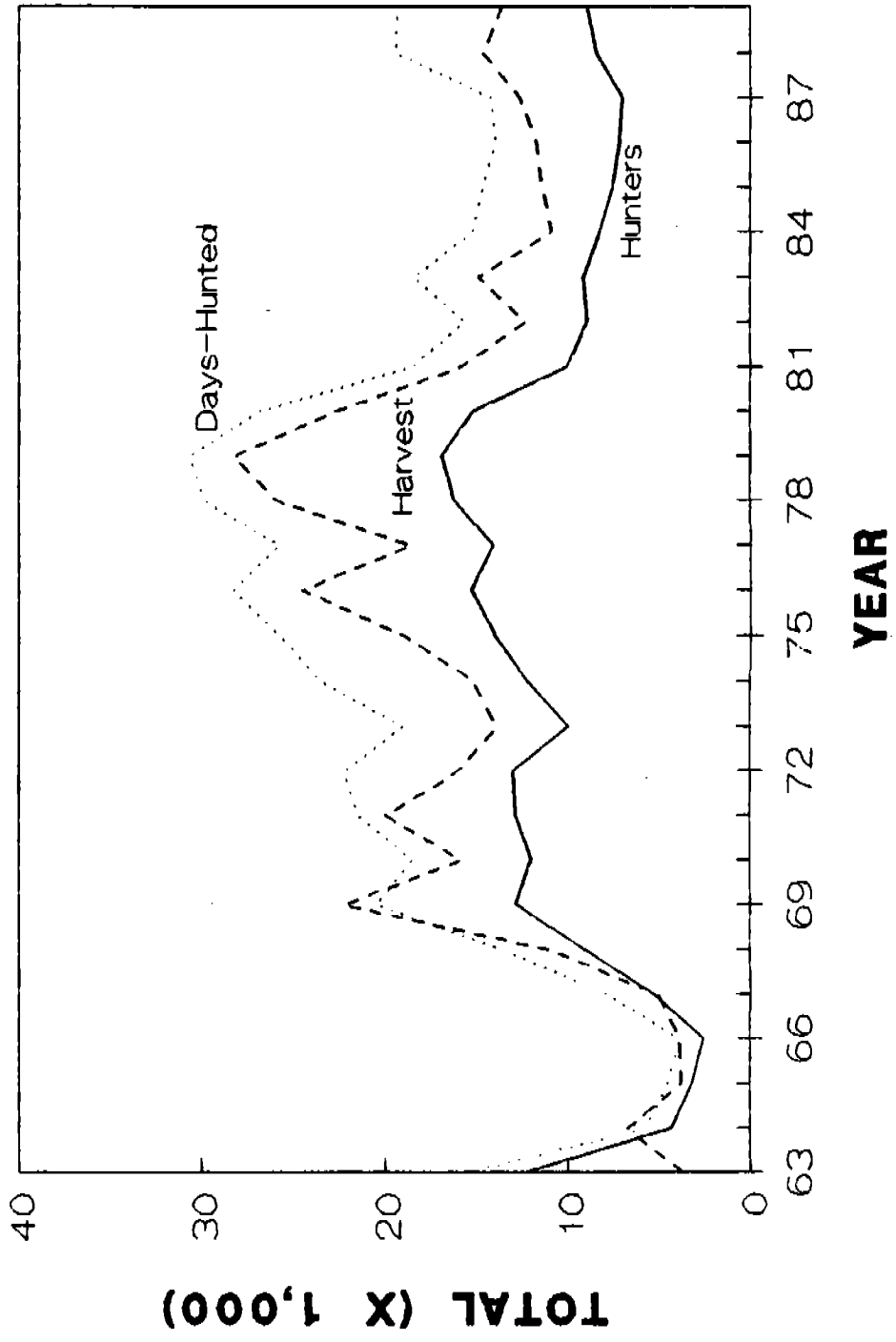


Figure 3. Statewide trend of sage grouse harvest statistics, 1963-89.

SAGE GROUSE PER HUNTER AND PER DAY

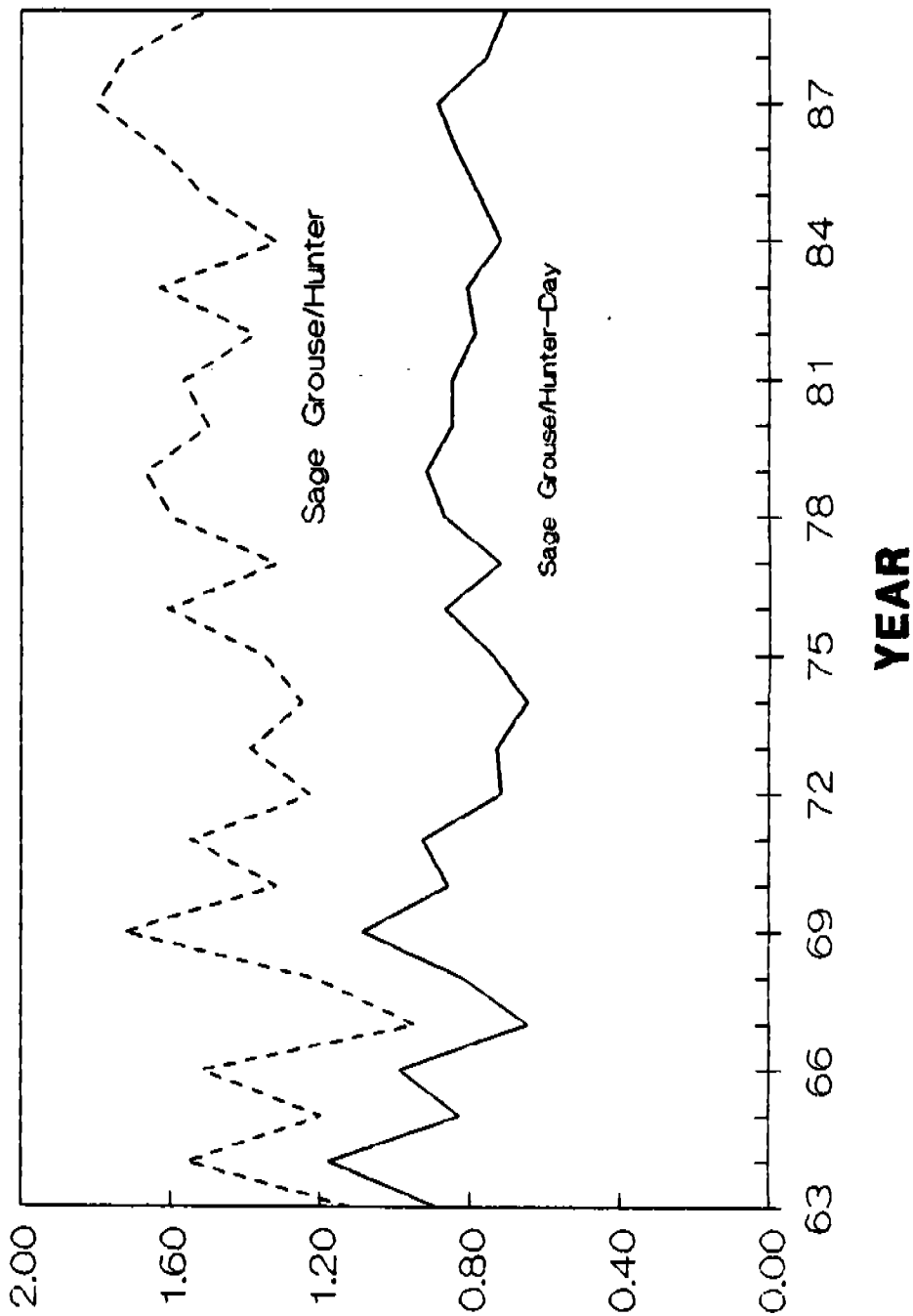


Figure 4. Statewide trend of sage grouse hunter success rates, 1963-89.

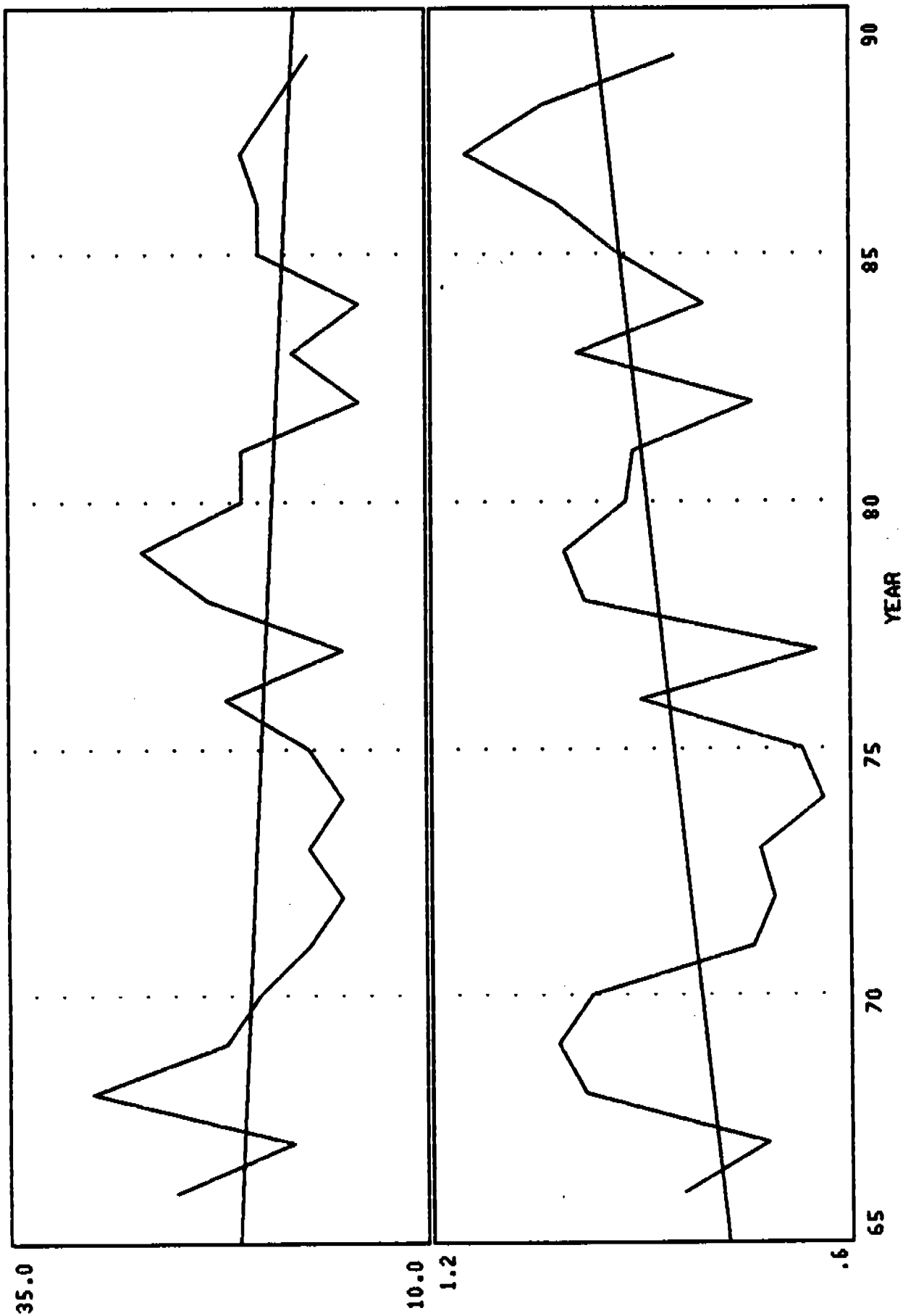


Figure 5. Statewide sage grouse field bag check indices, 1966-89.

Harvest

Hunter Questionnaire

Results of the 1989 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 1989 hunting season compared to 1988 and the 1963-88 average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Sage grouse hunters	9,002	+6	-10
Sage grouse harvested	13,710	-7	-3
Hunter-days afield	19,373	0	+15
Sage grouse per hunter-day	0.71	-7	-12
Sage grouse per hunter	1.52	-12	+9

Sage grouse per hunter-day success rates decreased 7 percent in 1989. Total statewide harvest decreased 7 percent, and total sage grouse hunters increased 6 percent. Hunter success increased 5 percent in the Northern Region where five of the seven counties were closed to sage grouse hunting. Nevertheless, 43 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 1989 is shown in Table 11. Hunter success trends determined via this method are shown in Table 12 and Figure 5. Results of the 1989 survey compared to 1988 and the 1979-88 average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Total hunters checked	1,356	+23	-4
Total hours hunted	5,649	+11	-11
Sage grouse per hunter			
(complete hunts)	0.85	-18	-11
Sage grouse bagged per 100 hours	17	-6	-9
Average hours per hunter-day			
(complete hunts)	4.9	-9	-2
Hours hunted per grouse bagged	5.8	+12	+7
(complete hunts)			

Much of Utah was again dry with birds concentrated around available water. Hunter success rates from field bag checks were similar to mail questionnaire success rates. Both were down again 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 1989 is found in Table 13 and the trend from 1986-89 in Table 14.

Following are data derived from wing surveys in 1989 compared to 1988 and the 1973-88 average:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Sample size	921	-2	-21
Percent males	35	+13	-16
Percent females	65	-6	+11
Young per 100 adults	98	-14	-35
Young per 100 hens (adult)	129	-22	-44

Analysis of wings collected at checking stations during the 1989 season indicates that statewide production was down compared to 1988, and was below the previous 16-year average.

Table 1. Summary of sage grouse strutting ground counts by region and county, 1979-89.

Region and County	Year										
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
NORTHERN REGION											
BOX ELDER											
No. strutting grounds counted	24	28	35	15	17	8	32	10	18	15	11
Total male grouse counted	763	899	711	384	322	216	309	288	324	419	343
County average (all strutting grounds)	32	32	20	26	19	27	10	29	18	28	31
% change from previous year - comparable grounds	+69	+9	-35	-24	-29	-8	+7	+17	-12	+33	-3
CACHE											
No. strutting grounds counted	3	1	3	1	0	1	0	2	1	1	2
Total male grouse counted	32	18	18	19	0	5	--	8	0	9	15
County average (all strutting grounds)	11	18	6	19	--	5	--	4	0	9	8
% change from previous year - comparable grounds	0	+20	-33	+58	--	--	--	--	--	+100	+40
MORGAN											
No. strutting grounds counted	3	3	3	3	3	1	3	3	2	1	--
Total male grouse counted	75	131	57	65	31	2	33	22	26	19	--
County average (all strutting grounds)	25	44	19	22	10	2	11	7	13	19	--
% change from previous year - comparable grounds	-32	+76	-57	+16	-31	-91	+1,000	-33	+18	-21	--
RICH											
No. strutting grounds counted	11	11	13	7	9	6	18	11	12	3	6
Total male grouse counted	382	236	259	153	188	103	399	296	431	319	281
County average (all strutting grounds)	35	21	20	22	21	17	22	27	36	53	46
% change from previous year - comparable grounds	+11	-40	+5	-21	+2	-2	+49	-28	+53	-10	+5
SUMMIT											
No. strutting grounds counted	8	1	7	2	7	1	0	7	7	10	--
Total male grouse counted	116	15	60	11	46	16	--	23	25	17	--
County average (all strutting grounds)	15	15	9	6	7	16	--	3	4	2	--
% change from previous year - comparable grounds	+5	+15	+13	-50	-9	+78	--	--	-65	-32	--
REGIONAL TOTALS											
No. strutting grounds counted	49	44	61	28	36	17	53	33	40	33	19
Total male grouse counted	1,368	1,299	1,105	632	587	342	741	637	806	783	639
Average grouse per ground (all strutting grounds)	28	30	18	23	16	20	14	19	20	24	34
% change from previous year - comparable grounds	+29	-2	-27	-20	-22	-9	+27	-8	+16	+11	+5

Table 1 (continued)

Region and County	Year										
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
SOUTHERN REGION											
GARFIELD											
No. strutting grounds counted	9	8	11	9	8	7	--	8	9	8	8
Total male grouse counted	211	97	298	359	197	133	--	152	175	251	126
County average (all strutting grounds)	23	12	27	39	25	19	--	19	19	31	16
% change from previous year - comparable grounds	0	-48	+114	+78	-12	-46	--	+13	0	+24	-50
WAYNE											
No. strutting grounds counted	9	8	14	14	1*	(12)*	--	13	13	13	13
Total male grouse counted	221	32	284	300	123	(89)	--	120	182	326	268
County average (all strutting grounds)	25	4	20	21	123	(7)	--	9	14	25	21
% change from previous year - comparable grounds	-59	--	--	--	--	--	--	-15	+52	+79	-18
BEAVER											
No. strutting grounds counted	6	5	7	7	7	4	3	4	4	3	5
Total male grouse counted	134	113	140	131	117	48	45	55	52	46	71
County average (all strutting grounds)	22	23	20	19	17	12	15	14	13	15	14
% change from previous year - comparable grounds	+137	+1	+6	-6	-11	+78	--	+22	-5	--	-7
IRON											
No. strutting grounds counted	5	6	7	9	4	--	5	6	4	6	6
Total male grouse counted	83	84	101	111	105	--	81	131	64	111	127
County average (all strutting grounds)	17	14	14	12	26	--	16	22	16	19	21
% change from previous year - comparable grounds	+48	+1	+20	-3	+27	--	--	+49	-11	-13	+14
SEVIER											
No. strutting grounds counted	4	--*	2	4	--	--	--	2	--	2	--
Total male grouse counted	9	--	0	5	--	--	--	0	--	0	--
County average (all strutting grounds)	2	--	0	1	--	--	--	--	--	--	--
% change from previous year - comparable grounds	60	--	--	--	--	--	--	--	--	--	--
MILLARD											
No. strutting grounds counted	--	--*	1	1	--	1	1	1	--	--	--
Total male grouse counted	--	--	22	22	--	4	2	3	--	--	--
County average (all strutting grounds)	--	--	22	22	--	4	2	3	--	--	--
% change from previous year - comparable grounds	--	--	--	0	--	--	--	+33	--	--	--

Table 1 (continued)

Region and County	Year										
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
KANE											
No. strutting grounds counted											2
Total male grouse counted											41
County average (all strutting grounds)											21
% change from previous year - comparable grounds											—
REGIONAL TOTALS											
No. strutting grounds counted	33	27	42	44	23	12	21	34	30	32	34
Total male grouse counted	691	326	845	928	563	185	391	461	473	734	633
Average grouse per ground (all strutting grounds)	21	12	20	21	24	15	19	14	16	23	19
% change from previous year - comparable grounds	-22	-32	+46	+33	-9	-33	—	+12	+13	+48	-18
*No counts because of snow. Aerial count made in Wayne County only (not added to regional total).											
CENTRAL REGION											
SANPETE											
No. strutting grounds counted	2	2	2	2	2	2	2	2	2	2	2
Total male grouse counted	6	9	9	11	8	0	0	0	0	0	0
County average (all strutting grounds)	3	5	5	6	4	—	—	—	—	0	0
% change from previous year - comparable grounds	-14	+17	0	+22	-27	-100	0	—	—	0	0
TOOELE											
No. strutting grounds counted	5	5	5	5	6	6	6	6	5	5	5
Total male grouse counted	116	131	46	28	28	23	55	82	96	89	77
County average (all strutting grounds)	23	26	9	6	5	4	9	16	19	18	15
% change from previous year - comparable grounds	-38	+13	-64	-64	0	-18	+139	+149	+17	-5	-17
WASATCH											
No. strutting grounds counted	2	2	2	2	2	2	2	2	2	2	2
Total male grouse counted	119	45	45	18	54	57	63	117	54	52	44
County average (all strutting grounds)	60	23	23	9	27	29	32	59	27	26	22
% change from previous year - comparable grounds	-35	-62	0	-60	+200	+6	+11	+205	-54	-4	-19
JUAZ											
No. strutting grounds counted									1	1	1
Total male grouse counted									9	14	11
County average (all strutting grounds)									9	14	11
% change from previous year - comparable grounds									0	+56	-21

Table 1 (continued)

Region and County	Year											
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	
REGIONAL TOTALS												
No. strutting grounds counted	9	9	9	9	10	10	10	10	9	10	10	
Total male grouse counted	197	185	100	57	90	80	118	199	150	155	132	
Average grouse per ground (all strutting grounds)	22	21	11	6	9	8	12	18	17	16	13	
% change from previous year - comparable grounds	-35	-24	-51	-43	+58	-11	+48	+170	-25	-3	-16	
NORTHEASTERN REGION												
DAGGETT												
No. strutting grounds counted	3	5	6	6	6	--	5	6	6	6	7	
Total male grouse counted	47	51	68	18	45	--	25	22	26	46	25	
County average (all strutting grounds)	16	10	11	3	7	--	5	3	4	8	4	
% change from previous year - comparable grounds	-40	-19	+20	-57	+56	--	-43	--	+16	+77	-24	
DUCHESNE												
No. strutting grounds counted	10	16	16	15	15	--	13	14	14	7	11	
Total male grouse counted	93	120	112	156	178	--	121	117	104	9	76	
County average (all strutting grounds)	9	8	7	10	12	--	9	8	7	1	7	
% change from previous year - comparable grounds	-35	+5	0	+15	+17	--	-29	--	-12	-83	+167	
UINTAH												
No. strutting grounds counted	11	12	10	12	16	--	12	14	14	22	20	
Total male grouse counted	338	126	174	242	273	--	190	216	159	468	266	
County average (all strutting grounds)	31	11	17	20	17	--	16	15	11	21	13	
% change from previous year - comparable grounds	-18	-67	+56	+40	-21	--	-21	--	-26	+66	-45	
GRAND												
No. strutting grounds counted										2	--	
Total male grouse counted										5	--	
County average (all strutting grounds)										3	--	
% change from previous year - comparable grounds										0	--	
WASATCH												
No. strutting grounds counted										2	2	
Total male grouse counted										22	22	
County average (all strutting grounds)										11	11	
% change from previous year - comparable grounds										120	0	

Table 1 (continued)

Region and County	Year										
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
REGIONAL TOTALS											
No. strutting grounds counted	24	33	32	33	37	--	30	34	34	37	40
Total male grouse counted	478	297	354	416	396	--	336	339	289	550	389
Average grouse per ground (all strutting grounds)	20	9	11	13	13	--	11	10	9	15	10
% change from previous year - comparable grounds	-25	-48	+27	+17	-3	--	-26	--	-18	+37	-37
SOUTHEASTERN REGION											
CARBON											
No. strutting grounds counted	--	--	6	1	1	--	--	2	7	10	10
Total male grouse counted	--	--	2	0	16	--	--	32	55	196	181
County average (all strutting grounds)	--	--	3	--	16	--	--	16	8	20	18
% change from previous year - comparable grounds	--	--	--	--	+100	--	--	--	-27	+142	-8
EMERY											
No. strutting grounds counted	--	--	--	2	--	--	1	1	2	2	2
Total male grouse counted	--	--	--	9	--	--	12	11	10	12	28
County average (all strutting grounds)	--	--	--	5	--	--	12	11	5	6	14
% change from previous year - comparable grounds	--	--	--	--	--	--	--	-8	-18	+20	+167
SAN JUAN											
No. strutting grounds counted	4	5	4	4	6	4	4	4	4	4	4
Total male grouse counted	67	41	63	47	59	57	39	29	35	32	39
County average (all strutting grounds)	17	8	16	12	10	14	10	7	9	8	10
% change from previous year - comparable grounds	+1	-33	+65	-25	+52	-14	-29	-26	+28	-9	+22
REGIONAL TOTALS											
No. strutting grounds counted	4	5	10	7	7	4	4	7	13	16	16
Total male grouse counted	67	41	65	56	75	57	39	72	100	240	248
Average grouse per ground (all strutting grounds)	17	8	7	8	11	14	10	10	8	15	16
% change from previous year - comparable grounds	+1	-33	+58	-28	+34	-14	-29	-26	0	+74	+3
STATE TOTALS											
No. strutting grounds counted	120	116	154	121	113	43	97	118	126	137	119
Total male grouse counted	2,808	2,148	2,469	2,089	1,711	664	1,234	1,708	1,818	2,734	2,041
Average grouse per ground (all strutting grounds)	23	19	16	17	15	15	13	14	14	20	17
% change from previous year - comparable grounds	-13	-20	-9	-1	-8	-18	-1	+5	+2	+51	+14

*No counts because of snow conditions.

Table 2. Sage grouse summer inventory summary, 1989.

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					W/o Yng	Yng	Veh.		Horse	Walk
Northern Region															
Box Elder	5	5	19	4	16	12	21	35	167	45	8	2	3	13	431
Cache	0	0	0	0	0	0	0	0	---	300	27	0	0	27	---
Davis	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Morgan	1	1	7	0	0	5	6	7	117	40	7	6	0	13	100
Rich	0	0	0	0	0	0	0	0	---	80	0	11	0	11	---
Summit	0	0	0	0	0	0	0	0	---	0	0	44	0	44	---
Weber	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
REGIONAL TOTALS	6	6	26	4	16	17	27	42	156	465	42	63	3	108	64
Central Region															
Juab	3	3	12	2	8	3	8	20	250	27	3	0	6	9	311
Salt Lake	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Sanpete	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Tooele	5	5	15	7	20	6	18	35	194	319	16	0	5	21	252
Utah	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Wasatch	0	0	0	0	0	5	5	0	0	14	2	24	0	26	19
REGIONAL TOTALS	8	8	27	9	28	14	31	55	177	360	21	24	11	56	154
Southern Region															
Beaver	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Garfield	---	---	---	4	4	6	10	4	40	46	7	0	0	7	207
Iron	9	9	42	14	31	24	47	73	155	---	---	12	0	12	1,000
Kane	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Millard	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Piute	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Sevier	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Washington	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Wayne	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
REGIONAL TOTALS	9	9	42	18	35	30	57	77	135	46	7	12	0	19	705
Northeastern Region															
Daggett	3	3	13	0	0	0	3	13	433	94	9.5	0	0	10	168
Duchesne	6	6	13	0	0	0	6	13	217	60	7	5	4	16	123
Uintah	27	26	139	28	110	113	168	249	148	403	31	0	4	35	1,191
REGIONAL TOTALS	36	36	165	28	110	113	177	275	155	557	48	5	8	61	741
Southeastern Region															
Carbon	2	2	9	0	0	14	16	9	56	107	2	0	18	20	125
Emery	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Grand	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
San Juan	1	1	2	0	0	3	4	2	50	60	4	0	0	4	150
REGIONAL TOTALS	3	3	11	0	0	17	20	11	55	167	6	0	18	24	129
STATE TOTALS	62	62	271	59	189	191	312	460	147	1,595	124	104	40	268	288

Table 3. Trend of sage grouse young per 100 adults, 1979-89.

Region and County	Year										Average 1979-88	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		1989
<u>Northern Region</u>												
Box Elder	81	84	68	127	135	75	265	178	94	108	167	
Cache	0	300	122	--	--	--	--	--	--	--	--	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	66	89	120	--	240	--	300	--	500	--	117	
Rich	101	33	85	85	--	164	96	91	116	153	--	
Summit	221	74	114	80	67	--	--	400	167	50	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	99	67	82	91	145	126	130	103	115	135	156	109
<u>Central Region</u>												
Juab	262	204	245	--	--	--	--	--	--	380	250	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	154	267	348	314	305	--	--	--	--	--	--	
Tooele	449	143	101	107	176	100	125	106	207	100	194	
Utah	--	--	--	--	--	--	--	--	--	150	--	
Wasatch	163	170	236	166	157	175	43	200	209	300	--	
REGIONAL TOTALS	204	171	171	209	214	155	64	120	209	135	177	165
<u>Southern Region</u>												
Beaver	100	142	104	32	--	400	43	--	--	35	--	
Garfield	272	383	84	128	133	140	229	125	144	144	40	
Iron	229	269	113	148	150	63	--	250	198	146	155	
Kane	57	--	--	--	1,000	--	--	--	400	--	--	
Millard	--	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	38	--	--	--	
Sevier	--	--	--	--	--	--	--	--	--	525	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	288	291	263	193	104	411	152	44	455	86	--	
REGIONAL TOTALS	230	235	154	130	98	92	137	105	216	127	135	152
<u>Northeastern Region</u>												
Daggett	169	200	230	369	88	250	170	100	124	181	433	
Duchesne	127	248	235	305	240	145	297	180	137	288	217	
Uintah	279	401	253	183	375	67	261	127	192	164	148	
REGIONAL TOTALS	191	297	242	237	265	126	255	131	159	172	155	208
<u>Southeastern Region</u>												
Carbon	400	--	64	--	--	238	400	133	150	--	56	
Emery	--	--	--	--	--	--	--	--	--	--	--	
Grand	71	--	--	--	--	--	--	--	--	--	--	
San Juan	--	400	350	--	57	500	88	60	--	200	50	
REGIONAL TOTALS	223	450	83	--	57	267	122	81	150	200	55	181
STATE TOTALS	175	163	142	179	202	125	147	114	160	145	147	155

Table 4. Trend of sage grouse mean brood size, 1979-89.

Region and County	Year										Average 1979-88	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		
Northern Region												
Box Elder	4.32	3.36	3.97	3.92	5.00	5.75	5.31	3.57	3.88	3.80	3.80	
Cache	--	1.00	3.50	--	--	--	--	--	--	--	--	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	4.00	5.60	5.14	--	4.20	--	3.00	--	5.00	--	7.00	
Rich	4.58	3.36	3.67	4.45	--	3.92	3.96	5.08	5.00	4.27	--	
Summit	5.00	3.78	3.67	2.67	3.33	--	--	4.00	5.00	4.00	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	4.52	3.61	3.94	4.00	4.25	4.36	4.39	4.74	4.82	4.17	4.30	4.28
Central Region												
Juab	4.25	5.00	2.00	--	--	--	--	--	--	6.33	4.00	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	6.44	5.58	4.80	6.36	5.83	--	--	--	--	--	--	
Tooele	5.64	4.09	3.00	3.33	4.33	3.33	3.29	3.25	3.60	3.50	3.00	
Utah	--	--	--	--	--	--	--	--	--	--	--	
Wasatch	4.90	4.09	3.83	4.81	3.14	4.90	2.00	5.00	6.94	6.00	--	
REGIONAL TOTALS	5.18	4.41	3.44	5.32	4.37	4.54	2.56	3.60	5.42	4.29	3.40	4.31
Southern Region												
Beaver	4.00	4.14	5.50	4.00	--	4.00	5.00	--	5.00	--	--	
Garfield	4.39	5.00	4.50	3.43	3.43	4.00	4.50	2.00	4.00	4.60	--	
Iron	4.68	4.12	3.57	6.40	3.00	3.50	--	4.00	4.64	3.67	4.66	
Kane	--	--	--	--	5.00	--	--	--	4.00	--	--	
Millard	--	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	--	--	--	--	--	--	--	--	--	7.00	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	4.74	4.60	3.96	4.43	3.67	5.00	3.57	6.00	6.14	6.29	--	
REGIONAL TOTALS	4.61	4.48	3.93	4.52	3.62	4.27	4.00	4.29	4.89	4.89	4.66	4.35
Northeastern Region												
Daggett	5.10	4.75	4.11	5.13	5.80	4.63	3.00	1.00	4.00	4.45	4.30	
Duchesne	4.73	4.42	3.91	5.32	4.59	3.77	4.73	4.29	3.54	3.60	2.17	
Uintah	4.67	5.55	5.27	4.95	5.13	3.00	5.00	5.44	5.55	4.05	5.15	
REGIONAL TOTALS	4.79	5.05	4.50	5.10	5.00	3.96	4.43	4.94	4.59	4.09	4.58	4.65
Southeastern Region												
Carbon	4.67	--	--	--	--	4.33	4.00	4.00	1.50	--	4.50	
Emery	--	--	--	--	--	--	--	--	--	--	--	
Grand	5.00	--	--	--	--	--	--	--	--	--	--	
San Juan	--	--	3.50	--	4.00	5.00	3.50	3.00	--	--	2.00	
REGIONAL TOTALS	3.25	--	3.50	--	4.00	4.50	3.67	3.40	1.50	--	3.67	3.40
STATE TOTALS	4.77	4.51	4.05	4.85	4.58	4.27	4.04	4.53	4.86	4.29	4.37	4.48

Table 5. Trend of sage grouse observed per 100 hours, 1979-89.

Region and County	Year										Average 1979-88	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		1989
Northern Region												
Box Elder	1,835	575	571	238	90	195	380	304	475	694	431	
Cache	0	154	232	--	--	11	--	--	0	3	--	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	412	427	471	77	93	--	19	--	19	--	100	
Rich	952	393	648	188	--	198	288	282	364	287	--	
Summit	226	111	135	100	81	--	--	21	480	300	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	545	315	440	144	82	110	186	198	251	271	64	254
Central Region												
Juab	588	206	380	--	--	--	0.00	--	--	150	311	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	743	319	303	426	214	--	--	--	--	--	--	
Tooele	776	710	627	207	203	105	242	746	742	150	252	
Utah	--	--	--	--	--	--	--	--	--	125	--	
Wasatch	652	360	147	362	41	122	267	92	792	27	19	
REGIONAL TOTALS	695	410	347	342	111	118	244	310	776	118	154	347
Southern Region												
Beaver	89	920	613	62	767	167	429	--	575	--	--	
Garfield	468	229	480	291	300	257	295	225	275	452	207	
Iron	1,315	342	1,085	315	71	260	--	466	1,331	1,517	1,000	
Kane	588	--	--	--	275	--	--	--	500	--	--	
Millard	--	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	316	--	--	--	
Sevier	--	--	--	--	--	--	--	--	--	417	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	494	338	538	783	612	381	358	344	793	542	--	
REGIONAL TOTALS	617	346	653	429	392	304	342	300	732	574	705	469
Northeastern Region												
Daggett	1,274	489	800	300	467	308	284	114	492	474	168	
Duchesne	258	446	574	845	433	454	325	165	382	141	123	
Uintah	705	474	398	1,036	866	314	888	813	642	830	1,191	
REGIONAL TOTALS	673	483	507	800	631	364	490	474	509	589	741	552
Southeastern Region												
Carbon	200	5	219	--	--	415	--	200	28	--	125	
Emery	--	--	--	--	--	--	--	--	--	--	--	
Grand	240	--	--	--	--	--	--	--	--	--	--	
San Juan	--	100	50	--	50	57	231	400	--	--	150	
REGIONAL TOTALS	210	36	141	--	50	194	235	271	28	--	129	146
STATE TOTALS	621	374	444	401	258	180	284	291	415	347	288	362

Table 6. Summary of sage grouse hunter success and distribution of harvest and hunter pressure by region and county, 1989.

Region and County	Sample Size*	Hunter-days Afield	Birds Bagged	Birds per Hunter-day	% of Pressure	% of Harvest
NORTHERN REGION						
BOX ELDER	76	3,256	3,069	0.94	16.81	22.39
CACHE**	21	829	373	0.45	4.28	2.72
DAVIS**	4	518	373	0.72	2.68	2.72
MORGAN**	8	290	145	0.50	1.50	1.06
RICH	69	2,551	1,597	0.63	13.17	11.65
SUMMIT**	7	145	103	0.71	0.75	0.76
WEBER**	22	1,078	290	0.27	5.57	2.12
REGIONAL TOTALS	207	8,670	5,952	0.69	44.75	43.42
CENTRAL REGION						
JUAB**	6	186	41	0.22	0.96	0.30
SALT LAKE**	4	207	62	0.30	1.07	0.45
SANPETE**	11	580	352	0.61	3.00	2.57
TOOELE	29	767	311	0.41	3.96	2.27
UTAH	25	1,327	435	0.33	6.85	3.18
WASATCH**	4	82	124	1.50	0.43	0.91
REGIONAL TOTALS	79	3,152	1,327	0.42	16.27	9.68
SOUTHERN REGION						
BEAVER	7	248	103	0.42	1.28	0.76
GARFIELD	26	1,037	1,182	1.14	5.35	8.62
IRON	11	539	331	0.62	2.78	2.42
KANE	2	82	62	0.75	0.43	0.45
MILLARD**	3	228	20	0.09	1.18	0.15
PIUTE	6	311	580	1.87	1.61	4.24
SEVIER	19	684	269	0.39	3.53	1.97
WASHINGTON**	0	0	0	0.00	0.00	0.00
WAYNE	20	850	891	1.05	4.39	6.51
REGIONAL TOTALS	94	3,982	3,443	0.86	20.56	25.11
NORTHEASTERN REGION						
DAGGETT**	9	311	103	0.33	1.61	0.76
DUCHESNE	12	435	497	1.14	2.25	3.63
UINTAH	46	1,742	1,700	0.98	8.99	12.41
REGIONAL TOTALS	67	2,489	2,302	0.93	12.85	16.79
SOUTHEASTERN REGION						
CARBON	13	518	228	0.44	2.68	1.66
EMERY	5	414	394	0.95	2.14	2.87
GRAND	2	41	62	1.50	0.21	0.45
SAN JUAN**	1	103	0	0.00	0.54	0.00
REGIONAL TOTALS	21	1,078	684	0.63	5.57	4.99
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	468	19,373	13,710	0.71	100.00	100.00

**Closed to sage grouse hunting in 1989.

Table 7. Summary of sage grouse bagged per hunter-day by region and county, 1982-89.

Region and County	Year							
	1982	1983	1984	1985	1986	1987	1988	1989
Northern Region								
Box Elder	0.78	0.88	0.80	0.73	0.94	1.05	0.78	0.94
Cache	0.50	0.47	0.54	0.21*	0.18*	0.38*	0.47*	0.45*
Davis	0.36*	0.45*	0.18*	0.25*	0.25*	0.00*	0.00*	0.72*
Morgan	0.30	0.15	0.32	0.25*	0.47*	1.25*	0.36*	0.50*
Rich	0.51	0.44	0.50	0.30	0.58	0.88	0.81	0.63
Summit	0.32	0.50	0.23	0.20*	0.50*	0.55*	0.57*	0.71*
Weber	0.39	0.47	0.67	0.43*	0.57*	0.56*	0.64*	0.27*
REGIONAL TOTALS	0.56	0.58	0.55	0.49	0.67	0.76	0.66	0.69
Central Region								
Juab	0.17	0.36*	0.33*	4.00*	3.00*	0.60*	0.88*	0.22*
Salt Lake	2.08*	0.50*	0.25*	0.08*	2.54*	0.00*	0.50*	0.30*
Sanpete	0.31*	0.33*	0.64*	0.44*	0.38*	0.62*	0.23*	0.61*
Tooele	0.86*	0.30*	0.53*	0.23*	1.54*	1.10*	0.27	0.41*
Utah	0.50*	1.08*	0.77*	0.45*	0.42	0.62	0.42	0.33
Wasatch	0.54	0.65	0.28	0.19	0.65*	0.58	0.48*	1.50*
REGIONAL TOTALS	0.62	0.63	0.51	0.46	0.85	0.70	0.36	0.42
Southern Region								
Beaver	1.24	0.95	1.29	0.33	0.90	1.08	0.76	0.42
Garfield	1.12	1.33	1.33	0.78	0.68	1.50	1.17	1.14
Iron	0.92	1.35	1.00	1.85	0.82	1.29	0.61	0.62
Kane	0.00	--	0.00	0.50	0.13	0.00	1.00	0.75
Millard	1.00*	1.88*	0.67*	2.00*	0.50*	1.00*	0.00*	0.09*
Piute	0.93	1.30	1.44	0.95	0.50	0.58	0.95	1.87
Sevier	0.85	0.67	0.67	0.40	0.43	1.00	0.67	0.39
Washington	5.50*	--	0.00*	0.50*	0.00	0.00*	0.00*	0.00*
Wayne	1.22	1.26	1.25	1.19	1.19	0.60	1.30	1.05
REGIONAL TOTALS	1.21	0.16	1.19	0.92	0.75	0.99	0.91	0.86
Northeastern Region								
Daggett	1.00	1.04	0.16	0.92	0.45	1.00	1.20	0.33*
Duchesne	0.85	1.31	0.50	0.67	1.00	0.91	1.00	1.14
Uintah	1.16	1.15	0.98	1.08	1.30	1.25	1.12	0.98
REGIONAL TOTALS	1.04	1.17	0.76	0.95	1.16	1.17	1.11	0.93
Southeastern Region								
Carbon	0.44*	0.27*	0.33*	0.60	1.24	1.09	1.04	0.44
Emery	0.00*	0.08*	1.50*	0.63	2.71	1.00	0.77	0.95
Grand	0.25	--	0.00	1.00	0.40	2.00	0.00	1.50
San Juan	1.50*	1.00*	0.00*	0.00	1.33	0.00	10.00	0.00*
REGIONAL TOTALS	0.47	0.26	0.90	0.60	1.44	1.13	1.40	0.63
Unknown counties	2.00	--	7.50	5.67	2.00	0.00	1.63	0.00
Closed areas	(12.55)	(5.89)	(29.95)	(9.04)	(10.58)	(6.06)	(3.25)	(4.65)
STATE TOTALS	0.79	0.81	0.72	0.78	0.84	0.89	0.76	0.71

*Closed season.

Table 8. Percentage distribution of sage grouse harvest by region and county, 1982-89.

Region and County	Year							
	1982	1983	1984	1985	1986	1987	1988	1989
Northern Region								
Box Elder	18.19	15.56	18.95	14.20	19.61	16.63	16.47	22.39
Cache	3.84	4.56	4.83	1.31*	0.88*	5.02*	4.77*	2.72*
Davis	0.50*	2.86*	0.92*	0.18*	0.35*	0.00*	0.00*	2.72*
Morgan	1.36	0.44	2.60	0.37*	2.45*	0.96*	1.36*	1.06*
Rich	4.33	3.48	3.90	2.80	4.90	8.12	12.04	11.65*
Summit	2.35	3.13	1.86	0.37*	0.88*	1.16*	1.81*	0.76*
Weber	1.86	1.52	3.34	1.12*	2.80*	0.96*	2.61*	2.12*
REGIONAL TOTALS	32.43	31.55	36.43	20.37	31.87	32.88	39.09	43.42
Central Region								
Juab	0.12*	0.35*	0.37*	2.98*	2.10*	0.58*	0.79*	0.30*
Salt Lake	3.09*	0.71*	0.18*	0.18*	5.78*	0.00*	0.11*	0.45*
Sanpete	1.11*	1.42*	1.30*	1.49*	1.58*	3.48*	1.25*	2.57*
Tooele	1.49*	0.62*	1.48*	0.56*	3.50*	4.25*	1.81	2.27
Utah	2.85*	5.72*	5.02*	4.67*	3.85	4.64	2.15	3.18
Wasatch	3.22	1.34	1.86	0.75	2.63*	1.35	1.81*	0.91
REGIONAL TOTALS	11.88	10.17	10.22	10.65	19.44	14.31	7.95	9.68*
Southern Region								
Beaver	2.60	1.87	1.67	1.12	1.58	5.41	1.81	0.76
Garfield	9.28	10.46	9.66	6.54	4.38	4.64	3.86	8.62
Iron	2.85	3.13	1.30	4.48	2.45	3.48	1.59	2.42
Kane	0.00	0.00	0.00	0.18	0.18	0.00	0.11	0.45
Millard	0.62*	2.68*	0.74*	1.87*	0.18*	0.38*	0.00*	0.15*
Piute	1.73	2.32	4.27	3.36	0.35	1.35	2.04	4.24
Sevier	2.72	2.86	1.48	1.12	1.75	2.32	5.00	1.97
Washington	4.08*	0.00*	0.00*	0.37*	0.00*	0.00*	0.00*	0.00*
Wayne	9.43	9.21	7.44	8.03	6.65	2.32	8.40	6.51
REGIONAL TOTALS	33.42	32.54	26.58	27.10	17.50	19.92	22.84	25.11
Northeastern Region								
Daggett	1.36	2.14	0.55	2.24	0.88	2.32	2.04	0.76*
Duchesne	5.69	5.72	2.60	5.23	3.68	4.06	2.61	3.63
Uintah	13.49	16.99	15.98	19.43	18.21	23.21	17.61	12.41
REGIONAL TOTALS	20.55	24.85	19.15	26.91	22.78	29.59	22.27	16.79
Southeastern Region								
Carbon	0.50*	0.53*	0.92*	1.12	3.68	2.32	2.95	1.66
Emery	0.00*	0.09*	3.90*	0.93	3.33	0.19	1.13	2.87
Grand	0.12	--	0.00	0.18	0.35	0.77	0.00	0.45
San Juan	0.37*	0.27*	0.00*	0.00	0.70	0.00	2.27	0.00*
REGIONAL TOTALS	0.99	0.89	4.83	2.24	8.06	3.28	6.36	4.99
Unknown counties	0.74	0.00	2.78	12.71	0.35	0.00	1.47	0.00
Closed areas	(17.95)	(15.25)	(14.83)	(11.47)	(23.09)	(16.79)	(14.51)	(14.52)
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, 1982-89.

Region and County	Year							
	1982	1983	1984	1985	1986	1987	1988	1989
Northern Region								
Box Elder	18.40	14.33	16.89	15.15	17.53	14.11	15.99	16.81
Cache	6.07	7.89	6.38	4.71*	4.12*	11.87*	7.65*	4.28*
Davis	1.08*	5.14*	3.72*	0.58*	1.18*	0.34*	1.63*	2.68*
Morgan	3.62	2.39	5.85	1.16*	4.42*	0.68*	2.83*	1.50*
Rich	6.75	6.44	5.58	7.28	7.07	8.26	11.26	13.17
Summit	5.77	5.07	5.71	1.46*	1.47*	1.89*	2.40*	0.75*
Weber	3.72	2.60	3.59	2.04*	4.12*	1.54*	3.09*	5.57
REGIONAL TOTALS	45.40	43.87	47.74	32.51	39.91	38.72	44.88	44.75
Central Region								
Juab	0.59*	0.79*	0.79*	0.58*	0.59*	0.86*	0.68*	0.96*
Salt Lake	1.17*	1.15*	0.53*	1.75*	1.91*	0.17*	0.17*	1.07*
Sanpete	2.84*	3.55*	1.46*	2.62*	3.53*	4.99*	4.12*	3.00*
Tooele	1.37*	1.66*	1.99*	1.89*	1.91*	3.44*	5.07	3.96
Utah	4.50*	4.27*	4.65*	8.01*	7.81	6.71	3.86	6.85
Wasatch	4.70	1.66	4.78	3.06	3.39*	2.06	2.83*	0.43*
REGIONAL TOTALS	15.17	13.09	14.23	17.93	19.15	18.24	16.76	16.27
Southern Region								
Beaver	1.66	1.59	0.93	2.62	1.47	4.47	1.80	1.28
Garfield	6.56	6.37	5.18	6.56	5.45	2.75	2.49	5.35
Iron	2.45	1.88	0.93	1.89	2.50	2.40	1.97	2.78
Kane	0.00	0.65	0.00	0.29	1.18	0.00	0.08	0.43
Millard	0.49*	1.15*	0.79*	0.73*	0.29*	0.34*	0.00*	1.18*
Piute	1.47	1.45	2.12	2.77	0.59	2.06	1.63	1.61
Sevier	2.54	3.47	1.59	2.18	3.39	2.06	5.67	3.53
Washington	0.59*	0.14*	0.13*	0.58*	0.00	0.34*	0.42*	0.00*
Wayne	6.16	5.93	4.25	5.24	4.71	3.44	4.90	4.39
REGIONAL TOTALS	21.92	22.64	15.96	22.88	19.59	17.89	18.99	20.56
Northeastern Region								
Daggett	1.08	1.66	2.25	1.89	1.62	2.06	1.28	1.61*
Duchesne	5.28	3.54	3.84	6.12	3.09	3.95	1.97	2.25
Uintah	9.20	11.95	11.70	13.99	11.78	16.52	11.95	8.99
REGIONAL TOTALS	15.56	17.15	17.95	22.01	16.59	22.54	15.21	12.85
Southeastern Region								
Carbon	0.88*	1.59*	1.99*	1.46	2.50	1.89	2.14	2.68
Emery	0.20*	0.94*	1.86*	1.16	1.03	0.17	1.11	2.14
Grand	0.39	0.00	0.00	0.14	0.74	0.34	0.00	0.21
San Juan	0.20*	0.22*	0.00*	0.14	0.44	0.17	0.17	0.54*
REGIONAL TOTALS	1.66	2.75	3.85	2.91	4.71	2.57	3.43	5.57
Unknown counties	0.29	0.50	0.26	1.75	0.15	0.00	0.68	0.00
Closed areas	(13.91)	(20.60)	(17.91)	(26.21)	(26.90)	(26.46)	(25.82)	(23.57)
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, 1951-89.

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	21,509	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
1989	9,002	13,710	19,373	0.71	1.52
<hr/>					
TOTALS (1963-1989)	277,806	395,434	473,786	(22.46)	(39.18)
<hr/>					
AVERAGES (1963-1988)	9,956	14,138	16,830	0.81	1.39

*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, 1989.

Region and County	ALL HUNTS						COMPLETE HUNTS					
	Total Parties	Total Hunters	Total Hours	Total Birds	Total Birds/100 Hr	Total Complete Hunts	Total Hunters	Total Hours	Total Birds	Total Birds/100 Hr	Birds/Hunter	
						Hunts						
<u>Northern Region</u>												
Box Elder	210	528	2,713	556	20	168	421	2,585	537	21	1.28	
Cache	10	17	20	0	--	3	6	9	0	--	--	
Davis	14	22	38	0	--	10	16	34	0	--	--	
Morgan	1	1	2	0	--	1	1	2	0	--	--	
Rich	133	302	1,424	115	8	133	302	1,424	115	8	0.38	
Summit	1	2	--	0	--	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	369	870	4,197	671	16	315	746	4,054	652	16	0.87	
<u>Central Region</u>												
Juab	--	--	--	--	--	--	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	--	--	--	--	--	--	--	--	
Tooele	28	73	152	29	19	10	23	49	20	41	0.87	
Utah	--	--	--	--	--	--	--	--	--	--	--	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	28	73	152	29	19	10	23	49	20	41	0.87	
<u>Southern Region</u>												
Beaver	--	--	--	--	--	--	--	--	--	--	--	
Garfield	8	21	11	7	64	8	21	11	7	64	0.33	
Iron	9	28	--	18	--	9	28	--	18	--	0.64	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	--	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	--	--	--	--	--	--	--	--	--	--	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	--	77	338	104	31	--	--	--	--	--	--	
REGIONAL TOTALS	17	126	349	129	37	17	49	11	25	227	0.51	
<u>Northeastern Region</u>												
Daggett	4	13	52	5	10	2	9	48	3	6	0.33	
Duchesne	--	--	--	--	--	--	--	--	--	--	--	
Uintah	84	227	738	133	18	31	78	341	68	20	0.87	
REGIONAL TOTALS	88	240	790	138	17	33	85	389	71	18	0.84	
<u>Southeastern Region</u>												
Carbon	17	47	161	27	17	9	31	110	24	22	0.77	
Emery	--	--	--	--	--	--	--	--	--	--	--	
Grand	--	--	--	--	--	--	--	--	--	--	--	
San Juan	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	17	47	161	27	17	9	31	110	24	22	0.77	
STATE TOTALS	519	1,356	5,649	994	18	384	934	4,613	792	17	0.85	

Table 12. Sage grouse hunter success trend determined by field bag checks, 1984-89.

Region and County	1984		1985		1986		1987		1988		1989	
	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter
<u>Northern Region</u>												
Box Elder	13	0.82	16	0.98	17	1.06	19	1.39	16	1.21	21	1.28
Cache	4	0.18	--	--	19	0.71	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	17	0.56	18	0.68	14	0.57	17	0.70	18	0.60	8	0.38
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	11	0.44	--	--	--	--	--	--	--	--
REGIONAL TOTALS	13	0.78	16	0.95	17	0.93	19	1.20	17	1.06	16	0.87
<u>Central Region</u>												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	40	0.83	41	0.87
Utah	--	--	17	0.33	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	17	0.33	--	--	--	--	40	0.83	41	0.87
<u>Southern Region</u>												
Beaver	--	--	20	0.60	--	--	--	--	--	--	--	--
Garfield	--	--	25	1.10	8	0.20	50	1.71	65	1.82	64	0.33
Iron	--	--	--	--	--	--	0	0.00	14	0.70	--	0.64
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	11	0.94	137	0.74	22	1.23	21	0.95	23	1.12	--	--
REGIONAL TOTALS	11	0.94	62	0.78	22	1.20	22	0.97	24	1.15	227	0.51
<u>Northeastern Region</u>												
Daggett	33	0.67	23	1.09	47	1.78	80	1.67	40	0.67	6	0.33
Duchesne	45	0.83	25	0.33	94	2.00	75	1.50	--	--	--	--
Uintah	25	0.80	40	1.10	49	1.17	36	1.05	26	0.91	20	0.87
REGIONAL TOTALS	26	0.79	36	1.06	52	1.33	40	1.12	27	0.90	18	0.84
<u>Southeastern Region</u>												
Carbon	--	--	--	--	200	1.00	50	1.00	--	--	22	0.77
Emery	--	--	133	1.00	--	--	--	--	--	--	--	--
Grand	--	--	100	2.00	--	--	50	3.00	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	114	1.33	200	1.00	50	1.73	--	--	22	0.77
STATE TOTALS	14	0.81	20	0.93	20	1.02	21	1.15	19	1.04	17	0.85

Table 13. Sex and age composition of harvested sage grouse, 1989.

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	283	44	87	131	61	91	152	116	175
Cache	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--
Rich	99	10	32	42	25	32	57	136	178
Summit	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	382	54	119	171	86	123	209	122	176
<u>Central Region</u>									
Juab	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--
Tooele	23	4	7	11	2	10	12	109	171
Utah	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	23	4	7	11	2	10	12	109	171
<u>Southern Region</u>									
Beaver	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--
Wayne	209	17	89	106	49	54	103	97	116
REGIONAL TOTALS	209	17	89	106	49	54	103	97	116
<u>Northeastern Region</u>									
Daggett	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--
Uintah	242	28	108	136	60	46	106	78	98
REGIONAL TOTALS	242	28	108	136	60	46	106	78	98
<u>Southeastern Region</u>									
Carbon	65	8	31	39	11	15	26	67	84
Emery	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	65	8	31	39	11	15	26	67	84
STATE TOTALS	921	111	354	465	208	248	456	98	129

Table 14. Sex and age composition of harvested sage grouse from 1986-89.

Region and County	1986						1987						1988						1989						Averages 1979-88													
	Sex Ratio %		n	Young/100H		100A	Sex Ratio %		n	Young/100H		100A	Sex Ratio %		n	Young/100H		100A	Sex Ratio %		n	Young/100H		100A	Sex Ratio %		n	Young/100H		100A	Sex Ratio %		n	Young/100H		100A		
	M	F		M	F		M	F		M	F		M	F		M	F		M	F		M	F		M	F		M	F		M	F		M	F		M	F
Northern Region																																						
Box Elder	322	41	59	395	232	336	44	56	265	155	232	36	64	130	89	283	37	63	175	116																		
Cache						100																																
Davis																																						
Morgan																																						
Rich	54	44	56	840	350	77	47	53	233	175	59	32	68	123	84	99	35	65	178	136																		
Summit																																						
Weber																																						
REGIONAL TOTALS	366	46	54	266	177	376	41	59	431	245	413	45	55	258	158	382	37	63	176	122																		
Central Region																																						
Juab																																						
Salt Lake																																						
Sanpete																																						
Tooele											37	43	57	133	76	23	26	74	171	109																		
Utah																																						
Wasatch																																						
REGIONAL TOTALS											37	43	57	133	76	23	26	74	171	109																		
Southern Region																																						
Beaver																																						
Garfield																																						
Iron																																						
Kane																																						
Millard																																						
Piute																																						
Sevier																																						
Washington																																						
Wayne	265	48	52	378	268	230	43	57	278	233	335	45	55	263	186	209	32	68	116	97																		
REGIONAL TOTALS	265	48	52	378	268	230	43	57	278	233	335	45	55	263	186	209	32	68	116	97																		
Northeastern Re																																						
Daggett																																						
Duchesne																																						
Uintah	65	47	53	323	183	82	48	52	767	531	71	49	51	321	173	242	36	64	98	78																		
REGIONAL TOTALS	65	47	53	323	183	82	48	52	767	531	71	49	51	321	173	242	36	64	98	78																		
Southeastern Re																																						
Carbon																																						
Emery																																						
Grand																																						
San Juan																																						
REGIONAL TOTALS																																						
STATE TOTALS	706	45	55	398	246	800	42	58	256	181	942	31	69	166	114	921	35	65	133	98																		

n = wing sample size.

FOREST GROUSE

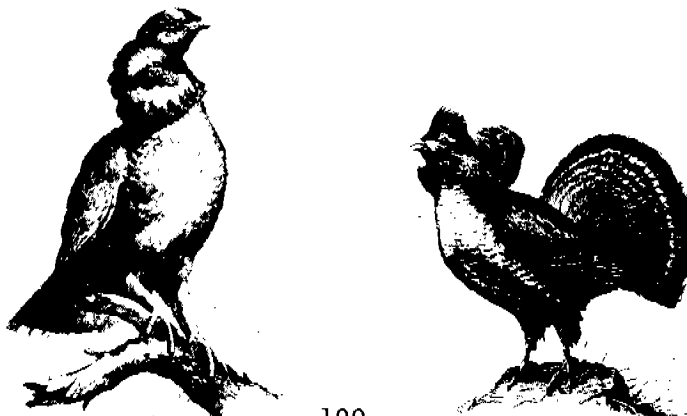
SUMMARY

Judging from harvest statistics for the fall of 1988, the 1989 breeding populations of blue and ruffed grouse were higher than average. However, ruffed grouse observed per 100 hours of effort during summer brood counts in 1989 dropped 43 percent.

Production of blue grouse increased from 1988 but was below the 10-year average. However, blue grouse observed per 100 hours of effort dropped 51 percent from the previous year. A total of 46 forest grouse broods were observed during 1989 compared with 86 in 1988, 134 in 1987, 53 in 1986, and 78 in 1985.

Harvest statistics indicated decreased density of forest grouse. Total harvest decreased from 53,562 in 1988 to 45,487 in 1989, a 95 percent decrease. Total hunters and days afield remained the same. Field bag check data corroborated decreased forest grouse numbers from the questionnaire.

These data indicate that hunters are discovering forest grouse hunting and are using the resources more than 10 years ago. This is what we hoped to accomplish in the five-year strategic plan.



Brood Counts

Ruffed Grouse

Results of the annual random brood survey for 1989 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 1989 compared to 1988 and the previous 10-year average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Total ruffed grouse observed	49	-53	-63
Young per 100 adults	277	+73	-13
Mean brood size	3.30	-11	-26
Ruffed grouse observed per 100 hours	26	-43	-30
Total hours effort	187	-17	-58

Harvest statistics for 1988 indicated an above average breeding population for 1989.

Effort on brood surveys decreased by 17 percent and was 58 percent below average.

Grouse observed per 100 hours was 30 percent below average, while mean brood size was 26 percent below average indicating poor production.

Blue Grouse

Results of the annual random brood survey for 1989 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 1989 compared to 1988 and the 10-year average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Total blue grouse observed	234	-49	-54
Young per 100 adults	225	+9	-5
Mean brood size	3.61	+12	-4
Blue grouse observed per 100 hours	81	-51	-24
Total hours effort (forest grouse)	289	+5	-44

Harvest statistics for 1988 indicated the blue grouse breeding population for 1989 was again above average.

The 1989 summer surveys on blue grouse indicated that production increased slightly (9 percent) from 1988 but was still below average.

This may have resulted from a dryer and warmer spring than normal statewide and above average temperatures and below average precipitation May through August 1989.

Total observations decreased 49 percent, without any decrease in effort. The number of grouse observed per 100 hours of effort decreased from 1988 and was 24 percent below average.

Harvest

Hunter Questionnaire

Results of the 1989 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, 1963-1989 are listed in Table 17. Harvest statistics for 1989 compared to 1988 and the 26-year (1963-88) average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Forest grouse hunters	16,987	0	+20
Forest grouse harvested	45,487	-15	+58
Hunter-days afield	50,631	-2	+48
Forest grouse per hunter-day	0.90	-13	-8
Forest grouse per hunter	2.68	-15	+17
Percent ruffed grouse	35.9	+1	-6
Percent blue grouse	61.1	+4	+17
Percent unidentified	3.0	-44	-52

Results from the harvest questionnaire confirmed decreasing forest grouse populations in 1989. This decrease was in both blue and ruffed grouse. Ruffed grouse hunter success was 18 percent below average. Total harvest decreased 15 percent from 1988 but was 58 percent above average. Blue grouse hunter success was about average. Total harvest decreased 12 percent from 1988 but was 48 percent above average. Hunter success (grouse per hunter-day) was 8 percent below average, and the number of grouse harvested per hunter was 17 percent above average. Hunter pressure remained about the same as 1988, and was 48 percent above the 26-year average.

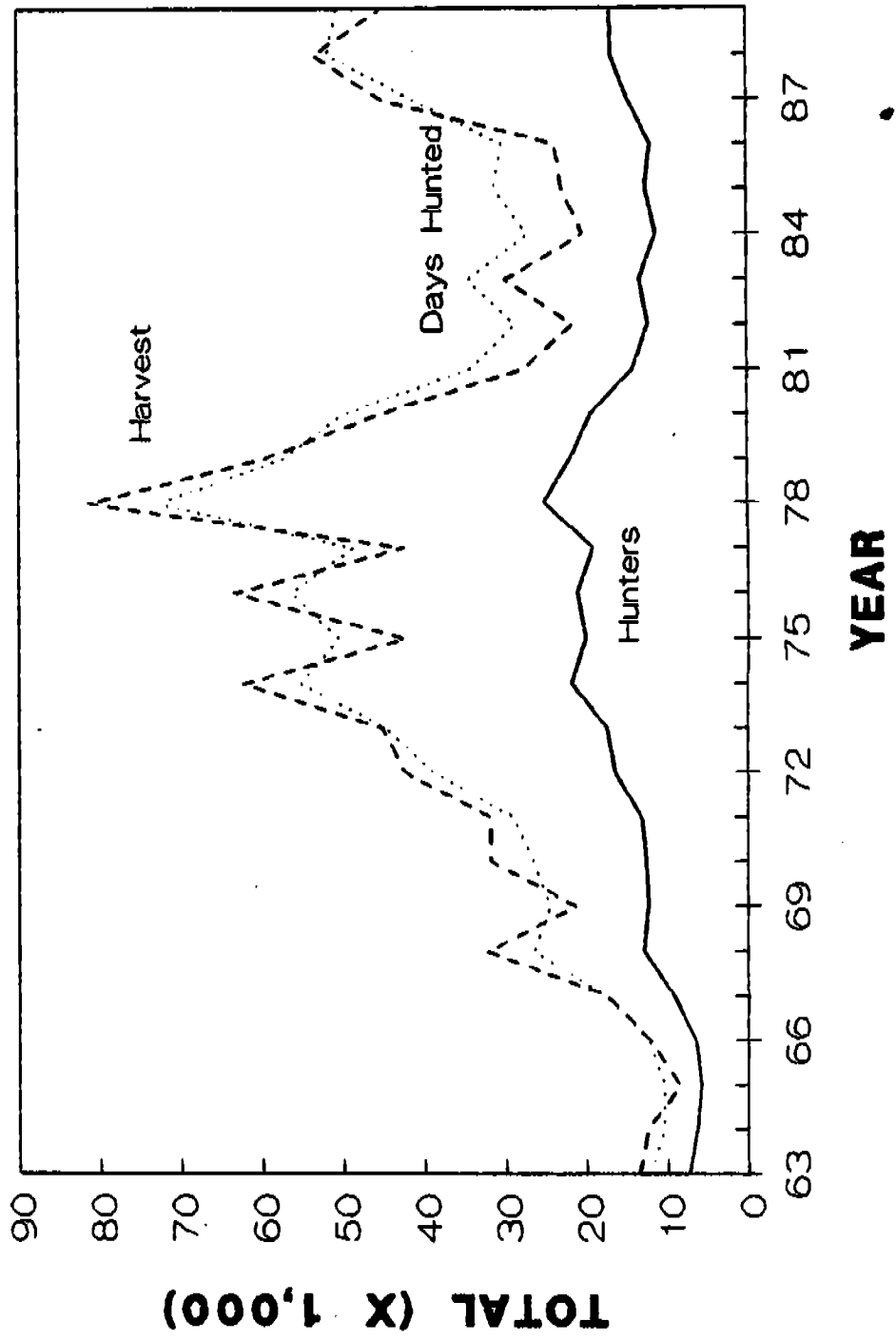


Figure 1. Statewide trends of forest grouse harvest statistics, 1963-89.

FOREST GROUSE PER HUNTER AND PER DAY

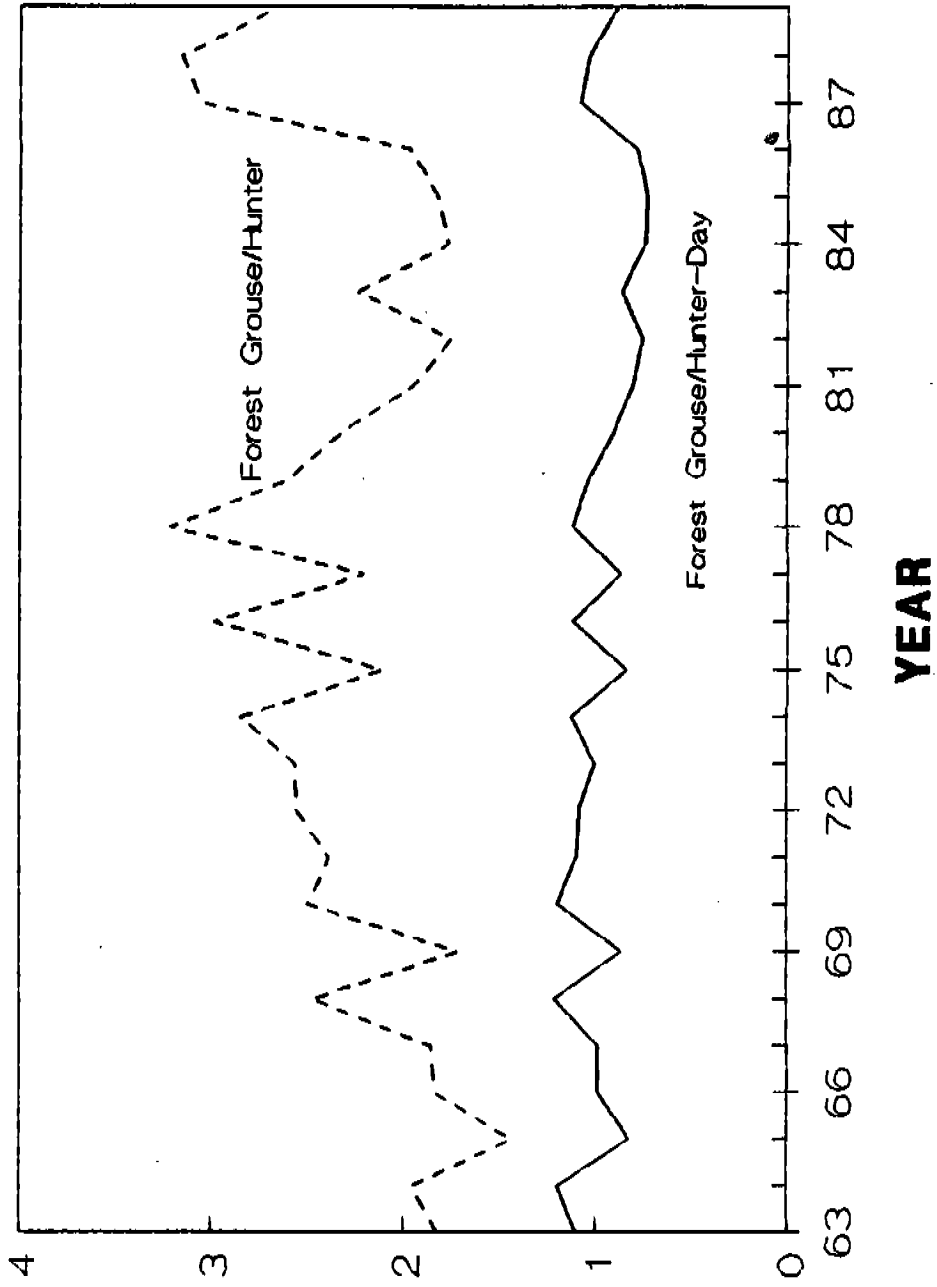


Figure 2. Statewide trends of forest grouse hunter success rates, 1963-89.

Field Bag Checks

A summary of field bag check data for 1989 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 1989 survey compared to 1988 and the 10-year (1979-88) average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Total hunters checked	766	+3	-22
Total hours hunted	3,025	+12	-24
Forest grouse per hunter (complete hunts)	0.68	-28	+17.
Forest grouse bagged per 100 hours	16	-36	+14
Average hours per hunter-day (complete hunts)	4.39	+17	+9
Hours hunted per grouse bagged (complete hunts)	6.42	+61	-13

Field bag check trends confirmed harvest results of the mail questionnaire. Hunter success (grouse per hunter) decreased 28 percent from 1988 but was still 17 percent above average. This plus the fact that average hours per hunter day increased, and it took 13 percent longer to bag a grouse in 1989 than average, indicates hunters have discovered blue and ruffed grouse hunting and are using the resource more than 10 years ago.

Table 1. Ruffed grouse summer inventory, 1989.

Region and County	Distinct Broods		Mixed Yng & Adults		Mean Brood	Total Yng	Total Adults	Total Yng & Adults	Total Yng	Total Ad	Veh. Miles	Hours of Effort		Birds/100 Hr		
	# Ad	Yng	Ad	Yng								Yng	Ad		Veh.	Horse
<u>Northern Region</u>																
Box Elder	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Cache	4	4	12	3.00	0	3	1	5	15	300	690	40	3	1	44	46
Davis	0	0	0	--	0	0	0	0	0	--	105	8	0	7	15	--
Morgan	0	0	0	--	0	0	0	0	0	0	0	0	0	6	6	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Summit	1	1	3	3.00	0	0	0	1	3	300	0	0	44	0	44	9
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	5	5	15	3.00	0	3	1	6	18	300	795	48	53	8	109	22
<u>Central Region</u>																
Juab	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Utah	1	1	3	3.00	0	0	0	1	3	300	30	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	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<u>Northeastern Region</u>																
Daggett	1	1	3	3.00	0	0	1	2	3	150	175	19	0	0	19	109
Duchesne	1	1	4	4.00	0	0	0	1	4	400	115	15	0	1	16	33
Uintah	2	2	8	4.00	0	0	1	3	8	267	283	32	3	5	40	28
REGIONAL TOTALS	4	4	15	3.75	0	0	2	6	15	250	573	66	3	6	75	28
<u>Southeastern Region</u>																
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
STATE TOTALS	10	10	33	3.30	0	3	3	13	36	277	1,398	117	56	14	187	26

Table 2. Trend of ruffed grouse young per 100 adults, 1979-89.

Region and County	Year										Average 1979-88	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		1989
<u>Northern Region</u>												
Box Elder	--	--	--	--	300	--	--	433	150	50	--	--
Cache	450	138	--	--	700	--	350	100	300	267	300	--
Davis	1,100	--	--	--	--	--	--	--	--	136	--	--
Morgan	400	600	--	--	200	--	0	--	--	--	--	--
Rich	--	--	--	--	--	--	667	200	--	267	--	--
Summit	500	200	200	--	--	--	200	400	500	--	300	--
Weber	500	500	267	--	--	--	150	--	380	220	--	--
REGIONAL TOTALS	460	217	250	--	286	--	308	300	337	141	300	287
<u>Central Region</u>												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	200	92	--	--	--	--	150	0	--	--	--
Sanpete	506	373	390	476	475	--	700	--	--	--	--	--
Tooele	--	--	--	300	--	--	--	--	--	--	--	--
Utah	280	217	300	275	--	--	--	460	320	300	300	--
Wasatch	300	--	--	--	300	--	--	--	--	--	--	--
REGIONAL TOTALS	416	295	282	414	392	--	700	322	320	300	300	382
<u>Southern Region</u>												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	400	600	500	--	--	--	--	--	450	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	400	600	500	--	--	--	--	--	450	--	--	488
<u>Northeastern Region</u>												
Daggett	240	--	475	--	--	--	--	--	--	--	150	--
Duchesne	450	--	700	--	--	--	--	--	--	--	400	--
Uintah	--	300	--	--	--	--	--	400	400	--	267	--
REGIONAL TOTALS	300	300	520	--	--	--	--	300	300	--	250	355
<u>Southeastern Region</u>												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	300	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	300	--	--	300
STATE TOTALS	398	294	311	404	353	--	336	312	306	160	277	319

Table 3. Trend of ruffed grouse mean brood size, 1979-89.

Region and County	Year										Average 1979-88	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		1989
Northern Region												
Box Elder	--	--	--	--	3.00	--	--	2.00	3.00	3.00	--	--
Cache	5.14	3.67	--	--	7.00	--	3.50	1.00	3.14	4.00	3.00	--
Davis	9.00	--	--	--	--	--	--	--	--	4.00	--	--
Morgan	4.89	6.00	--	--	5.00	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	6.67	3.00	--	3.00	--	--
Summit	5.00	4.00	2.00	--	--	--	3.33	4.00	5.00	--	3.00	--
Weber	5.00	5.00	4.00	--	--	--	3.00	--	4.75	3.67	--	--
REGIONAL TOTALS	5.20	4.33	3.33	--	5.00	--	4.44	2.60	3.93	3.64	3.00	4.06
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	2.00	2.20	--	--	--	--	--	--	--	--	--
Sanpete	5.79	5.14	5.47	5.47	4.75	--	7.00	--	--	--	--	--
Tooele	--	--	--	4.00	--	--	--	--	--	--	--	--
Utah	4.67	3.25	3.00	--	--	--	--	4.60	3.20	3.00	3.00	--
Wasatch	3.00	--	--	--	9.00	--	--	--	--	--	--	--
REGIONAL TOTALS	5.20	4.25	4.57	5.13	5.22	--	7.00	4.60	3.20	3.00	3.00	4.69
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	4.80	6.00	5.00	--	--	--	--	--	--	4.50	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	4.80	6.00	5.00	--	--	--	--	--	--	4.50	--	5.08
Northeastern Region												
Daggett	4.00	--	4.75	--	--	--	--	--	--	--	3.00	--
Duchesne	4.50	--	7.00	--	--	--	--	--	--	--	4.00	--
Uintah	--	6.00	--	--	--	--	--	--	4.00	--	4.00	--
REGIONAL TOTALS	4.20	6.00	5.20	--	--	--	--	--	4.00	--	3.75	4.85
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	3.00	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	3.00	--	--	3.00
STATE TOTALS	5.06	4.52	4.57	5.13	5.15	--	4.70	3.60	3.75	3.71	3.30	4.47

Table 4. Trend of ruffed grouse observed per 100 hours, 1979-89.

Region and County	Year										Average 1979-88	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	19878		1989
<u>Northern Region</u>												
Box Elder	--	--	--	--	29	--	--	80	31	100	--	--
Cache	18	25	--	3	6	--	17	20	58	17	46	--
Davis	60	--	--	--	--	--	--	--	--	114	--	--
Morgan	149	20	--	--	57	--	2	--	--	--	--	--
Rich	--	--	--	--	--	--	1,150	53	--	50	--	--
Summit	600	21	--	--	--	--	52	36	900	--	9	--
	16	17	31	--	--	--	21	--	267	178	--	--
REGIONAL TOTALS	38	19	10	1	12	--	26	30	56	62	22	28
<u>Central Region</u>												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	2	150	70	--	--	--	--	167	--	--	--	--
Sanpete	270	200	515	293	271	--	160	--	--	--	--	--
Tooele	--	--	--	880	--	--	--	--	--	--	--	--
Utah	39	37	14	38	3	--	--	400	50	133	133	--
Wasatch	--	48	3	--	--	86	--	--	25	--	--	--
REGIONAL TOTALS	73	47	98	144	63	86	14	88	30	133	133	78
<u>Southern Region</u>												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	15	3	2	--	--	--	--	--	--	138	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	15	3	2	--	--	--	--	--	--	138	--	40
<u>Northeastern Region</u>												
Daggett	85	--	164	--	--	--	--	--	--	--	109	--
Duchesne	48	--	12	--	--	--	--	--	4	--	33	--
Uintah	11	--	350	--	--	--	--	--	68	--	28	--
REGIONAL TOTALS	26	350	26	--	--	--	--	--	28	--	28	108
<u>Southeastern Region</u>												
Carbon	9	--	--	--	--	--	--	--	--	--	--	--
Emery	33	--	--	--	--	--	--	0	400	--	--	--
Grand	--	--	--	--	--	--	--	0	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	12	--	--	--	--	--	--	0	400	--	--	206
STATE TOTALS	37	20	27	66	19	--	22	47	45	46	26	37

Table 5. Blue grouse summer inventory summary, 1989.

Region and County	Distinct Broods		Mean		Mixed Yng & Adults		Total Adults	Total Yng	Young/100 Ad	Veh. Miles	Hours of Effort		Birds/100 Hr			
	# Ad	Yng	Brood	Ad	Yng	w/o Yng					Veh. Horse	Walk Total				
Northern Region																
Box Elder	1	1	7	7.00	0	0	1	7	700	--	0	0	--			
Cache	9	9	32	3.60	2	4	14	36	257	690	40	3	114			
Davis	2	2	9	4.50	2	3	6	12	200	105	8	0	120			
Morgan	0	0	0	0	0	0	1	0	--	0	0	6	17			
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--			
Summit	2	2	6	3.00	0	0	3	6	200	0	0	44	21			
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--			
REGIONAL TOTALS	14	14	54	3.86	4	7	25	61	244	795	48	53	8	109	79	
Central Region																
Juab	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	2	2	4	2.00	0	0	3	4	80	580	54	2	7	63	14	
Tooele	2	2	12	6.00	2	14	0	4	650	25	3	0	0	3	1,000	
Utah	1	1	5	5.00	0	0	2	3	267	30	3	0	0	3	367	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	5	5	21	4.20	2	14	5	12	317	635	60	2	7	69	72	
Southern Region																
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Millard	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Washington	0	0	0	--	0	0	0	0	--	45	1	2	0	3	--	
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	0	0	0	--	0	0	0	0	--	45	1	2	0	3	--	
Northeastern Region																
Daggett	9	9	35	3.89	2	5	5	11	40	364	175	19	0	19	265	
Duchesne	0	0	0	--	0	0	0	0	--	115	15	0	1	16	--	
Uintah	5	5	11	2.20	0	0	3	8	11	138	283	32	3	5	48	
REGIONAL TOTALS	14	14	46	3.29	2	5	8	19	51	268	573	66	3	6	75	95
Southeastern Region																
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Garfield	0	0	0	--	3	3	10	3	23	220	23	0	0	23	70	
Grand	2	2	6	3.00	0	0	0	2	6	300	60	5	0	4	9	89
San Juan	1	1	3	3.00	0	0	0	1	3	300	6	1	0	0	1	400
REGIONAL TOTALS	3	3	9	3.00	3	3	10	16	12	75	286	29	0	4	33	85
STATE TOTALS	36	36	130	3.61	11	29	30	72	162	2,334	204	60	25	289	81	

Table 6. Trend of blue grouse young per 100 adults, 1979-89.

Region and County	Year										Average 1979-88	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		1989
Northern Region												
Box Elder	380	600	360	--	125	350	--	100	--	--	700	
Cache	167	83	254	--	467	--	167	--	300	363	257	
Davis	100	600	--	--	300	250	183	150	222	248	200	
Morgan	0	233	200	--	--	300	900	--	433	--	--	
Rich	--	300	--	--	--	--	--	350	--	--	--	
Summit	325	400	389	--	--	500	450	--	500	--	200	
Weber	280	425	221	400	--	--	400	--	380	400	--	
REGIONAL TOTALS	205	217	271	400	220	300	269	222	300	279	244	268
Central Region												
Juab	200	124	300	--	400	400	0	180	--	--	--	
Salt Lake	230	350	200	38	--	--	--	--	--	--	--	
Sanpete	275	--	--	471	--	--	--	600	--	--	80	
Tooele	225	141	138	--	138	--	168	167	218	650	650	
Utah	169	279	88	100	200	--	175	--	256	267	267	
Wasatch	214	--	--	200	250	--	--	--	--	--	--	
REGIONAL TOTALS	200	167	153	317	156	400	157	169	273	486	317	248
Southern Region												
Beaver	200	--	200	214	700	250	200	267	133	109	--	
Garfield	375	--	--	340	300	241	200	245	160	--	--	
Iron	233	340	--	--	--	--	--	--	300	--	--	
Kane	--	--	--	--	267	--	255	500	475	250	--	
Millard	475	--	--	235	--	100	300	200	425	60	--	
Piute	--	--	387	350	--	200	300	300	--	--	--	
Sevier	100	179	155	238	100	80	417	--	150	90	--	
Washington	400	--	500	--	367	--	--	233	533	--	--	
Wayne	--	--	--	--	400	--	600	--	350	375	--	
REGIONAL TOTALS	158	193	253	245	237	164	282	279	230	118	--	216
Northeastern Region												
Daggett	154	336	442	469	500	--	--	282	331	318	364	
Duchesne	220	409	257	382	340	--	--	228	129	190	--	
Uintah	460	354	380	238	311	--	--	140	500	233	138	
REGIONAL TOTALS	202	366	371	381	402	--	--	235	305	254	268	315
Southeastern Region												
Carbon	100	350	200	--	700	300	150	500	--	--	--	
Emery	--	--	--	--	--	--	--	--	400	100	--	
Garfield	--	--	--	--	--	--	--	--	--	--	23	
Grand	--	--	100	--	--	25	200	260	--	227	300	
San Juan	250	200	300	--	100	175	300	--	300	213	300	
REGIONAL TOTALS	140	275	208	--	200	140	206	300	140	200	75	201
STATE TOTALS	188	219	274	297	272	190	229	225	268	207	225	237

Table 7. Trend of blue grouse mean brood size, 1979-89.

Region and County	Year										Average 1979-88	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		1989
Northern Region												
Box Elder	3.80	6.00	3.60	--	5.00	7.00	--	2.00	--	--	7.00	--
Cache	2.50	3.75	3.67	--	4.33	--	3.33	--	3.67	3.63	3.60	--
Davis	3.50	6.00	--	--	3.00	5.50	3.67	3.00	2.83	4.00	4.50	--
Morgan	--	3.00	2.00	--	--	3.00	9.00	--	4.33	--	--	--
Rich	--	3.00	--	--	--	--	--	--	--	--	--	--
Summit	4.33	4.00	3.89	--	--	5.00	4.50	--	5.00	--	3.00	--
Weber	3.50	4.25	3.57	4.00	--	--	5.33	4.00	4.75	4.00	--	--
REGIONAL TOTALS	3.63	3.90	3.65	4.00	4.20	4.83	4.73	3.25	3.88	3.84	3.86	4.00
Central Region												
Juab	2.00	3.67	4.00	--	4.00	4.00	0.00	--	--	--	--	--
Salt Lake	3.29	3.50	--	--	--	--	--	--	--	--	--	--
Sanpete	2.75	--	--	5.44	--	--	--	--	6.00	--	2.00	--
Tooele	4.20	3.58	3.20	--	3.83	--	3.38	3.20	3.43	6.00	6.00	--
Utah	3.13	3.00	7.00	3.00	4.00	--	3.50	--	3.45	5.00	5.00	--
Wasatch	5.00	--	--	3.00	5.00	--	--	--	--	--	--	--
REGIONAL TOTALS	3.30	3.37	3.89	5.05	4.00	4.00	3.43	3.20	3.62	5.67	4.20	4.00
Southern Region												
Beaver	5.00	--	4.00	2.60	7.00	3.33	2.00	2.67	4.00	4.00	--	--
Garfield	5.00	--	--	3.40	3.00	3.22	--	4.50	3.29	--	--	--
Iron	3.50	4.25	--	--	--	--	--	--	3.50	--	--	--
Kane	--	--	--	--	4.00	--	--	1.00	4.75	4.00	--	--
Millard	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	3.29	4.95	3.44	4.04	2.50	2.00	4.16	--	4.57	2.33	--	--
Washington	4.00	--	5.00	--	3.67	--	--	3.50	5.33	--	--	--
Wayne	--	--	--	--	4.00	--	6.00	--	3.50	3.75	--	--
REGIONAL TOTALS	4.04	4.82	4.15	3.70	3.58	2.95	3.21	3.53	4.12	2.71	--	3.68
Northeastern Region												
Daggett	4.00	7.20	4.45	4.91	4.33	--	--	3.75	4.71	3.20	3.89	--
Duchesne	3.00	5.00	3.60	3.88	3.40	--	--	3.25	2.50	2.50	--	--
Uintah	5.75	3.70	4.75	2.71	5.60	--	--	4.00	5.00	3.50	2.20	--
REGIONAL TOTALS	3.95	4.90	4.35	4.00	4.63	--	--	3.56	4.52	3.00	3.29	4.11
Southeastern Region												
Carbon	2.00	3.50	2.00	--	7.00	3.00	3.00	5.00	--	--	--	--
Emery	--	--	--	--	--	--	--	--	4.00	4.00	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	2.50	--	--	--	--	--	--	--	--	--
San Juan	5.00	4.00	3.00	--	4.00	1.75	3.00	3.25	--	2.78	3.00	--
REGIONAL TOTALS	3.50	3.67	2.60	--	5.50	2.17	3.00	3.60	3.50	2.93	3.00	3.39
STATE TOTALS	3.69	4.20	3.97	4.06	4.29	3.18	3.56	3.44	4.00	3.22	3.61	3.76

Table 8. Trend of blue grouse observed per 100 hours, 1979-89.

Region and County	Year											Average 1979-88
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	
Northern Region												
Box Elder	800	58	230	--	64	38	--	20	0	--	--	--
Cache	7	44	74	--	14	--	77	--	71	56	114	--
Davis	140	92	7	--	33	110	94	50	232	300	120	--
Morgan	--	86	30	--	4	200	23	4	59	--	17	--
Rich	--	--	--	--	--	--	--	53	0	0	--	--
Summit	850	18	293	--	--	12	38	--	900	--	21	--
Weber	51	58	174	71	4	--	167	100	267	56	--	--
REGIONAL TOTALS	30	57	121	20	15	28	58	27	109	90	79	56
Central Region												
Juab	38	336	73	--	29	125	30	156	0	--	--	--
Salt Lake	70	450	36	48	14	--	--	--	400	--	--	--
Sanpete	33	--	--	281	--	--	--	--	1,400	--	14	--
Tooele	557	248	271	--	344	--	536	444	206	1,000	1,000	--
Utah	176	104	52	36	32	--	165	--	229	367	367	--
Wasatch	88	3	--	53	50	--	--	--	0	--	--	--
REGIONAL TOTALS	109	122	55	127	94	17	183	254	194	683	72	184
Southern Region												
Beaver	107	--	46	220	133	233	33	137	175	164	--	--
Garfield	61	--	--	--	--	141	122	141	195	--	--	--
Iron	333	275	--	--	--	--	--	--	1,200	--	--	--
Kane	--	--	--	--	122	--	213	257	383	127	--	--
Millard	2,300	--	--	248	15	107	133	200	525	100	--	--
Piute	--	--	557	225	--	200	67	266	--	--	--	--
Sevier	46	68	20	48	50	72	155	--	275	738	--	--
Washington	125	--	800	--	117	--	--	333	950	--	--	--
Wayne	--	--	--	--	--	--	700	--	450	475	--	--
REGIONAL TOTALS	61	74	41	74	80	122	140	178	309	247	--	133
Northeastern Region												
Daggett	420	600	736	389	632	--	--	300	1,255	230	265	--
Duchesne	209	130	75	126	51	--	--	51	64	121	--	--
Uintah	44	256	308	54	239	--	--	600	55	37	48	--
REGIONAL TOTALS	150	220	228	138	232	--	--	126	286	120	95	188
Southeastern Region												
Carbon	19	35	17	--	80	53	33	60	--	--	--	--
Emery	33	--	--	--	--	--	--	--	500	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	70	--
Grand	--	--	--	--	--	50	360	120	300	--	89	--
San Juan	54	46	218	--	100	73	53	--	400	--	400	--
REGIONAL TOTALS	29	38	128	--	90	60	123	96	400	--	85	121
STATE TOTALS	68	93	93	91	83	55	101	110	197	166	81	106

Table 9. Summary of effort expended on forest grouse brood counts, 1989.

Region and County	Vehicle Miles Traveled	Hours Effort Expended			Total
		Vehicle	Horseback	Walking	
Northern Region					
Box Elder	--	--	--	--	--
Cache	690	40	3	1	44
Davis	105	8	0	7	15
Morgan	--	0	6	0	6
Rich	--	--	--	--	--
Summit	--	0	44	0	44
Weber	--	--	--	--	--
REGIONAL TOTALS	795	48	53	8	109
Central Region					
Juab	--	--	--	--	--
Salt Lake	--	--	--	--	--
Sanpete	580	54	2	7	63
Tooele	25	3	0	0	3
Utah	30	3	0	0	3
Wasatch	--	--	--	--	--
REGIONAL TOTALS	635	60	2	7	9
Southern Region					
Beaver	--	--	--	--	--
Garfield	--	--	--	--	--
Iron	--	--	--	--	--
Kane	--	--	--	--	--
Millard	--	--	--	--	--
Piute	--	--	--	--	--
Sevier	--	--	--	--	--
Washington	45	1	2	0	3
Wayne	--	--	--	--	--
REGIONAL TOTALS	45	1	2	0	3
Northeastern Region					
Daggett	175	19	0	0	19
Duchesne	115	15	0	1	16
Uintah	283	32	3	5	40
REGIONAL TOTALS	573	66	3	6	75
Southeastern Region					
Carbon	--	--	--	--	--
Emery	--	--	--	--	--
Garfield	220	23	0	0	23
Grand	60	5	0	4	9
San Juan	6	1	0	0	1
REGIONAL TOTALS	286	29	0	4	33
STATE TOTALS	2,334	204	60	25	289

Table 10. Summary of blue grouse hunter success and distribution of harvest and hunting pressure by region and county, 1989.

Region and County	Sample Size*	Hunter-days Afield	Birds Bagged	Birds per Hunter-day	% of Pressure	% of Harvest
NORTHERN REGION						
BOX ELDER	25	1,182	1,721	1.46	4.32	6.19
CACHE	61	4,708	4,272	0.91	17.20	15.37
DAVIS	8	539	435	0.81	1.97	1.57
MORGAN	20	1,887	1,223	0.65	6.89	4.40
RICH	15	1,140	601	0.53	4.17	2.16
SUMMIT	18	1,078	871	0.81	3.94	3.13
WEBER	44	2,841	3,007	1.06	10.38	10.82
REGIONAL TOTALS	191	13,378	12,134	0.91	48.86	43.66
CENTRAL REGION						
JUAB	6	497	248	0.50	1.82	0.90
SALT LAKE	8	601	477	0.79	2.20	1.72
SANPETE	21	891	1,078	1.21	3.26	3.88
TOOELE	29	1,078	1,991	1.85	3.94	7.16
UTAH	36	2,032	2,219	1.09	7.42	7.99
WASATCH	21	1,597	1,431	0.90	5.83	5.15
REGIONAL TOTALS	121	6,699	7,446	1.11	24.47	26.79
SOUTHERN REGION						
BEAVER	5	145	228	1.57	0.53	0.82
GARFIELD	9	497	725	1.46	1.82	2.61
IRON	10	643	622	0.97	2.35	2.24
KANE	2	62	103	1.67	0.23	0.37
MILLARD	13	601	871	1.45	2.20	3.13
PIUTE	5	290	331	1.14	1.06	1.19
SEVIER	31	1,576	2,509	1.59	5.76	9.03
WASHINGTON	0	0	0	0.00	0.00	0.00
WAYNE	4	186	124	0.67	0.68	0.45
REGIONAL TOTALS	79	4,003	5,517	1.38	14.62	19.85
NORTHEASTERN REGION						
DAGGETT	3	145	62	0.43	0.53	0.22
DUCHESNE	9	456	311	0.68	1.67	1.12
UINTAH	29	1,970	1,597	0.81	7.20	5.75
REGIONAL TOTALS	41	2,572	1,970	0.77	9.39	7.09
SOUTHEASTERN REGION						
CARBON	6	186	207	1.11	0.68	0.75
EMERY	3	82	145	1.75	0.30	0.52
GRAND	1	20	82	4.00	0.08	0.30
SAN JUAN	2	62	82	1.33	0.23	0.30
REGIONAL TOTALS	12	352	518	1.47	1.29	1.87
UNKNOWN	4	373	207	0.56	1.36	0.75
STATE TOTALS	448	27,379	27,794	1.02	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, 1989.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	15	912	622	0.68	4.46	3.81
CACHE	46	4,272	2,489	0.58	20.87	15.25
DAVIS	7	497	435	0.88	2.43	2.67
MORGAN	16	1,576	1,887	1.20	7.70	11.56
RICH	16	808	560	0.69	3.95	3.43
SUMMIT	16	1,223	1,037	0.85	5.98	6.35
WEBER	37	2,654	1,700	0.64	12.97	10.42
REGIONAL TOTALS	153	11,947	8,732	0.73	58.36	53.50
CENTRAL REGION						
JUAB	5	394	352	0.89	1.93	2.16
SALT LAKE	5	311	145	0.47	1.52	0.89
SANPETE	20	912	808	0.89	4.46	4.96
TOOELE	2	82	124	1.50	0.41	0.76
UTAH	25	1,327	1,244	0.94	6.48	7.62
WASATCH	15	1,286	974	0.76	6.28	5.97
REGIONAL TOTALS	72	4,314	3,650	0.85	21.07	22.36
SOUTHERN REGION						
BEAVER	3	103	103	1.00	0.51	0.64
GARFIELD	1	20	41	2.00	0.10	0.25
IRON	1	62	20	0.33	0.30	0.13
KANE	0	0	0	0.00	0.00	0.00
MILLARD	9	414	560	1.35	2.03	3.43
PIUTE	2	103	103	1.00	0.51	0.64
SEVIER	27	1,763	1,949	1.11	8.61	11.94
WASHINGTON	0	0	0	0.00	0.00	0.00
WAYNE	4	290	207	0.71	1.42	1.27
REGIONAL TOTALS	47	2,758	2,986	1.08	13.48	18.30
NORTHEASTERN REGION						
DAGGETT	3	228	103	0.45	1.11	0.64
DUCHESNE	11	539	394	0.73	2.63	2.41
UINTAH	6	331	248	0.75	1.62	1.52
REGIONAL TOTALS	20	1,099	746	0.68	5.37	4.57
SOUTHEASTERN REGION						
CARBON	0	0	0	0.00	0.00	0.00
EMERY	1	41	41	1.00	0.20	0.25
GRAND	1	20	82	4.00	0.10	0.51
SAN JUAN	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	2	62	124	2.00	0.30	0.76
UNKNOWN	2	290	82	0.29	1.42	0.51
STATE TOTALS	296	20,472	16,323	0.80	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, 1989.

Region and County	Sample Size*	Hunter-days Afield	Birds Bagged	Birds per Hunter-day	% of Pressure	% of Harvest
NORTHERN REGION						
BOX ELDER	46	2,302	2,281	0.99	4.55	5.02
CACHE	131	8,213	6,907	0.84	16.22	15.18
DAVIS	27	1,140	891	0.78	2.25	1.96
MORGAN	38	2,572	3,152	1.23	5.08	6.93
RICH	49	2,800	1,182	0.42	5.53	2.60
SUMMIT	51	2,343	2,094	0.89	4.63	4.61
WEBER	87	4,729	4,708	1.00	9.34	10.35
REGIONAL TOTALS	429	24,102	21,219	0.88	47.60	46.65
CENTRAL REGION						
JUAB	16	850	601	0.71	1.68	1.32
SALT LAKE	14	891	684	0.77	1.76	1.50
SANPETE	61	3,194	2,074	0.65	6.31	4.56
TOOELE	37	1,306	2,281	1.75	2.58	5.02
UTAH	74	3,484	3,463	0.99	6.88	7.62
WASATCH	54	3,194	2,489	0.78	6.31	5.47
REGIONAL TOTALS	256	12,922	11,594	0.90	25.52	25.49
SOUTHERN REGION						
BEAVER	13	435	373	0.86	0.86	0.82
GARFIELD	14	622	788	1.27	1.23	1.73
IRON	15	808	643	0.79	1.60	1.41
KANE	3	82	103	1.25	0.16	0.23
MILLARD	25	1,265	1,597	1.26	2.50	3.51
PIUTE	9	435	435	1.00	0.86	0.96
SEVIER	71	3,650	4,501	1.23	7.21	9.90
WASHINGTON	2	41	0	0.00	0.08	0.00
WAYNE	9	435	331	0.76	0.86	0.73
REGIONAL TOTALS	161	7,778	8,773	1.13	15.36	19.29
NORTHEASTERN REGION						
DAGGETT	9	497	207	0.42	0.98	0.46
DUCHESNE	21	788	725	0.92	1.56	1.60
UINTAH	49	2,945	1,970	0.67	5.82	4.33
REGIONAL TOTALS	79	4,231	2,903	0.69	8.36	6.38
SOUTHEASTERN REGION						
CARBON	14	622	228	0.37	1.23	0.50
EMERY	8	311	186	0.60	0.61	0.41
GRAND	4	145	165	1.14	0.29	0.36
SAN JUAN	3	82	82	1.00	0.16	0.18
REGIONAL TOTALS	29	1,161	663	0.57	2.29	1.46
UNKNOWN	7	435	331	0.76	0.86	0.73
STATE TOTALS	961	50,631	45,487	0.90	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 13. Summary of forest grouse bagged per hunter-day by region and county, 1983-89.

Region and County	Year						
	1983	1984	1985	1986	1987	1988	1989
<u>Northern Region</u>							
Box Elder	0.87	0.60	0.45	0.60	0.68	1.03	0.99
Cache	1.04	0.76	0.90	0.96	1.07	1.24	0.84
Davis	0.98	0.66	0.50	0.50	0.71	0.98	0.78
Morgan	1.01	0.44	0.88	0.64	1.00	0.99	1.23
Rich	0.65	0.86	0.75	0.39	1.56	0.92	0.42
Summit	0.75	0.54	0.70	0.63	1.25	0.86	0.89
Weber	0.84	0.60	0.60	0.85	1.41	0.99	1.00
REGIONAL TOTALS	0.92	0.66	0.71	0.76	1.12	1.07	0.88
<u>Central Region</u>							
Juab	0.77	0.43	1.00	0.14	1.14	0.86	0.71
Salt Lake	0.84	1.25	0.65	0.75	1.05	0.87	0.77
Sanpete	0.60	0.99	0.72	0.67	1.12	0.84	0.65
Tooele	0.97	0.40	1.00	0.89	1.24	1.33	1.75
Utah	0.85	0.84	0.86	0.59	1.04	1.08	0.99
Wasatch	0.76	0.43	0.59	0.51	.94	0.74	0.78
REGIONAL TOTALS	0.78	0.78	0.75	0.62	1.07	0.97	0.90
<u>Southern Region</u>							
Beaver	1.13	1.05	0.59	1.00	0.91	1.31	0.86
Garfield	1.09	0.67	0.79	0.27	0.57	1.00	1.27
Iron	1.03	0.59	0.94	1.21	0.74	1.08	0.79
Kane	0.05	0.67	0.78	0.14	2.33	1.50	1.25
Millard	0.54	0.64	0.50	1.14	0.75	1.36	1.26
Piute	1.16	1.27	0.94	1.42	1.19	1.34	1.00
Sevier	1.03	0.73	0.77	0.88	1.00	1.18	1.23
Washington	0.42	0.00	2.14	2.01	0.17	0.10	0.00
Wayne	0.46	0.34	1.09	0.33	0.90	0.25	0.76
REGIONAL TOTALS	0.89	0.82	0.82	0.98	0.93	1.16	1.13
<u>Northeastern Region</u>							
Daggett	1.00	0.47	0.94	1.19	1.10	0.65	0.42
Duchesne	0.99	0.67	0.60	1.07	1.29	0.98	0.92
Uintah	0.98	1.23	0.94	1.19	1.63	0.91	0.67
REGIONAL TOTALS	0.98	0.96	0.83	1.16	1.43	0.88	0.69
<u>Southeastern Region</u>							
Carbon	0.48	0.00	0.71	0.83	0.92	0.48	0.37
Emery	0.70	0.90	0.35	0.65	0.96	1.06	0.60
Grand	0.25	1.60	0.64	1.29	1.91	0.81	1.14
San Juan	0.25	0.67	0.20	0.67	1.00	0.67	1.00
REGIONAL TOTALS	0.54	0.86	0.52	0.81	1.14	0.79	0.57
Unknown Counties	1.33	1.00	1.00	0.00	0.55	0.70	0.76
STATE TOTALS	0.87	0.75	0.74	0.79	1.09	1.04	0.90

Table 14. Percentage distribution of forest grouse harvest by region and county, 1983-89.

Region and County	Year						
	1983	1984	1985	1986	1987	1988	1989
Northern Region							
Box Elder	4.31	3.38	2.23	2.59	1.62	3.83	5.02
Cache	22.58	15.72	17.35	21.23	14.98	21.10	15.18
Davis	5.73	4.48	5.66	2.50	1.83	3.14	1.96
Morgan	3.42	2.88	3.90	3.02	1.13	2.64	6.93
Rich	2.76	3.78	4.26	2.24	4.05	4.55	2.60
Summit	3.78	2.49	3.52	2.93	4.65	3.55	4.61
Weber	8.58	7.86	4.91	10.44	6.65	9.53	10.35
REGIONAL TOTALS	51.16	49.59	41.85	44.96	34.93	48.37	46.65
Central Region							
Juab	1.60	1.19	1.02	0.26	1.29	1.12	1.32
Salt Lake	2.80	4.48	2.41	1.81	1.18	1.40	1.50
Sanpete	4.89	6.97	5.84	4.57	6.43	4.70	4.56
Tooele	3.06	1.00	2.87	4.74	3.94	4.17	5.02
Utah	10.67	13.34	9.65	8.02	10.22	9.47	7.62
Wasatch	3.69	2.58	5.01	3.02	3.94	3.05	5.47
REGIONAL TOTALS	26.71	29.56	26.80	22.43	27.04	23.94	25.49
Southern Region							
Beaver	0.80	2.09	2.13	0.86	1.56	0.65	0.82
Garfield	1.64	1.39	1.39	0.26	0.64	0.74	1.73
Iron	1.64	1.59	2.87	3.53	1.40	1.77	1.41
Kane	0.04	0.59	0.65	0.08	0.37	0.18	0.23
Millard	0.31	0.70	0.65	3.45	1.13	1.77	3.51
Piute	0.98	5.57	1.48	2.33	2.05	2.80	0.96
Sevier	4.71	4.38	4.45	6.56	11.35	10.84	9.90
Washington	0.22	0.00	1.39	0.52	0.05	0.03	0.00
Wayne	0.27	0.40	1.11	0.17	0.48	0.09	0.73
REGIONAL TOTALS	10.61	16.72	16.14	17.77	19.09	18.92	19.92
Northeastern Region							
Daggett	0.84	0.89	1.48	3.19	1.73	0.93	0.46
Duchesne	3.78	1.59	2.50	2.67	4.75	1.55	1.60
Uintah	3.73	7.56	6.21	6.03	8.27	3.64	4.33
REGIONAL TOTALS	8.35	10.05	10.20	11.91	14.76	6.14	6.38
Southeastern Region							
Carbon	0.71	0.00	2.23	0.86	0.64	0.43	0.50
Emery	1.38	1.79	1.11	0.95	1.29	1.15	0.41
Grand	0.09	0.79	1.48	0.77	1.13	0.68	0.36
San Juan	0.13	0.40	0.18	0.34	0.43	0.12	0.18
REGIONAL TOTALS	2.30	2.99	5.01	2.93	3.51	2.40	1.46
Unknown Counties	0.89	0.10	0.00	0.00	0.64	0.21	0.73
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, 1983-89.

Region and County	Year						
	1983	1984	1985	1986	1987	1988	1989
<u>Northern Region</u>							
Box Elder	4.30	4.25	3.63	4.65	2.60	3.84	4.55
Cache	18.86	15.35	14.18	14.69	15.26	17.65	16.22
Davis	5.11	5.07	8.29	3.90	2.84	3.32	2.25
Morgan	2.94	4.91	3.29	3.15	1.24	2.77	5.08
Rich	3.72	3.28	4.18	4.05	2.84	5.13	5.53
Summit	4.41	3.42	3.70	4.50	4.08	4.26	4.63
Weber	8.87	9.69	6.02	9.00	5.14	9.94	9.34
REGIONAL TOTALS	48.22	45.97	43.29	43.93	34.02	46.93	47.60
<u>Central Region</u>							
Juab	1.82	2.08	0.75	1.50	1.24	1.35	1.68
Salt Lake	2.90	2.68	2.74	2.40	1.24	1.67	1.76
Sanpete	7.09	5.29	5.96	4.65	6.27	5.77	6.31
Tooele	2.75	1.86	2.12	3.90	3.49	3.26	2.58
Utah	10.96	11.84	8.29	10.49	10.76	9.10	6.88
Wasatch	4.22	4.54	6.23	4.50	4.61	4.29	6.31
REGIONAL TOTALS	29.74	28.31	26.09	27.44	27.63	25.46	25.52
<u>Southern Region</u>							
Beaver	0.62	1.49	2.67	1.05	1.89	0.51	0.86
Garfield	1.31	1.56	1.30	1.05	1.24	0.77	1.23
Iron	1.39	2.01	2.26	2.25	2.07	1.71	1.60
Kane	0.85	0.67	0.61	0.75	0.17	0.12	0.16
Millard	0.50	0.82	0.96	1.35	1.65	1.35	2.50
Piute	0.74	3.28	1.16	1.20	1.89	2.16	0.86
Sevier	3.99	4.47	4.24	6.30	12.48	9.52	7.21
Washington	0.46	0.00	0.48	0.30	0.35	0.32	0.08
Wayne	0.50	0.89	0.75	0.75	0.59	0.38	0.86
REGIONAL TOTALS	10.38	15.20	14.45	15.00	22.36	16.88	15.36
<u>Northeastern Region</u>							
Daggett	0.74	1.41	1.16	2.10	1.71	1.48	0.98
Duchesne	3.33	1.79	3.08	3.45	4.02	1.64	1.56
Uintah	3.33	4.62	4.86	4.35	5.56	4.13	5.82
REGIONAL TOTALS	7.40	7.82	9.10	9.90	11.30	7.26	8.36
<u>Southeastern Region</u>							
Carbon	1.20	0.30	2.33	0.45	0.76	0.93	1.23
Emery	1.70	1.49	2.33	1.80	1.47	1.12	0.61
Grand	0.31	0.37	1.71	0.75	0.65	0.87	0.29
San Juan	0.46	0.44	0.68	0.75	0.47	0.19	0.16
REGIONAL TOTALS	3.67	2.61	7.05	3.75	3.37	3.12	2.29
Unknown Counties	0.57	0.07	0.00	0.00	1.30	0.32	0.86
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 16. Statewide summary of forest grouse harvest statistics, 1963-89.

Year	Total			Total Harvest			Hunter-days			Grouse/Hunter-day			Grouse Per Hunter			
	Hunters	Ruffed	Blue	Percent	Blue	Percent	Unknown	Percent	Total	Afield	Ruffed	Blue	Total	Ruffed	Blue	Total
1963	7,425	5,470	(40.2)	7,372	(54.2)	766	(5.6)	13,608	12,313	0.44	0.66	1.11	0.74	0.99	1.83	
1964	6,487	5,354	(42.2)	6,685	(57.7)	652	(5.1)	12,691	10,566	0.51	0.63	1.20	0.82	1.03	1.96	
1965	6,005	3,225	(37.2)	4,924	(56.8)	520	(6.0)	8,669	10,504	0.31	0.47	0.83	0.54	0.82	1.44	
1966	6,683	6,966	(56.6)	4,659	(37.8)	696	(5.7)	12,321	12,387	0.56	0.38	0.99	1.04	0.68	1.84	
1967	9,420	8,476	(48.4)	6,773	(38.6)	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	(52.6)	12,604	(38.9)	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	(44.1)	10,419	(48.5)	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	(48.9)	13,515	(42.4)	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	(49.4)	13,749	(43.1)	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	(48.6)	19,221	(45.2)	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	(15.8)	36,846	(81.4)	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	(39.3)	32,236	(51.6)	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	(37.1)	23,138	(54.5)	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	(37.1)	35,660	(56.2)	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	(37.1)	23,455	(55.2)	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	(37.2)	46,651	(57.2)	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	(38.7)	33,070	(55.3)	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	(34.0)	27,588	(60.6)	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	(30.7)	17,852	(64.0)	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	(34.5)	12,138	(55.7)	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	(37.8)	16,955	(56.4)	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	(33.2)	12,647	(62.0)	969	(4.8)	20,396	27,244	0.25	0.46	0.75	0.59	1.10	1.77	
1985	12,646	8,701	(37.7)	13,416	(58.1)	980	(4.2)	23,097	31,290	0.28	0.43	0.74	0.69	1.06	1.83	
1986	12,117	8,819	(36.9)	14,156	(59.3)	894	(3.7)	23,869	30,312	0.29	0.47	0.79	0.73	1.17	1.97	
1987	14,831	15,811	(34.9)	28,068	(61.9)	1,447	(3.2)	45,326	41,428	0.38	0.68	1.09	1.07	1.89	3.06	
1988	16,947	19,100	(35.7)	31,556	(58.9)	2,906	(5.4)	53,562	51,726	0.37	0.61	1.04	1.13	1.86	3.16	
1989	16,987	16,323	(35.9)	27,794	(61.1)	1,370	(3.0)	45,487	50,631	0.32	0.55	0.90	0.96	1.64	2.68	
			(1061.8)		(1472.6)		(170.5)									

TOTALS (1963-89) 400,354 366,726 (35.9) 533,147 (61.1) 59,644 (3.0) 959,517 975,322 (10.54) (14.24) (26.39) (24.20) (33.82) (61.89)

AVERAGES (1963-88) 14,199 12,978 (38.0) 18,717 (52.3) 2,158 (6.2) 33,853 34,248 0.39 0.53 0.98 0.90 1.25 2.29

Table 17. Blue and ruffed grouse harvest statistics and hunt regulations, 1963-1989.

Year	Total Ruffed Grouse Harvest		Total Blue Grouse Harvest		Total Forest Grouse Harvest		Total Hunters Afield		Total Hunter Days Afield		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	21	?	?	4	4	8	
1965	3,225	4,924	8,669	6,005	10,504	9/25	10/22	28	9/25	10/22	4	4	8	
1966	6,966	4,659	12,321	6,683	12,387	9/24	10/21	28	9/24	10/21	4	4	8	
1967	8,476	6,773	17,526	9,420	17,773	9/23	10/31	39	9/23	10/31	4	4	8	
1968	17,048	12,604	32,414	13,061	26,537	9/28	10/29	32	9/28	10/29	4	4	8	
1969	9,490	10,419	21,498	12,523	24,572	9/27	11/2	37	9/27	11/2	4	4	8	
1970	15,590	13,515	31,898	12,775	26,619	9/26	11/6	42	9/26	11/6	4	4	8	
1971	15,759	13,749	31,901	13,363	29,100	9/25	11/30	67	9/25	11/30	4	4	8	
1972	20,648	19,221	42,518	16,640	38,940	9/23	11/30	69	9/23	11/30	4	4	8	
1973	7,153	36,846	45,232	17,588	44,738	9/22	11/30	70	9/22	11/30	4	4	8	
1974	24,561	32,236	62,439	21,920	55,258	9/28	11/30	64	9/28	11/30	4	4	8	
1975	15,750	23,138	42,461	20,102	50,579	9/20	11/30	72	9/20	11/30	4	4	8	
1976	23,551	35,660	63,436	21,186	56,422	9/18	11/30	74	9/18	11/30	4	4	8	
1977	15,766	23,455	42,477	19,188	48,746	9/17	11/30	75	9/17	11/30	4	4	8	
1978	30,340	46,651	81,558	25,318	72,732	9/16	11/30	76	9/16	11/30	4	4	8	
1979	23,156	33,070	59,851	21,993	57,404	9/15	11/30	77	9/15	11/30	4	4	8	
1980	15,457	27,588	45,522	19,511	49,899	9/20	11/30	72	9/20	11/30	4	4	8	
1981	8,557	17,852	27,894	14,329	34,305	9/19	11/30	73	9/19	11/30	4	4	8	
1982	7,509	12,138	21,778	12,384	28,767	9/18	11/30	74	9/18	11/30	4	4	8	
1983	11,366	16,955	30,088	13,414	34,530	9/17	11/30	75	9/17	11/30	4	4	8	
1984	6,780	12,647	20,396	11,511	27,244	9/15	11/30	77	9/15	11/30	4	4	8	
1985	8,701	13,416	23,097	12,646	31,290	9/14*	11/30	78	9/14*	11/30	4	4	8	
1986	8,819	14,156	23,869	12,117	30,312	9/13	11/30	79	9/13	11/30	4	4	8	
1987	15,811	28,068	45,326	14,831	41,428	9/12	11/30	80	9/12	11/30	4	4	8	
1988	19,100	31,556	53,562	16,947	51,726	9/11	11/30	82	9/11	11/30	4	4	8	
1989	16,323	27,794	45,487	16,987	50,631	9/09	11/30	82	9/09	11/30	4	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, 1989.

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	21	54	306	136	44	18	47	297	124	42	2.60
Cache	168	321	1,431	116	8	168	321	1,431	116	8	0.36
Davis	2	6	7	4	57	1	4	5	2	40	0.50
Morgan	--	--	--	--	--	--	--	--	--	--	--
Rich	15	31	140	10	7	15	31	140	10	7	0.32
Summit	1	2	--	1	--	--	--	--	--	--	--
Weber	13	30	84	16	19	13	30	84	16	19	0.53
REGIONAL TOTALS	220	444	1,958	283	14	215	433	1,954	268	14	0.62
<u>Central Region</u>											
Juab	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--
Sanpete	3	7	18	6	33	3	7	18	6	33	0.86
Tooele	11	25	59	16	27	8	18	55	16	29	2.00
Utah	29	49	180	58	32	16	26	128	50	39	1.90
Wasatch	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	43	81	257	80	31	27	51	201	72	36	1.41
<u>Southern Region</u>											
Beaver	--	--	--	--	--	--	--	--	--	--	--
Garfield	1	4	2	11	550	1	4	2	11	550	2.75
Iron	2	4	--	9	--	2	4	--	9	--	2.25
Kane	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	3	8	2	20	1,000	3	8	2	20	1,000	2.50
<u>Northeastern Region</u>											
Daggett	11	33	98	34	35	3	13	34	11	32	0.85
Duchesne	--	--	--	--	--	--	--	--	--	--	--
Uintah	72	194	678	71	11	31	79	375	25	7	0.32
REGIONAL TOTALS	83	227	776	105	14	34	92	409	36	9	0.40
<u>Southeastern Region</u>											
Carbon	3	6	22	7	32	3	6	22	7	32	1.20
Emery	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	3	6	22	7	32	3	6	22	7	32	1.20
STATE TOTALS	352	766	3,025	495	16	282	590	2,588	403	16	0.68

Table 19. Forest grouse hunter success trend determined by field bag checks, 1984-89.

Region and County	1984		1985		1986		1987		1988		1989	
	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	4	0.10	--	--	35	1.42	39	3.50	50	2.83	42	2.60
Cache	15	0.56	15	0.70	15	0.57	17	0.74	28	1.15	8	0.63
Davis	18	0.67	--	--	--	0.00	16	0.56	16	0.50	40	0.50
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	13	0.57	6	0.23	6	0.2	10	0.44	14	0.52	7	0.32
Summit	--	--	--	--	200	2.00	--	--	--	--	--	--
Weber	2	0.08	26	0.86	10	0.38	29	0.93	20	0.56	19	0.53
REGIONAL TOTALS	13	0.47	14	0.58	14	0.50	16	0.71	23	0.88	14	0.62
<u>Central Region</u>												
Juab	22	0.59	--	--	--	--	--	--	108	3.25	56	2.30
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	17	0.50	--	--	--	--	--	--	--	--	33	0.86
Tooele	--	--	46	1.50	--	--	13	0.51	133	3.00	29	2.00
Utah	9	0.39	4	0.13	10	0.39	--	--	20	0.86	39	1.90
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	11	0.43	7	0.27	10	0.39	13	0.51	26	1.07	33	1.41
<u>Southern Region</u>												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	10	0.33	25	1.00	--	--	--	--	550	2.75
Iron	--	--	--	--	--	--	--	--	200	3.75	--	2.25
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	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	89	1.33	10	0.40	17	0.63	82	2.00	190	3.64	1,000	2.50
<u>Northeastern Region</u>												
Daggett	--	--	20	1.10	--	--	46	1.20	38	1.50	32	0.85
Duchesne	26	1.15	0	0.00	16	0.55	33	1.00	--	--	--	--
Uintah	29	1.25	32	1.22	12	0.43	53	1.46	24	0.47	7	0.32
REGIONAL TOTALS	28	1.22	25	1.08	13	0.45	50	1.37	26	0.52	9	0.40
<u>Southeastern Region</u>												
Carbon	--	--	39	1.17	--	--	--	--	--	--	32	1.20
Emery	--	--	133	1.33	333	2.50	--	--	--	--	--	--
Grand	--	--	50	1.00	50	0.50	--	--	--	--	--	--
San Juan	--	--	--	--	33	1.00	--	--	--	--	--	--
REGIONAL TOTALS	--	--	52	1.20	54	1.40	--	--	--	--	32	1.20
STATE TOTALS	14	0.54	14	0.57	14	0.50	18	0.75	25	0.94	16	0.68

Table 20. Sex and age composition of harvested blue grouse, 1989.

Region and County	Sample Size	Adults			Young			Young/100 Adults	Young/100 Hens
		M	F	Total	M	F	Total*		
Northern Region									
Box Elder	---	---	---	---	---	---	---	---	---
Cache	---	---	---	---	---	---	---	---	---
Davis	---	---	---	---	---	---	---	---	---
Morgan	---	---	---	---	---	---	---	---	---
Rich	---	---	---	---	---	---	---	---	---
Summit	---	---	---	---	---	---	---	---	---
Weber	---	---	---	---	---	---	---	---	---
REGIONAL TOTALS*	151	31	22	53	48	50	98	185	445
Central Region									
Juab	---	---	---	---	---	---	---	---	---
Salt Lake	---	---	---	---	---	---	---	---	---
Sanpete	---	---	---	---	---	---	---	---	---
Tooele	31	6	9	15	3	13	16	107	178
Utah	26	5	4	9	8	9	17	189	425
Wasatch	---	---	---	---	---	---	---	---	---
REGIONAL TOTALS	57	11	13	24	11	22	33	138	254
Southern Region									
Beaver	---	---	---	---	---	---	---	---	---
Garfield	---	---	---	---	---	---	---	---	---
Iron	---	---	---	---	---	---	---	---	---
Kane	---	---	---	---	---	---	---	---	---
Millard	---	---	---	---	---	---	---	---	---
Piute	---	---	---	---	---	---	---	---	---
Sevier	---	---	---	---	---	---	---	---	---
Washington	---	---	---	---	---	---	---	---	---
Wayne	25	12	3	15	3	7	10	67	333
REGIONAL TOTALS	25	12	3	15	3	7	10	67	333
Northeastern Region									
Daggett	---	---	---	---	---	---	---	---	---
Duchesne	---	---	---	---	---	---	---	---	---
Uintah	80	31	18	49	10	21	31	63	172
REGIONAL TOTALS	80	31	18	49	10	21	31	63	172
Southeastern Region									
Carbon	---	---	---	---	---	---	---	---	---
Emery	---	---	---	---	---	---	---	---	---
Grand	---	---	---	---	---	---	---	---	---
San Juan	---	---	---	---	---	---	---	---	---
REGIONAL TOTALS	---	---	---	---	---	---	---	---	---
STATE TOTALS	313	85	56	141	72	100	172	122	307

*Includes portions of Box Elder, Cache, Rich, and Weber counties.

Table 21. Sex and age composition of harvested ruffed grouse, 1989.

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**	14	---	---	7	---	---	7	100	---
<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***	---	---	---	---	---	---	---	---	---

* Includes unclassified males and females.

** Includes portions of Cache, Rich, and Weber counties.

*** Insufficient sample size to calculate.

QUAIL

SUMMARY

The 1989 breeding populations of California quail were higher than in 1988, but were still below average. Production of Gambel's quail increased from 1988, but was below average. Production statewide declined in 1989 and was below average.

Statewide harvest statistics, when compared to 1988, showed an increase in total hunters and a decline in total harvest. Hunter success (birds per hunter-day) declined 16 percent and remained below average statewide. There was a 77 percent increase in hunter days afield and no change in 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. Bloomington, 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).



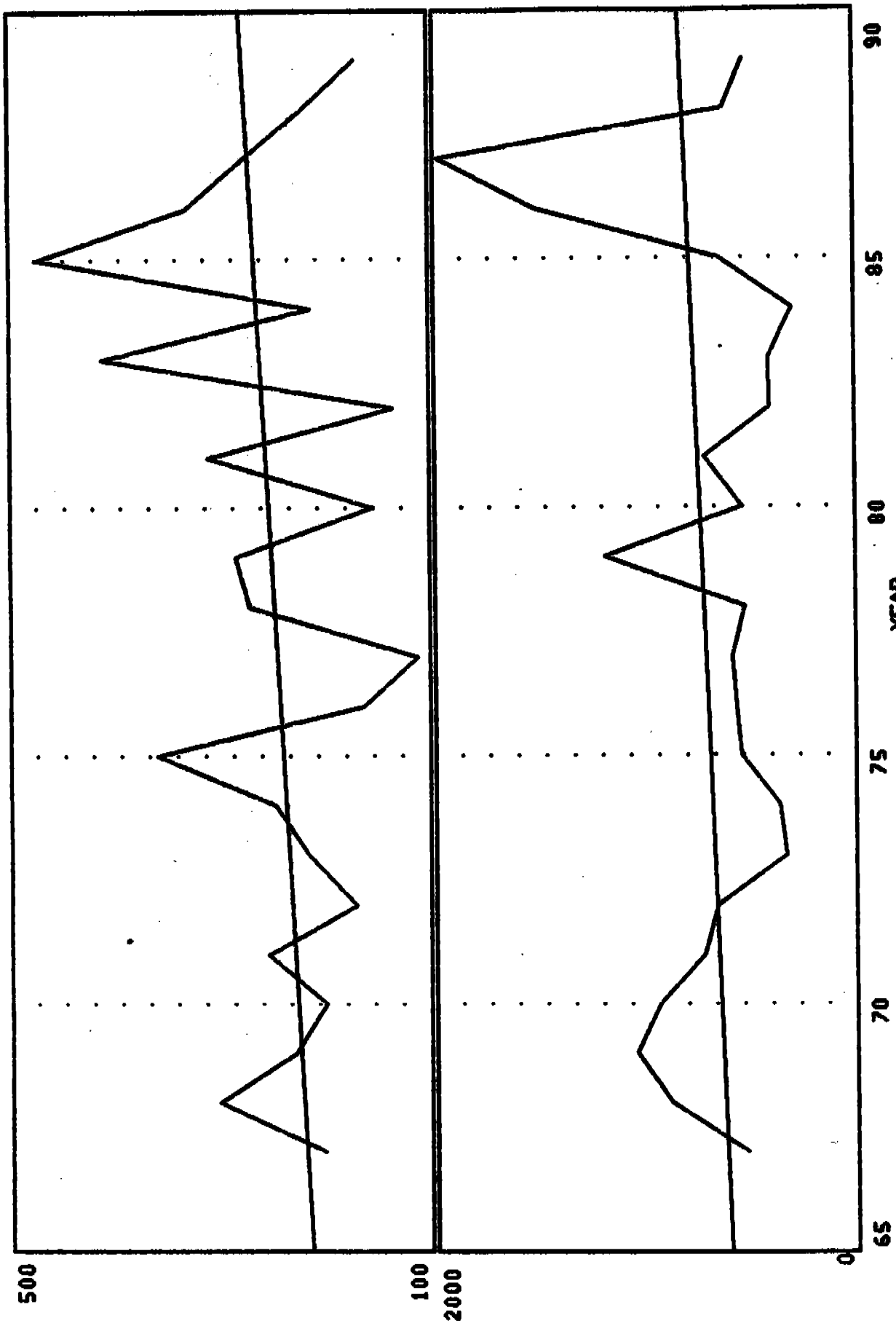


Figure 1. Statewide quail production indices, 1967-89.

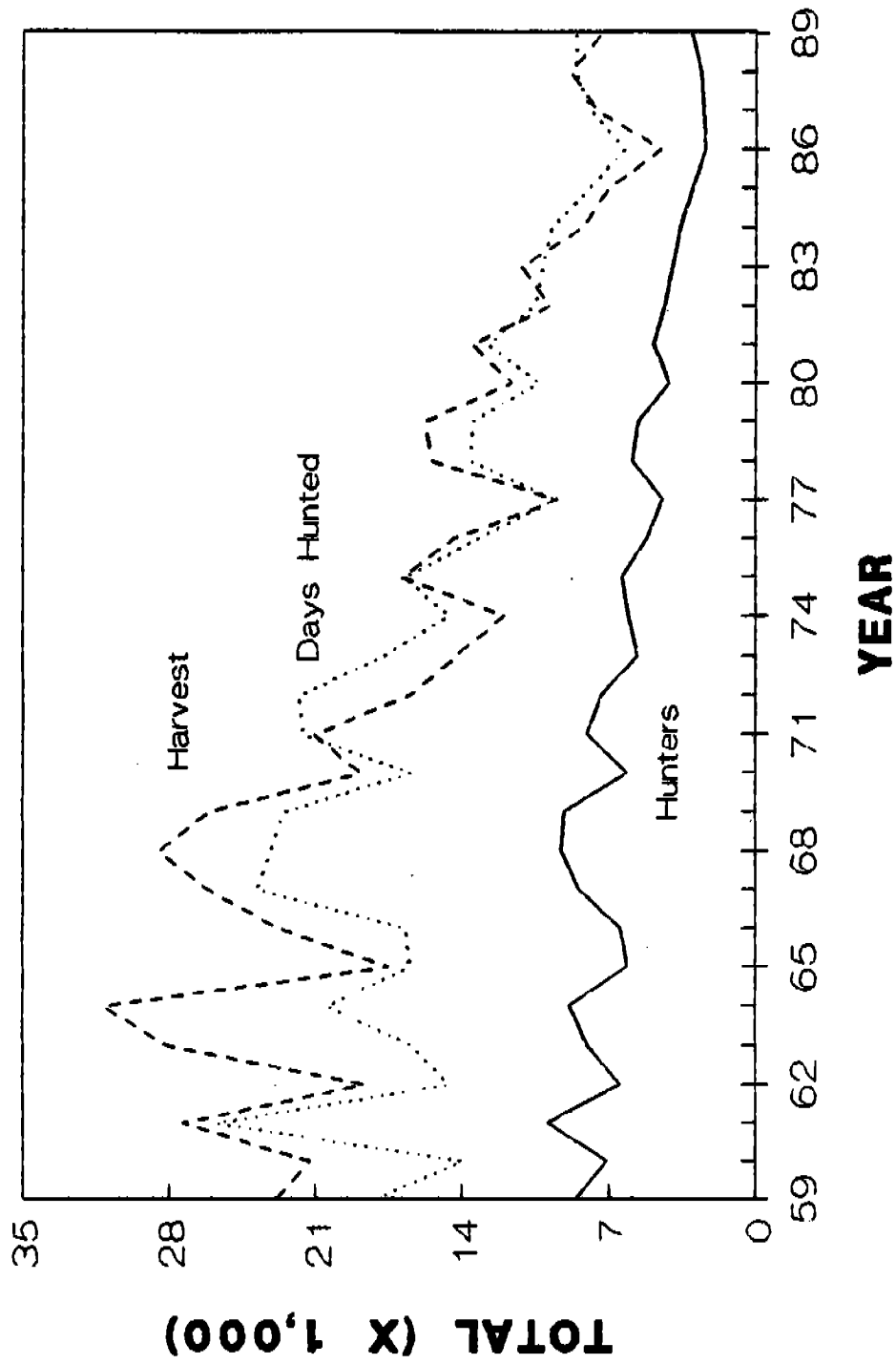


Figure 2. Statewide trend of quail harvest statistics, 1959-89.

Brood Counts

Results of the annual random brood counts for 1989 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 1989 compared to 1988 and the previous 10-year average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Total quail observed	89	-80	-83
Young per 100 adults	170	-23	-40
Mean brood size	4.50	-38	-36
Quail observed per 100 hours	524	-16	-37
Total hours effort	17	-69	-76

Harvest statistics for 1988 indicated an increased breeding population of quail statewide. In Washington County hunter success rates remained about the same as the previous year. Apparently, there was good overwinter survival.

Brood count effort was greatly reduced in 1989 due to excessive workloads. Only 89 quail were observed in 1989 which was 83 percent below the average of 516. Total hours of effort on brood counts was 17 compared to 71 hours average for the last 10 years. The production index of young per 100 adults for Gambel's quail was 54 percent higher than what it was the previous year. Production statewide declined from 1988 and was below average.

Temperatures were above average and precipitation below average in the Dixie climatic subdivision March through July. January and February were colder and dryer than normal. This drought did not foster good brood production.

Harvest

Results of the annual hunter questionnaire for 1989 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 1989 season to 1988 and the previous 30-year average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Quail hunters	3,111	+16	-49
Quail harvested	7,384	-17	-56
Hunter-days afield	8,607	-1	-43
Quail per hunter-day	0.86	-16	-21
Quail per hunter	2.37	-28	-13

Harvest for 1989 decreased 17 percent from 1988 and was 56 percent below average. This was consistent with decreased production of quail, perhaps due to drought.

In Washington County (Gambel's quail), hunter success decreased 45 percent but hunter days afield increased 77 percent from 1988. Total harvest remained about the same. Thirty-two percent of the statewide harvest of quail was taken in Washington County during 1989 compared to 28 percent in 1988, 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.

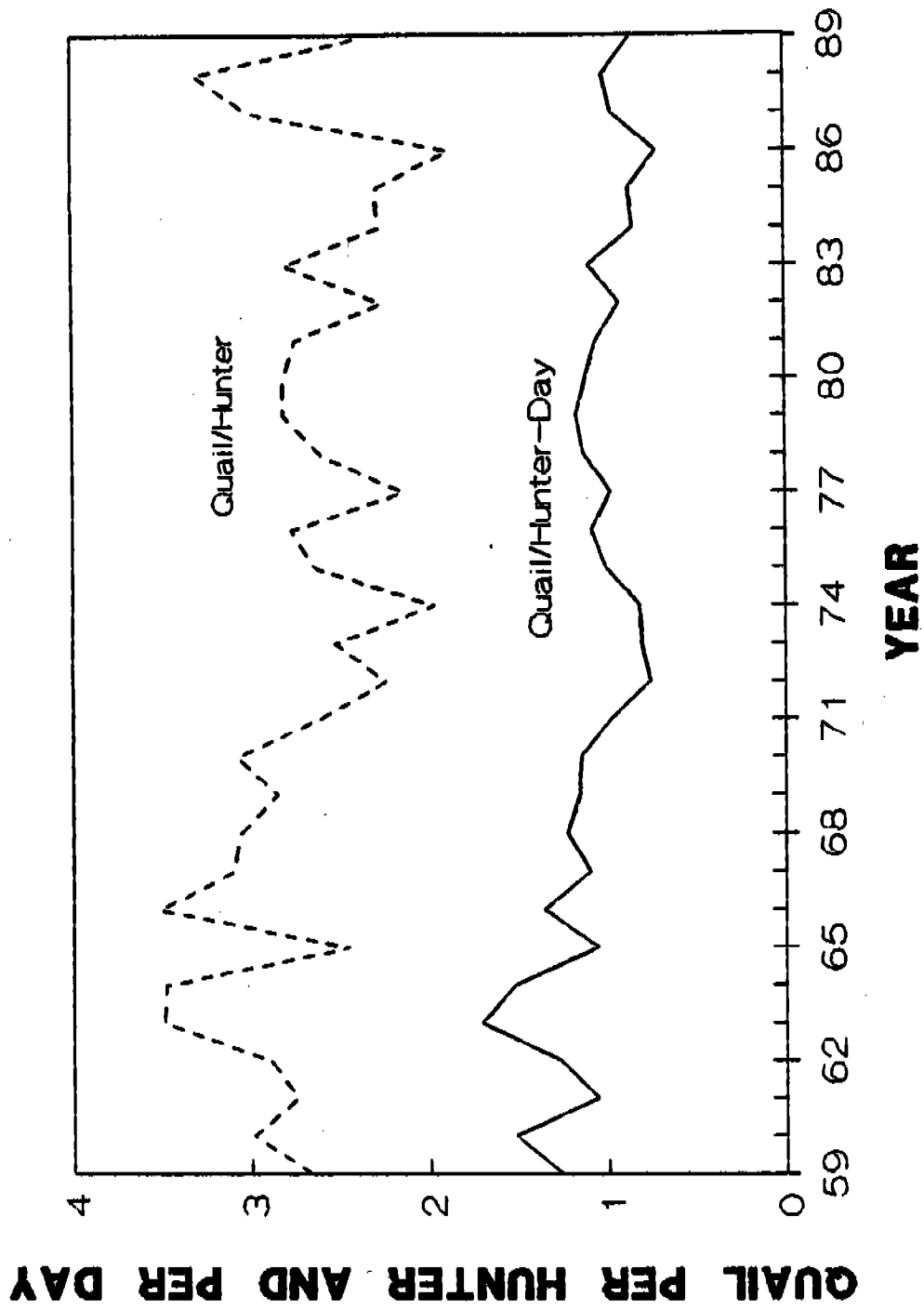


Figure 3. Statewide trend of quail hunter success rates, 1959-59.

Table 1. Quail summer inventory summary, 1989.

Region and County	Distinct Broods		Mean		Mixed Yng & Adults		Total Adults	Total Yng	Young/100 Ad	Veh. Miles	Hours of Effort		Birds/100 Hr
	# Ad	Yng	Brood	Ad	Yng	w/o Yng					Veh.	Horse	
Northern Region													
Box Elder	--	--	--	--	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS													
Central Region													
Juab	--	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS													
Southern Region													
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	15	35	3	18	35	194	145	10	0	53
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS													
Northeastern Region													
Baggett	--	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	0	0	--	0	0	0	0	0	--	72	6	0	6
Uintah	2	2	9	4.50	2	12	1	5	420	0	0	0	371
REGIONAL TOTALS													
Southeastern Region													
Carbon	--	--	--	--	--	--	--	--	--	72	6	0	7
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS													
STATE TOTALS													
	2	2	9	4.50	17	47	4	33	56	170	217	16	17
													524

Table 2. Trend of quail young per 100 adults, 1979-89.

Region and County	Year										Average 1979-88	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		1989
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	--	462
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	256	400	67	40	40	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	240	714	100	--	--	--	700	700	220	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	245	656	72	40	40	--	700	700	220	--	--	334
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
*Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	204	156	540	300	133	133	138	44	545	790	--	--
Plute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	700	--	--	250	--	--	--	--	--	--	--	--
*Washington	301	93	226	152	624	224	571	412	250	126	194	--
*Wayne	--	--	550	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	283	114	439	162	544	213	434	456	272	242	194	316
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	340	114	583	600	--	--	--	--	--	300	--	--
Uintah	653	338	305	411	--	--	--	--	--	135	420	--
REGIONAL TOTALS	517	282	367	286	--	--	--	--	--	177	420	326
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	300	--	--	--	--	--	--	--	--	--
San Juan	--	40	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	40	300	--	--	--	--	--	--	--	--	170
STATE TOTALS	285	155	311	134	412	213	473	331	276	220	170	281

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

Table 3. Trend of quail mean brood size from 1979-89.

Region and County	Year										Average 1979-88	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		1989
Northern Region												
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	--	7.75
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	4.60	4.00	--	--	3.00	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	4.00	5.00	3.00	--	--	--	7.00	7.50	11.00	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	4.43	4.50	3.00	--	3.00	--	7.00	7.50	11.00	--	--	5.78
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
*Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	11.25	5.63	8.54	--	3.00	4.00	9.00	1.80	12.00	11.28	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	7.00	--	--	--	--	--	--	--	--	--	--	--
*Washington	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	8.86	5.45	7.97	6.00	11.17	5.06	8.56	6.64	6.16	7.22	--	7.31
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	6.00	4.00	9.00	--	--	--	--	--	--	9.00	--	--
Uintah	6.34	3.55	12.80	6.17	--	--	--	--	--	8.50	4.50	--
REGIONAL TOTALS	6.17	3.59	11.71	6.17	--	--	--	--	--	8.15	4.50	7.16
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	4.50	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	4.50	--	--	--	--	--	--	--	--	4.50
STATE TOTALS	8.08	4.52	8.09	6.05	9.71	5.06	8.62	6.70	6.62	7.25	4.50	7.07

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

Table 4. Trend of quail observed per 100 hours, 1979-89.

Region and County	Year										Average 1979-88	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		1989
<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	--	--	943
<u>Central Region</u>												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	1,067	167	63	527	1,400	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	1,700	900	75	--	--	--	320	2,000	1,600	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	1,429	296	258	414	247	--	320	2,000	1,600	--	--	729
<u>Southern Region</u>												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
*Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	1,340	1,536	3,911	800	350	177	344	867	1,303	1,271	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	800	--	--	1,400	--	--	--	--	--	--	--	--
*Washington	2,741	675	275	771	605	380	783	1,604	2,029	530	53	--
*Wayne	--	--	650	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	1,951	867	1,053	691	580	357	663	1,484	1,958	527	53	960
<u>Northeastern Region</u>												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	209	79	205	27	42	--	--	--	--	356	--	--
Uintah	890	613	708	328	100	--	--	--	--	1,800	371	--
REGIONAL TOTALS	443	314	406	123	58	--	--	--	--	717	371	344
<u>Southeastern Region</u>												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	400	--	--	--	--	--	--	--	--	--
San Juan	127	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	127	--	400	--	--	--	--	--	--	--	--	264
STATE TOTALS	1,193	541	720	408	411	297	645	1,519	1,984	622	524	834

*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, 1989.

Region and County	Sample Size*	Hunter-Days Afield	Birds Bagged	Birds Per Hunter-Day	% of Pressure	% of Harvest
NORTHERN REGION						
BOX ELDER	4	207	186	0.90	2.41	2.53
CACHE**	4	103	20	0.20	1.20	0.28
DAVIS	6	186	124	0.67	2.17	1.69
MORGAN**	3	82	0	0.00	0.96	0.00
RICH**	0	0	0	0.00	0.00	0.00
SUMMIT**	0	0	0	0.00	0.00	0.00
WEBER	11	684	145	0.21	7.95	1.97
REGIONAL TOTALS	28	1,265	477	0.38	14.70	6.46
CENTRAL REGION						
JUAB	0	0	0	0.00	0.00	0.00
SALT LAKE	3	124	62	0.50	1.45	0.84
SANPETE**	4	165	41	0.25	1.93	0.56
TOOELE**	3	82	269	3.25	0.96	3.65
UTAH	39	1,866	1,576	0.84	21.69	21.35
WASATCH**	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	49	2,240	1,949	0.87	26.03	26.41
SOUTHERN REGION						
BEAVER	0	0	0	0.00	0.00	0.00
GARFIELD	0	0	0	0.00	0.00	0.00
IRON	2	62	103	1.67	0.72	1.40
KANE	0	0	0	0.00	0.00	0.00
MILLARD	9	435	394	0.90	5.06	5.34
PIUTE	0	0	0	0.00	0.00	0.00
SEVIER	0	0	0	0.00	0.00	0.00
WASHINGTON	28	1,887	2,385	1.26	21.93	32.30
WAYNE	1	103	82	0.80	1.20	1.12
REGIONAL TOTALS	40	2,489	2,966	1.19	28.92	40.17
NORTHEASTERN REGION						
DAGGETT	0	0	0	0.00	0.00	0.00
DUCHESNE	15	1,140	705	0.62	13.25	9.55
UINTAH	21	1,306	954	0.73	15.18	12.92
REGIONAL TOTALS	36	2,447	1,659	0.68	28.44	22.47
SOUTHEASTERN REGION						
CARBON	1	20	103	5.00	0.24	1.40
EMERY	5	124	62	0.50	1.45	0.84
GRAND	0	0	0	0.00	0.00	0.00
SAN JUAN	1	20	165	8.00	0.24	2.25
REGIONAL TOTALS	7	165	331	2.00	1.93	4.49
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	160	8,607	7,384	0.86	100.00	100.00

*Total hunter-trips from questionnaire returns.

**Closed to quail hunting in 1989.- 137 -

Table 6. Summary of quail bagged per hunter-day by region and county, 1983-89.

Region and County	Year						
	1983	1984	1985	1986	1987	1988	1989
Northern Region							
Box Elder	0.50	0.21	0.50	0.00	0.23	0.80	0.90
Cache	1.40	0.00	0.00	1.00	0.43	0.22*	0.20*
Davis	1.00	0.43	0.45	0.44	0.43	0.74	0.67
Morgan	2.50	0.00	1.00	1.00	2.00	1.00*	0.00*
Rich	0.00	0.00	0.00	0.00	0.00	1.00*	0.00*
Summit	0.29	0.00	0.00	0.40	0.00	0.00*	0.00*
Weber	1.08	0.64	0.71	0.69	0.11	0.35	0.21
REGIONAL TOTALS	0.94	0.40	0.54	0.50	0.35	0.60	0.38
Central Region							
Juab	2.00	0.33	0.00	2.00	0.00	1.38	0.00
Salt Lake	1.00	0.32	1.88	0.43	0.83	1.18	0.50
Sanpete	0.75	0.00	1.50	1.00	0.86	0.80*	0.25*
Tooele	2.00	0.22	1.50	0.33	1.00	1.24*	3.25*
Utah	0.86	0.82	0.60	0.72	0.59	0.46	0.84
Wasatch	2.67	1.25	0.00	0.00	0.50	1.13*	0.00
REGIONAL TOTALS	0.96	0.65	0.85	0.69	0.63	0.80	0.87
Southern Region							
Beaver	0.00	0.00	1.83	0.00	0.00	5.00	0.00
Garfield	0.00	0.00	0.00	0.00	0.00	5.00	0.00
Iron	0.00	1.50	0.00	0.00	0.00	0.00	1.67
Kane	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Millard	1.33	1.00	0.63	1.55	0.96	0.00	0.90
Piute	0.00	0.50	0.00	1.00	2.25	0.00	0.00
Sevier	0.00	0.86	1.80	0.00	0.00	1.50	0.00
Washington	1.53	1.98	1.23	1.27	2.33	2.30	1.26
Wayne	3.00	0.00	0.00	0.00	0.00	2.00	0.80
REGIONAL TOTALS	1.50	1.64	1.21	1.15	1.93	2.08	1.19
Northeastern Region							
Daggett	4.50	0.00	0.00	0.00	0.50	0.00	0.00
Duchesne	1.46	0.08	0.70	0.44	1.86	0.89	0.62
Uintah	0.70	0.72	1.00	0.70	0.52	0.87	0.73
REGIONAL TOTALS	1.11	0.54	0.86	0.63	0.81	0.88	0.68
Southeastern Region							
Carbon	0.40	0.00	1.00	0.00	1.00	0.38	5.00
Emery	0.76	0.00	0.31	1.14	1.06	1.11	0.50
Grand	0.00	0.00	0.00	0.00	0.50	0.80	0.00
San Juan	0.00	0.00	0.00	0.00	0.00	0.00	8.00
REGIONAL TOTALS	0.67	0.00	0.62	0.29	0.85	0.77	2.00
Unknown counties	0.00	0.00	0.00	0.00	0.00	2.00	0.00
STATE TOTALS	1.10	0.85	0.88	0.72	0.97	1.02	0.86

*Closed Season

Table 7. Percentage distribution of quail harvest by region and county, 1983-89.

Region and County	Year						
	1983	1984	1985	1986	1987	1988	1989
Northern Region							
Box Elder	1.54	0.98	0.30	0.00	0.96	1.50	2.53
Cache	0.83	0.00	0.00	0.44	1.92	0.37*	0.28*
Davis	9.03	6.11	5.16	3.59	1.92	6.98	1.69
Morgan	0.59	0.00	0.60	0.90	0.64	0.18*	0.00*
Rich	0.00	0.00	0.00	0.00	0.00	0.18*	0.00*
Summit	0.23	0.00	0.00	0.90	0.00	0.00*	0.00*
Weber	4.87	2.19	6.07	4.94	0.32	1.32	1.97
REGIONAL TOTALS	17.09	9.29	12.15	10.80	5.76	10.56	6.46
Central Region							
Juab	0.23	0.48	0.00	0.90	0.00	4.15	0.00
Salt Lake	4.16	1.46	9.11	2.69	1.60	3.77	0.84
Sanpete	0.71	0.00	0.91	0.44	3.84	0.75*	0.56*
Tooele	1.42	0.98	0.91	0.90	0.64	6.79*	3.65*
Utah	13.66	18.33	12.45	34.24	18.58	9.43	21.35
Wasatch	0.94	1.22	0.00	0.00	0.64	5.09*	0.00*
REGIONAL TOTALS	21.12	22.49	23.40	39.18	25.32	30.00	26.41
Southern Region							
Beaver	0.00	0.00	3.33	0.00	0.00	0.00	0.00
Garfield	0.00	0.00	0.00	0.00	0.00	2.83	0.00
Iron	0.00	0.72	0.00	0.00	0.00	1.88	1.40
Kane	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Millard	1.89	7.82	1.52	7.65	7.69	0.00	5.34
Piute	0.00	0.48	0.00	0.44	2.88	0.00	0.00
Sevier	0.00	1.46	2.72	0.00	0.00	0.56	0.00
Washington	24.37	46.45	35.56	29.27	42.62	27.73	32.30
Wayne	0.71	0.00	0.00	0.00	0.00	0.75	1.12
REGIONAL TOTALS	26.97	56.97	43.16	37.39	53.20	33.77	40.17
Northeastern Region							
Daggett	4.28	0.00	0.00	0.00	0.32	0.00	0.00
Duchesne	16.16	0.48	5.77	1.79	4.16	6.41	9.55
Uintah	12.24	10.76	9.11	7.19	3.84	11.32	12.92
REGIONAL TOTALS	32.68	11.24	14.89	9.00	8.33	17.73	22.47
Southeastern Region							
Carbon	0.23	0.00	4.85	0.00	0.32	0.56	1.40
Emery	1.89	0.00	1.52	3.59	5.44	1.88	0.84
Grand	0.00	0.00	0.00	0.00	1.60	0.75	0.00
San Juan	1.08	0.00	0.00	0.00	0.00	0.00	2.25
REGIONAL TOTALS	2.10	0.00	6.38	3.59	7.37	3.20	4.49
Unknown counties	0.00	0.00	0.00	0.00	0.00	4.71	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 quail hunting pressure by region and county, 1983-89.

Region and County	Year						
	1983	1984	1985	1986	1987	1988	1989
Northern Region							
Box Elder	3.39	3.93	0.53	1.94	4.02	1.92	2.41
Cache	0.64	0.61	1.06	0.32	4.33	1.73*	1.20*
Davis	9.93	12.00	10.18	5.85	4.33	9.61	2.17
Morgan	0.25	0.41	0.53	0.65	0.30	0.19*	0.96*
Rich	0.00	0.00	0.00	0.00	0.00	0.19*	0.00*
Summit	0.91	0.00	0.00	1.63	0.30	0.57*	0.00*
Weber	4.96	2.90	7.51	5.20	2.78	3.84	7.95
REGIONAL TOTALS	20.08	19.87	19.83	15.63	16.08	18.07	14.70
Central Region							
Juab	0.13	1.23	0.26	0.3	0.30	3.07	0.00
Salt Lake	4.57	3.93	4.28	4.55	1.85	3.26	1.45
Sanpete	1.04	0.61	0.53	0.32	4.33	0.96*	1.93*
Tooele	0.78	3.72	0.53	1.94	0.61	5.57*	0.96*
Utah	13.37	19.04	18.23	34.19	30.65	20.76	21.69
Wasatch	0.39	0.83	0.53	0.00	1.23	4.61*	0.00*
REGIONAL TOTALS	24.28	29.39	24.39	41.37	38.99	38.26	26.03*
Southern Region							
Beaver	0.00	0.00	1.60	1.63	0.00	0.00	0.00
Garfield	0.00	0.00	0.00	0.00	0.00	0.57	0.00
Iron	0.00	0.41	0.80	0.65	0.00	0.38	0.72
Kane	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Millard	1.56	6.62	2.14	3.57	7.73	2.50	5.06
Piute	0.00	0.83	0.00	0.32	1.23	0.00	0.00
Sevier	0.39	1.45	1.34	0.65	0.00	0.38	0.00
Washington	17.51	19.87	25.47	16.60	17.64	12.30	21.93
Wayne	0.25	0.20	0.00	0.00	0.00	0.38	1.20
REGIONAL TOTALS	19.72	29.39	31.36	23.44	26.62	16.52	28.92
Northeastern Region							
Daggett	1.56	0.00	0.00	0.00	0.61	0.00	0.00
Duchesne	12.14	4.97	7.23	2.92	2.16	7.30	13.25
Uintah	19.20	12.63	8.03	7.48	7.12	13.26	15.18
REGIONAL TOTALS	32.90	17.59	15.27	10.42	9.90	20.57	28.44
Southeastern Region							
Carbon	0.64	2.90	4.28	6.83	0.30	1.53	0.24
Emery	2.74	0.61	4.28	2.28	4.95	1.73	1.45
Grand	0.13	0.20	0.26	0.00	3.09	0.96	0.00
San Juan	0.00	0.00	0.26	0.00	0.00	0.00	0.24
REGIONAL TOTALS	3.51	3.72	9.11	9.11	8.34	4.22	1.93
Unknown counties	0.00	0.00	0.00	0.00	0.00	2.30	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 quail harvest statistics, 1951-1989.

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
1989	3,111	7,384	8,607	0.86	2.37
<hr/>					
TOTALS (1959-89)	184,557	515,716	464,757	(33.66)	(84.41)
<hr/>					
AVERAGES (1959-88)	6,048	16,944	15,205	1.09	2.73
<hr/>					

Table 10. Gambel's quail long period waterhole count trend on the west slope of the Beaver Dam Mountains, Washington County, 1975-89. These counts have been conducted since 1962.

Index	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Total young	145	61	--	67	253	72	37	85	114	166	47	163	348	59	35
Total adults	20	53	--	29	77	52	25	33	14	86	11	48	139	47	18
Total quail	165	114	17	86	330	124	62	118	128	252	58	211	487	106	53
Young per 100 adults	725	115	--	353	329	138	148	258	814	193	427	340	250	126	194

HUNGARIAN PARTRIDGE

SUMMARY

Harvest data for 1988 indicated below average breeding populations for 1989. Limited brood data was collected in Box Elder County and indicated increased Hun production.

The 1989 hunt data indicated increased hunting pressure on Huns when compared to 1988. The number of Huns harvested decreased 11 percent in 1989. Hunters afield decreased 14 percent. Total hunters, days afield, harvest and hunter success were significantly below the long-term 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, but this did not occur. The decline in production and harvest in 1989 was possibly due to the hot, dry summer.



Brood Counts

Results of the annual random brood counts for 1989 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 1989 compared to 1988 and the previous 10-year average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Total Huns observed	21	-73	-64
Young per 100 adults	425	+30	-19
Mean brood size	8.50	+9	-16
Huns observed per 100 hours	--	--	--
Total hours effort	--	--	--

Harvest data for 1988 indicated a below average breeding population for 1989. Hungarian partridge should have overwintered well since January and February were dryer than normal but temperatures in the Western and North Central climatic subdivisions were 8 degrees below normal both months. Young per 100 adults increased 30 percent from the previous year but was 19 percent below average.

Harvest

Hunter Questionnaire

Results of the annual hunter questionnaire for 1989 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 1989 season compared to 1988 and the previous 30-year average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Hungarian partridge hunters	2,136	-14	-41
Hungarian partridge harvest	3,920	-11	-50
Hunter-days afield	6,035	+12	-33
Huns per hunter-day	0.65	-21	-21
Huns per hunter	1.83	+2	-9

Hungarian partridge hunting pressure increased but total hunters decreased. Success decreased 21 percent from 1988. Harvest was 50 percent below the 30-year average.

Field Bag Checks

Results of the survey for 1989 are shown in Table 10. Hunter success trends determined via this method are shown in Table 11. Indices obtained for 1989 compared to 1988 and the previous 10-year average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Total hunters checked	23	-71	-81
Total hours hunted	59	-76	-92
Huns per hunter (complete hunts)	9.50	+813	+1,692
Huns bagged per 100 hours	181	+654	+1,408
Average hours per hunter-day (complete hunts)	5.25	+22	+51
Hours hunted per Hun bagged (complete hunts)	0.55	-87	-96

Field bag check data submitted in 1989 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. Sample sizes were too small to derive meaningful conclusions.

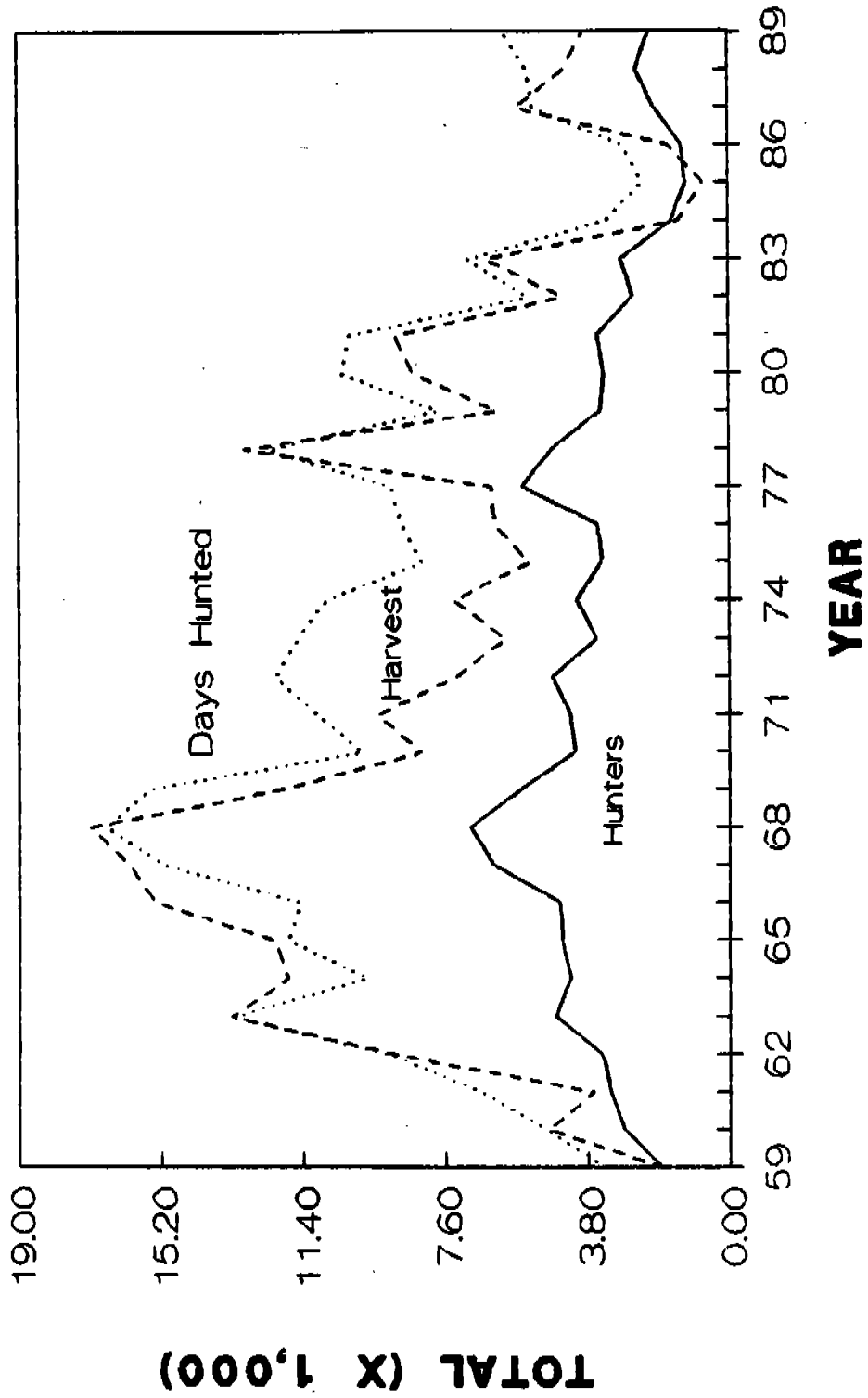


Figure 1. Statewide trend of Hungarian partridge harvest statistics, 1959-89.

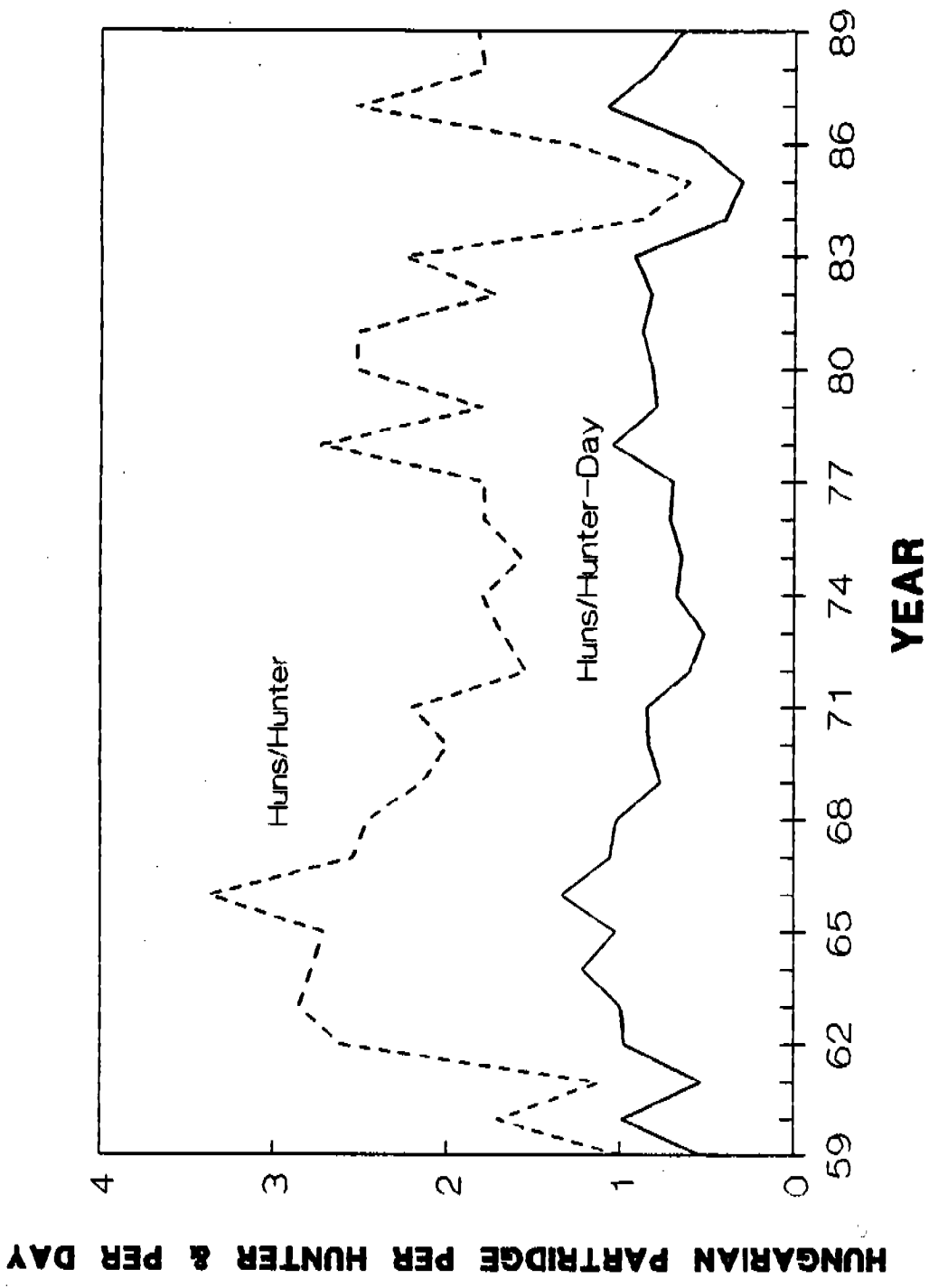


Figure 2. Statewide trend of Hungarian partridge hunter success rates, 1959-89.

Table 1. Hungarian partridge summer inventory summary, 1989.

Region and County	Distinct Broods		Mixed Yng & Adults		Mean Brood	Total Adults w/o Yng	Total Adults	Total Yng	Young/100 Ad	Veh. Miles	Hours of Effort Veh. Horse Walk	Total Effort	Birds/100 Hr
	# Ad	Yng	Ad	Yng									
<u>Northern Region</u>													
Box Elder	2	4	17	8.50	0	0	0	4	17	425	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	2	4	17	8.50	0	0	4	17	425	--	--	--	--
<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	2	4	17	8.50	0	0	4	17	425	--	--	--	--

Table 2. Trend of Hungarian partridge young per 100 adults, 1979-89.

Region and County	Year										Average 1979-88
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
<u>Northern Region</u>											
Box Elder	840	688	671	409	400	--	--	450	569	307	--
Cache	--	--	--	--	--	--	--	--	--	400	--
Davis	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	700	300	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	840	691	600	409	400	--	--	450	569	324	425
<u>Central Region</u>											
Juab	--	500	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--
Utah	--	0	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	400	--	400	--
REGIONAL TOTALS	500	0	--	--	--	--	--	400	--	400	433
<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	780	663	600	409	400	--	--	440	569	328	425

NOT APPLICABLE

NOT APPLICABLE

NOT APPLICABLE

Table 3. Trend of Hungarian partridge mean brood size from 1979-89.

Region and County	Year										Average 1979-89	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		1989
Northern Region												
Box Elder	8.40	11.00	12.00	11.25	10.67	--	--	18.00	11.88	8.60	8.50	
Cache	--	--	--	--	--	--	--	--	--	--	--	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	7.00	6.00	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	8.40	9.50	10.80	11.25	10.67	--	--	18.00	11.88	8.60	8.50	11.32
Central Region												
Juab	5.00	--	--	--	--	--	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	--	--	--	--	--	--	--	--	
Tooele	--	--	--	--	--	--	--	--	--	--	--	
Utah	--	--	--	--	--	--	--	--	--	--	--	
Wasatch	--	--	--	--	--	--	4.00	--	--	4.00	--	
REGIONAL TOTALS	5.00	--	--	--	--	--	4.00	--	4.00	4.00	--	4.50
Southern Region												
Beaver												
Garfield												
Iron												
Kane												
Millard												
Piute												
Sevier												
Washington												
Wayne												
REGIONAL TOTALS												
Northeastern Region												
Daggett												
Duchesne												
Uintah												
REGIONAL TOTALS												
Southeastern Region												
Carbon												
Emery												
Grand												
San Juan												
REGIONAL TOTALS												
STATE TOTALS	7.83	9.50	10.80	11.25	10.67	--	--	11.00	11.88	7.83	8.50	10.10

NOT APPLICABLE

NOT APPLICABLE

NOT APPLICABLE

Table 4. Trend of Hungarian partridge observed per 100 hours, 1979-89.

Region and County	Year										Average 1979-88	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		1989
<u>Northern Region</u>												
Box Elder	235	154	570	144	67	--	0	96	561	438	--	
Cache	--	--	--	--	--	--	--	--	--	88	--	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	174	158	639	144	67	--	0	50	435	240	--	212
<u>Central Region</u>												
Juab	600	--	--	--	--	--	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	--	--	--	--	--	--	--	--	
Tooele	--	--	--	--	--	--	--	--	--	--	--	
Utah	--	--	--	--	--	--	--	--	--	--	--	
Wasatch	0	33	--	--	--	--	--	500	--	500	--	
REGIONAL TOTALS	200	17	--	--	--	--	--	500	--	500	--	304
<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	177	144	565	144	67	--	0	60	435	248	--	230

Table 5. Summary of hungarian partridge hunter success and distribution of harvest and hunting pressure by region and county, 1989.

Region and County	Sample Size*	Hunter-days Afield	Huns Bagged	Huns/Hunter-day	% of Pressure	% of Harvest
NORTHERN REGION						
BOX ELDER	78	4,853	2,986	0.62	80.42	76.20
CACHE	12	352	331	0.94	5.84	8.47
DAVIS	1	62	165	2.67	1.03	4.23
MORGAN	1	62	82	1.33	1.03	2.12
RICH	1	41	0	0.00	0.69	0.00
SUMMIT	0	0	0	0.00	0.00	0.00
WEBER	1	82	82	1.00	1.37	2.12
REGIONAL TOTALS	94	5,455	3,650	0.67	90.39	93.13
CENTRAL REGION						
JUAB**	0	0	0	0.00	0.00	0.00
SALT LAKE**	1	62	41	0.67	1.03	1.06
SANPETE**	0	0	0	0.00	0.00	0.00
TOOELE	6	311	145	0.47	5.16	3.70
UTAH**	1	20	0	0.00	0.34	0.00
WASATCH**	2	62	0	0.00	1.03	0.00
REGIONAL TOTALS	10	456	186	0.41	7.56	4.76
SOUTHERN REGION						
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**	1	41	0	0.00	0.69	0.00
WASHINGTON**	0	0	0	0.00	0.00	0.00
WAYNE**	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	1	41	0	0.00	0.69	0.00
NORTHEASTERN REGION						
DAGGETT**	0	0	0	0.00	0.00	0.00
DUCHESNE**	0	0	0	0.00	0.00	0.00
UINTAH**	1	20	20	1.00	0.34	0.53
REGIONAL TOTALS	1	20	20	1.00	0.34	0.53
SOUTHEASTERN REGION						
CARBON**	1	20	0	0.00	0.34	0.00
EMERY**	0	0	0	0.00	0.00	0.00
GRAND**	0	0	0	0.00	0.00	0.00
SAN JUAN**	1	41	62	1.50	0.69	1.59
REGIONAL TOTALS	2	62	62	1.00	1.03	1.59
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	108	6,035	3,920	0.65	100.00	100.00

**Closed to Hungarian partridge hunting in 1989.

Table 6. Summary of Hungarian partridge bagged per hunter-day by region and county, 1983-89.

Region and County	Year						
	1983	1984	1985	1986	1987	1988	1989
<u>Northern Region</u>							
Box Elder	0.99	0.44	0.25	0.60	1.28	0.95	0.62
Cache	0.80	0.15	2.00	0.00	1.05	0.50	0.94
Davis	0.29	0.00	0.00	0.00	0.00	0.00	2.67
Morgan	0.75	0.00	0.00	0.00	0.67	0.00	1.33
Rich	0.94	0.00	0.00	0.00	1.50	0.000	0.00
Summit	0.00	0.00	0.00	0.00	2.00	3.00	0.00
Weber	1.36	1.00	0.00	0.00	1.25	1.17	1.00
REGIONAL TOTALS	0.93	0.41	0.26	0.59	1.23	0.89	0.67
<u>Central Region</u>							
Juab	0.00	0.00	0.00	0.00	0.30	0.00*	0.00*
Salt Lake	0.00	0.50	0.50	0.00	0.00	0.09*	0.67*
Sanpete	0.00	0.00	0.00	0.00	0.00	0.00*	0.00*
Tooele	1.91	0.00	0.46	0.00	0.00	0.33	0.47
Utah	0.13	2.00	0.00	0.00	0.33	0.31*	0.00*
Wasatch	1.77	1.00	1.50	0.00	0.00	0.00*	0.00*
REGIONAL TOTALS	0.96	0.55	0.48	0.00	0.20	0.24	0.41
<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	0.00	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	1.00	0.00	0.00	2.00	0.00	0.00*	0.00*
Piute	0.00	0.00	0.00	0.00	0.00	0.00*	0.00*
Sevier	0.50	0.00	0.00	0.20	2.00	0.00*	0.00*
Washington	2.00	0.00	0.00	0.00	0.00	2.14*	0.00*
Wasatch	1.77	1.00	0.00	0.00	0.00	0.00*	0.00*
REGIONAL TOTALS	0.96	0.55	0.00	0.78	1.33	2.14	0.00*
<u>Northeastern Region</u>							
Daggett	0.00	0.00	1.00	0.00	0.00	0.00*	0.00*
Duchesne	0.00	0.00	0.00	0.00	0.00	0.00*	0.00*
Uintah	0.00	0.00	0.00	0.00	0.00	0.00*	1.00*
REGIONAL TOTALS	0.00	0.00	0.50	0.00	0.00	0.00	1.00
<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	1.00*	0.00*
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*	1.50*
REGIONAL TOTALS	0.00	0.00	0.00	0.00	0.00	1.00	1.50
Unknown Counties	0.00	0.00	0.00	0.00	0.30	0.00	0.00
STATE TOTALS	0.93	0.41	0.31	0.57	1.09	0.82	0.65

*Closed Season

Table 7. Percentage distribution of Hungarian partridge harvest by region and county, 1983-89.

Region and County	Year						
	1983	1984	1985	1986	1987	1988	1989
Northern Region							
Box Elder	67.61	79.04	60.34	91.14	80.25	78.86	76.20
Cache	14.39	2.94	5.94	0.00	9.87	6.03	8.47
Davis	0.40	0.00	0.00	0.00	0.00	0.00	4.23
Morgan	1.23	0.00	0.00	0.00	0.85	0.00	2.12
Rich	3.27	0.00	0.00	0.00	1.28	0.00	0.00
Summit	0.00	0.00	0.00	0.00	0.85	2.26	0.00
Weber	3.07	8.90	0.00	0.00	2.14	2.64	2.12
REGIONAL TOTALS	89.97	91.03	66.62	91.14	95.27	89.81	93.13
Central Region							
Juab	0.00	0.00	0.00	0.00	1.28	0.00*	0.00*
Salt Lake	0.00	1.47	2.97	0.00	0.00	0.37*	1.06*
Sanpete	0.00	0.00	0.00	0.00	0.00	0.00*	0.00*
Tooele	4.30	0.00	18.10	0.00	0.00	1.88	3.70
Utah	0.40	5.96	0.00	0.00	0.42	1.88*	0.00*
Wasatch	4.72	1.47	9.05	0.00	0.00	0.00*	0.00*
REGIONAL TOTALS	9.42	8.90	30.27	0.00	1.71	4.15	4.76
Southern Region							
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	0.00	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	0.40	0.00	0.00	7.59	0.00	0.00*	0.00*
Piute	0.00	0.00	0.00	0.00	0.00	0.00*	0.00*
Sevier	0.20	0.00	0.00	1.27	1.71	0.00*	0.00*
Washington	0.00	0.00	0.00	0.00	0.00	5.66*	0.00*
Wayne	0.00	0.00	0.00	0.00	0.00	0.00*	0.00*
REGIONAL TOTALS	0.60	0.00	0.00	8.86	1.71	5.66	0.00*
Northeastern Region							
Daggett	0.00	0.00	2.97	0.00	0.00	0.00*	0.00*
Duchesne	0.00	0.00	0.00	0.00	0.00	0.00*	0.00*
Uintah	0.00	0.00	0.00	0.00	0.00	0.00*	0.53*
REGIONAL TOTALS	0.00	0.00	2.97	0.00	0.00	0.00	0.53
Southeastern Region							
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	0.37*	0.00*
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*	1.59*
REGIONAL TOTALS	0.00	0.00	0.00	0.00	0.00	0.37	1.59
Unknown counties	0.00	0.00	0.00	0.00	1.28	0.00	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, 1983-89.

Region and County	Year						
	1983	1984	1985	1986	1987	1988	1989
<u>Northern Region</u>							
Box Elder	63.43	73.62	74.98	87.68	68.22	68.42	80.42
Cache	16.80	7.95	0.91	0.72	10.28	9.90	5.84
Davis	1.33	1.81	0.00	0.00	1.40	1.23	1.03
Morgan	1.51	3.66	1.82	0.00	1.40	0.30	1.03
Rich	3.24	0.60	0.00	0.72	0.93	0.00	0.69
Summit	1.14	0.00	0.00	0.00	0.46	0.61	0.00
Weber	2.10	3.66	0.00	0.00	1.86	1.85	1.37
<u>REGIONAL TOTALS</u>	89.56	91.39	77.79	89.13	84.57	82.36	90.39
<u>Central Region</u>							
Juab	1.14	0.00	0.00	0.72	4.67	0.00*	0.00*
Salt Lake	0.00	1.21	1.82	0.00	0.00	3.40*	1.03*
Sanpete	0.37	0.00	0.91	0.72	0.46	0.00*	0.00*
Tooele	2.10	3.66	12.01	0.72	2.80	4.64	5.16
Utah	3.04	1.21	2.77	1.44	1.40	4.95*	0.34*
Wasatch	2.47	0.60	1.82	0.00	0.00	1.23*	1.03*
<u>REGIONAL TOTALS</u>	9.13	6.74	19.45	3.62	9.34	14.24	7.56
<u>Southern Region</u>							
Beaver	0.19	1.21	0.00	0.72	0.00	0.00*	0.00*
Garfield	0.00	0.00	0.00	0.00	0.00	0.00*	0.00*
Iron	0.00	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	0.37	0.00	0.00	2.17	0.00	0.00*	0.00*
Piute	0.00	0.16	0.00	0.00	0.00	0.00*	0.00*
Sevier	0.37	0.00	0.00	3.62	0.93	0.00*	0.69*
Washington	0.00	0.00	0.00	0.00	0.46	2.16*	0.00*
Wayne	0.00	0.00	0.00	0.00	0.00	0.00*	0.00*
<u>REGIONAL TOTALS</u>	0.93	1.21	0.00	6.52	1.39	2.15	0.69
<u>Northeastern Region</u>							
Daggett	0.00	0.00	0.91	0.00	0.00	0.00*	0.00*
Duchesne	0.00	0.00	0.00	0.00	0.00	0.30*	0.00*
Uintah	0.00	0.60	0.91	0.72	0.00	0.00*	0.34*
<u>REGIONAL TOTALS</u>	0.00	0.60	1.82	0.72	0.00	0.29	0.34
<u>Southeastern Region</u>							
Carbon	0.19	0.00	0.00	0.00	0.00	0.61*	0.34*
Emery	0.00	0.00	0.00	0.00	0.00	0.30*	0.00*
Grand	0.00	0.00	0.91	0.00	0.00	0.00*	0.00*
San Juan	0.00	0.00	0.00	0.00	0.00	0.00*	0.69*
<u>REGIONAL TOTALS</u>	0.19	0.00	0.91	0.00	0.00	0.92	1.03
Unknown counties	0.19	0.00	0.00	0.00	4.67	0.00	0.00
<u>STATE TOTALS</u>	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, 1955-89.

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
1989	2,136	3,920	6,035	0.65	1.83
<hr/>					
TOTAL (1959-89)	110,582	238,772	277,065	(25.21)	(62.17)
<hr/>					
AVERAGES (1959-88)	3,615	7,828	9,034	0.82	2.01

Table 10. Hungarian partridge field bag check summary, 1989.

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	Total Birds/100 Hr Hunter
<u>Northern Region</u>									
Box Elder	13	23	59	58 98	3	4	21	38 181	9.50
Cache	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	13	23	59	58 98	3	4	21	38 181	9.50
<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	13	23	59	58 98	3	4	21	38 181	9.50

NO DATA

NOT APPLICABLE

NOT APPLICABLE

NOT APPLICABLE

Table 11. Hungarian partridge hunter success trend determined by field bag checks, 1984-89.

Region and County	1984		1985		1986		1987		1988		1989	
	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	--	--	3	0.16	2	0.16	31	1.69	24	1.04	181	9.50
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	3	0.16	2	0.16	31	1.69	24	1.04	181	9.50
<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	--	--	3	0.16	2	0.16	31	1.69	24	1.04	181	9.50

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 1989 spring season indicated that the East Zion area had another good year even though total harvest and percent success declined 20 and 25 percent respectively. Thirty-five birds were reported harvested for this unit. The Boulder Mountains and LaSal Mountains still indicated growing populations. Harvest statistics indicate the Boulder population was up from the previous year while the LaSal population declined slightly. 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 1989. A fall turkey hunting season was not held anywhere in 1989.

Spring hunting pressure was up again in 1989. Complaints about hunters interfering with each other due to over-crowding were common. Concern for hunter safety prompted a change in regulation. The season opened May 1 rather than the Saturday nearest May 1. Five out of seven years the season will open on a weekday. It is quite obvious that hunter interest in spring turkeys outstripped supply. We need to continue to establish new populations, then cautiously promote safe ethical hunting practices.

Hunter success was down 25 percent. A total of 59 turkeys were harvested in the spring hunt of 1989 compared to 66 taken in 1988 and 60 in 1987. Observations of turkeys remained higher than average in 1989, but percent of hunters observing turkeys dropped on the LaSal Mountain area.

Temperatures in southcentral and southeastern Utah were well below normal in January and February, and well above average in March and April. Precipitation was below normal all year in the southcentral climatic subdivision (E. Zion turkey unit). This was the second year of drought in southern Utah and may be adversely affecting brood survival.



Harvest

Spring Gobbler Season

Results of the 1989 spring season are shown in Table 1 of this section. The trend of these data since the first spring season in 1969 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 1989 spring season compared to 1988 and the previous 20-year average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Permits sold	527	+8	+191
Hunters afield	477	+13	+194
Turkeys harvested	59	-11	+195
Hunter-days afield	1,568	+24	+251
Percent hunter success	12	-25	+9
Turkeys bagged per hunter-day	0.04	-20	0
Percent of hunters who observed turkeys	55	+10	+45

Permit sales and hunters afield increased from 1988 and were well above average. Total harvest decreased from 66 in 1988 to 59 in 1989, which is still nine percent above the 20-year average. Although harvest rates dropped from an all-time high, hunter success rates remained above average. The proportion of hunters who reported having observed turkeys was 45 percent above average. The East Zion unit accounted for 49 percent of the hunting pressure based on hunter-days afield, compared with 54 percent in 1988. The East Zion unit yielded 59 percent of the 1989 statewide harvest.

The trend of spring turkey harvest statistics is shown in Figures 1 and 2. Eight percent of the hunters (23) used bows and 1 percent used rifles (2) which were illegal. Five turkeys were reported crippled and not recovered. Three of 40 known kills were suspected of being females and another twelve are suspected of being jakes.

Twenty-five percent of the harvest (9 of 36) occurred on opening day (Monday) 14 percent the following day, 6 percent the first weekend and 11 percent the last weekend of the hunt. Thirty-three percent of the harvest occurred on weekends compared with 44 percent last year (1988). It appears that opening the season on May 1 instead of Saturday nearest May 1, did what was intended by spreading harvest and pressure out over the season.

Four of 359 hunters commented that there were too many hunters. This was down from the previous year. Twenty-four commented that there were not very many turkeys or they would like more turkeys. This was up from the previous year. Eighteen hunters commented that they would like to see the spring turkey season opened 1-3 weeks earlier.

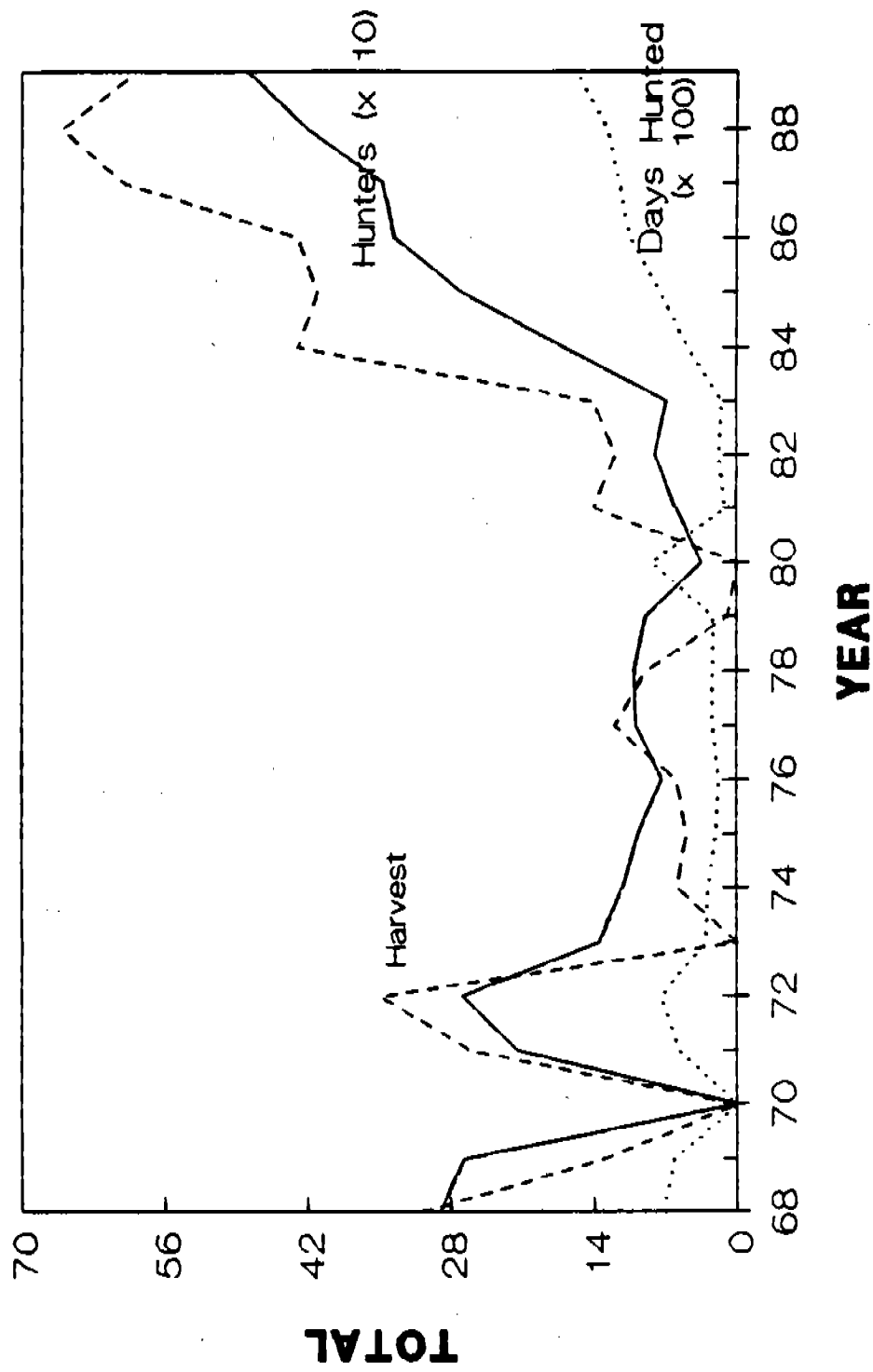


Figure 1. Spring wild turkey hunters, harvest, and days hunted, 1968-89.

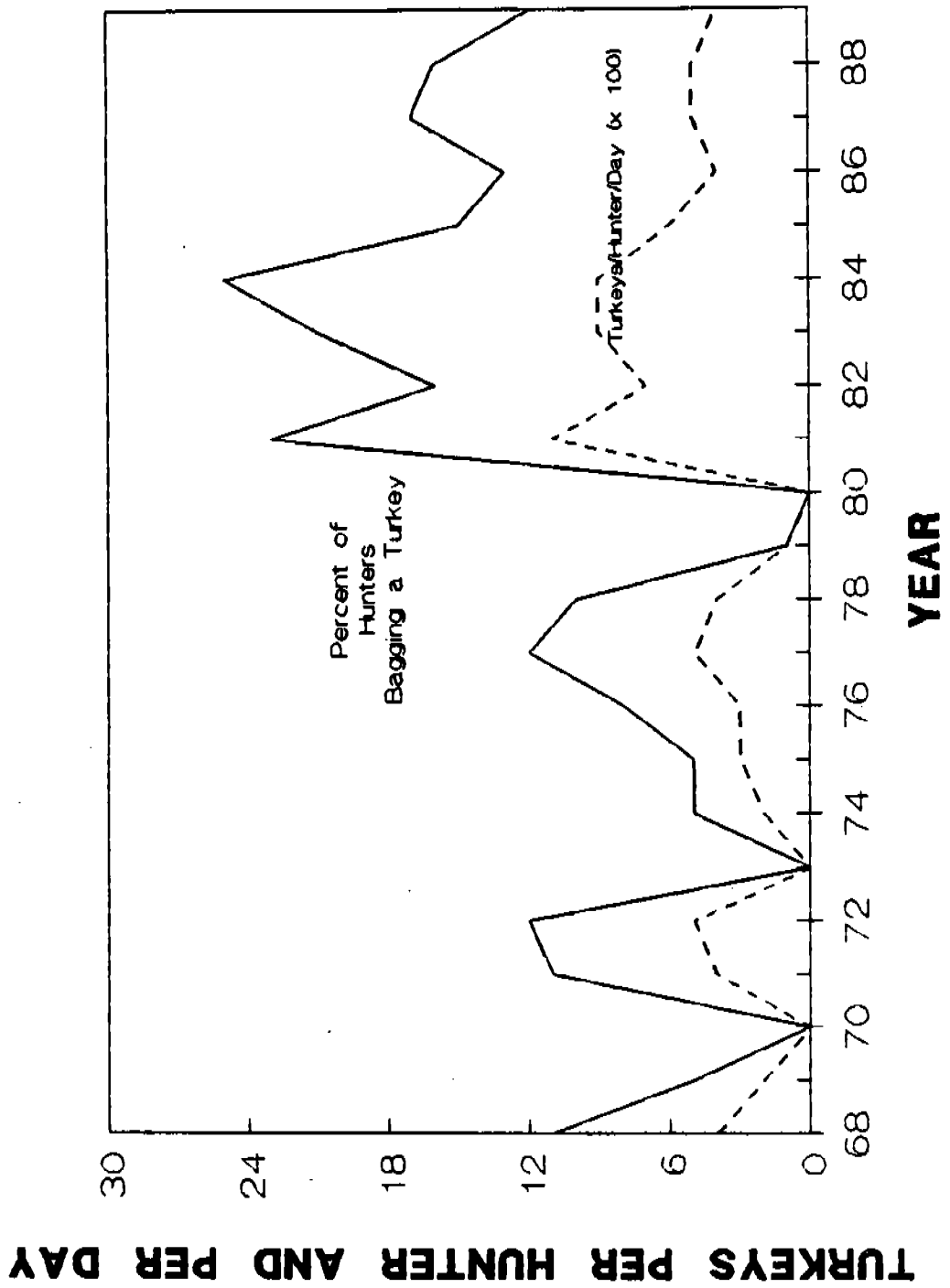


Figure 2. Spring wild turkey hunting success, 1968-89.

Table 1. Summary of the 1989 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															527	--
No hunts															34	50
Hunters afield	C	160	235	94	138	71	104		C				4 ^a	(6)	325	477
Hunter-days	L	544	799	284	417	240	352		L				(8)	(12)	1,068	1,568
Turkeys bagged	O	24	35	9	13	6	11		O				1	1	40	59
Percent success	S	15	--	10	--	8	--		S				25	--	12	--
Turkeys bagged per hunter-day	E								E							
Reported crippling loss (Loss/100 bagged)	D	0.04	--	0.03	--	0.03	--		D				0.13	--	0.04	--
Turkeys observed	S	13	--	22	--	0	--		S				0	--	35	--
Gobblers	E	471	--	168	--	73	--		E				14	--	712	--
Hens	A	151	--	69	--	45	--		A				8	--	265	--
Unidentified	S	265	--	64	--	17	--		S				6	--	346	--
Number of hunters who saw turkeys	O	55	--	35	--	15	--		O				0	--	105	--
Percent of hunters who saw turkeys	N								N				2	--	178	--
		105	--	44	--	29	--						50	--	55	--

Projection factor = 527 permits sold/359 questionnaires returned = 1.4679666

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

^a Figures 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 (2-3), both of these were from E. Zion as their primary unit, East Zion (1-4), from LaSal; LaSal (1-2), from East Zion.

Table 2. Summary of turkey harvest statistics for spring gobbler seasons, 1967-89.

Hunting Unit	Year	Hunters		Total Harvest	Hunter-days		Percent Success*	Turkeys per		Percent of Hunters	Total Permits**
		Afield	Afield		Afield	Hunter-day		Observing	Turkeys		
EAST ZION	1967	24	59	9	38	0.15	58				
	1968	130	364	16	11	0.04	48				
	1969	77	210	4	6	0.02	35				
	1970				N O S E A S O N						
	1971	106	272	14	12	0.05	38				
	1972	113	321	20	14	0.06	47				
	1973	43	96	0	0	0.00	14				
	1974	34	73	2	7	0.03	23				
	1975	29	42	3	8	0.06	33				
	1976	31	74	5	16	0.05	38				
	1977	47	117	6	13	0.05	48				
	1978	36	80	4	13	0.06	56				
	1979	35	95	1	4	0.01	11				
	1980	35	84	0	0	0.00	17				
	1981	39	94	13	32	0.14	68				
	1982	62	134	11	18	0.08	70				
	1983	48	122	12	25	0.10	68				
	1984	108	313	30	27	0.09	70				
	1985	129	368	24	19	0.07	60				
1986	173	508	31	18	0.06	68					
1987	153	500	40	26	0.08	74					
1988	221	680	44	20	0.06	45					
1989	235	799	35	15	0.04	66					

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		Afield	Afield					
BOULDER MOUNTAINS	1967	17	17	2	43	12	0.05	75			
	1968	134	134	15	330	10	0.05	33			
	1969	141	141	6	300	4	0.02	16			
	1970					NO SEASON					
	1971	27	27	1	64	4	0.02	13			
	1972	42	42	3	107	8	0.03	28			
	1973	22	22	0	52	0	0.00	6			
	1974	23	23	0	56	0	0.00	25			
	1975	16	16	1	34	7	0.04	8			
	1976	12	12	0	25	0	0.00	10			
	1977	6	6	0	13	0	0.00	40			
	1978	16	16	1	31	0	0.00	14			
	1979	5	5	0	10	0	0.00	0			
	1980					NO SEASON					
	1981					NO SEASON					
	1982					NO SEASON					
	1983	6	6	1	7	20	0.17	40			
	1984	33	33	9	85	27	0.11	73			
	1985	73	73	7	187	10	0.04	46			
1986	123	123	8	354	7	0.02	44				
1987	105	105	11	363	7	0.03	40				
1988	134	134	11	383	8	0.03	50				
1989	138	138	13	417	10	0.03	47				

Table 2. (continued)

Hunting Unit	Year	Hunters		Total Harvest	Hunter-days		Percent Success*	Turkeys per		Percent of Hunters Observing Turkeys	Total Permits**
		Afield	Afield		Afield	Hunter-day					
LASAL MOUNTAINS	1967	6	16	0	0	0.00	33				
	1968	17	44	0	0	0.00	62				
	1969	39	102	3	9	0.03	24				
	1970				NO SEASON						
	1971	17	34	1	6	0.03	20				
	1972	50	129	3	7	0.03	29				
	1973	23	53	0	0	0.00	16				
	1974	20	66	0	0	0.00	11				
	1975	11	30	0	0	0.00	33				
	1976	8	25	0	0	0.00	14				
	1977	24	53	4	15	0.07	45				
	1978	32	78	2	7	0.03	38				
	1979	34	74	0	0	0.00	7				
	1980				NO SEASON						
	1981	18	31	1	6	0.03	24				
	1982	18	50	1	6	0.02	35				
	1983	12	27	1	10	0.10	30				
	1984	24	70	4	19	0.06	88				
	1985	72	194	10	14	0.05	42				
	1986	51	192	4	7	0.02	45				
1987	74	218	6	9	0.03	50					
1988	65	199	11	16	0.06	70					
1989	104	352	9	8	0.03	41					

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**	
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	0	50	
	1979								
	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				
1989				NO	SEASON				

Table 2 (continued)

Hunting Unit	Year	Hunters		Total Harvest	Hunter-days		Percent Success*	Turkeys per		Percent of Hunters Observing Turkeys	Total Permits**
		Afield	Afield		Afield	Hunter-day		Hunter-day			
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							
	1989***			NO SEASON							

Table 2 (continued)

Hunting Unit	Year	Hunters		Total Harvest	Hunter-days		Percent Success*	Turkeys per		Percent of Hunters Observing Turkeys	Total Permits**
		Afield			Afield	Hunter-day					
BLUE MOUNTAIN	1974	17	2	34	13	0.07		27			
ELK RIDGE	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				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				N O		S E A S O N				
	1984				N O		S E A S O N				
	1985				N O		S E A S O N				
	1986				N O		S E A S O N				
	1987				N O		S E A S O N				
	1988				N O		S E A S O N				
	1989				N O		S E A S O N				

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**
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	
	1989	6	1	12	25	0.13	50	

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**
STATE TOTALS	1968	290	31	738	11	0.04	41	310
	1969	267	13	612	5	0.02	22	276
	1970			N O S E A S O N				
	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
	1989	477	59	1,568	12	0.04	55	527
STATE TOTALS (1967-89)		4,012	496	11,238	--	--	(852)	4,459
STATE AVERAGES (1967-88)		191	24	535	12	0.04	41	212

*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 and 1989 by proclamation.

Table 3. Date of kill, beard and spur length of turkeys harvested during Spring 1989.

Hunting Unit	Date of Kill	Beard Length (Inches)	Spur Length (1/8 Inches)
EAST ZION	--	9.00	12.00
	--	8.00	8.00
	5/01	8.00	4.00
	5/01	12.00	8.00
	5/01	8.00	--
	5/01	8.00	3.00
	5/01	9.00	--
	5/02	8.00	--
	5/02	8.00	11.00
	5/02	8.00	7.00
	5/02	9.00	4.00
	5/03	9.00	1.00
	5/03	7.00	--
	5/04	8.00	--
	5/06	5.00	--
	5/10	7.00	4.00
	5/12	8.00	4.00
	5/13*	--	--
	5/13	9.00	8.00
	5/13	10.00	8.00
	5/13	--	6.00
	5/13	7.00	--
	5/19*	6.00	0.00
5/20	8.00	8.00	
5/21	9.00	6.00	
LA SAL	5/06*	1.00	--
	5/07	9.00	4.00
	5/18	7.00	--
	5/18	9.00	6.00
	5/20	8.00	6.00
	5/20	8.00	6.00
	5/20*	3.00	2.00
BOULDER	--	5.00	3.00
	5/01	8.00	2.00
	5/01	8.00	0.00
	5/01	8.00	6.00
	5/02	9.00	4.00
	5/10	8.00	7.00
	5/13	4.00	4.00
	5/17	8.00	4.00

*Possible violation of season date, sex, or weapon. All successful turkey hunters reported using shotguns except one who used archery equipment.

Table 4. Statewide summary of fall wild turkey harvest statistics, 1964-89.

Year	Permits Sold		Hunters		Hunter-days		Turkeys Bagged	Percent Success**	Turkeys/Hunter-Day		Crippling Loss/100 Bagged	% Hunters	
	Afield		Afield		Afield				Turkeys Observed	Turkeys Observing			
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***	--	--	--	--	--	--	--	--	--				
1989***	--	--	--	--	--	--	--	--	--				
TOTALS (1964-84)	2,504	2,290	5,622	671	(440)	--	(295)	9,269	(716)				
AVERAGES (1964-84)	125	115	281	34	22	0.10	15	463	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 LaSal 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

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 1989. In 1988 and 1989, the number of birds present on active dancing grounds was substantially greater than in recent years (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 1989. 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 except 1988-89. 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, 1977-89.

County	No.	Name	Dancing Ground																
			1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989				
Box Elder	1.	West Hills #1 (located 1977)	21	--	12	3	12	0	12	0	12	0	0	0	--	0	0	0	
	2.	West Hills #2 (located 1977)	7	--	3	1	0	0	2	0	2	0	18	40	40	40	33	40**	
	3.	West Hills #3 (located 1977)	13	--	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0
	4.	Hunsaker's Field (located 1977)	13	16	3	0	0	0	0	0	0	0	0	18	0	3	0	0	0
	5.	Whites Valley (located 1977)	12	--	0	0	0	0	6	0	0	0	2	0	6	7	3	0	0
	6.	North Whites Valley (located 1977)	10	15	--	0	0	0	0	0	0	0	0	--	18	11	9**	0	0
	7.	Pocatello Valley #1 (located 1978)	7	4	1	9	19*	6	2	0	--	--	3	4	--	--	--	--	--
	8.	Pocatello Valley #2 (located 1978)	25	3	6	10	0	8	3	9	20	20	16	12**	--	--	--	--	--
	9.	Pocatello Valley #3 (located 1978)	4	0	0	0	0	0	0	0	0	0	0	0	--	--	--	--	--
	10.	Pocatello Valley #4 (located 1978)	6	0	0	0	0	0	0	0	0	0	0	0	--	--	--	--	--
	11.	Ag. Station							3	0	0	0	0	0	--	--	--	--	--
	12.	Microwave Tower (located 1987)													6	6	7	9	--
Cache	1.	Bankhead Well (relocated 1975)	8	7	2	2	0	0	--	--	--	--	--	--	--	--	--	--	
	2.	Baxter Ridge (relocated 1975)	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)	14	6	3	--	--	--	--	--	--	--	--	--	--	--	--	--	
	2.	Cottonwood #2 (located 1975)	6	16	25	--	--	--	--	--	--	--	--	--	--	--	--	--	
	3.	Deep Creek #2			4	--	--	--	--	--	--	--	--	--	--	--	--	--	
Weber	1.	Monastery (located 1969)	Active	Active	3	0	0	0	--	--	--	--	--	--	--	--	--	--	
Total grounds counted			10	9	15	16	17	15	11	11	2	11	6	8	12	11			
Total grouse counted			104	102	71	24	57	31	28	5	29	84	90	80	77				
Average number of grouse/ground			10.4	11.3	4.7	1.5	3.4	2.1	2.5	2.5	2.5	2.6	14.0	11.3	6.7	7.0			

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

**High sagebrush precludes accurate count, thus birds must be counted when flushed. An estimated range in count is made which includes females. Estimated counts are West Hills #2 (45-48), North Whites Valley (9-11), and Pocatello Valley #2 (12-15). Since visitation by females at any given time is low, an estimated 90% of the grouse seen on the ground are males. Therefore we have arrived at estimated figures of 40, 9, 12 respectively.

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 1988-89 winter was relatively harsh in northern Utah.

No spring survey of breeding territories was made in 1989.

Brood surveys were conducted in the Upper Yellowstone River drainage. Two broods were observed. Average brood size was 4.00 young.

Hunter Success

Twenty hunters bought \$2.00 permits to hunt ptarmigan in Utah in 1989 (Table 3). An estimated 3 hunters actually pursued ptarmigan and 13 birds were killed. Hunter success was 0.72 birds bagged per hunter-day.

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.

Table 1. Summary of white-tailed ptarmigan breeding territories (pairs), 1979-89.

County	Location	(6/18-24)		(6/12-17)		(6/16-17)		(6/18-19)		1987	1988	1989 ³
		1979	1980	1981	1982	1983	1984	1985	1986			
Summit	Lake Blanchard			2								
Duchesne	Painter Basin											
Duchesne	Gilbert Basin							C ²	C ²		N	
Duchesne	Atwood Basin							A	A		O	
Duchesne	Yellowstone River		2					N	N		S	
Summit	Henry's Fork	4						C	C		U	
Summit	Flat Top Mtn.							E	E		R	
Summit	Beaver Creek	3	0	0	0			L	L		V	
Summit	Smith's Fork			1				L	L		E	
Uintah	Leidy Peak			0 ¹				E	E	3	Y	
								D	D			

¹A sighting of ptarmigan was reported by a hunter in October 1979. Division Biologists reported droppings at the base of Leidy Peak in the willow on June 25, 1981.

²Excessive snow cover precluded access to trail-heads during the June breeding period.

³Investigator was incapacitated.

Table 2. Ptarmigan brood inventory, 1980-89.

Area:	DATE									
	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	8/89
<u>Painter Basin</u>										
n	7	12	0 ^b	2 ^c	3	--	--	--	--	--
mean brood	4.71	3.67		4.50						
young/100 adult hens	471	314		450						
hens w/o broods	0	2		0						
adult males	0	14		0						
<u>Henry's Fork</u>										
n	0	4	0	0	0	4	3	3	3	--
mean brood		4.50				3.75	4.00	2.33		
young/100 adult hens		450				375	217	233		
hens w/o broods		0				0	3	6 ^e		
adult males	0									
<u>Yellowstone</u>										
n	4	4								2
mean brood		4.50	4.25							4.00
young/100 adult hens		450								366
hens w/o broods		0								4
adult males	0									18
<u>Smith's Fork</u>										
n	0	0	2 ^d	1 ^d	--	1				
mean brood				3.50	6.00		6.00			
young/100 adult hens				350	300		120			
hens w/o broods				0	1		4			
adult males			0	0	--					
<u>Atwood Basin</u>										
n	1	--	--	--	--	--	--	--	--	--
mean brood	5.00	--	--	--	--	--	--	--	--	--
young/100 adult hens	500	--	--	--	--	--	--	--	--	--
hens w/o broods	0	--	--	--	--	--	--	--	--	--
adult males	0	--	--	--	--	--	--	--	--	--

Table 2. (continued)

Area:	D A T E									
	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	8/89
<u>Flat Top Mountain</u>										
n			1					1	3	
mean brood			6.00					6.00	4.33	
young/100 adult hens								900	433	
hens w/o broods			1					0	9 ^e	
adult males								0	0	
<u>Little E. Fork - Black's Fork</u>										
n										
Mean brood										
young/100 adult hens										
hens w/o broods										
adult males										
<u>Rainbow Basin</u>										
n		1								
mean brood		4.0								
young/100 adult hens		400								
hens w/o brood		0								
adult males		0								
<u>Gilbert Basin</u>										
n		2								
mean brood		5.00								
young/100 adult hens		500								
hens w/o broods		0								
adult males		0								
<u>Samuel's Draw</u>										
n			1							
mean brood			4.00							
young/100 adult hens			400							
hens w/o broods			0							
adult males			0							
<u>Leidy Peak</u>										
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									
	8/17-29/80	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	8/89
<u>East F. Black's Fork</u>										
n	0									
mean brood										
young/100 adult hens										
hens w/o broods										
adult males										
<u>Joulious Creek</u>										
n								1	0	
mean brood								1.00	0.00	
young/100 adult hens								300	000	
hens w/o broods								0	4 ^e	
adult males								0	0	
TOTAL										
n	11 ^a	20	4.00	5	4	4	4	7	6	2
mean brood	4.73	4.00	4.20	4.00	3.50	3.75	3.86	3.33	4.00	
young/100 adult hens	473	364	400	300	350	375	236	333	366	
hens w/o brood	0	2	0	2	0	0	7	19 ^e	4	
adult males	0	14	0	0	0	0	0	0	0	
Total birds observed	63	116	20	18	19	47	45	18		

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

^bAfter 4 days of searching.

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

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

^eMixed adults

^fNumber of broods.

Table 3. Summary of ptarmigan harvest statistics, 1982-89.

Year	Permits Sold		Hunters		Hunter-days		Ptarmigan		Birds/		Ptarmigan/		Crippling Loss/		Ptarmigan		% Hunters		Immatures		
			Afield		Afield		Bagged	Hunter	Hunter	Hunter	Hunter	Hunter	Hunter	Hunter	Hunter	Hunter	Hunter	Hunter	Hunter	Hunter	Hunter
1982	48	21	33	0	0.00	0.00	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	31	13	21	14	0.67	1.08	14	0.67	0	25	30	25	30	0	25	30	25	30	30	30	30
1984	28	20	25	36	1.44	1.80	36	1.44	0	--	--	--	--	0	--	--	--	--	--	--	--
1985	55	10	13	7	0.54	0.70	7	0.54	14	9	14	9	14	14	9	14	9	14	14	14	14
1986	49	14	21	8	0.36	0.57	8	0.36	0	8	22	8	22	0	8	22	8	22	22	22	22
1987	45	9	9	8	0.89	0.89	8	0.89	--	--	--	--	--	--	--	--	--	--	--	--	--
1988	28**	15	15	22	1.47	1.47	22	1.47	--	59	--	59	--	--	59	--	59	--	--	4.5(11)	4.5(11)
1989	20	3	18	13	0.72	4.33	13	0.72	--	35	--	35	--	--	35	--	35	--	--	--	--

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

COTTONTAIL RABBIT

Roadside Counts

Results of the annual roadside counts for 1989 are shown in Table 1 and Figure 1 of this section. The long-term trend of cottontails observed per mile and young per 100 adults is shown in Figure 4 and Tables 2 and 3. Indices for 1989 compared to 1988 and the 10-year average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Total miles driven	872	-41	-52
Total cottontails counted	408	-51	-44
Cottontails observed per mile	0.47	-16	+31
Young observed per 100 adults	64	-4	-30

A decreased breeding population for 1989 was again indicated by 1988 harvest statistics for the fourth year in a row. However, production data from roadside counts indicated a decline in population. The cottontail per mile index decreased 16 percent but was above average. However, production was 30 percent below the average.

Harvest

Hunter Questionnaire

Results of the 1989 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 are found in Tables 5-7. Trends of statewide harvest statistics are found in Table 8 and Figure 2. Results of the 1989 season compared to 1988 and the 22-year average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Cottontail hunters	22,878	-5	-8
Cottontail harvest	120,075	-20	-26
Hunter-days afield	91,264	-6	-9
Cottontails per hunter-day	1.32	-15	-9
Cottontails per hunter	5.25	-16	-13

Total hunters and effort decreased in 1989. Total harvest decreased significantly from 1988. Total harvest was 26 percent below average and success was 9 percent below average. Harvest data indicate a year of below average populations of cottontails. The drought may be negatively affecting rabbit populations statewide. A population crash was apparent in the spring of 1984, and has been confirmed by the 1984 and 1985 harvest data. Populations recovered rapidly in 1986, 1987, and 1988. Populations may be headed downward again. The last four winters have not been harsh.

Field Bag Checks

Results of field bag checks for 1989 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 1989 field bag check data to 1988 and the 10-year average.

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Total hunters checked	80	-79	-42
Total hours hunted	153	-86	-54
Cottontails per hunter (complete hunts)	2.15	-20	+23
Cottontails bagged per 100 hours	95	+36	+58
Hours per hunter-day (complete hunts)	2.27	-29	-25
Hours per cottontail bagged (complete hunts)	1.06	-12	-53

This data is consistent with mail questionnaire data. Hunter success (cottontails per hunter) declined but was well above average.

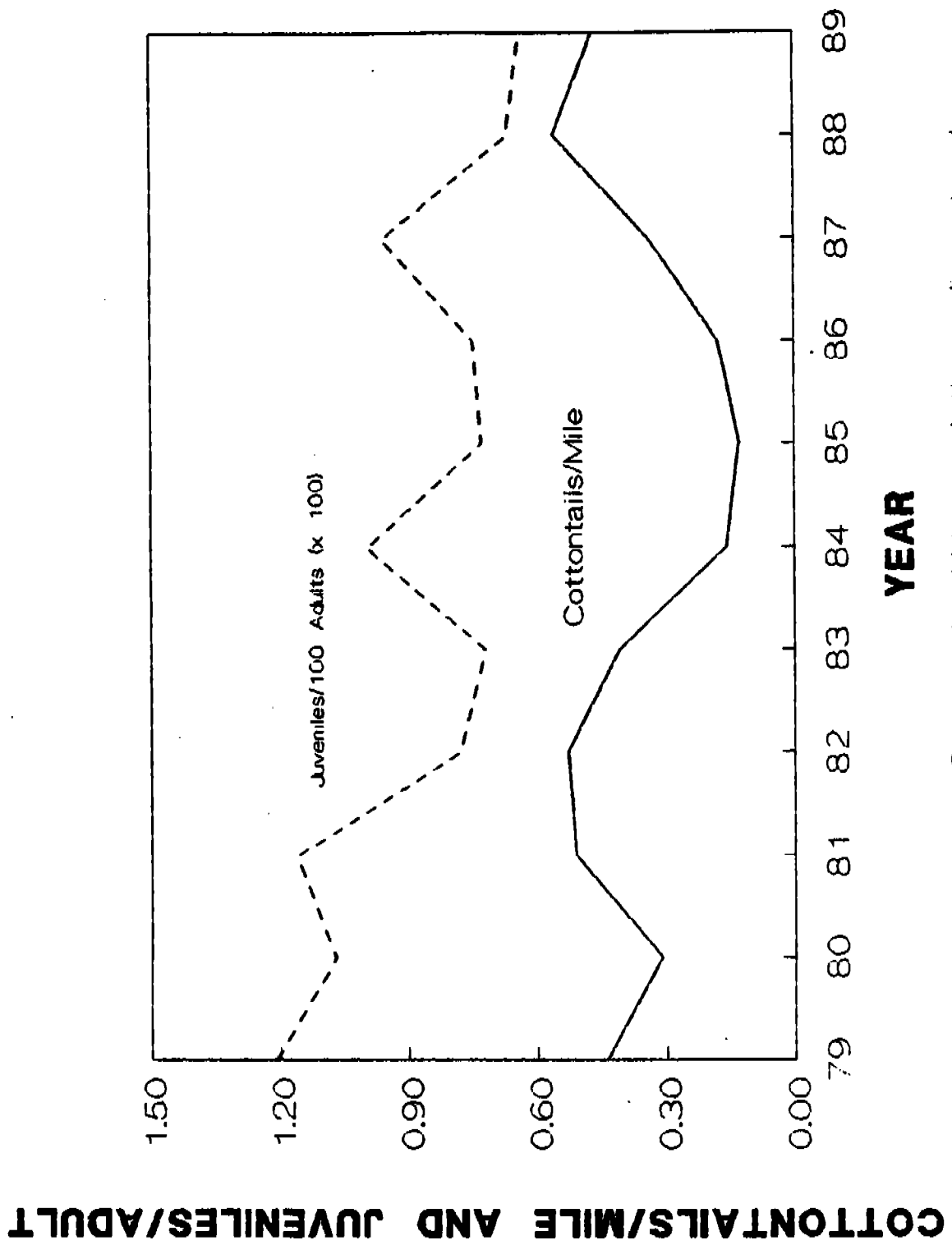


Figure 1. Cottontail rabbit population indices trend.

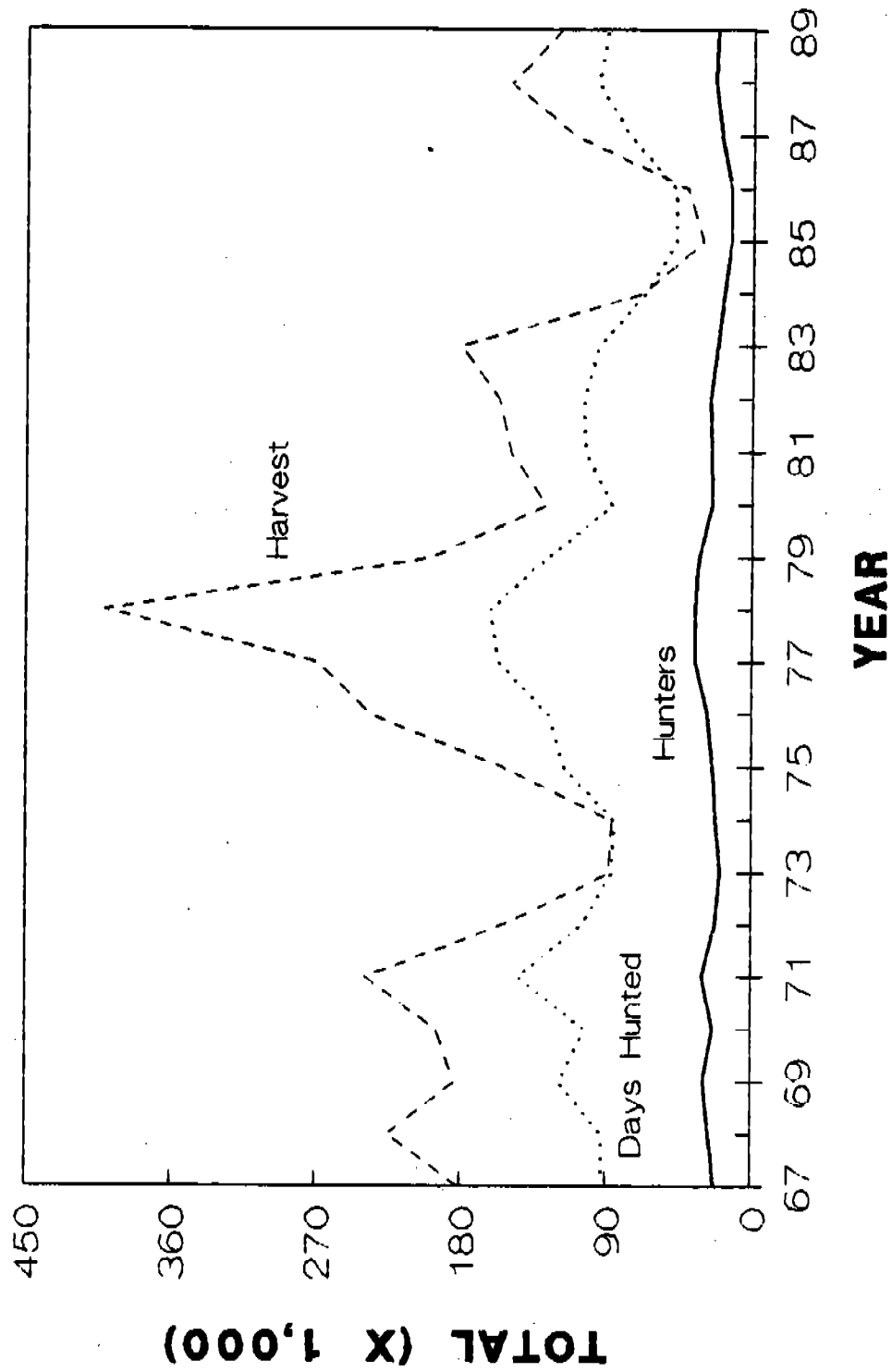


Figure 2. Statewide trend of cottontail rabbit harvest statistics, 1967-89.

COTTONTAILS PER HUNTER AND PER DAY

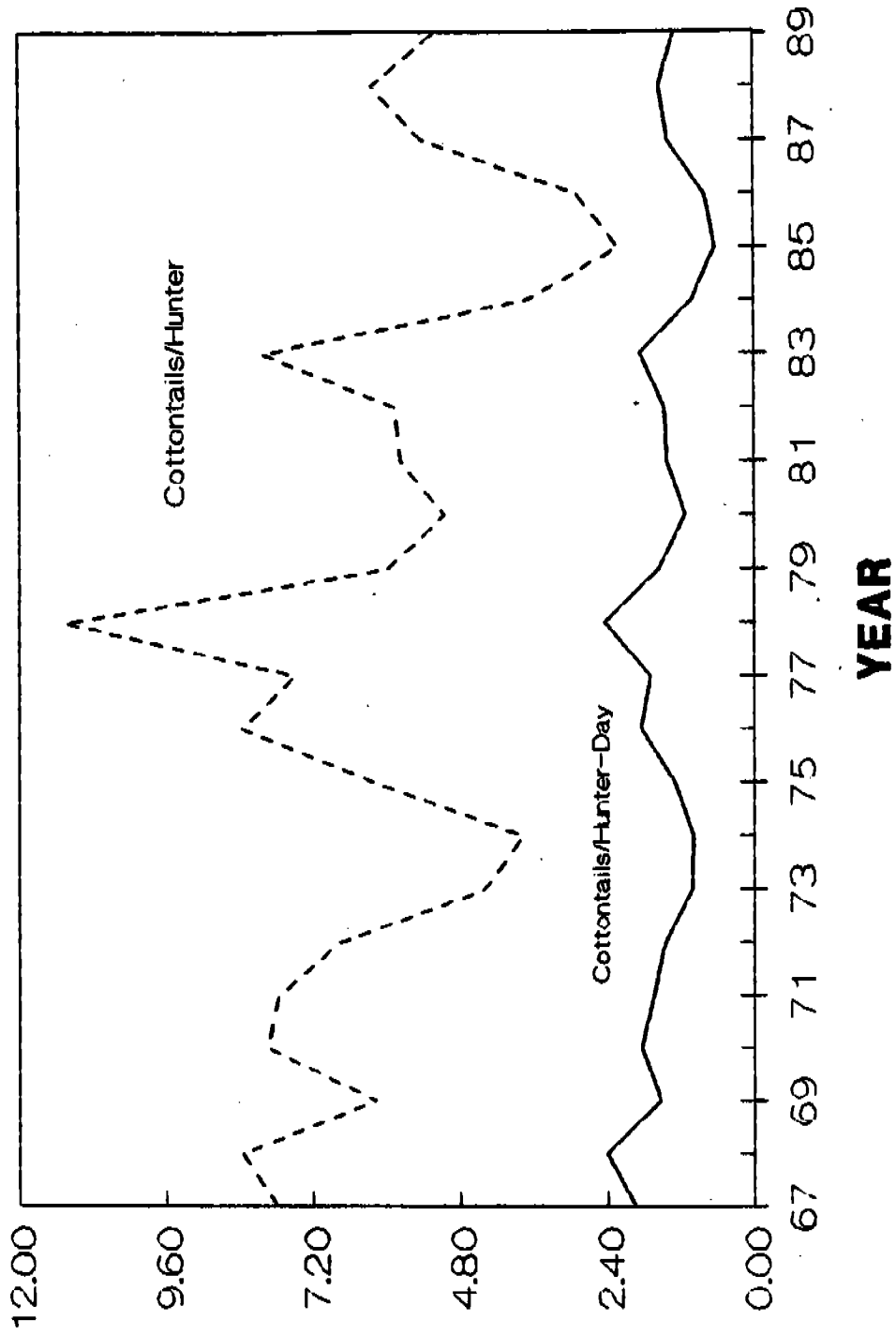


Figure 3. Statewide trend of cottontail rabbit hunter success rates, 1967-89.

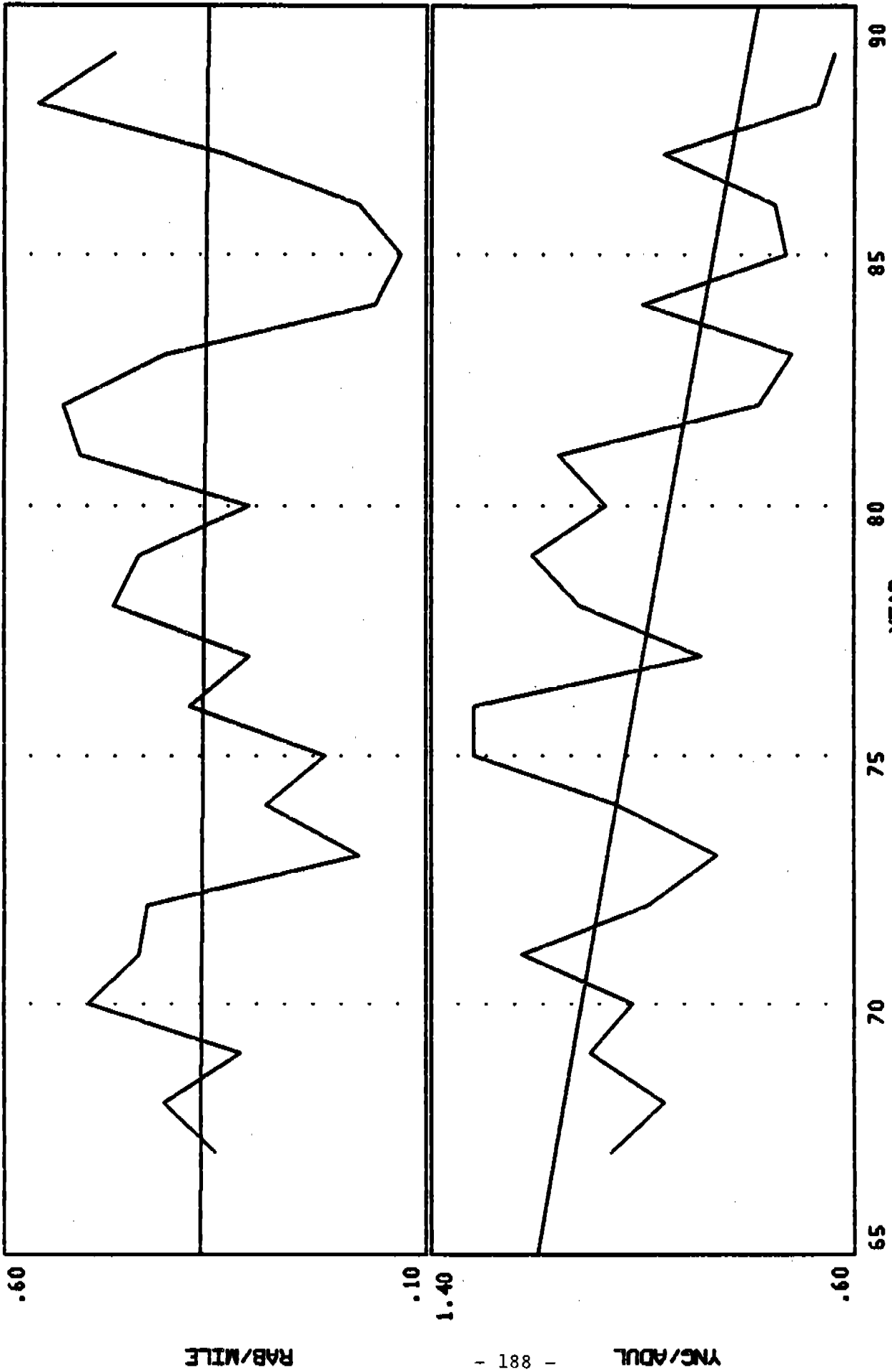


Figure 4. Statewide cottontail production indices, 1967-89.

Table 1. Cottontail rabbit summer inventory summary, 1989.

Region and County	Miles Driven	Rabbits Observed				Young Per 100 Adults	Rabbits Per Mile
		Adults	Young	Unclass.	Total		
<u>Northern Region</u>							
Box Elder	90	1	2	0	3	200	0.03
Cache	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--
REGIONAL TOTALS	90	1	2	0	3	200	0.03
<u>Central Region</u>							
Juab	30	8	1	0	9	13	0.30
Salt Lake	--	--	--	--	--	--	--
Sanpete	33	5	2	0	7	40	0.22
Tooele	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--
REGIONAL TOTALS	66	13	3	0	16	23	0.26
<u>Southern Region</u>							
Beaver	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--
Washington	90	13	17	0	30	131	0.33
Wayne	--	--	--	--	--	--	--
REGIONAL TOTALS	90	13	17	0	30	131	0.33
<u>Northeastern Region</u>							
Daggett	115	27	16	14	57	59	0.50
Duchesne	72	56	16	3	75	29	1.04
Uintah	79	23	55	33	111	239	1.40
REGIONAL TOTALS	266	106	87	50	243	82	0.91
<u>Southeastern Region</u>							
Carbon	90	3	12	16	31	400	0.34
Emery	90	0	0	30	30	--	0.33
Grand	90	1	0	4	5	--	0.06
San Juan	90	25	20	5	50	80	0.55
REGIONAL TOTALS	360	29	32	54	116	110	0.32
STATE TOTALS	872	162	141	104	408	64	0.47

Table 2. Summary of cottontail rabbits observed per mile during summer inventory, 1979-89.

Region and County	Year										Average 1979-88	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		1989
<u>Northern Region</u>												
Box Elder	0.33	--	0.37	0.01	--	--	--	0.02	0.03	--	0.03	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	0.30	0.11	0.13	0.16	--	--	0.02	--	--	--	--	--
Summit	--	--	--	--	0.18	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	0.32	0.11	0.26	0.06	0.18	--	0.02	0.02	0.03	--	0.03	0.14
<u>Central Region</u>												
Juab	0.23	0.29	1.12	0.38	--	0.00	0.00	0.02	0.00	0.00	0.54	0.30
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	1.15	1.06	1.29	0.78	0.57	--	--	--	--	0.47	0.22	--
Tooele	0.51	0.26	0.13	0.10	--	0.02	0.00	0.01	0.02	0.18	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	0.64	0.54	0.85	0.43	0.57	0.01	0.00	0.01	0.02	0.36	0.26	0.38
<u>Southern Region</u>												
Beaver	0.22	0.06	0.19	0.12	0.04	0.01	0.03	0.10	0.04	0.06	--	--
Garfield	0.15	--	--	0.27	0.25	--	0.06	0.13	--	--	--	--
Iron	0.45	0.45	--	0.18	0.38	0.27	0.33	0.53	0.26	--	--	--
Kane	0.34	--	0.69	--	--	--	0.52	0.47	0.97	1.09	--	--
Millard	0.52	0.18	0.56	0.28	0.16	0.04	0.02	0.08	0.09	0.09	--	--
Piute	0.02	--	0.10	0.13	0.03	--	--	0.06	0.05	--	--	--
Sevier	0.55	0.27	0.83	0.27	0.23	--	--	--	--	--	--	--
Washington	0.35	0.10	0.24	0.32	0.38	--	0.23	0.12	0.12	0.36	0.33	--
Wayne	0.56	0.54	0.49	0.69	--	0.80	--	0.20	0.24	0.34	--	--
REGIONAL TOTALS	0.37	0.22	0.45	0.29	0.19	0.18	0.19	0.24	0.27	0.33	0.33	0.27
<u>Northeastern Region</u>												
Daggett	1.58	0.40	0.32	0.45	0.58	0.22	0.12	0.22	0.66	0.85	0.50	--
Duchesne	0.24	0.42	1.78	2.28	0.58	0.28	0.13	0.44	0.86	1.49	1.04	--
Uintah	0.53	0.27	0.48	1.97	2.97	0.11	0.00	0.02	0.36	1.26	1.40	--
REGIONAL TOTALS	0.84	0.36	0.81	1.46	1.21	0.21	0.09	0.25	0.65	1.18	0.91	0.71
<u>Southeastern Region</u>												
Carbon	0.12	0.15	0.12	0.10	0.11	--	0.05	0.08	0.33	0.41	0.34	--
Emery	0.28	0.16	0.41	0.18	0.23	0.18	0.20	--	0.40	0.34	0.33	--
Grand	0.21	0.11	0.32	0.67	0.15	0.13	0.67	0.08	--	0.10	0.06	--
San Juan	0.20	0.60	0.42	1.26	0.40	--	0.14	0.37	0.29	0.59	0.55	--
REGIONAL TOTALS	0.21	0.30	0.36	0.58	0.25	0.17	0.13	0.17	0.38	0.36	0.32	0.29
STATE TOTALS	0.44	0.31	0.51	0.53	0.41	0.16	0.13	0.18	0.34	0.56	0.47	0.36

Table 3. Summary of cottontail rabbits young per 100 adults, 1979-89.

Region and County	Year										Average 1979-88		
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		1989	
<u>Northern Region</u>													
Box Elder	100	--	77	--	--	--	--	0	25	--	--	200	
Cache	--	--	--	--	--	--	--	--	--	--	--	--	
Davis	--	--	--	--	--	--	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	
Rich	60	67	43	63	67	--	--	50	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	85	67	71	63	67	--	--	20	25	--	--	200	57
<u>Central Region</u>													
Juab	13	78	102	53	--	0	0	0	0	20	13	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	312	352	197	209	225	--	--	--	--	88	40	--	
Tooele	100	71	200	80	--	--	--	--	100	120	--	--	
Utah	--	--	--	--	--	--	--	--	--	--	--	--	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	167	194	147	140	225	0	0	0	100	57	23	--	147
<u>Southern Region</u>													
Beaver	63	40	55	83	33	--	--	22	--	--	--	--	
Garfield	250	--	--	38	120	--	33	38	--	--	--	--	
Iron	44	23	--	57	35	40	82	75	--	--	--	--	
Kane	82	--	106	--	--	--	100	71	111	149	--	--	
Millard	190	96	170	94	125	75	200	170	114	110	--	--	
Piute	--	--	--	--	200	--	--	--	--	--	--	--	
Sevier	171	350	--	33	61	--	--	--	--	--	--	--	
Washington	94	--	123	150	81	--	73	133	175	100	131	--	
Wayne	214	308	287	343	--	380	--	360	2,100	244	--	--	
REGIONAL TOTALS	139	114	184	145	82	215	85	100	137	136	131	--	134
<u>Northeastern Region</u>													
Daggett	123	58	104	140	66	33	46	136	116	30	59	--	
Duchesne	200	61	42	37	16	22	15	26	24	39	29	--	
Uintah	82	160	176	44	76	233	0	100	264	170	239	--	
REGIONAL TOTALS	118	73	67	48	63	42	31	58	74	46	82	62	
<u>Southeastern Region</u>													
Carbon	230	133	83	66	40	--	--	150	567	500	400	--	
Emery	25	70	97	43	75	217	216	--	54	50	--	--	
Grand	50	250	137	148	150	33	300	300	--	--	--	--	
San Juan	30	68	105	72	43	--	43	61	47	49	80	--	
REGIONAL TOTALS	46	79	103	82	54	156	88	69	100	64	110	84	
STATE TOTALS	121	107	116	78	72	100	73	75	96	67	64	91	

Table 4. Summary of cottontail rabbit hunter success and distribution of harvest and hunting pressure by region and county, 1989.

Region and County	Sample Size*	Hunter-days Afield	Cottontails Bagged	Cottontails/Hunter-day	% of Pressure	% of Harvest
NORTHERN REGION						
BOX ELDER	111	6,699	8,649	1.29	7.34	7.20
CACHE	9	850	560	0.66	0.93	0.47
DAVIS	4	82	82	1.00	0.09	0.07
MORGAN	9	248	41	0.17	0.27	0.03
RICH	43	1,680	2,302	1.37	1.84	1.92
SUMMIT	17	1,493	871	0.58	1.64	0.73
WEBER	13	622	165	0.27	0.68	0.14
REGIONAL TOTALS	206	11,677	12,673	1.09	12.80	10.55
CENTRAL REGION						
JUAB	82	4,998	7,591	1.52	5.48	6.32
SALT LAKE	9	352	477	1.35	0.39	0.40
SANPETE	68	4,023	4,438	1.10	4.41	3.70
TOOELE	225	14,747	17,692	1.20	16.16	14.73
UTAH	142	6,948	6,243	0.90	7.61	5.20
WASATCH	8	373	560	1.50	0.41	0.47
REGIONAL TOTALS	534	31,444	37,003	1.18	34.45	30.82
SOUTHERN REGION						
BEAVER	10	1,161	477	0.41	1.27	0.40
GARFIELD	16	1,617	3,194	1.97	1.77	2.66
IRON	21	1,286	1,099	0.85	1.41	0.92
KANE	10	1,472	1,472	1.00	1.61	1.23
MILLARD	38	2,654	3,360	1.27	2.91	2.80
PIUTE	6	373	103	0.28	0.41	0.09
SEVIER	40	2,053	1,991	0.97	2.25	1.66
WASHINGTON	28	3,567	3,235	0.91	3.91	2.69
WAYNE	11	1,161	1,223	1.05	1.27	1.02
REGIONAL TOTALS	180	15,349	16,158	1.05	16.82	13.46
NORTHEASTERN REGION						
DAGGETT	22	2,343	3,858	1.65	2.57	3.21
DUCHESNE	106	9,956	14,851	1.49	10.91	12.37
UINTAH	104	7,342	23,189	3.16	8.05	19.31
REGIONAL TOTALS	232	19,642	41,898	2.13	21.52	34.89
SOUTHEASTERN REGION						
CARBON	66	5,662	5,475	0.97	6.20	4.56
EMERY	57	5,683	4,542	0.80	6.23	3.78
GRAND	7	311	311	1.00	0.34	0.26
SAN JUAN	15	1,348	1,721	1.28	1.48	1.43
REGIONAL TOTALS	145	13,005	12,051	0.93	14.25	10.04
UNKNOWN	3	145	290	2.00	0.16	0.24
STATE TOTALS	1,300	91,264	120,075	1.32	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 5. Summary of cottontail rabbits bagged per hunter-day by region and county, 1982-89.

Region and County	Year							
	1982	1983	1984	1985	1986	1987	1988	1989
<u>Northern Region</u>								
Box Elder	1.12	1.44	0.72	0.46	0.73	2.25	1.78	1.29
Cache	0.61	0.77	0.71	0.93	0.18	1.78	0.37	0.66
Davis	0.00	1.05	0.57	0.00	4.00	0.67	0.50	1.00
Morgan	0.95	1.65	1.19	0.55	0.05	1.17	1.50	0.17
Rich	1.03	2.28	1.61	0.52	0.74	1.33	1.86	1.37
Summit	0.87	1.44	0.17	0.35	0.29	1.44	0.92	0.58
Weber	0.70	0.56	0.68	0.13	0.69	2.83	0.61	0.27
<u>REGIONAL TOTALS</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>1.09</u>
<u>Central Region</u>								
Juab	1.43	1.21	1.41	0.56	0.78	1.74	1.52	1.52
Salt Lake	1.07	1.74	0.88	0.21	1.06	1.26	0.53	1.35
Sanpete	0.86	1.12	0.48	0.35	0.60	1.25	1.62	1.10
Tooele	1.12	1.21	0.82	0.53	0.71	1.32	1.37	1.20
Utah	0.74	1.02	0.82	0.65	0.94	1.21	1.04	0.90
Wasatch	0.80	0.49	0.69	0.48	0.84	1.28	0.99	1.50
<u>REGIONAL TOTALS</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>1.18</u>
<u>Southern Region</u>								
Beaver	2.00	1.25	0.28	0.50	0.61	1.00	1.44	0.41
Garfield	1.86	0.98	0.84	1.00	1.25	0.71	1.41	1.97
Iron	0.77	0.80	1.48	0.60	0.87	0.44	1.58	0.85
Kane	1.84	0.58	2.19	2.07	1.12	0.58	1.41	1.00
Millard	1.58	1.04	0.89	0.86	0.70	0.82	1.09	1.27
Piute	0.38	0.80	0.67	1.00	1.00	1.00	1.25	0.28
Sevier	0.87	0.66	0.79	0.56	0.56	1.04	1.45	0.97
Washington	1.53	0.92	0.93	1.08	0.94	0.95	2.10	0.91
Wayne	1.41	1.52	1.93	1.45	1.53	1.22	1.49	1.05
<u>REGIONAL TOTALS</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>1.05</u>
<u>Northeastern Region</u>								
Daggett	1.38	1.77	1.19	1.00	1.96	3.16	3.02	1.65
Duchesne	2.17	3.41	1.62	0.63	1.01	1.63	2.38	1.49
Uintah	2.18	3.09	1.47	0.49	0.49	1.89	2.32	3.16
<u>REGIONAL TOTALS</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>2.13</u>
<u>Southeastern Region</u>								
Carbon	1.61	1.73	0.52	0.69	0.49	1.34	1.29	0.97
Emery	1.38	1.61	0.78	0.64	1.05	1.00	1.78	0.80
Grand	2.44	2.27	1.53	1.74	1.28	2.00	2.03	1.00
San Juan	2.93	2.09	1.51	0.89	1.27	2.57	1.67	1.28
<u>REGIONAL TOTALS</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>	<u>0.93</u>
Unknown counties	1.35	1.78	0.00	1.11	2.50	1.04	1.49	2.00
<u>STATE TOTALS</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>	<u>1.32</u>

Table 6. Percentage distribution of cottontail rabbit harvest by region and county, 1982-89.

Region and County	Year							
	1982	1983	1984	1985	1986	1987	1988	1989
Northern Region								
Box Elder	6.05	5.93	5.49	3.82	5.68	12.83	12.11	7.20
Cache	0.36	0.33	0.50	0.96	0.25	0.91	0.27	0.47
Davis	0.00	0.16	0.12	0.00	0.41	0.04	0.12	0.07
Morgan	0.38	0.64	0.73	1.16	0.10	0.15	0.19	0.03
Rich	0.36	0.96	2.08	0.89	1.98	0.53	1.05	1.92
Summit	0.65	0.83	0.29	1.16	0.56	0.57	0.77	0.73
Weber	0.38	0.11	0.56	0.27	0.56	1.44	0.42	0.14
REGIONAL TOTALS	8.19	8.95	9.77	8.26	9.53	16.49	14.96	10.55
Central Region								
Juab	5.76	1.95	5.28	2.04	2.84	5.17	6.05	6.32
Salt Lake	1.09	1.16	2.29	0.48	0.91	1.19	0.49	0.40
Sanpete	0.94	1.21	0.82	1.23	2.38	5.61	3.74	3.70
Tooele	10.04	6.53	9.18	10.51	9.99	11.67	13.72	14.73
Utah	3.55	3.44	5.43	8.26	7.66	11.07	8.61	5.20
Wasatch	0.73	0.17	0.91	1.57	1.83	1.73	0.92	0.47
REGIONAL TOTALS	22.10	14.44	23.91	24.09	25.61	36.47	33.55	30.82
Southern Region								
Beaver	0.76	0.30	0.32	1.30	1.12	0.95	0.68	0.40
Garfield	0.64	0.32	0.47	0.61	3.04	0.26	0.42	2.66
Iron	0.81	0.52	1.82	1.23	2.94	0.26	1.54	0.92
Kane	0.34	0.29	2.05	1.98	2.43	0.33	0.84	1.23
Millard	4.94	1.50	3.64	5.66	4.26	3.48	2.99	2.80
Piute	0.08	0.06	0.12	0.20	0.30	0.08	0.22	0.09
Sevier	0.79	0.48	0.56	1.23	0.91	1.22	2.28	1.66
Washington	2.99	1.49	5.05	10.99	6.09	0.77	1.90	2.69
Wayne	0.98	0.61	2.43	2.18	1.17	0.48	0.77	1.02
REGIONAL TOTALS	12.33	5.56	16.46	25.35	22.26	7.88	11.69	13.46
Northeastern Region								
Daggett	1.28	1.36	2.20	1.84	5.58	4.41	2.82	3.21
Duchesne	15.10	16.19	13.17	9.21	7.05	7.68	9.43	12.37
Uintah	14.70	29.37	14.23	5.87	3.35	7.03	13.20	19.31
REGIONAL TOTALS	31.08	46.93	29.61	16.93	15.97	19.13	25.45	34.89
Southeastern Region								
Carbon	9.98	9.60	4.90	7.30	4.87	6.26	4.65	4.56
Emery	5.47	6.98	4.69	9.76	9.53	5.63	5.91	3.78
Grand	2.79	2.15	5.99	4.16	5.07	2.53	0.74	0.26
San Juan	5.78	4.55	4.66	3.41	6.90	2.90	0.77	1.43
REGIONAL TOTALS	24.01	23.28	20.25	24.64	26.37	17.34	12.09	10.04
Unknown counties	2.28	0.84	0.00	0.68	0.25	2.66	2.24	0.24
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, 1982-89.

Region and County	Year							
	1982	1983	1984	1985	1986	1987	1988	1989
Northern Region								
Box Elder	8.04	7.73	7.77	5.40	6.52	8.17	10.53	7.34
Cache	0.88	0.79	0.72	0.66	1.18	0.73	1.15	0.93
Davis	0.15	0.29	0.21	1.42	0.08	0.09	0.37	0.09
Morgan	0.59	0.72	0.63	1.37	1.65	0.19	0.20	0.27
Rich	0.52	0.79	1.32	1.11	2.24	0.57	0.87	1.84
Summit	1.10	1.08	1.74	2.13	1.61	0.57	1.30	1.64
Weber	0.81	0.38	0.84	1.33	0.68	0.73	1.06	0.68
REGIONAL TOTALS	12.10	11.79	13.23	13.42	13.97	11.07	15.51	12.80
Central Region								
Juab	5.98	3.05	3.84	2.39	3.05	4.26	6.15	5.48
Salt Lake	1.51	1.25	2.67	1.46	0.72	1.36	1.46	0.39
Sanpete	1.61	2.03	1.74	2.26	3.30	6.45	3.57	4.41
Tooele	13.25	10.12	11.43	12.98	11.68	12.63	15.44	16.16
Utah	7.15	6.26	6.78	8.24	6.81	13.07	12.83	7.61
Wasatch	1.36	0.65	1.35	2.13	1.82	1.94	1.44	0.41
REGIONAL TOTALS	30.86	23.36	27.82	29.46	27.38	39.73	40.90	34.45
Southern Region								
Beaver	0.57	0.44	1.20	1.68	1.52	1.36	0.73	1.27
Garfield	0.51	0.61	0.57	0.40	2.03	0.54	0.46	1.77
Iron	1.57	1.22	1.26	1.33	2.84	0.85	1.51	1.41
Kane	0.28	0.93	0.96	0.62	1.82	0.82	0.92	1.61
Millard	4.64	2.73	4.20	4.30	5.08	6.07	4.24	2.91
Piute	0.30	0.14	0.18	0.13	0.25	0.12	0.27	0.41
Sevier	1.35	1.38	0.72	1.42	1.35	1.68	2.43	2.25
Washington	2.90	3.05	5.52	6.60	5.42	1.17	1.40	3.91
Wayne	1.03	0.75	1.29	0.97	0.63	0.57	0.80	1.27
REGIONAL TOTALS	13.14	11.25	15.91	17.46	20.95	13.23	12.81	16.82
Northeastern Region								
Daggett	1.38	1.45	1.89	1.19	2.37	2.00	1.44	2.57
Duchesne	10.33	8.93	8.34	9.44	5.80	6.74	6.13	10.91
Uintah	9.98	17.87	9.87	7.84	5.71	5.34	8.81	8.05
REGIONAL TOTALS	21.69	28.25	20.11	18.48	13.88	14.09	16.38	21.52
Southeastern Region								
Carbon	9.20	10.42	9.66	6.82	8.34	6.68	5.60	6.20
Emery	5.88	8.18	6.12	9.92	7.58	8.08	5.15	6.23
Grand	1.70	1.78	3.99	1.55	3.30	1.81	0.56	0.34
San Juan	2.93	4.09	3.15	2.48	4.53	1.62	0.72	1.48
REGIONAL TOTALS	19.70	24.46	22.93	20.78	23.74	18.19	12.04	14.25
Unknown counties	2.51	0.89	0.00	0.40	0.08	3.65	2.33	0.16
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, 1967-89.

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
1989	22,878	120,075	91,264	1.32	5.25
TOTALS (1967-89)	572,923	3,698,749	2,295,213	(33.30)	(137.17)
AVERAGES (1967-88)	25,002	162,667	100,180	1.45	6.00

Table 9. Cottontail rabbit field bag check summary, 1989.

Region and County	ALL HUNTS					COMPLETE HUNTS					
	Total Parties	Total Hunters	Total Hours	Total Rabbits	Total Rabbits/100 Hr	Total Complete Hunts	Total Hunters	Total Hours	Total Rabbits	Rabbits/100 Hr	Rabbits/Hunter
<u>Northern Region</u>											
Box Elder	8	20	22	27	126	3	7	7	22	314	3.14
Cache	--	--	--	--	--	--	--	--	--	--	--
Davis	1	2	5	5	100	1	4	5	5	100	1.25
Morgan	--	--	--	--	--	--	--	--	--	--	--
Rich	3	7	31	13	42	3	7	31	13	42	1.86
Summit	--	--	--	--	--	--	--	--	--	--	--
Weber	1	2	3	1	33	--	--	--	--	--	--
REGIONAL TOTALS	13	33	61	46	76	7	18	43	40	93	2.22
<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	1	2	2	3	150	1	2	2	3	150	1.50
Wayne	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	1	2	2	3	150	1	2	2	3	150	1.50
<u>Northeastern Region</u>											
Daggett	4	8	8	11	133	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--
Uintah	20	37	82	61	74	9	13	30	28	93	2.20
REGIONAL TOTALS	24	45	90	72	80	9	13	30	28	93	2.20
<u>Southeastern Region</u>											
Carbon	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
STATE TOTALS	38	80	153	121	79	17	33	75	71	95	2.15

Table 10. Cottontail hunter success trend determined by field bag checks, 1984-89.

Region and County	1984		1985		1986		1987		1988		1989	
	Bag/ 100 Hr Hunter	Bag/ Hunter	Bag/ 100 Hr Hunter	Bag/ Hunter	Bag/ 100 Hr Hunter	Bag/ Hunter	Bag/ 100 Hr Hunter	Bag/ Hunter	Bag/ 100 Hr Hunter	Bag/ Hunter	Bag/ 100 Hr Hunter	Bag/ Hunter
<u>Northern Region</u>												
Box Elder	--	--	--	--	0	0	28	1.43	44	1.84	314	3.14
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	100	1.25	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	43	1.50	42	1.86
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	0	0	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	28	1.43	44	1.77	93	2.22	--
<u>Central Region</u>												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
<u>Southern Region</u>												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	21	0.80	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	150	1.50
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	21	0.80	--	--	--	--	--	--	150	1.50
<u>Northeastern Region</u>												
Daggett	107	3.20	--	--	--	--	0	3.33	379	8.00	--	--
Duchesne	100	0.75	--	--	0	0	63	3.33	104	2.94	--	--
Uintah	111	1.91	--	--	100	1.50	70	1.76	147	4.00	93	2.20
REGIONAL TOTALS	108	2.00	--	--	50	0.75	68	1.93	149	4.01	93	2.20
<u>Southeastern Region</u>												
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	50	1.33	--	--	--	--	--	--	20	0.33	--	--
REGIONAL TOTALS	61	2.13	--	--	133	3.33	--	--	32	0.67	--	--
STATE TOTALS	76	2.06	21	0.80	36	1.21	43	1.68	83	2.69	95	2.15

SNOWSHOE HARE

Harvest

Results of the 1989 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 1989 season compared to 1988 and the 14-year average follow:

	<u>1989</u>	<u>Percent change from</u>	
		<u>1988</u>	<u>Average</u>
Snowshoe hare hunters	4,895	+4	-7
Snowshoe hares harvested	8,006	-3	-28
Hunter-days afield	13,233	-14	-15
Snowshoes per hunter-day	0.61	+15	-8
Snowshoes per hunter	1.64	-6	-17

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. Several attempts were made in the 1970's to reduce misidentification through pictures and descriptions in leaflets and questionnaires.

The 1988 and 1989 questionnaires and 1989 Upland Game Proclamation had drawings and descriptions of the various rabbits in an attempt to reduce misidentification.

Results of the 1989 questionnaire indicate a 15 percent increase in hunter success compared to 1988. However, success was below the 14-year average.

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, 1989.

Region and County	Sample Size*	Hunter-days Afield	Snowshoes Bagged	Snowshoes/Hunter-day	% of Pressure	% of Harvest
NORTHERN REGION						
BOX ELDER	12	746	248	0.33	5.64	3.11
CACHE	20	829	912	1.10	6.27	11.40
DAVIS	2	41	62	1.50	0.31	0.78
MORGAN	9	228	82	0.36	1.72	1.04
RICH	27	1,223	622	0.51	9.25	7.77
SUMMIT	12	456	331	0.73	3.45	4.15
WEBER	8	207	103	0.50	1.57	1.30
REGIONAL TOTALS	90	3,733	2,364	0.63	28.21	29.54
CENTRAL REGION						
JUAB	0	0	0	0.00	0.00	0.00
SALT LAKE	4	165	62	0.38	1.25	0.78
SANPETE	18	1,161	746	0.64	8.78	9.33
TOOELE	14	891	684	0.77	6.74	8.55
UTAH	20	850	311	0.37	6.43	3.89
WASATCH	14	497	497	1.00	3.76	6.22
REGIONAL TOTALS	70	3,567	2,302	0.65	26.96	28.76
SOUTHERN REGION						
BEAVER	2	82	0	0.00	0.63	0.00
GARFIELD	5	414	145	0.35	3.13	1.81
IRON	0	0	0	0.00	0.00	0.00
KANE	0	0	0	0.00	0.00	0.00
MILLARD	2	124	124	1.00	0.94	1.55
PIUTE	5	228	145	0.64	1.72	1.81
SEVIER	10	414	228	0.55	3.13	2.85
WASHINGTON	1	20	0	0.00	0.16	0.00
WAYNE	10	746	373	0.50	5.64	4.66
REGIONAL TOTALS	35	2,032	1,016	0.50	15.36	12.69
NORTHEASTERN REGION						
DAGGETT	1	20	20	1.00	0.16	0.26
DUCHESNE	16	995	539	0.54	7.52	6.74
UINTAH	15	829	186	0.23	6.27	2.33
REGIONAL TOTALS	32	1,846	746	0.40	13.95	9.33
SOUTHEASTERN REGION						
CARBON	9	871	871	1.00	6.58	10.88
EMERY	18	1,120	601	0.54	8.46	7.51
GRAND	0	0	0	0.00	0.00	0.00
SAN JUAN	1	62	103	1.67	0.47	1.30
REGIONAL TOTALS	28	2,053	1,576	0.77	15.52	19.69
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	255	13,233	8,006	0.61	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 12. Summary of snowshoe hares bagged per hunter-day by region and county, 1983-89.

Region and County	Year						
	1983	1984	1985	1986	1987	1988	1989
<u>Northern Region</u>							
Box Elder	0.27	2.93	0.14	0.38	0.35	0.78	0.33
Cache	0.53	1.27	0.75	0.00	1.67	0.21	1.10
Davis	0.00	0.29	0.11	0.50	0.25	0.40	1.50
Morgan	0.45	0.14	0.00	0.03	0.00	0.67	0.36
Rich	0.67	0.58	0.06	0.56	1.27	0.33	0.51
Summit	0.94	0.61	0.63	0.29	0.50	0.36	0.73
Weber	0.39	0.31	0.17	1.00	0.38	0.25	0.50
REGIONAL TOTALS	0.47	1.30	0.33	0.29	0.76	0.40	0.63
<u>Central Region</u>							
Juab	1.20	0.33	0.00	1.44	0.00	0.17	0.00
Salt Lake	0.00	0.23	0.17	0.30	0.00	0.48	0.38
Sanpete	0.48	0.80	0.23	0.30	0.57	0.68	0.64
Tooele	0.94	0.68	0.24	0.21	0.75	0.28	0.77
Utah	0.38	0.71	0.64	0.53	0.39	0.44	0.37
Wasatch	0.65	0.44	0.32	0.68	0.56	0.77	1.00
REGIONAL TOTALS	0.60	0.55	0.33	0.54	0.48	0.50	0.65
<u>Southern Region</u>							
Beaver	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Garfield	0.00	0.00	0.40	0.11	0.00	0.00	0.35
Iron	0.17	3.00	0.50	0.00	0.00	0.00	0.00
Kane	0.00	0.00	0.75	0.00	0.00	0.00	0.00
Millard	0.00	0.00	0.00	1.00	2.80	1.20	1.00
Piute	1.45	0.20	0.00	0.00	0.00	3.00	0.64
Sevier	0.36	0.00	0.25	0.63	0.60	0.75	0.55
Washington	1.00	0.00	0.50	0.00	0.00	2.00	0.00
Wayne	0.81	1.22	1.00	0.38	1.14	0.00	0.50
REGIONAL TOTALS	0.67	0.65	0.46	0.45	0.88	0.47	0.50
<u>Northeastern Region</u>							
Daggett	0.60	0.33	1.00	0.50	1.00	1.96	1.00
Duchesne	0.89	0.43	0.30	0.41	0.65	0.63	0.54
Uintah	0.61	0.20	0.49	0.13	1.31	0.89	0.23
REGIONAL TOTALS	0.69	0.30	0.41	0.28	0.91	1.02	0.40
<u>Southeastern Region</u>							
Carbon	0.10	0.13	0.29	0.09	1.00	0.46	1.00
Emery	0.59	0.19	0.67	0.13	0.57	0.94	0.54
Grand	0.00	0.00	0.00	0.75	0.00	0.00	0.00
San Juan	0.00	2.00	0.00	1.00	5.00	1.00	1.67
REGIONAL TOTALS	0.36	0.17	0.37	0.16	0.81	0.83	0.77
Unknown counties	0.65	0.00	0.00	0.00	0.40	0.42	0.00
STATE TOTALS	0.57	0.60	0.36	0.37	0.67	0.53	0.61

Table 13. Percentage distribution of snowshoe hare harvested by region and county, 1983-89.

Region and County	Year						
	1983	1984	1985	1986	1987	1988	1989
<u>Northern Region</u>							
Box Elder	5.30	36.79	3.12	3.49	3.26	14.80	3.11
Cache	4.87	4.40	3.73	0.00	10.20	4.86	11.40
Davis	0.00	0.62	1.87	0.58	0.40	1.21	0.78
Morgan	2.75	0.31	0.00	0.58	0.00	0.40	1.04
Rich	2.11	2.20	0.61	5.80	7.75	3.24	7.77
Summit	7.00	7.85	24.99	6.98	4.89	6.08	4.15
Weber	1.90	1.25	1.22	5.23	1.22	1.82	1.30
REGIONAL TOTALS	23.93	53.46	35.61	22.67	27.75	32.45	29.54
<u>Central Region</u>							
Juab	1.27	0.62	0.00	13.37	0.00	0.81	0.00
Salt Lake	0.00	0.93	0.61	1.74	0.00	2.43	0.78
Sanpete	2.54	1.25	1.87	5.80	6.93	10.14	9.33
Tooele	10.17	4.07	5.60	3.49	4.89	3.24	8.55
Utah	6.36	6.91	9.97	14.53	8.57	6.89	3.89
Wasatch	4.67	5.02	3.73	14.53	8.16	8.31	6.22
REGIONAL TOTALS	25.01	18.87	21.87	53.49	28.57	31.84	28.76
<u>Southern Region</u>							
Beaver	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Garfield	0.00	0.00	1.22	0.58	0.00	0.00	1.81
Iron	0.21	0.93	1.22	0.00	0.00	0.00	0.00
Kane	0.00	0.00	1.87	0.00	0.00	0.00	0.00
Millard	0.00	0.00	0.00	2.33	5.71	1.21	1.55
Piute	3.38	0.31	0.00	0.00	0.00	1.21	1.81
Sevier	1.68	0.00	1.22	2.91	2.44	1.82	2.85
Washington	0.84	0.00	2.48	0.00	0.00	0.40	0.00
Wayne	4.67	6.91	2.48	1.74	3.26	0.00	4.66
REGIONAL TOTALS	10.78	8.16	10.62	7.56	11.42	4.66	12.69
<u>Northeastern Region</u>							
Daggett	0.63	0.31	3.12	0.58	0.81	9.53	0.26
Duchesne	11.66	8.16	9.97	6.98	6.93	6.28	6.74
Uintah	19.09	5.34	11.87	2.33	8.57	5.07	2.33
REGIONAL TOTALS	31.39	13.83	24.99	9.88	16.32	20.89	9.33
<u>Southeastern Region</u>							
Carbon	0.84	3.45	4.37	2.33	5.71	1.21	10.88
Emery	5.73	0.93	2.48	1.16	6.53	6.49	7.51
Grand	0.00	0.00	0.00	1.74	0.00	0.00	0.00
San Juan	0.00	1.25	0.00	1.16	2.04	1.41	1.30
REGIONAL TOTALS	6.57	5.65	6.85	6.40	14.28	9.12	19.69
Unknown counties	2.33	0.00	0.00	0.00	1.63	1.01	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, 1983-89.

Region and County	Year						
	1983	1984	1985	1986	1987	1988	1989
Northern Region							
Box Elder	11.21	7.49	8.34	3.46	6.30	10.16	5.64
Cache	5.19	2.06	1.80	2.81	4.10	12.64	6.27
Davis	0.00	1.31	6.09	0.43	1.09	1.62	0.31
Morgan	3.49	1.31	2.25	7.78	0.27	0.32	1.72
Rich	1.80	2.24	3.60	3.89	4.10	5.18	9.25
Summit	4.22	7.68	14.22	8.86	6.57	9.08	3.45
Weber	2.77	2.43	2.71	1.94	2.19	3.89	1.57
REGIONAL TOTALS	28.68	24.53	39.05	29.16	24.65	42.91	28.21
Central Region							
Juab	0.60	1.12	1.13	3.46	0.54	2.59	0.00
Salt Lake	0.36	2.43	1.35	2.16	2.19	2.70	1.25
Sanpete	3.01	0.93	2.93	7.13	8.21	8.00	8.78
Tooele	6.15	3.55	8.34	6.05	4.38	6.27	6.74
Utah	9.64	5.80	5.64	10.15	14.79	8.43	6.43
Wasatch	4.10	6.73	4.29	7.99	9.86	5.72	3.76
REGIONAL TOTALS	23.86	20.60	23.70	36.93	40.00	33.72	26.96
Southern Region							
Beaver	0.12	1.31	0.00	0.00	0.00	1.83	0.63
Garfield	0.12	0.18	1.13	1.94	0.27	0.10	3.13
Iron	0.72	0.18	0.90	0.00	2.19	0.00	0.00
Kane	0.00	0.00	0.90	0.00	0.00	0.00	0.00
Millard	0.48	0.18	0.90	0.86	1.36	0.54	0.94
Piute	1.33	0.93	0.00	0.00	0.27	0.21	1.72
Sevier	2.65	1.31	1.80	1.73	2.73	1.29	3.13
Washington	0.48	0.00	1.80	0.00	0.00	0.10	0.16
Wayne	3.26	3.37	0.90	1.73	1.91	1.18	5.64
REGIONAL TOTALS	9.15	7.49	8.34	6.26	8.76	5.29	15.36
Northeastern Region							
Daggett	0.60	0.55	1.13	0.43	0.54	2.59	0.16
Duchesne	7.48	11.42	12.19	6.26	7.12	5.29	7.52
Uintah	17.72	15.73	8.80	6.48	4.38	3.02	6.27
REGIONAL TOTALS	25.80	27.71	22.12	13.17	12.04	10.91	13.95
Southeastern Region							
Carbon	4.82	16.10	5.41	9.94	3.83	1.40	6.58
Emery	5.55	2.99	1.35	3.24	7.67	3.67	8.46
Grand	0.00	0.18	0.00	0.86	0.00	0.00	0.00
San Juan	0.12	0.37	0.00	0.43	0.27	0.75	0.47
REGIONAL TOTALS	10.48	19.66	6.76	14.47	11.78	5.83	15.52
Unknown counties	2.05	0.00	0.00	0.00	2.73	1.29	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, 1975-89.

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
1989	4,895	8,006	13,233	0.61	1.64
<hr/>					
TOTALS (1975-89)	78,358	164,562	230,524	(9.84)	(29.22)
<hr/>					
AVERAGES (1975-88)	5,247	11,182	15,521	0.66	1.97

A P P E N D I X

APPENDIX A

WEATHER CONDITIONS

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

The 1988-89 winter weather was relatively mild again. Below average precipitation fell between December 1988 and March 1989 but December 1988 through February 1989 temperatures were well below average. April and May precipitation was below normal across, most of the seven climatic subdivisions.

Temperatures remained above average March through July while precipitation averages stayed below normal. This warmer weather and below average precipitation may have hindered hatching successes and reduced brood survival for some upland game populations.

Table 1. Comparison of 1989 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
1989	19.2	24.5	44.6	53.0	57.1	65.3	76.9	71.1	62.6	50.1	38.0	28.3
Departure (degrees)	-7.7	-8.2	+5.9	+6.0	+6	-4	+2.5	-9	+2	-4	+8	-1
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
1989	37.3	42.7	55.8	64.9	68.6	76.8	84.5	77.2	72.5	60.7	50.9	41.8
Departure (degrees)	-1.4	-1.2	+7.0	+8.5	+3.2	+1.6	+2.5	-2.5	-1	-8	+3.1	+2.0
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
1989	19.7	23.5	43.7	53.1	58.0	66.0	77.6	72.3	64.2	51.8	39.0	29.2
Departure (degrees)	-7.3	-8.4	+5.1	+5.7	+9	+1	+3.0	+1	+1.1	+5	+1.0	+3
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
1989	19.7	26.8	43.8	51.6	55.5	63.3	73.2	67.4	61.2	49.3	39.0	30.1
Departure (degrees)	-7.4	-4.8	+6.8	+6.7	+1.5	+2	+2.8	-6	+1.0	-5	+1.9	+1.3
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
1989	16.9	18.8	36.9	45.8	50.9	57.7	68.4	63.3	56.5	45.1	34.5	23.9
Departure (degrees)	-4.3	-5.9	+6.3	+5.8	+1.3	+1	+3.1	+2	+1.5	+2	+2.5	+3
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
1989	11.8	14.5	40.1	52.1	57.7	64.6	74.7	68.5	60.9	49.3	36.6	24.4
Departure (degrees)	-5.4	-9.6	+4.6	+5.9	+1.5	-3	+2.6	-8	+6	+8	+3.1	+3.2
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
1989	22.1	31.1	47.9	56.8	62.5	70.1	78.9	73.3	66.7	53.7	42.3	31.0
Departure (degrees)	-4.9	-2.7	+6.9	+6.6	+2.7	+4	+2.3	-5	+1.3	0.0	+2.8	+1.7
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
1989	21.0	26.0	44.7	53.9	58.6	66.3	76.3	70.4	63.5	51.4	40.0	29.8
Departure (degrees)	-5.4	-5.8	+6.1	+6.5	+1.7	+3	+2.7	-8	+8	-1	+2.1	+1.2

Table 2. Comparison of 1989 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
1989	.27	.52	.71	.22	1.17	.54	.38	1.08	.43	.52	.22	.05
Departure (inches)	-.32	-.05	-.03	-.59	+2.6	-.13	-.25	+3.6	-.12	-.13	-.40	-.49
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
1989	1.03	.78	.73	.00	.73	.02	.31	1.47	.14	.53	.01	.00
Departure (inches)	-.32	-.58	-.69	-.82	+0.7	-.34	-.47	+4.6	-.62	-.25	-.98	-.96
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
1989	.70	1.50	1.86	.77	1.27	.49	.49	.77	1.08	1.47	.94	.18
Departure (inches)	-.86	+1.1	+2.6	-1.19	-.33	-.70	-.16	-.18	+0.9	+1.6	-.40	-1.23
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
1989	.91	.81	.96	.35	.62	.35	.89	1.30	.51	.75	.33	.10
Departure (inches)	-.18	-.25	-.19	-.69	-.32	-.19	-.07	-.01	-.49	-.17	-.65	-.87
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
1989	1.02	1.74	2.19	1.22	.99	1.04	.85	1.08	1.57	1.06	1.52	.35
Departure (inches)	-1.14	-.18	+3.0	-.66	-.55	-.13	-.03	-.15	+4.2	-.39	-.10	-1.63
No. 6 UTAH 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
1989	.20	.77	.33	.13	.25	.38	.44	.96	.74	.49	.20	.03
Departure (inches)	-.31	+3.2	-.24	-.55	-.53	-.34	-.14	+1.5	+0.3	-.38	-.34	-.58
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
1989	.66	.49	.54	.03	.34	.13	.91	1.20	.26	.40	.01	.00
Departure (inches)	-.06	-.12	-.10	-.58	-.33	-.27	+1.4	+1.5	-.52	-.69	-.72	-.74
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
1989	0.70	0.94	1.05	0.39	0.77	0.42	0.61	1.12	0.68	0.70	0.05	0.10
Departure (inches)	-0.44	-0.11	-0.09	-0.72	-0.24	-0.30	-0.14	+0.11	-0.17	-0.31	-0.92	-0.93

TEMP. DEPARTURE FROM NORMAL

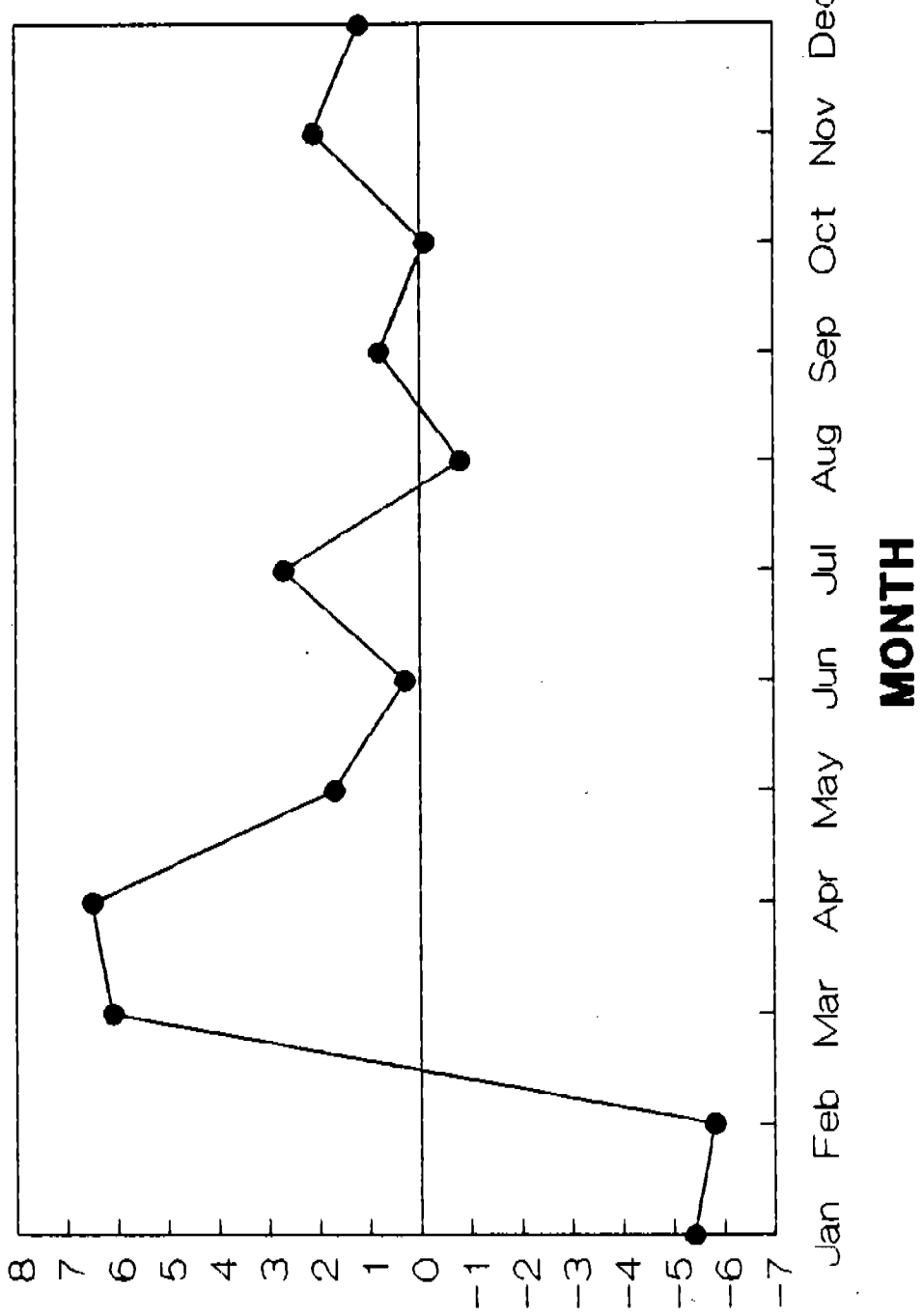


Figure 1. Monthly average temperature departure from normal (degrees F), 1989.

PRECIP. DEPARTURE FROM NORMAL

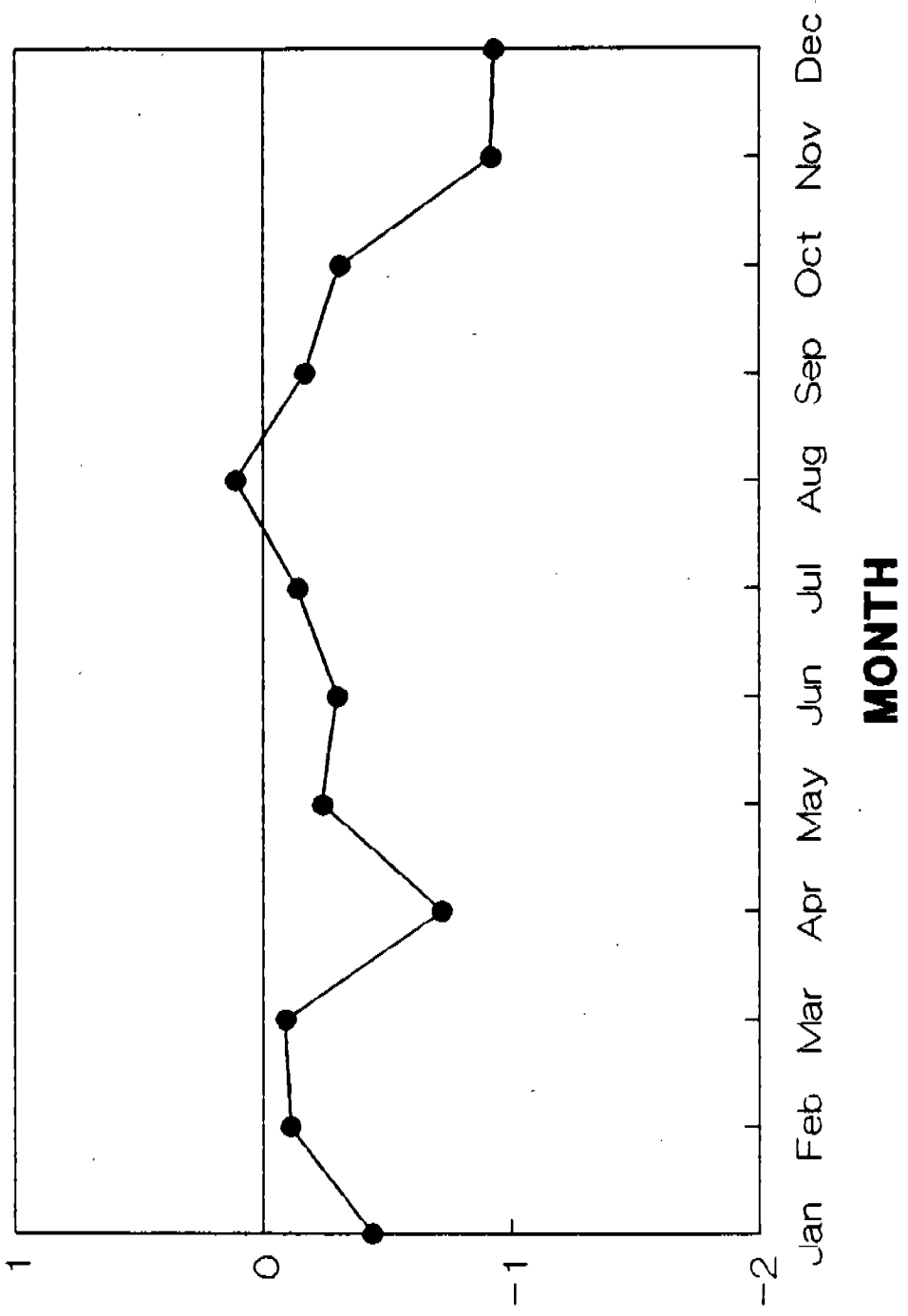


Figure 2. Monthly average precipitation departure from normal (inches), 1989.

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 juvenile, increased slightly in 1989. Juvenile small game license sales probably decreased in 1988 and 1989 due in part to legislative change in juvenile-adult age break from 16 to 14 years of age. However, adult resident small game licenses did not increase the same amount as juvenile small game licenses decreased to compensate.

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 6 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, 1954-89.

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
1989	25,845	12.00	5,769	6.00	1,422	40.00	74,274	35.00

Table 2. Actual (1971-1989) 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	Resident Small Game Licenses Sold	Proportion Hunting Small Game
1971	1,101,000	101,421	9.2
1972	1,135,000	110,691	9.8
1973	1,169,000	115,129	9.8
1974	1,197,000	112,963	9.4
1975	1,234,000	108,636	8.8
1976	1,272,000	85,268	6.7
1977	1,316,000	86,549	6.6
1978	1,364,000	95,637	7.0
1979	1,416,000	100,116	7.1
1980	1,461,037	110,039	7.5
1981	1,524,830	103,041	6.8
1982	1,588,622	99,744	6.3
1983	1,652,415	93,303	5.6
1984	1,716,207	88,084	5.1
1985	1,780,000	94,991	5.4
1986 ^a	1,665,000	82,777	5.0
1987 ^a	1,678,000	85,099	5.1
1988	1,695,000	92,677	5.5
1989 ^a	1,715,000	92,031	5.4
1995 ^a	1,842,100	105,000	5.7
2000a	1,935,600	115,000	5.9

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

^aUtah Population Estimate Committee Report for July 1 (Office of State Planning Coordinator)

Table 3. Small game license sales and income, 1971-89 (JSG=juvenile small game, RSG=adult resident small game, CMB=combination license, NRSG=nonresident small game).

Year	License Fees			Number of Licenses Sold			No. Federal Duck Stamps			Total Gross Revenue Attributed to Small Game (\$)			
	JSG	RSG	CMB	JSG ⁴	RSG	CMB	NRSG	Sold ³	JSG ⁴	RSG	CMB ²	NRSG	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	313,676
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	340,288
1973	2.50	4.50	10.00	16,522	18,836	115,436	964	35,665	20,652	84,762	247,290	19,280	352,704
1974	2.50	4.50	10.00	16,334	17,434	117,770	974	38,575	20,417	78,453	245,504	19,480	344,374
1975	2.50	4.50	10.00	15,869	17,057	115,362	967	39,652	19,836	76,756	234,701	19,340	330,993
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	407,534
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	418,734
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	467,339
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	494,488
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	694,716
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	661,985
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	638,477
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	588,539
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	565,444
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	884,431
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	786,615
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	794,406
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	873,261
1989	6.00	12.00	35.00	5,769	25,845	74,274	1,422	13,857	17,307	310,140	563,691	56,880	891,138

¹Value does not include cougar, bear, turkey permits and commercial hunting area licenses. It does not include NRSG Revenue - this is assumed to be primarily non-resident bear and cougar hunters.

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 1989.

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. Effort by conservation officers on upland game surveys in the Southeastern and Central Regions have been minimal for several years because of specialization. Conservation officers and biologist duties were separated into law enforcement and game management, respectively, in these regions two years ago. Rumors of similar re-organization may have reduced CO effort on upland game surveys in other regions in 1989. Under Phase I of the reorganization, there should be an increase in game management personnel and a significant improvement in upland game survey effort beginning in 1991.

Table 1. Regional and statewide summary of effort expended on upland game summer inventory, 1971-89.

Species	R E G I O N												STATE TOTALS				
	Northern		Central		Southern		Northeastern		Southeastern		Miles	Hours	Miles	Hours			
Pheasant																	
1971	507	--	878	--	796	--	588	--	346	--	3,115	--					
1972	469	--	963	--	752	--	535	--	297	--	3,016	--					
1973	322	--	691	--	740	--	488	--	320	--	2,561	--					
1974	479	--	819	--	848	--	508	--	317	--	2,971	--					
1975	490	--	846	--	993	--	515	--	393	--	3,237	--					
1976	476	--	822	--	773	--	434	--	400	--	2,905	--					
1977	484	--	731	--	790	--	554	--	343	--	2,902	--					
1978	479	--	642	--	654	--	512	--	588	--	2,875	--					
1979	438	--	642	--	721	--	562	--	209	--	2,572	--					
1980	358	--	672	--	750	--	546	--	270	--	2,596	--					
1981	459	--	525	--	801	--	535	--	330	--	2,650	--					
1982	437	--	639	--	583	--	477	--	332	--	2,468	--					
1983	260	--	442	--	780	--	426	--	330	--	2,238	--					
1984	444	--	359	--	473	--	463	--	166	--	1,905	--					
1985	383	--	303	--	650	--	492	--	180	--	2,008	--					
1986	455	--	617	--	669	--	520	--	270	--	2,531	--					
1987	432	--	518	--	574	--	546	--	90	--	2,160	--					
1988	334	--	436	--	604	--	469	--	90	--	1,933	--					
1989	499	--	427	--	45	--	403	--	90	--	1,464	--					
Quail																	
1971	192	24	289	40	344	28	587	49	140	13	1,652	154					
1972	46	9	342	30	575	39	870	63	120	8	1,953	149					
1973	80	10	264	35	32	8	538	38	25	17	939	108					
1974	24	4	43	27	853	66	227	28	214	21	1,361	146					
1975	27	8	107	23	841	64	594	43	230	12	1,799	150					
1976	81	10	206	29	503	62	597	44	75	10	1,462	155					
1977	22	4	351	39	445	42	341	26	60	16	1,219	127					
1978	--	--	239	18	563	61	541	46	88	17	1,431	142					
1979	68	11	95	7	478	41	346	32	15	6	1,002	97					
1980	36	9	265	23	240	36	410	34	0	0	951	102					
1981	58	11	180	12	329	43	366	31	0	3	933	100					
1982	0	0	151	14	304	44	475	44	0	0	930	102					
1983	5	9	93	9	562	61	295	26	0	0	955	105					
1984	--	--	82	8	266	40	--	--	--	--	348	48					
1985	--	2	82	5	252	33	--	--	--	--	334	40					
1986	--	--	10	2	306	28	--	--	--	--	316	30					
1987	--	1	20	2	257	29	--	--	--	--	277	31					
1988	0	5	--	--	277	37	96	12	--	--	373	54					
1989	--	--	--	--	145	10	72	7	--	--	217	17					

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>Sage Grouse</u>														
1971	1,743	296	909	145	1,423	98	1,465	144	1,089	128	6,629	812		
1972	1,628	323	1,187	143	751	144	2,125	170	1,280	141	6,971	921		
1973	3,146	353	927	147	1,171	116	1,952	238	496	41	7,692	895		
1974	2,026	321	1,551	115	1,881	193	2,964	248	887	124	9,299	1,001		
1975	1,254	249	963	123	714	226	1,868	236	1,098	131	5,897	965		
1976	1,965	281	426	121	379	183	1,881	227	1,222	161	5,873	973		
1977	1,966	305	1,370	133	465	157	1,995	215	928	116	6,724	926		
1978	1,408	267	541	124	490	152	1,616	226	879	97	4,934	866		
1979	1,051	150	700	132	563	143	1,719	203	279	20	4,312	648		
1980	1,003	218	806	150	518	94	1,471	184	278	30	4,076	676		
1981	619	194	691	99	285	57	771	163	377	39	2,743	552		
1982	1,669	169	762	92	454	83	862	116	--	--	3,747	460		
1983	610	158	720	164	284	51	992	125	108	10	2,714	508		
1984	1,411	278	283	82	289	54	530	95	151	17	2,664	526		
1985	2,164	169	481	74	410	45	666	84	106	9	3,827	381		
1986	1,024	197	281	39	169	43	948	94	146	14	2,568	387		
1987	1,939	205	172	37	286	50	1,114	124	195	18	3,706	434		
1988	2,092	177	678	108	315	66	690	91	--	--	3,775	442		
1989	465	108	360	56	46	19	557	61	167	24	1,595	268		
<u>Hungarian Partridge</u>														
1971	676	85	104	18	--	--	--	--	--	--	780	103		
1972	1,255	119	126	21	--	--	--	--	--	--	1,381	139		
1973	1,643	156	12	4	--	--	--	--	--	--	1,655	160		
1974	1,035	176	14	2	--	--	--	--	--	--	1,049	178		
1975	344	64	0	0	--	--	--	--	--	--	344	64		
1976	940	83	113	21	--	--	--	--	--	--	1,053	104		
1977	1,145	156	125	5	--	--	--	--	--	--	1,270	161		
1978	1,065	90	197	17	--	--	--	--	--	--	1,262	107		
1979	440	27	37	3	--	--	--	--	--	--	477	30		
1980	250	55	50	6	--	--	--	--	--	--	300	61		
1981	270	23	65	3	--	--	--	--	--	--	330	26		
1982	324	39	--	--	--	--	--	--	--	--	324	39		
1983	0	60	--	--	--	--	--	--	--	--	0	60		
1984	815	221	--	--	--	--	--	--	--	--	815	221		
1985	114	38	--	--	--	--	--	--	--	--	114	38		
1986	213	44	--	--	--	--	--	--	--	--	213	44		
1987	300	40	--	--	--	--	--	--	--	--	300	40		
1988	316	30	10	1	--	--	--	--	--	--	326	31		
1989	--	--	--	--	--	--	--	--	--	--	--	--		

APPENDIX D: Season dates, bag limits and areas open by upland game species, 1989.

Species	Season Dates	Daily Bag Limit	Possession Limit	Area Open
Pheasant	Nov. 4-17	2 cocks	4 cocks	Statewide
	Nov. 4-Dec. 3	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. 9-30	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. 9-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: Juab, Millard, Salt Lake, and Utah; and those parts of Duchesne and Uintah counties south of Highway U-40; parts of Box Elder and Sevier counties.
	Sept. 9, 1989-Jan. 31, 1990	5	10	Beaver, Carbon, Emery, Garfield, Grand, Iron, Kane, Piute, Tooele, Washington, Wayne and those parts of Juab, Millard, Salt Lake, and Utah counties lying west of I-15. Also parts of Box Elder, San Juan and Sevier counties.

APPENDIX D (continued)

Species	Season Dates	Daily Bag Limit	Possession Limit	Area Open
Sage grouse	Sept. 9-17	3	6	Garfield (part), Piute, Sevier, and Wayne counties.
	Sept. 9-17	2	4	Beaver, Box Elder (part), Carbon, Daggett, Duchesne (part), Emery, Garfield (part), Grand, Iron, Kane, Rich, Uintah, Utah (part) counties.
	Sept. 12-13	1	2	Tooele (part) County.

The following counties were closed to sage grouse hunting during 1989:

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

Forest grouse	Sept. 9- Nov. 30	4 (aggregate)	8 (aggregate)	Statewide.
Quail	Nov. 4-17	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. 4-Dec. 31	5	10	Washington County.

Cache, Morgan, Rich, Sanpete, Tooele, Summit, and Wasatch counties were closed to quail hunting in 1989.

Hungarian partridge	Sept. 9, 1989- Nov. 30, 1990	5	10	Box Elder, Cache, Davis, Morgan, Rich, Summit, Tooele, and Weber counties.
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APPENDIX D (continued)

Species	Season Dates	Daily Bag Limit	Possession Limit	Area Open
Wild turkey Spring hunt	May 1-20	Season limit 1 male turkey		Garfield (part), Grand (part), Iron (part), Kane, San Juan (part) Washington (part), Wayne counties.
Ptarmigan	Sept. 9-Oct. 17	4	8	Summit, Daggett, Duchesne and Uintah counties.
Snowshoe hare	Sept. 9, 1989- Jan. 31, 1990	5	10	Statewide.
Cottontail rabbit	Sept. 9, 1989- Jan. 31, 1990	10	20	Statewide.

APPENDIX E. Summary of upland game harvest questionnaire returns, 1962-1989

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
1989	12,894	5,135	39.8	5,105	39.5	36.7

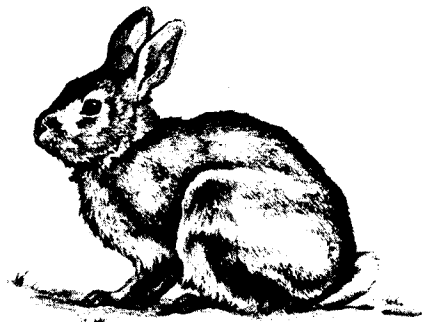
RABBITS AND HARES

SUMMARY

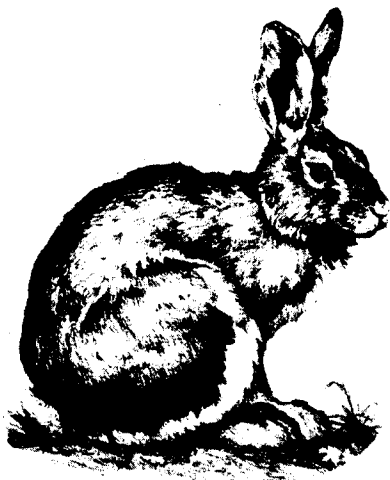
An increased breeding population for 1989 was indicated by the 1988 harvest statistics. Cottontail populations decreased from a short term high in 1988 but are above the 10 year average.

Summer roadside counts indicated a decreased population density statewide. Harvest statistics indicated decreased hunter success, with a total harvest decrease of 20 percent. Field bag checks on opening weekend indicated above average hunter success.

Cottontail Rabbits



Snowshoe Hares



The 1989 snowshoe hare hunting season indicated improved populations but they were still below the 10 year average.

Hunter pressure remained about the same as the previous year but was below average. 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.