

UTAH UPLAND GAME

ANNUAL REPORT 1990



Utah Division of Wildlife Resources

Department of Natural Resources

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

Annual Report

1990

Prepared by:

Dean L. Mitchell
Upland Game Biologist

and

Jay A. Roberson
Upland Game Coordinator

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Annual Performance Report for Federal Aid Project W-65-R-38 Job A-4

Utah Department of Natural Resources

DIVISION OF WILDLIFE RESOURCES

An Equal Opportunity Employer

Timothy H. Provan
Director

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

ALDO LEOPOLD 1932

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JOB PERFORMANCE REPORT

RESEARCH PROJECT SEGMENT
(Inventory)

State: U T A H Project Title: Statewide Wildlife

Management Inventory
Project No.: W-65-R-38

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

Period Covered: October 1, 1989 to September 30, 1990

Abstract: This report includes upland game inventory and harvest data collected during 1989-90. 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 1990 are compared to 1989 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, 1989 through February 10, 1990, 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 1989 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 (1990) resident small game license file and 1990 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 bag 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 twentieth 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 1990, a total of 64,868 Utah sportsmen spent 466,516 days afield in pursuit of various upland game species (Table 1). The harvest of upland game totaled 507,062 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 1990 upland game hunting seasons are shown in Appendix D.



Table 1. Summary of harvest statistics from the mail questionnaire for 1990.

Species	Hunters Afield	Total Harvest	Hunter Days	Bag per Hunter-day	Bag/Hunter For Season
Pheasant	47,025	78,944	161,634	0.49	1.68
Mourning dove	22,700	199,007	80,076	2.49	8.77
Chukar partridge	11,195	26,486	38,463	0.69	2.37
Sage grouse	9,014	15,784	20,147	0.78	1.75
Forest grouse	14,591	38,922	44,452	0.83	2.53
Quail	2,614	6,091	8,561	0.71	2.33
Hungarian partridge	2,305	6,770	6,976	0.97	2.94
Wild turkey	531	52	1,812	0.03	0.10
Band-tailed pigeon	9	7	28	0.26	0.80
Sharp-tailed grouse	0	0	0	--	--
Ptarmigan	11	17	27	0.63	1.55
Cottontail	23,070	127,389	93,515	1.36	5.52
Snowshoe	4,095	7,593	10,825	0.70	1.85
TOTAL	--	507,062	466,516	--	--

Total hunters afield for all species of upland game = 64,868

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 12,236 upland game questionnaires, a 11.49 percent sample, were mailed. Of the total, 532 (4.3%) questionnaires were undeliverable. Of the 11,704 questionnaires delivered, 5,175 (44.2%) useable upland game questionnaires were returned. Of those, 2,023 purchased a license but did not hunt upland game. By dividing the total of 106,501 eligible licensees by the usable returns (5,175), a projection factor of 20.579903 is derived.

The 1990 hunter questionnaire sample size decreased from 1989, 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 1984-90.

Species	Number of Hunters										Percent of Total				
	1984	1985	1986	1987	1988	1989	1990	1984	1985	1986	1987	1988	1989	1990	
Pheasant	76,840	69,889	59,987	57,118	54,514	50,382	47,025	86.9	86.2	84.2	83.8	77.7	75.2	72.5	
Chukar	9,846	7,930	9,397	11,276	11,237	10,910	11,195	11.1	9.8	13.2	16.5	16.0	16.3	17.3	
Mourning dove	30,573	28,183	26,583	22,553	22,457	21,696	22,700	34.6	34.7	37.3	33.	32.0	32.4	35.0	
Sage grouse	8,283	7,586	7,233	7,060	8,499	9,002	9,014	9.4	9.4	10.2	10.4	12.1	13.4	13.9	
Forest grouse	11,511	12,645	12,117	14,831	16,947	16,988	14,591	13.0	15.6	17.0	21.8	24.2	25.4	22.5	
Quail	3,654	3,065	2,432	2,549	2,671	3,111	2,614	4.1	3.8	3.4	3.7	3.8	4.6	4.0	
Hungarian partridge	1,523	1,157	1,257	2,010	2,471	2,136	2,305	1.7	1.4	1.8	2.9	3.5	3.2	3.6	
Wild turkey**	255*	270	335	347	421	477	531	0.3	0.3	0.5	0.5	0.6	0.7	0.8	
Sharp-tailed grouse**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Band-tailed pigeon**	--	--	--	--	11	23	9	--	0.1	--	--	0.0	0.03	0.01	
Ptarmigan**	20	14	14	9	15	3	11	0.02	0.02	0.02	0.01	0.02	0.004	0.02	
Cottontail rabbit	18,616	14,059	13,992	20,322	24,076	22,878	23,079	21.1	17.3	19.6	29.8	34.3	34.2	35.6	
Snowshoe hare	3,796	3,365	3,277	3,702	4,725	4,895	4,095	4.3	4.1	4.6	5.4	6.7	7.3	6.3	
TOTAL HUNTERS***	88,431	81,119	71,259	68,174	70,142	67,017	64,868								

*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, 1961-90.

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
1990	988	2,745	36	161	1,234	13	282	632	45	162	483	34	233	810	29	54	132	41	46	117	39

AVERAGES
(1961-89)

(913)
31

(392)
14

(1396)
48

(1085)
37

(1015)
35

(1110)
38

(1310)
45

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

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

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

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

RING-NECKED PHEASANT

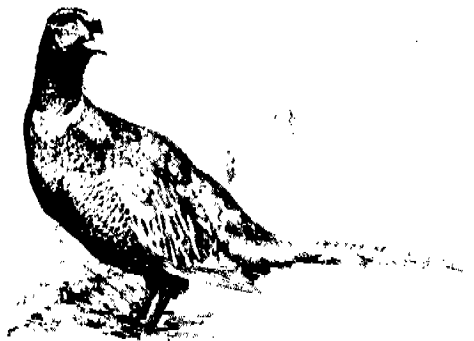
SUMMARY

Based on the 1989 harvest data, the 1990 statewide breeding population decreased from the previous year. However, the winter was milder than normal and survival of brood stock should have been good. 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 again good in 1990. Statewide monthly average temperatures were at or above normal; average precipitation was at or 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. There was no change in pheasants observed on roadside routes compared with 1989, but more hens appeared to have young. Overall, production was up.

Harvest statistics compiled from the questionnaire indicated slightly increased success compared to 1989. Harvest declined and was below average, resulting in the lowest recorded values since 1950. Opening weekend success was up 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 1989-90 and long-term trends are shown in Tables 1, 2 and Figure 1 of this section. Statewide comparisons to the winter of 1988-89 and the 10-year average are as follows:

	<u>Winter of</u> <u>1989-90</u>	<u>Percent change from</u>	
		<u>1988-89</u>	<u>Average</u>
Total pheasants counted (roadside)	477	-56	-88
Hens per cock	1.7	-45	-56
Pheasants observed per 100 hours	582	-53	-61
Total hours effort (roadside)	82	-5	-66

Winter sex ratio counts indicated a 53 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 45 percent from 1989 and was 56 percent below the long term average. Access was good but the lack of snow kept birds scattered. Less than average effort also reduced pheasant observations. No effort was expended in the Southern or Southeastern Region.

Roadside Counts

A summary of summer roadside pheasant counts for 1990 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 2. Summer 1990 survey results compared to 1989 and the previous 10-year average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Total pheasants observed	1,032	-1	-55
Total miles driven	1,454	-1	-34
Pheasants per mile	0.71	0	-30
Average brood size	4.8	+4	-7
Young per hen	3.70	+25	-6
Percent of hens with young	76	+19	+2

December 1989 through January 1990 temperatures were above normal. The average monthly temperature of all reporting stations in the seven climatic subdivisions in Utah were 3.5 degrees above normal in January (Appendix A). Temperatures in March and April were each 5 degrees above normal. Precipitation was at or below normal all year. Temperature was near 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 accumulated precipitation continued through December, resulting in drought over most of the state. Average temperatures in both subdivisions were at or above average March through November. Brood survival may again have declined due to hot, dry weather June through August.

Pheasant production increased from 1989 in Utah. Production and hunter success were up in all areas except central and southeastern Utah. The statewide density index (pheasants per mile) remained the same as (0.71) in 1989, and is 30 percent below the 10-year average.

Vegetation is re-establishing on alkaline soils around the Great Salt Lake. This should increase 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 1990 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, and total statewide harvest statistics in Table 13. A comparison of 1990 harvest statistics to 1989 and the previous 42-year average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Pheasant hunters	47,025	-7	-41
Pheasants harvested	78,944	-2	-64
Hunter-days afield	161,634	-9	-28
Pheasants per hunter-day	0.49	+7	-50
Pheasants per hunter	1.68	+5	-37

Hunters were told to expect poor hunting with slight improvement in hunter success compared to 1989. Low breeding populations were noted. Production was below average for those birds which made it through the winter. We predicted 55,000 hunters and 100,000 harvest.

Total hunters again decreased (7 percent) from 1989 and remained below the long-term (1948-89) average. Total harvest decreased 2 percent from 1989. Hunter success (pheasants per hunter-day) improved 7 percent from 1989. Pheasants per hunter also increased (5 percent).

Long-term trends (1949-90) 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, modern agricultural practices, and habitat fragmentation resulting in increased predation.

FIGURE 1. PHEASANT WINTER SEX RATIO INDICES, 1965-90.

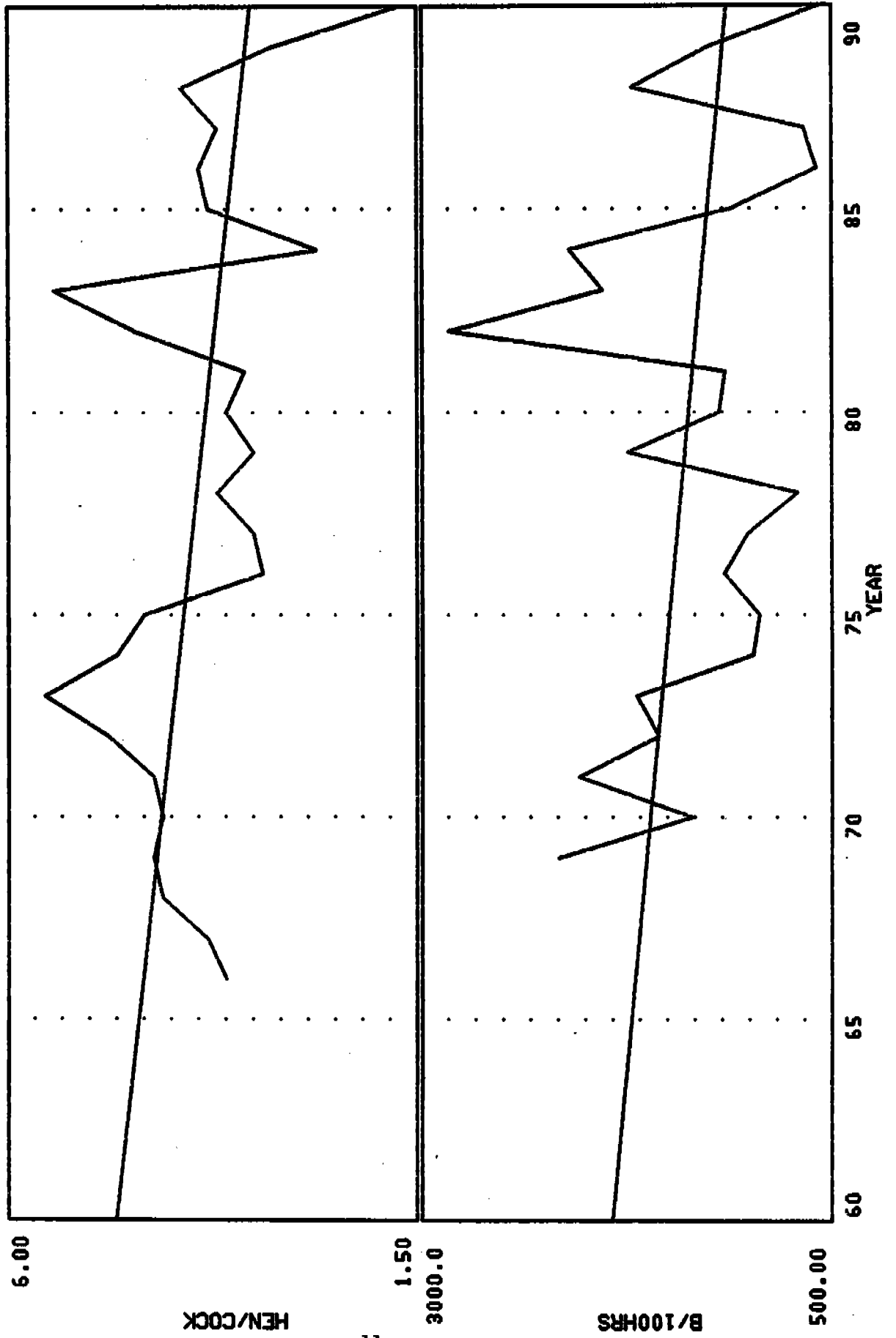
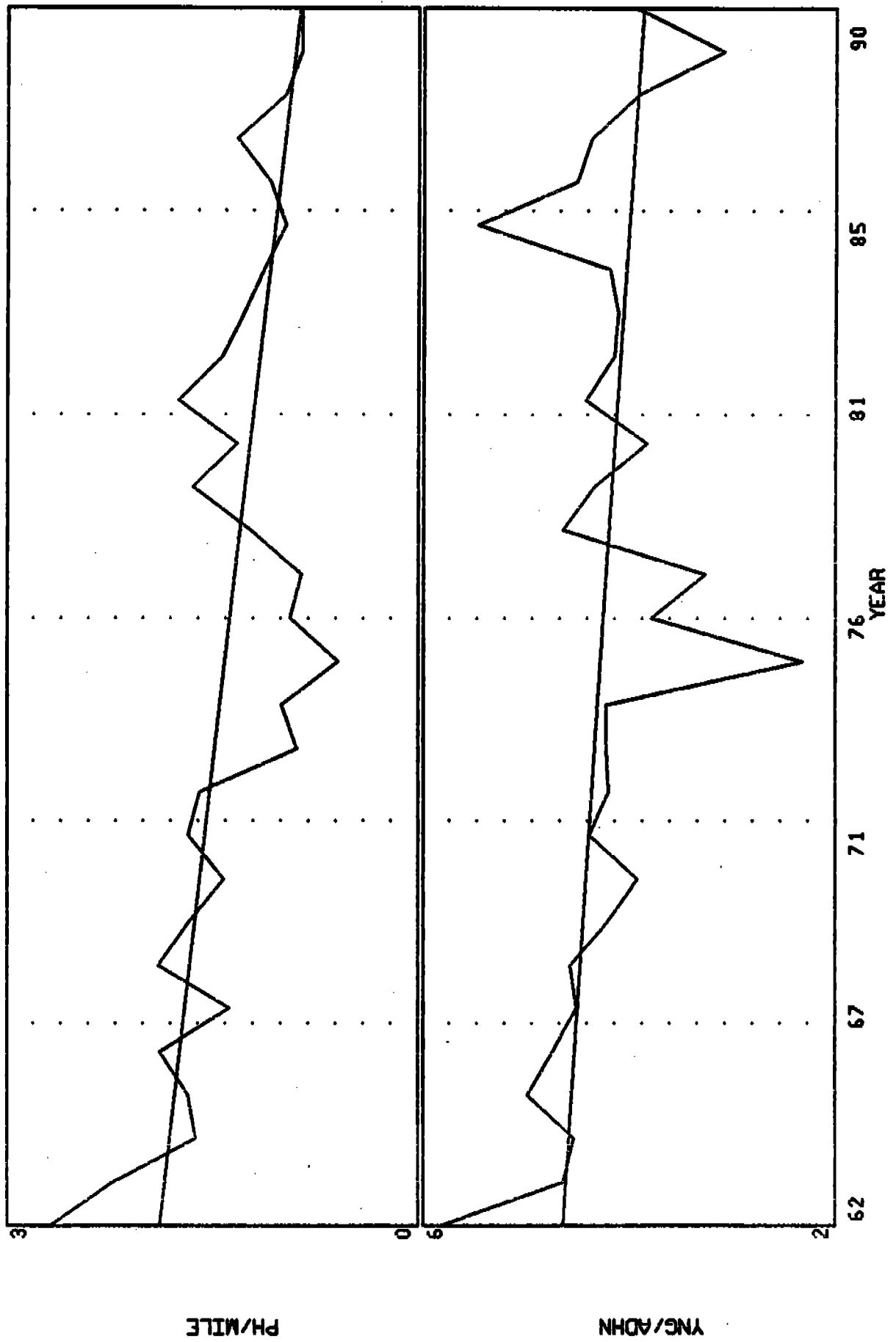


FIGURE 2. PHEASANT PRODUCTION INDICES, 1962-90.



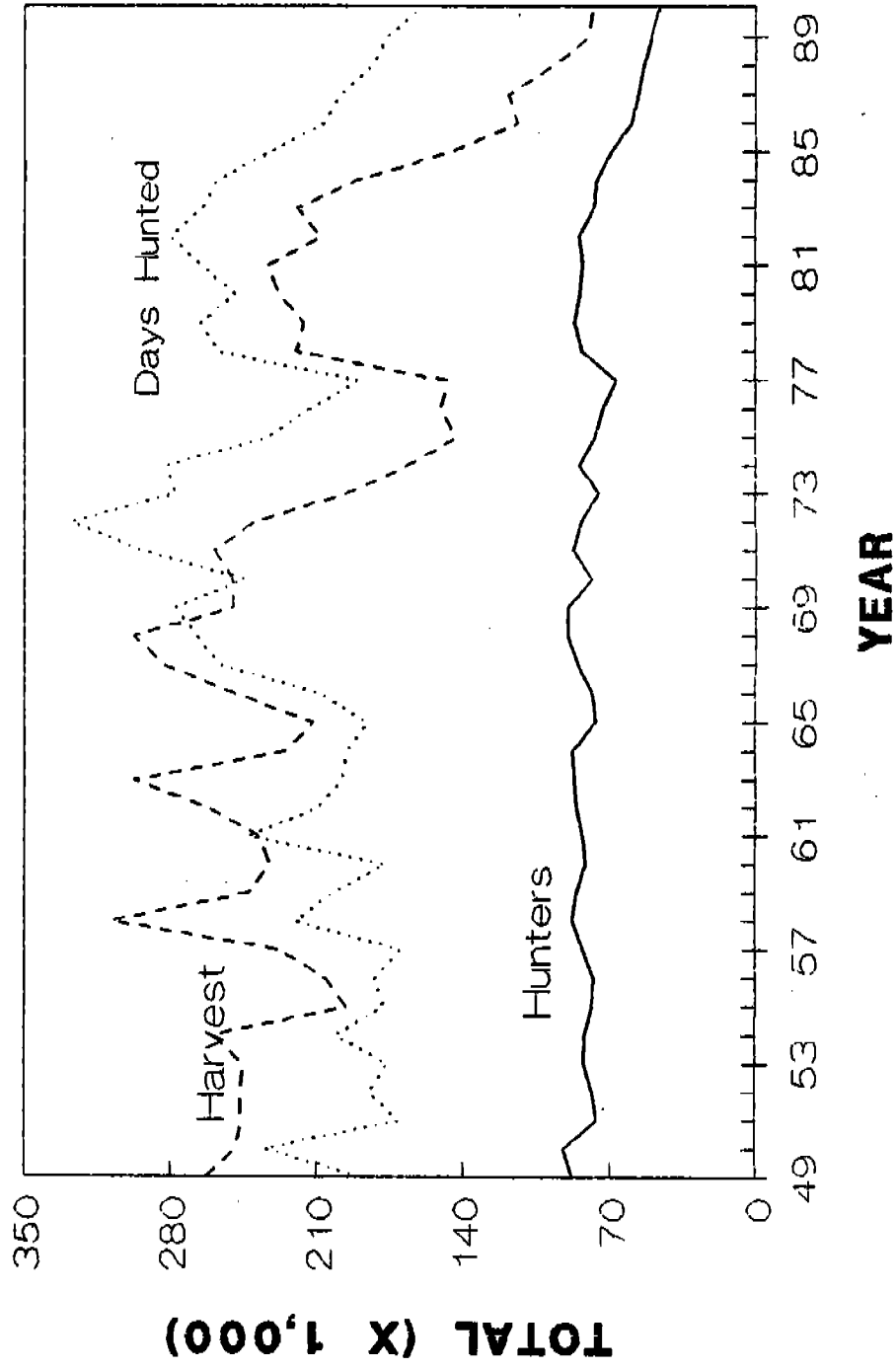


Figure 3. Statewide trend of pheasant harvest statistics, 1949-90.

PHEASANTS PER HUNTER AND PER DAY

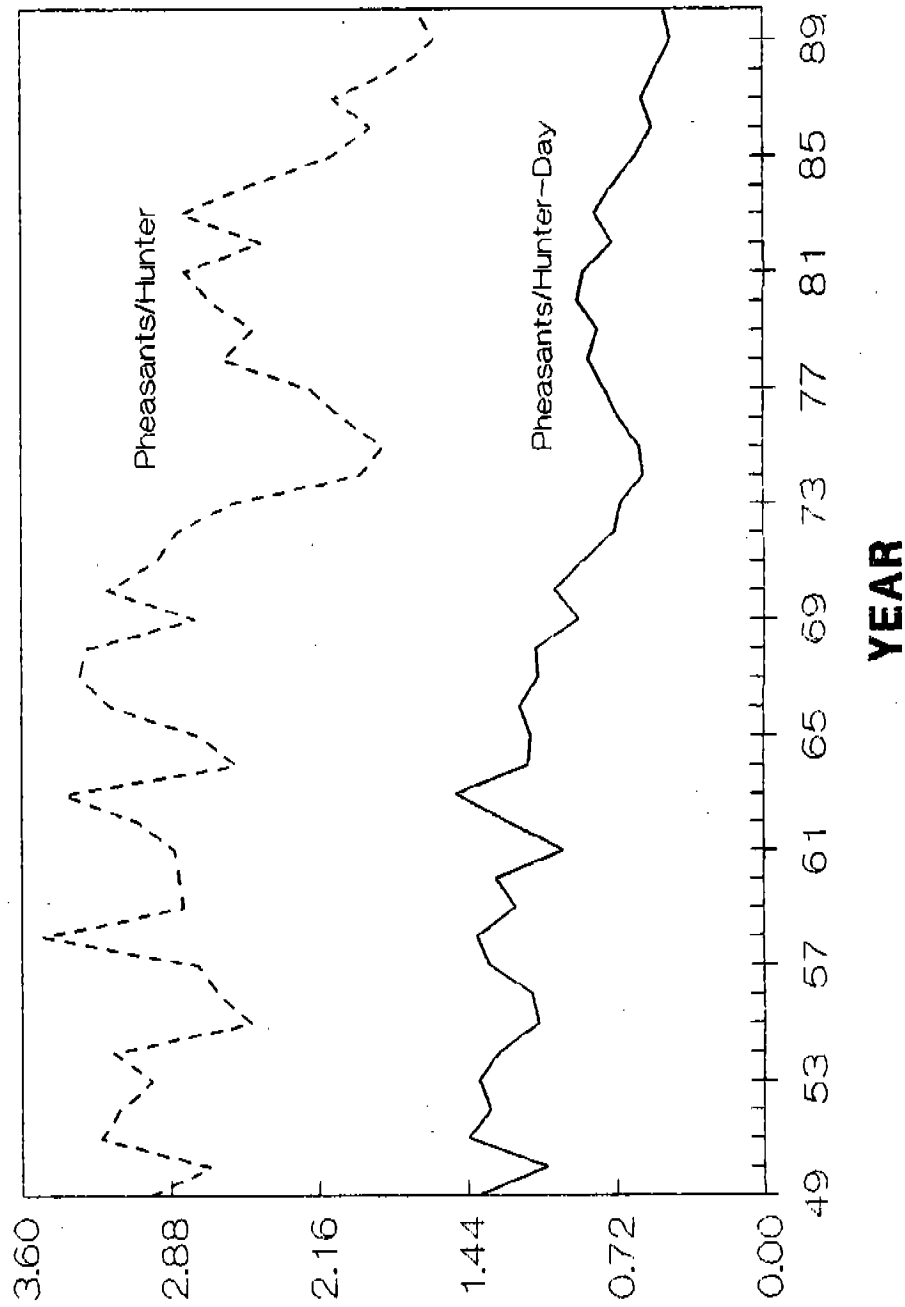
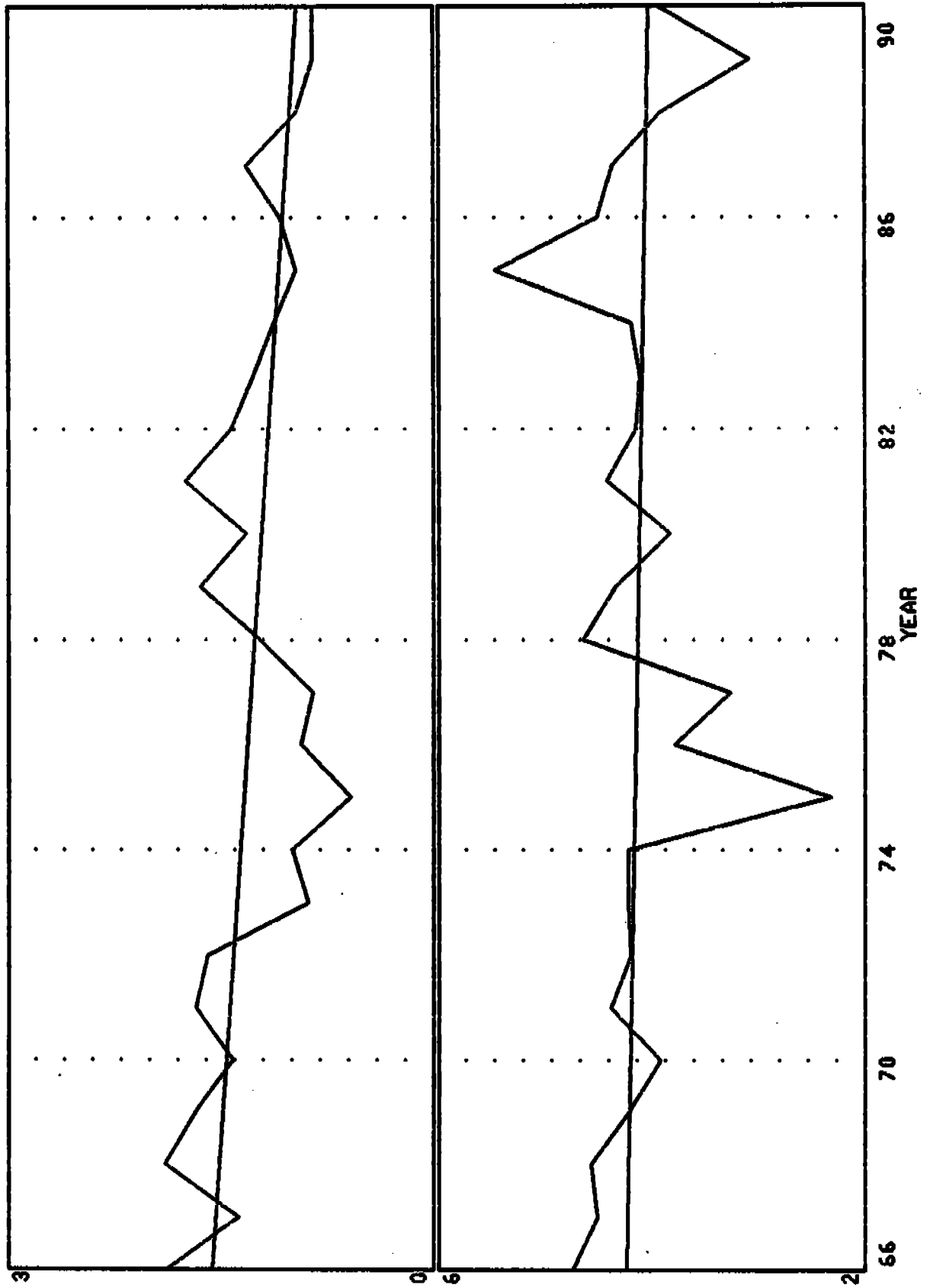


Figure 4. Statewide trend of pheasant hunter success rates, 1949-90.

FIGURE 5. PHEASANT FIELD BAG CHECK INDICES, 1966-90.



Field Bag Checks

A summary of pheasant field bag check data for 1990 is shown in Table 14. The hunter success trend determined via bag checks since 1985 is found in Table 15 and Figure 5. A comparison of 1990 data, on a statewide basis, to 1989 and the previous 10-year average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Total hunters checked	1,671	-20	-52
Total hours hunted	5,306	-10	-50
Pheasants per hunter (complete hunts)	0.36	+20	-37
Pheasants bagged per 100 hours	12	+20	-22
Average hours per hunter-day (complete hunts)	3.1	+7	-12
Hours hunted per pheasant bagged (complete hunts)	8.7	-10	+41

Checking Station Report

There was a warm spell during the last few days of October, peaking on the 28th. The first significant snow of the season occurred in northern Utah, November 1-3. November 3rd was cold and windy. On opening day, maximum daily temperatures were in the 40's.

Hunting pressure was down in most of Utah. This is attributed to decreasing pheasant populations and to less land being accessible to hunters.

Statewide hunter success was up compared with 1989 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 3, 1990, 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, 1989-90.

Region and County	Roadside Observations			Flushing Observations			Effort Expended			Pheas. Obs./ 100 Hours of Road. Obs.					
	Cocks	Hens	Total	Hens/ Cocks/ 100	Cocks/ 100	Total	Hens	Cocks/ Vehicle Miles	Hours of Effort		Vehicle Walk Total				
Northern Region															
Box Elder	14	50	64	3.6	28	1	0	1	0	100	305	12	3	15	533
Cache	32	40	72	1.3	80	--	--	--	--	--	505	29	0	29	253
Davis	2	3	5	1.5	67	1	14	15	14	107	74	4	3	6	143
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Weber	6	20	26	3.3	30	--	--	--	--	--	135	8	0	8	325
REGIONAL TOTALS	54	113	167	2.1	48	2	14	16	14.0	14	1,019	52	6	58	321
Central Region															
Juab	14	30	44	2.1	46	--	--	--	--	--	120	4	0	4	1,100
Salt Lake	12	16	28	1.3	75	5	1	6	0.2	500	94	5	0	5	533
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	43	35	78	0.8	122	--	--	--	--	--	6	3	0	3	2,600
Utah	35	92	127	2.6	38	--	--	--	--	--	156	13	0	13	1,016
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	104	173	277	1.7	60	5	1	6	0.2	500	376	25	0	25	1,119
Southern Region															
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Northeastern Region															
Daggett	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	6	5	11	0.8	120	--	--	--	--	--	65	2	0	2	550
Uintah	10	12	22	1.2	83	--	--	--	--	--	49	3	0	3	733
REGIONAL TOTALS	16	17	33	1.1	94	--	--	--	--	--	114	5	0	5	660
Southeastern Region															
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
STATE TOTALS	174	303	477	1.7	57	7	15	22	2.1	47	1,509	82	6	88	582

Table 2. Trend of pheasant winter sex ratio counts, 1984-90.

Region and County	1984-85		1985-86		1986-87		1987-88		1988-89		1989-90	
	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	3.6	533
Cache	5.7	3,133	17.2	585	6.8	168	4.3	390	2.7	386	1.3	253
Davis	6.2	3,108	8.4	4,683	7.5	340	11.3	2,667	7.3	2,014	1.5	143
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	7.6	3,425	27.0	350	6.3	587	--	--	4.2	700	3.3	30
REGIONAL TOTALS	5.1	3,127	5.5	1,235	6.3	379	5.5	925	4.1	833	2.1	321
Central Region												
Juab	--	--	3.4	947	3.9	1,005	1.8	1,486	2.4	1,100	2.1	1,100
Salt Lake	--	--	0.0	0	4.5	--	2.5	233	--	--	1.3	533
Sanpete	--	--	0.0	0	6.1	3,900	6.4	1,920	--	--	--	--
Tooele	--	--	0.0	0	--	--	--	--	--	--	0.8	2,600
Utah	--	--	3.4	965	3.5	857	2.4	2,650	10.0	2,200	2.6	1,016
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	3.4	958	3.8	1,057	3.0	1,893	3.5	1,344	1.7	1,119
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	3.4	4,270	7.0	4,135	1.6	900	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	3.2	2,667	--	--	9.6	209	3.9	2,230	12.6	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	3.2	2,667	--	--	3.7	2,943	5.4	3,105	3.6	2,778	--	3.8
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	1.4	145	1.5	241	2.0	139	1.6	1,400	1.6	1,425	0.8	550
Uintah	3.9	1,645	1.7	285	0.6	145	1.8	1,627	2.5	5,600	1.2	773
REGIONAL TOTALS	2.3	282	1.5	255	1.2	141	1.8	1,556	1.8	1,889	1.1	660
Southeastern Region												
Carbon	2.8	1,300	2.5	538	--	--	--	--	--	--	--	--
Emery	2.6	1,706	1.6	161	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	2.6	1,617	2.0	261	--	--	--	1.7	1,512	--	--	2.0
STATE TOTALS	3.8	1,116	3.9	594	3.7	673	4.1	1,724	3.1	1,251	1.7	582
STATE TOTALS	3.9	1,116	3.9	594	3.7	673	4.1	1,724	3.1	1,251	1.7	582

Table 3. Pheasant summer inventory, 1990.

Region and County	No. Routes	Distinct Broods			Mixed Observ.			Adults w/o Young			Total Total Pheas/ Mile	Yng/ Mile Brood	Mean Ad Hens w/Yng	Yng/ % Hens				
		No.	Yng	Hens	Yng	Hens	Yng	Cocks	Hens	Total Total Yng					Total Total Cocks	Total Total Hens		
Northern Region																		
Box Elder	2	150	5	27	2	14	0	0	7	41	0	48	.32	.27	5.4	5.86	100	
Cache	3	188	2	9	0	2	2	1	4	11	1	16	.09	.06	4.5	5.50	67	
Davis	1	93	6	25	0	4	4	6	12	29	4	45	.48	.31	4.2	2.41	50	
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Weber	1	87	11	60	7	25	3	4	20	85	5	110	1.26	.97	4.3	5.50	80	
REGIONAL TOTALS	7	518	24	121	9	45	9	11	43	166	10	219	.42	.32	5.0	3.86	74	
Central Region																		
Juab	1	42	1	4	--	--	--	1	0	1	4	1	6	.14	.09	4.0	4.00	100
Salt Lake	1	59	7	35	4	22	2	5	15	57	2	74	1.26	.97	5.0	3.80	67	
Sanpete	2	180	25	109	13	55	8	11	49	164	8	221	1.23	.91	4.4	3.34	78	
Tooele	1	60	2	6	--	--	--	1	3	6	1	10	.17	.10	3.0	2.00	67	
Utah	3	169	32	161	8	33	5	5	45	194	5	244	1.45	1.15	5.0	4.31	89	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	8	509	67	315	25	110	17	22	113	425	17	555	1.09	.87	4.7	3.92	81	
Southern Region																		
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Millard	1	97	8	30	--	--	1	--	2	30	1	33	.34	.31	3.8	15.00	100	
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	1	97	8	30	--	--	1	--	2	30	1	33	.34	.31	3.8	15.00	100	
Northeastern Region																		
Oggett	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	2	110	8	42	7	22	13	10	25	64	13	102	.93	.58	5.3	2.60	60	
Uintah	2	130	8	39	3	7	8	3	14	46	8	68	.52	.35	4.9	3.30	79	
REGIONAL TOTALS	4	240	16	81	10	29	21	13	39	110	21	170	.71	.46	5.1	2.82	67	
Southeastern Region																		
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Emery	1	90	5	28	2	11	5	4	11	39	5	55	.61	.43	5.6	3.50	64	
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	1	90	5	28	2	11	5	4	11	39	5	55	.61	.43	5.6	3.50	64	
STATE TOTALS	21	1,454	120	575	46	195	53	50	208	770	54	1,032	0.71	0.53	4.8	3.70	76	

Table 4. Trend of pheasants observed per mile during summer roadside pheasant counts, 1980-90.

Region and County	Year										Average 1980-89
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	
<u>Northern Region</u>											
Box Elder	1.03	1.40	0.74	1.43	0.46	0.91	0.44	0.81	.63	0.19	0.32
Cache	0.08	0.92	0.17	0.04	0.19	0.03	0.01	0.29	.13	0.23	0.09
Davis	1.77	1.38	0.83	1.07	0.34	0.71	1.04	1.30	.70	0.41	0.48
Morgan	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--
Weber	2.03	3.17	1.79	--	1.56	--	0.86	--	--	0.52	1.26
REGIONAL TOTALS	1.23	1.56	0.78	0.63	0.48	0.50	0.43	0.71	0.40	0.30	0.42
<u>Central Region</u>											
Juab	0.94	0.89	0.61	0.44	0.77	0.48	0.71	--	.38	0.50	0.14
Salt Lake	0.60	1.09	1.24	--	1.80	0.46	2.10	1.08	--	--	1.26
Sanpete	2.18	5.25	1.78	1.74	0.99	1.87	1.15	1.63	1.18	1.70	1.23
Tooele	1.08	0.48	0.45	--	--	--	0.20	0.08	.15	--	0.17
Utah	1.90	2.19	3.89	1.95	2.21	--	2.13	2.35	2.00	1.00	1.45
Wasatch	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	1.68	2.01	2.15	1.72	1.49	1.35	1.61	1.79	1.42	1.50	1.09
<u>Southern Region</u>											
Beaver	0.47	0.63	0.66	0.23	0.11	0.63	0.23	0.08	0.17	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--
Iron	0.67	1.24	0.07	0.31	--	0.06	0.01	0.00	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--
Millard	0.88	2.85	1.15	1.28	1.09	2.27	0.98	2.00	0.67	--	0.34
Piute	--	--	--	--	--	--	--	--	--	--	--
Sevier	1.13	0.87	1.37	1.27	1.52	0.62	1.82	1.95	1.30	--	--
Washington	0.70	1.41	0.62	1.09	--	0.13	1.30	0.47	0.22	0.06	--
Wayne	--	1.04	0.40	0.26	--	0.39	0.38	--	--	--	--
REGIONAL TOTALS	0.86	1.65	1.05	0.94	1.09	1.25	1.07	1.44	0.78	0.06	0.34
<u>Northeastern Region</u>											
Daggett	--	--	--	--	--	--	--	--	--	--	--
Duchesne	0.56	0.84	0.73	0.72	0.68	0.16	0.44	0.38	0.58	0.39	0.93
Uintah	1.60	1.05	1.27	2.97	1.33	0.35	0.46	0.55	0.45	0.24	0.52
REGIONAL TOTALS	0.93	0.91	0.90	1.39	0.91	0.22	0.45	0.45	0.54	0.32	0.71
<u>Southeastern Region</u>											
Carbon	0.37	1.22	0.28	0.42	--	0.12	0.26	0.00	--	--	--
Emery	0.49	0.74	0.74	0.32	0.66	0.83	0.73	0.72	1.06	1.00	0.61
Grand	--	--	--	1.70	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	0.45	0.86	0.61	0.39	0.66	0.59	0.51	0.72	1.06	1.00	0.61
STATE TOTALS	1.10	1.46	1.19	1.06	0.94	0.81	0.90	1.10	0.81	0.71	1.01

Table 5. Trend of young observed per mile during summer roadside pheasant counts, 1980-90.

Region and County	Year										Average 1980-89
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	
<u>Northern Region</u>											
Box Elder	0.69	1.07	0.44	0.63	0.26	0.65	0.29	0.62	.39	0.16	0.27
Cache	0.07	0.70	0.11	0.00	0.13	0.02	0.00	0.25	.09	0.14	0.06
Davis	1.27	0.81	0.43	0.78	0.16	0.35	0.85	0.98	.52	0.22	0.31
Morgan	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--
Weber	1.53	2.38	1.38	--	1.27	--	0.76	0.00	--	0.39	0.97
REGIONAL TOTALS	0.88	1.15	0.52	0.35	0.32	0.33	0.32	0.55	0.28	0.20	0.32
<u>Central Region</u>											
Juab	0.85	0.63	0.42	0.36	0.58	0.39	0.57	--	.17	0.08	0.09
Salt Lake	0.32	0.57	0.84	--	1.26	0.31	1.62	0.79	--	--	0.97
Sanpete	1.72	4.40	1.44	1.44	0.76	1.54	0.90	1.23	.96	1.30	0.91
Tooele	0.76	0.28	0.22	--	--	--	0.08	0.07	.07	--	0.10
Utah	1.30	1.68	2.52	1.34	1.26	--	1.68	1.81	1.57	1.00	1.15
Wasatch	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	1.21	1.51	1.63	1.31	0.99	1.09	1.26	1.37	1.11	1.10	0.87
<u>Southern Region</u>											
Beaver	0.37	0.54	0.48	0.17	0.08	0.51	0.14	0.07	0.10	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--
Iron	0.53	1.07	0.04	0.23	--	0.05	--	0.00	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--
Millard	0.69	2.27	0.83	1.00	0.89	1.98	0.76	1.55	0.50	--	0.31
Piute	--	--	--	--	--	--	--	--	--	--	--
Sevier	0.90	0.67	1.07	0.94	1.19	1.25	1.48	1.54	0.95	--	--
Washington	0.49	0.89	0.43	0.68	--	--	0.86	0.22	0.16	--	--
Wayne	--	0.87	0.21	0.12	--	0.28	0.19	--	--	--	--
REGIONAL TOTALS	0.67	1.30	0.76	0.68	0.86	1.03	0.84	1.12	0.57	--	0.31
<u>Northeastern Region</u>											
Daggett	--	--	--	--	--	--	--	--	--	--	--
Duchesne	0.37	0.52	0.54	0.55	0.46	0.07	0.29	0.25	0.32	0.20	0.58
Uintah	1.20	0.83	0.95	2.25	1.12	0.29	0.33	0.40	0.30	0.13	0.35
REGIONAL TOTALS	0.66	0.63	0.66	1.06	0.69	0.14	0.30	0.31	0.32	0.17	0.46
<u>Southeastern Region</u>											
Carbon	0.22	0.93	0.18	0.27	--	0.02	0.15	--	--	--	--
Emery	0.35	0.52	0.45	0.18	0.45	0.63	0.56	0.59	0.86	1.00	0.43
Grand	--	--	--	1.10	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	0.31	0.65	0.68	0.23	0.45	0.42	0.34	0.59	0.86	1.00	0.43
STATE TOTALS	0.75	1.05	0.85	0.73	0.66	0.60	0.61	0.79	0.63	0.62	0.48

Table 6. Trend of young per adult hen ratios found during summer roadside pheasant counts, 1980-90.

Region and County	Year										Average 1980-89	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		1990
<u>Northern Region</u>												
Box Elder	2.60	4.09	3.00	1.41	2.44	3.63	2.38	4.42	2.21	7.00	5.86	
Cache	4.00	4.18	3.43	0.00	3.40	1.50	0.00	7.17	2.33	2.60	5.50	
Davis	2.78	1.81	1.25	3.31	1.67	1.26	5.92	3.30	6.86	1.30	2.41	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	3.97	3.38	4.70	--	5.50	--	7.33	--	--	4.80	5.50	
REGIONAL TOTALS	3.07	3.39	3.00	1.98	3.23	2.60	3.92	4.18	3.44	2.90	3.86	3.17
<u>Central Region</u>												
Juab	9.67	4.29	3.75	6.50	4.20	4.33	4.00	--	2.00	0.23	4.00	
Salt Lake	1.70	2.04	2.73	--	3.58	3.13	5.10	3.88	--	--	3.80	
Sanpete	4.97	6.71	5.48	5.85	5.38	6.10	3.98	3.25	4.48	3.20	3.34	
Tooele	2.88	2.43	2.17	--	--	--	1.50	4.00	2.00	--	2.00	
Utah	2.65	3.80	3.53	2.51	1.66	--	4.16	4.18	3.94	3.80	4.31	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	3.23	4.08	3.95	3.69	2.59	5.61	4.18	3.89	4.00	4.70	3.92	3.99
<u>Southern Region</u>												
Beaver	6.29	7.00	4.89	3.75	2.33	5.11	2.60	6.00	1.80	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	5.14	8.56	3.00	5.33	--	3.00	--	0.00	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	6.00	4.65	4.48	6.37	6.24	8.95	4.04	3.99	3.64	--	15.00	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	4.44	4.18	3.94	3.49	4.64	4.58	5.22	5.14	3.77	--	--	
Washington	5.50	2.69	3.46	2.23	--	--	2.78	1.11	3.50	--	--	
Wayne	--	8.75	1.67	3.33	--	3.17	2.43	--	--	--	--	
REGIONAL TOTALS	5.16	4.66	3.93	3.69	5.05	5.92	4.43	4.32	3.61	--	15.00	4.53
<u>Northeastern Region</u>												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	4.22	2.94	6.10	5.03	3.81	3.00	3.73	3.40	2.36	1.68	2.60	
Uintah	3.22	5.50	4.96	5.16	13.00	11.50	4.13	3.65	3.67	2.33	3.30	
REGIONAL TOTALS	3.52	3.73	5.54	5.11	6.38	5.83	3.88	3.52	2.64	2.01	2.82	4.22
<u>Southeastern Region</u>												
Carbon	5.00	7.91	5.67	3.13	--	0.50	3.00	--	--	--	--	
Emery	3.37	3.97	2.56	2.93	3.75	4.17	5.15	6.63	6.42	3.60	3.50	
Grand	--	--	--	5.50	--	--	--	--	--	--	--	
San Juan	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	3.65	4.98	4.93	3.21	3.75	3.80	4.04	6.63	6.42	3.60	3.50	4.50
STATE TOTALS	3.60	4.12	3.88	3.85	3.92	5.04	4.20	4.08	3.68	2.95	3.70	3.93

Table 7. Trend of the percent of hens observed with broods during summer roadside pheasant counts, 1980-1990.

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

Table 8. Trend of average brood size for pheasants, 1980-90.

Region and County	Year										Average 1980-89
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	
Northern Region											
Box Elder	3.40	4.90	4.13	4.00	4.63	5.77	5.33	6.0	4.8	8.0	5.4
Cache	4.00	5.93	6.50	0.00	3.40	3.00	0.00	4.8	4.0	4.0	4.5
Davis	5.13	3.64	2.00	5.40	3.33	3.50	5.12	4.4	6.6	4.5	4.2
Morgan	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--
Weber	4.37	3.70	5.66	--	6.00	--	6.33	--	--	5.5	4.3
REGIONAL TOTALS	4.21	4.48	4.88	4.58	4.72	5.11	5.41	5.1	5.4	5.4	4.93
Central Region											
Juab	4.00	3.80	3.75	6.50	6.00	4.33	4.67	--	4.0	4.0	4.0
Salt Lake	3.33	4.67	4.44	--	4.75	5.00	5.70	3.8	--	--	5.0
Sanpete	5.43	7.24	5.93	6.39	6.38	8.28	5.10	4.8	5.8	4.2	4.4
Tooele	3.83	3.67	3.50	--	--	--	3.00	4.0	4.0	--	3.0
Utah	4.09	5.38	4.99	4.02	2.95	--	4.75	4.9	4.8	5.1	5.0
Wasatch	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	4.46	5.66	5.15	5.01	3.75	7.42	4.89	4.8	5.0	4.4	5.05
Southern Region											
Beaver	7.25	6.50	5.00	6.50	7.00	5.75	3.25	6.0	4.5	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--
Iron	6.00	8.14	3.00	5.33	--	--	--	0.0	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--
Millard	6.38	6.30	6.30	6.40	6.00	10.63	3.72	5.3	4.9	--	3.8
Piute	--	--	--	--	--	--	--	--	--	--	--
Sevier	4.70	5.00	4.56	5.14	5.10	5.17	5.69	5.8	5.6	--	--
Washington	--	5.90	4.40	3.90	--	--	4.14	5.0	7.0	--	--
Wayne	--	1.00	2.00	--	--	3.33	2.25	--	--	--	--
REGIONAL TOTALS	5.49	6.14	4.98	5.18	5.42	7.35	4.70	5.6	5.3	3.8	5.57
Northeastern Region											
Daggett	--	--	--	--	--	--	--	--	--	--	--
Duchesne	5.50	4.58	7.31	4.50	5.87	4.00	5.75	3.9	5.3	2.7	5.3
Uintah	3.30	5.50	4.25	5.11	5.50	6.33	5.71	4.4	5.3	4.2	4.9
REGIONAL TOTALS	3.90	4.89	5.84	4.87	5.72	4.78	5.74	4.1	5.3	3.5	4.86
Southeastern Region											
Carbon	6.67	7.67	6.00	3.00	--	1.00	--	--	--	--	--
Emery	7.00	6.00	4.42	6.60	5.00	5.20	6.89	5.0	7.1	5.7	5.6
Grand	--	--	--	5.50	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	6.86	6.24	4.64	5.30	5.00	4.82	5.46	5.0	7.1	5.7	5.61
STATE TOTALS	4.58	5.45	5.11	5.03	4.78	6.71	4.94	5.1	5.3	4.6	5.16

Table 9. Summary of pheasant hunter success and distribution of harvest and hunting pressure by region and county, 1990.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	305	17,245	10,022	0.58	10.67	12.70
CACHE	197	12,903	5,947	0.46	7.98	7.53
DAVIS	178	11,833	3,128	0.26	7.32	3.96
MORGAN	4	246	164	0.67	0.15	0.21
RICH	1	20	0	0.00	0.01	0.00
SUMMIT	1	20	0	0.00	0.01	0.00
WEBER	289	19,612	6,626	0.34	12.13	8.39
REGIONAL TOTALS	975	61,883	25,889	0.42	38.29	32.79
CENTRAL REGION						
JUAB	95	4,218	1,646	0.39	2.61	2.09
SALT LAKE	120	6,647	3,395	0.51	4.11	4.30
SANPETE	201	11,010	6,256	0.57	6.81	7.92
TOOELE	103	4,774	1,728	0.36	2.95	2.19
UTAH	567	34,862	18,501	0.53	21.57	23.44
WASATCH	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	1,086	61,513	31,528	0.51	38.06	39.94
SOUTHERN REGION						
BEAVER	13	843	576	0.68	0.52	0.73
GARFIELD	2	123	0	0.00	0.08	0.00
IRON	22	1,152	391	0.34	0.71	0.50
KANE	0	0	0	0.00	0.00	0.00
MILLARD	179	9,281	6,873	0.74	5.74	8.71
PIUTE	4	123	61	0.50	0.08	0.08
SEVIER	131	7,408	3,107	0.42	4.58	3.94
WASHINGTON	32	1,646	617	0.38	1.02	0.78
WAYNE	2	102	0	0.00	0.06	0.00
REGIONAL TOTALS	385	20,682	11,627	0.56	12.80	14.73
NORTHEASTERN REGION						
DAGGETT	1	20	0	0.00	0.01	0.00
DUCHESNE	102	5,741	4,506	0.78	3.55	5.71
UINTAH	75	4,383	2,490	0.57	2.71	3.15
REGIONAL TOTALS	178	10,145	6,997	0.69	6.28	8.86
SOUTHEASTERN REGION						
CARBON	35	2,016	596	0.30	1.25	0.76
EMERY	80	4,980	2,181	0.44	3.08	2.76
GRAND	4	370	123	0.33	0.23	0.16
SAN JUAN	1	20	0	0.00	0.01	0.00
REGIONAL TOTALS	120	7,388	2,901	0.39	4.57	3.68
UNKNOWN	1	20	0	0.00	0.01	0.00
STATE TOTALS	2,745	161,634	78,944	0.49	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 10. Summary of pheasants bagged per hunter-day by region and county, 1983-90.

Region and County	Year							
	1983	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>								
Box Elder	0.99	0.81	0.66	0.52	0.62	0.49	0.40	0.58
Cache	0.82	0.66	0.42	0.44	0.52	0.47	0.32	0.46
Davis	0.58	0.56	0.46	0.36	0.43	0.32	0.28	0.26
Morgan	0.58	0.44	0.05	0.18	0.70	1.71	0.40	(0.67)
Rich	(0.67)	(0.80)	(0.17)	0.00	(1.00)	(0.18)	(0.17)	0.00
Summit	(0.96)	(0.80)	0.00	0.00	(0.67)	0.00	(0.67)	0.00
Weber	0.72	0.69	0.55	0.39	0.40	0.34	0.29	0.34
<u>REGIONAL TOTALS</u>	<u>0.78</u>	<u>0.68</u>	<u>0.53</u>	<u>0.42</u>	<u>0.49</u>	<u>0.40</u>	<u>0.32</u>	<u>0.42</u>
<u>Central Region</u>								
Juab	1.00	0.86	0.70	0.64	0.66	0.49	0.38	0.39
Salt Lake	0.66	0.51	0.53	0.40	0.45	0.26	0.32	0.51
Sanpete	1.20	1.08	0.98	0.72	0.73	0.80	0.65	0.57
Tooele	0.60	0.58	0.60	0.44	0.56	0.31	0.29	0.36
Utah	0.81	0.82	0.65	0.64	0.68	0.64	0.58	0.53
Wasatch	(0.21)	(0.29)	(0.55)	(0.17)	(0.32)	(0.60)	(1.33)	0.00
<u>REGIONAL TOTALS</u>	<u>0.83</u>	<u>0.79</u>	<u>0.69</u>	<u>0.60</u>	<u>0.65</u>	<u>0.58</u>	<u>0.54</u>	<u>0.51</u>
<u>Southern Region</u>								
Beaver	0.72	0.66	0.52	0.56	0.37	0.41	0.39	0.68
Garfield	0.41	0.52	0.17	0.58	0.14	2.75	0.71	0.00
Iron	0.61	0.43	0.49	0.32	0.28	0.23	0.34	0.34
Kane	(1.00)	(0.50)	0.00	0.00	0.00	0.00	0.00	0.00
Millard	1.10	0.92	0.88	0.77	0.68	0.60	0.66	0.74
Piute	0.80	0.66	0.56	0.83	0.67	0.42	1.12	(0.50)
Sevier	0.96	0.87	0.71	0.68	0.65	0.57	0.45	0.42
Washington	0.43	0.24	0.42	0.40	0.21	0.39	0.33	0.38
Wayne	0.50	0.25	1.22	0.33	0.24	0.63	(0.46)	0.00
<u>REGIONAL TOTALS</u>	<u>0.89</u>	<u>0.79</u>	<u>0.73</u>	<u>0.67</u>	<u>0.60</u>	<u>0.77</u>	<u>0.52</u>	<u>0.56</u>
<u>Northeastern Region</u>								
Daggett	(0.67)	0.00	(0.50)	0.00	(0.50)	(0.20)	0.00	0.00
Duchesne	1.15	0.99	0.88	0.84	0.87	0.90	0.62	0.78
Uintah	0.98	0.86	0.62	0.79	0.80	0.64	0.42	0.57
<u>REGIONAL TOTALS</u>	<u>1.06</u>	<u>0.92</u>	<u>0.75</u>	<u>0.81</u>	<u>0.83</u>	<u>0.56</u>	<u>0.53</u>	<u>0.69</u>
<u>Southeastern Region</u>								
Carbon	0.59	0.44	0.42	0.39	0.47	0.51	0.39	0.30
Emery	0.60	0.65	0.58	0.46	0.48	0.68	0.44	0.44
Grand	2.44	0.38	(2.00)	(0.50)	(0.86)	(0.20)	(0.33)	(0.33)
San Juan	0.76	2.50	0.40	0.58	1.64	1.50	(2.00)	0.00
<u>REGIONAL TOTALS</u>	<u>0.62</u>	<u>0.57</u>	<u>0.51</u>	<u>0.44</u>	<u>0.53</u>	<u>0.63</u>	<u>0.43</u>	<u>0.39</u>
Unknown Counties	1.03	0.47	1.00	0.40	0.63	0.54	0.60	0.00
<u>STATE TOTALS</u>	<u>0.83</u>	<u>0.74</u>	<u>0.63</u>	<u>0.55</u>	<u>0.60</u>	<u>0.53</u>	<u>0.46</u>	<u>0.49</u>

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

Table 11. Percentage distribution of pheasant harvest by region and county, 1983-90.

Region and County	Year							
	1983	1984	1985	1986	1987	1988	1989	1990
Northern Region								
Box Elder	13.87	10.02	9.84	8.16	9.00	8.30	7.65	12.70
Cache	7.22	4.92	3.61	4.07	4.83	5.09	4.01	7.53
Davis	7.57	7.84	7.34	5.80	6.12	5.48	4.80	3.96
Morgan	0.13	0.08	0.01	0.05	0.14	0.20	0.15	(0.21)
Rich	(0.02)	(0.04)	(0.01)	0.00	(0.02)	(0.03)	(0.03)	0.00
Summit	(0.15)	(0.13)	0.00	0.00	(0.04)	0.00	(0.05)	0.00
Weber	10.66	12.82	12.28	8.81	5.46	7.42	7.40	8.39
REGIONAL TOTALS	39.36	35.69	33.08	26.90	25.63	26.55	24.09	32.79
Central Region								
Juab	1.87	1.80	2.13	2.95	3.47	1.94	1.69	2.09
Salt Lake	5.86	4.64	5.28	4.90	4.48	2.18	2.67	4.30
Sanpete	7.84	9.11	10.25	10.32	9.53	10.63	10.76	7.92
Tooele	2.08	2.29	2.61	2.63	2.79	2.20	2.03	2.19
Utah	15.73	18.69	17.24	22.25	23.70	25.83	27.35	23.44
Wasatch	(0.02)	(0.06)	(0.09)	(0.02)	(0.12)	(0.15)	(0.51)	0.00
REGIONAL TOTALS	33.38	36.52	37.52	43.07	44.12	42.96	45.02	39.94
Southern Region								
Beaver	0.40	0.58	0.51	0.65	0.45	0.56	0.36	0.73
Garfield	0.05	0.12	0.04	0.13	0.02	0.18	0.13	0.00
Iron	0.893	0.35	0.72	0.47	0.32	0.25	0.62	0.50
Kane	(0.01)	(0.04)	0.00	0.00	0.00	0.00	0.00	0.00
Millard	4.17	6.93	7.85	8.30	6.29	6.03	7.99	8.71
Piute	0.09	0.24	0.13	0.18	0.24	0.18	0.74	(0.08)
Sevier	-5.04	6.06	6.58	7.42	7.07	6.34	5.75	3.94
Washington	0.50	0.35	0.70	0.61	0.24	0.22	1.05	0.78
Wayne	0.03	0.01	0.16	0.04	0.16	0.08	(0.15)	0.00
REGIONAL TOTALS	11.11	14.74	16.70	17.80	14.82	13.88	16.80	14.73
Northeastern Region								
Daggett	0.00	0.00	(0.03)	0.00	(0.08)	(0.05)	0.00	0.00
Duchesne	6.17	4.64	5.04	4.11	5.26	6.34	5.86	5.71
Uintah	6.03	4.87	3.72	4.16	4.74	3.91	3.16	3.15
REGIONAL TOTALS	12.20	9.74	8.76	8.27	10.09	10.30	9.01	8.86
Southeastern Region								
Carbon	1.40	1.01	1.26	1.37	1.37	1.48	1.90	0.76
Emery	1.80	2.13	2.44	2.32	3.00	3.93	2.88	2.76
Grand	0.13	0.05	0.06	0.11	0.37	(0.01)	(0.08)	(0.16)
San Juan	0.10	0.05	0.03	0.13	0.47	0.10	(0.15)	0.00
REGIONAL TOTALS	3.44	3.25	3.78	3.93	5.22	5.53	5.01	3.68
Unknown Counties	0.40	0.30	0.16	0.04	0.10	0.75	0.08	0.00
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, 1983-90.

Region and County	Year							
	1983	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>								
Box Elder	11.62	9.26	9.38	8.60	8.67	8.91	8.77	10.67
Cache	7.30	5.53	5.39	5.16	5.59	5.69	5.68	7.98
Davis	10.75	10.33	10.00	8.92	8.43	8.95	7.85	7.32
Morgan	0.19	0.14	0.20	0.17	0.12	0.06	0.18	(0.15)
Rich	--	(0.04)	(0.05)	0.00	0.01	0.09	(0.07)	(0.01)
Summit	--	(0.12)	(0.04)	(0.01)	0.03	0.09	(0.04)	(0.01)
Weber	12.20	13.93	14.05	12.36	8.19	11.42	11.59	12.13
<u>REGIONAL TOTALS</u>	<u>42.06</u>	<u>39.20</u>	<u>39.03</u>	<u>35.22</u>	<u>31.06</u>	<u>35.24</u>	<u>34.17</u>	<u>38.29</u>
<u>Central Region</u>								
Juab	1.55	1.55	1.91	2.54	3.15	2.11	2.02	2.61
Salt Lake	7.31	6.79	6.31	6.72	5.91	4.54	3.84	4.11
Sanpete	5.39	6.28	6.55	7.86	7.76	7.04	7.55	6.81
Tooele	2.85	2.93	2.76	3.29	2.99	3.80	3.17	2.95
Utah	16.00	16.90	16.81	19.12	20.72	21.42	21.39	21.57
Wasatch	--	(0.17)	(0.10)	(0.06)	(0.23)	(0.13)	(0.18)	0.00
<u>REGIONAL TOTALS</u>	<u>33.10</u>	<u>34.46</u>	<u>34.34</u>	<u>39.59</u>	<u>40.78</u>	<u>39.06</u>	<u>38.15</u>	<u>38.06</u>
<u>Southern Region</u>								
Beaver	0.46	0.65	0.66	0.64	0.73	0.72	0.42	0.52
Garfield	0.11	0.17	0.17	0.12	0.08	0.03	0.08	(0.08)
Iron	1.12	0.61	0.91	0.80	0.70	0.58	0.83	0.71
Kane	--	(0.06)	(0.02)	(0.02)	0.00	0.00	(0.01)	0.00
Millard	3.15	5.61	5.60	5.95	5.49	5.29	5.52	5.74
Piute	0.10	0.28	0.15	0.12	0.22	0.23	0.30	(0.08)
Sevier	4.34	5.17	5.83	6.00	6.48	5.91	5.79	4.58
Washington	0.95	1.10	1.04	0.84	0.71	0.29	1.47	1.02
Wayne	0.05	0.31	0.08	0.06	0.41	0.07	(0.15)	(0.06)
<u>REGIONAL TOTALS</u>	<u>10.28</u>	<u>13.89</u>	<u>14.39</u>	<u>14.56</u>	<u>14.85</u>	<u>13.16</u>	<u>14.58</u>	<u>12.80</u>
<u>Northeastern Region</u>								
Daggett	--	(0.06)	(0.04)	(0.02)	(0.09)	(0.13)	(0.01)	(0.01)
Duchesne	4.45	3.48	3.58	2.69	3.61	3.74	4.27	3.55
Uintah	5.08	4.24	3.77	2.91	3.56	3.22	3.41	2.71
<u>REGIONAL TOTALS</u>	<u>9.53</u>	<u>7.72</u>	<u>7.34</u>	<u>5.62</u>	<u>7.27</u>	<u>7.10</u>	<u>7.70</u>	<u>6.28</u>
<u>Southeastern Region</u>								
Carbon	1.97	1.71	1.90	1.92	1.76	1.54	2.21	1.25
Emery	2.51	2.43	2.66	2.79	3.71	3.05	2.99	3.08
Grand	0.04	0.10	0.02	0.12	0.25	0.04	(0.11)	(0.23)
San Juan	0.10	0.02	0.05	0.12	0.17	0.03	(0.04)	(0.01)
<u>REGIONAL TOTALS</u>	<u>4.62</u>	<u>4.25</u>	<u>4.63</u>	<u>4.94</u>	<u>5.91</u>	<u>4.67</u>	<u>5.34</u>	<u>4.57</u>
Unknown Counties	0.32	0.47	0.25	0.05	0.09	0.74	0.06	0.01
<u>STATE TOTALS</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>

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

Table 13. Statewide summary of pheasant harvest statistics, 1948-1990.

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
1990	47,025	78,944	161,634	0.49	1.68
<hr/>					
TOTALS (1948-90)	3,411,949	9,241,859	9,412,090	(40.76)	(114.44)
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AVERAGES (1948-89)	80,117	218,165	225,621	0.98	2.68

Table 14. Pheasant field bag check summary, 1990.

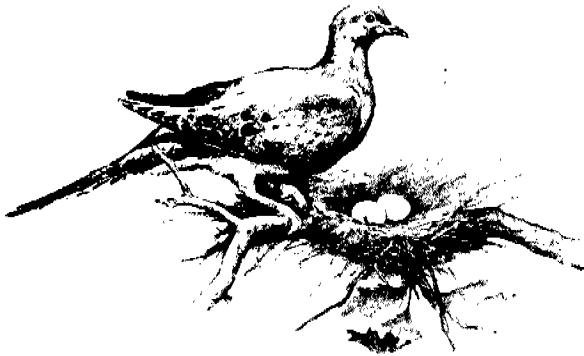
Region and County	ALL HUNTS				COMPLETE HUNTS				Total Birds/ 100 Hr Hunter	
	Total Parties	Total Hunters	Total Hours	Total Birds/ 100 Hr	Total Complete Hunts	Total Hunters	Total Hours	Total Birds		
<u>Northern Region</u>										
Box Elder	50	100	313	42	3	455	714	125	18	0.27
Cache	27	68	266	22	8	22	76	5	7	0.23
Davis	30	57	121	12	10	26	62	5	8	0.19
Morgan	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--
Weber	24	50	140	4	3	6	12	0	0	0
REGIONAL TOTALS	131	275	841	80	10	509	864	135	33	0.27
<u>Central Region</u>										
Juab	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	54	162	21	13	0.38
Sanpete	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--
Utah	201	425	966	134	14	128	274	51	19	0.40
Wasatch	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	201	425	966	134	14	182	436	72	17	0.40
<u>Southern Region</u>										
Beaver	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--
Millard	118	453	2,076	175	8	308	1,814	147	8	0.48
Piute	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	118	453	2,076	175	8	308	1,814	147	8	0.48
<u>Northeastern Region</u>										
Daggett	--	--	--	--	--	--	--	--	--	--
Duchesne	81	251	729	123	17	43	228	36	16	0.84
Uintah	35	108	313	38	12	35	146	15	10	0.43
REGIONAL TOTALS	116	359	1,042	161	15	78	374	51	14	0.65
<u>Southeastern Region</u>										
Carbon	--	--	--	--	--	--	--	--	--	--
Emery	60	159	381	33	9	90	181	17	9	0.19
Grand	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	60	159	381	33	9	90	181	17	9	0.19
STATE TOTALS	626	1,671	5,306	583	11	1,167	3,669	422	12	0.36

Table 15. Pheasant hunter success trend as determined by field bag check, 1985-90.

Region and County	1985		1986		1987		1988		1989		1990	
	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter
Northern Region												
Box Elder	9	0.31	5	0.14	11	0.29	7	0.21	8	0.22	18	0.27
Cache	5	0.13	--	--	31	1.25	2	0.08	4	0.10	7	0.23
Davis	16	0.46	6	0.19	18	0.80	8	0.20	2	0.06	8	0.19
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	7	0.18	12	0.21	9	0.13	11	0.21	9	0.12	0	0
REGIONAL TOTALS	9	0.27	7	0.16	11	0.23	28	0.20	8	0.18	33	0.27
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	13	0.38
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	8	0.26	--	--
Utah	35	0.88	28	0.74	24	0.68	16	0.50	24	0.53	19	0.40
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	35	0.88	28	0.74	24	0.68	16	0.50	19	0.46	17	0.40
Southern Region												
Beaver	14	0.37	--	--	6	0.18	0	0.00	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	12	0.59	10	0.48	9	0.50	10	0.33	4	0.24	8	0.48
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	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	14	0.61	11	0.51	12	0.40	12	0.37	4	0.24	8	0.48
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	11	0.40	38	1.50	13	0.50	27	1.96	16	0.85	16	0.84
Uintah	15	0.37	17	0.50	--	--	8	0.53	4	0.15	10	0.43
REGIONAL TOTALS	21	0.38	24	0.79	13	0.50	20	1.41	14	0.68	14	0.65
Southeastern Region												
Carbon	--	--	7	0.33	0	0.00	25	0.71	25	0.50	--	--
Emery	23	1.80	14	0.35	6	0.33	--	0.43	26	0.53	9	0.19
Grand	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	23	1.80	13	0.35	5	0.32	25	0.71	26	0.53	9	0.19
STATE TOTALS	13	0.44	12	0.39	13	0.32	11	0.35	10	0.30	12	0.36

MIGRATORY UPLAND GAME BIRDS

SUMMARY



Mourning Doves

The breeding density index remained stable in 1990, for the second year in a row and it was below average.

Harvest statistics derived from the questionnaire indicated a slight increase in number of hunters, and harvest compared to 1989. Hunter success for the season remained the same.

Field bag checks indicated a decrease 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 increased to 127 compared to 77 in 1989, and the 8-year average of 108. Either production was up or juvenile doves migrated later than previous years.

Band-tailed Pigeons

A band-tailed pigeon hunting permit was required again in 1989 to obtain mailing addresses for a questionnaire. Twenty-two hunters purchased permits but only 9 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 1990 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 1990 survey to 1989 and the average for the period 1964-1989:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Average doves heard per route	9.0	-4	-29
Average calls heard per route	53.9	+24	-1
Average doves seen per route	11.8	-41	-19

Coo count data indicated similar breeding activity in late May compared to 1989, but was 29 percent below the long-term average of 13 doves heard per route.

Harvest

Hunter Questionnaire

Information obtained from the hunter questionnaire for 1990 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 Figures 2 and 3. The following is a comparison of the harvest statistics for 1990 compared to 1989 and the previous 39-year average:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Mourning dove hunters	22,700	+5	+2
Mourning dove harvest	199,007	+5	-4
Hunter-days afield	80,076	+5	+17
Mourning doves per hunter-day	2.49	0	-26
Mourning doves hunter	8.77	0	-3

Dove hunter success was predicted to be similar to 1989 due to the second year of no change in the spring dove call count index and summer drought. We predicted 25,000 hunters (a slight increase due to the Saturday opening), 218,000 harvest and 100,000 hunter days. Hunter success remained the same as 1989. Total harvest increased 5 percent compared to 1989. Numbers of dove

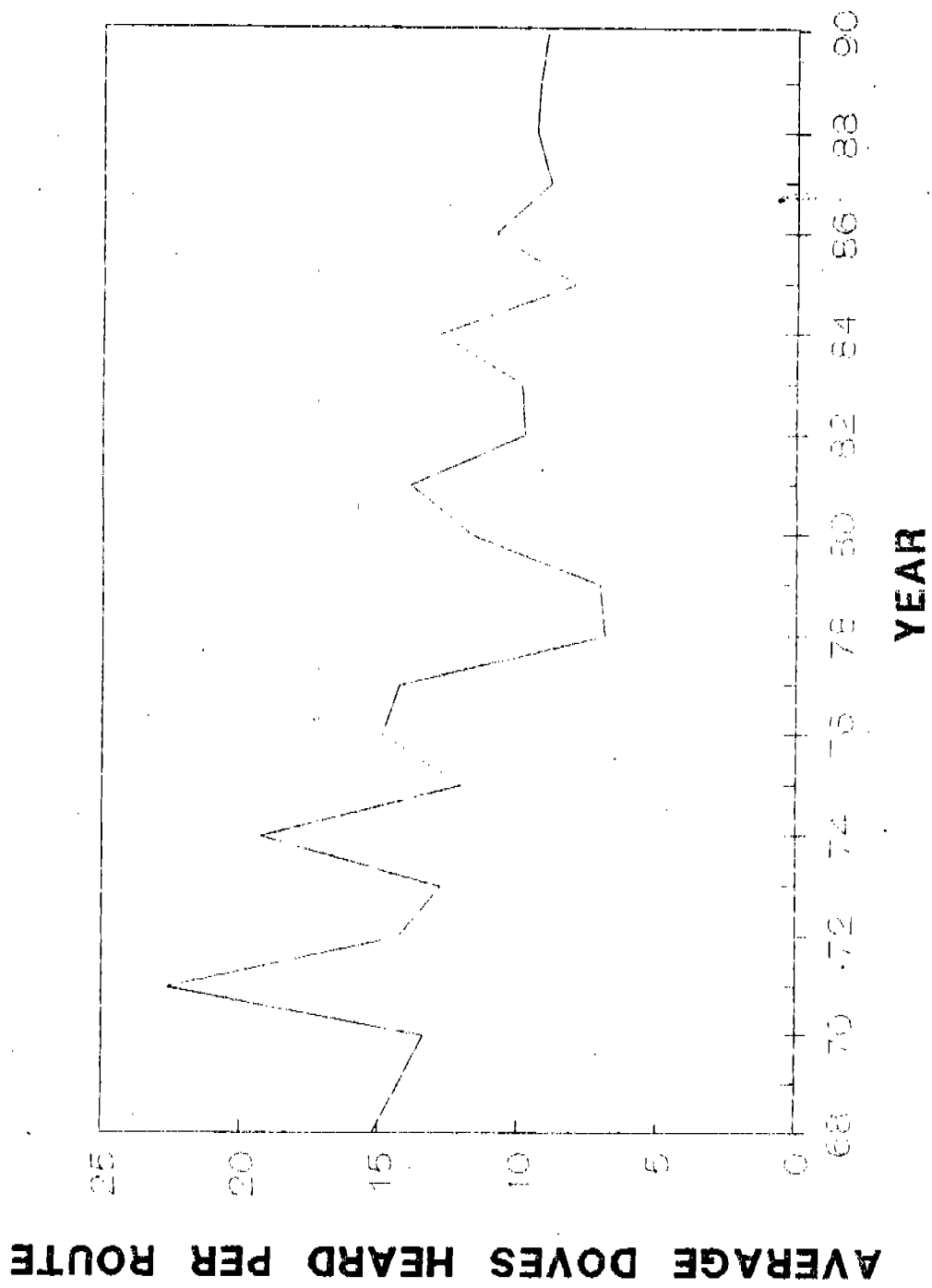


Figure 1. Changing dove frequency density, 1968-90

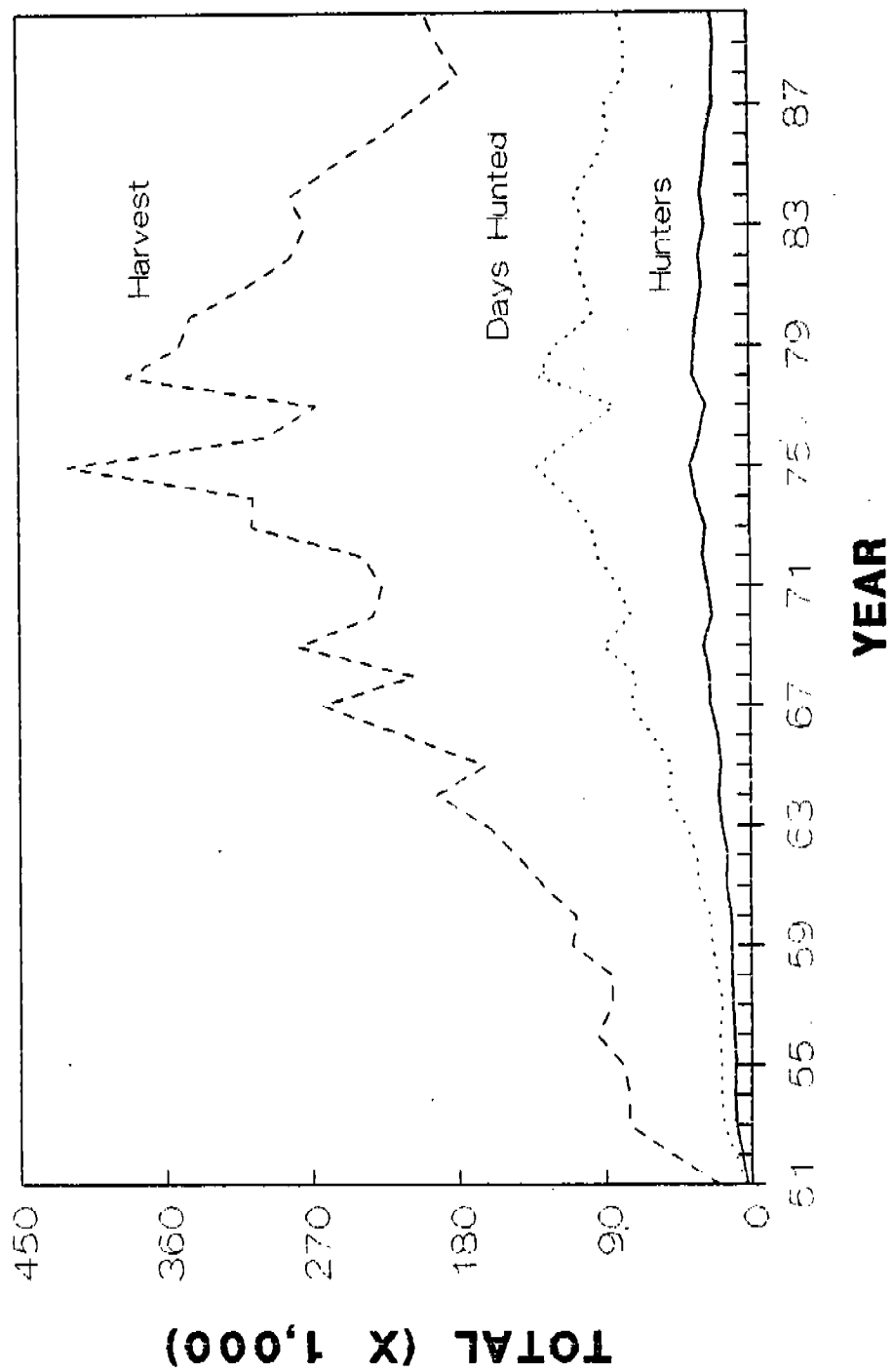


Figure 2. Statewide trends of mourning dove harvest statistics, 1951-90.

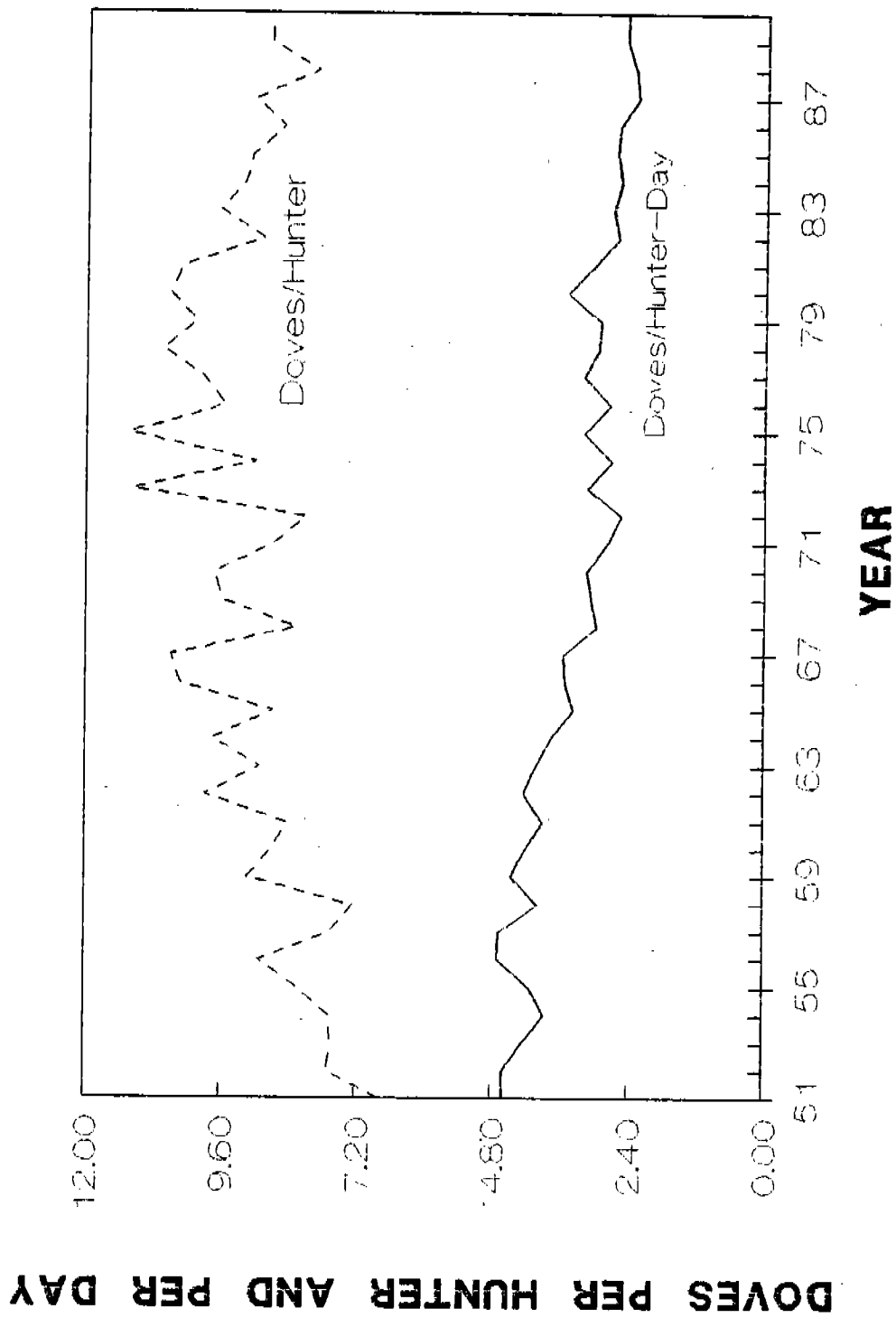
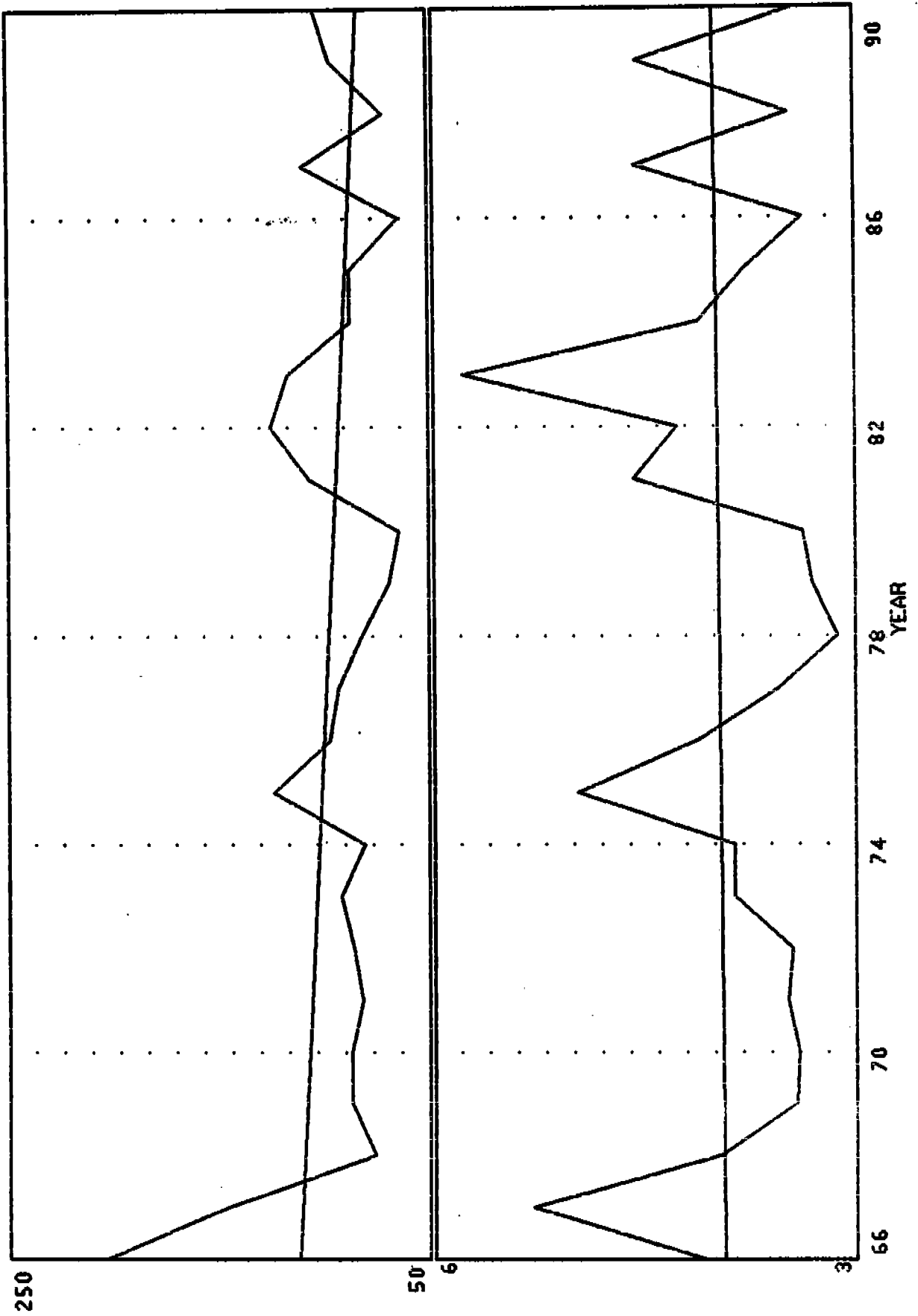


Figure 3. Statewide trends of mourning dove hunter success rates, 1951-90.

FIGURE 4. DOVE FIELD BAG CHECK INDICES, 1966-90.



hunters, hunter-days afield and doves per hunter-day all increase slightly. Saturday, September 1, 1990, was warm and nice weather, but in central Utah a storm front moved through in the afternoon and hunter effort dropped off. April through August were warmer than normal. Precipitation in August was again below normal 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 1990 is shown in Table 8. Hunter success trends determined via this method are shown in Table 9. Results of the 1990 survey compared to 1989 and the 10-year average (1980-89) follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Total hunters checked	1,336	-18	-30
Total hours hunted	4,780	-21	-35
Doves per hunter (complete hunts)	3.00	-30	-23
Doves bagged per 100 hours (complete hunts)	104	-5	+17
Average hours per hunter-day (complete hunts)	2.9	-26	-30
Hours hunted per dove bagged (complete hunts)	1.0	0	-7

September 1, 1990 was a Saturday. Hunt conditions were good on opening day. Hunter participation should have been better than last year's Friday opening. Field bag checks indicated a decrease in hunter success. The total number of hunters checked was down 18 percent from 1989. Dove hunters spent less time afield per hunter-day than in 1989, but the same 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 1981 through 1990 is contained in Table 10. Hatching dates for immature doves harvested in the Northern Region since 1981 are shown in Table 11. Hatching dates for immature doves harvested in Utah in 1990 are shown in Table 12.

Following is a comparison of data collected in 1990 compared to 1989 and long-term averages (1966-89):

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Sample size	2,967	+237	-7
Immatures/100 adults	127	+65	+10
Percent of immatures hatched on: (N. Region)			
August 3 or later	18.1	-69	-54
July 25 or later	57.9	-29	-28
Before July 25	42.1	+129	+116

Sample size was up significantly (237%). The 127 immatures per 100 adults in the harvest was up 65 percent from the previous year and 10 percent above the 24-year average.

Table 1. Summary of the mourning dove call-count survey for 1990.

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	17	6
\ Box Elder	R1500	1	4	4
<u>REGIONAL TOTALS</u>		4	21	10
<u>Central Region</u>				
Juab	R2830	36	323	10
<u>REGIONAL TOTALS</u>		36	323	10
<u>Southern Region</u>				
Sevier-Sanpete	R0370	6	13	8
Wayne-Sevier	R0660	5	46	0
Garfield	R1090	0	0	0
Millard	R3640	5	10	2
Beaver	R3820	9	52	18
Iron	R4000	12	81	6
Washington	R4310	12	44	5
<u>REGIONAL TOTALS</u>		49	246	39
<u>Northeastern Region</u>				
Duchesne	R0080	11	43	53
Uintah	R0220	2	4	3
<u>REGIONAL TOTALS</u>		13	47	56
<u>Southeastern Region</u>				
Emery	R0540	2	10	1
San Juan	R1171	31	161	61
San Juan	R1450	0	0	0
<u>REGIONAL TOTALS</u>		33	171	62
<u>STATE TOTALS</u>		135	808	177
<u>STATE AVERAGE</u>		9.0	53.9	11.8
<u>PERCENT CHANGE</u> (from previous year)		-3.6	+23.7	-40.6

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, 1976-90.

Region and County	Route Number	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Northern Region																
Summit	R1020	11	10	5	6	5	4	5	--	1	4	5	3	5	3	3
Box Elder	R1500	1	4	2	9	4	8	--	1	0	0	1	2	0	0	1
REGIONAL TOTALS		12	14	7	15	9	12	5	1	1	4	6	5	5	3	4
Central Region																
Juab	R2830	28	25	31	15	31	22	9	25	19	20	19	16	23	13	36
REGIONAL TOTALS		28	25	31	15	31	22	9	25	19	20	19	16	23	13	36
Southern Region																
Sevier-Sanpete	R0370	0	2	0	0	3	0	0	3	5	4	4	3	3	2	6
Wayne-Sevier	R0660	5	8	1	2	5	14	4	--	17	3	2	0	3	7	5
Garfield	R1090	3	1	0	0	0	9	2	3	15	3	1	1	0	16	0
Millard	R3640	6	29	8	4	2	10	9	5	14	2	2	3	5	4	5
Beaver	R3820	0	0	0	5	9	7	13	3	6	6	4	17	13	14	9
Iron	R4000	45	27	12	14	40	36	21	19	31	41	26	23	20	10	12
Washington	R4310	19	15	1	4	3	6	0	14	1	0	6	7	1	6	12
REGIONAL TOTALS		78	82	22	29	62	82	49	47	89	53	45	54	45	59	49
Northeastern Region																
Duchesne	R0080	11	14	2	2	1	13	7	0	1	8	3	4	8	13	11
Uintah	R0220	27	7	4	--	49	19	1	9	10	5	20	12	6	0	2
REGIONAL TOTALS		38	21	6	2	50	32	8	9	11	13	23	16	14	13	13
Southeastern Region																
Emery	R0540	14	4	10	9	7	22	7	11	10	.3	10	11	15	8	2
San Juan	R1170	51	67	24	28	14	38	26	30	57	25	60	31	37	43	31
San Juan	R1450	2	1	3	1	3	0	24	5	7	2	0	1	2	1	0
REGIONAL TOTALS		67	72	37	38	24	60	57	46	74	30	70	43	54	52	33
STATE TOTALS		223	214	103	99	176	208	128	128	194	120	163	134	141	140	135
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	9.0
PERCENT CHANGE (from previous year)		+23	-4	-52	+3	+65	+18	-38	0	+30	-38	+36	-18	+6	-1	-4

Table 3. Summary of mourning dove hunter success and distribution of harvest and hunting pressure by region and county, 1990.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	126	7,264	19,797	2.73	9.07	9.95
CACHE	67	3,971	6,647	1.67	4.96	3.34
DAVIS	39	3,354	5,124	1.53	4.19	2.57
MORGAN	13	679	1,173	1.73	0.85	0.59
RICH	11	391	761	1.95	0.49	0.38
SUMMIT	4	144	1,008	7.00	0.18	0.51
WEBER	63	4,753	7,038	1.48	5.94	3.54
REGIONAL TOTALS	323	20,559	41,550	2.02	25.67	20.88
CENTRAL REGION						
JUAB	119	5,083	18,810	3.70	6.35	9.45
SALT LAKE	59	4,795	11,360	2.37	5.99	5.71
SANPETE	37	2,099	6,420	3.06	2.62	3.23
TOOELE	114	6,667	12,677	1.90	8.33	6.37
UTAH	202	12,430	25,539	2.05	15.52	12.83
WASATCH	9	884	2,140	2.42	1.11	1.08
REGIONAL TOTALS	540	31,960	76,948	2.41	39.91	38.67
SOUTHERN REGION						
BEAVER	16	1,502	2,572	1.71	1.88	1.29
GARFIELD	11	782	1,831	2.34	0.98	0.92
IRON	33	2,819	12,347	4.38	3.52	6.20
KANE	4	144	144	1.00	0.18	0.07
MILLARD	108	6,009	26,568	4.42	7.50	13.35
PIUTE	6	782	1,131	1.45	0.98	0.57
SEVIER	40	3,704	8,067	2.18	4.63	4.05
WASHINGTON	41	3,539	9,940	2.81	4.42	4.99
WAYNE	5	370	226	0.61	0.46	0.11
REGIONAL TOTALS	264	19,653	62,830	3.20	24.54	31.57
NORTHEASTERN REGION						
DAGGETT	3	61	123	2.00	0.08	0.06
DUCHESNE	25	1,749	3,231	1.85	2.18	1.62
UINTAH	22	1,543	4,898	3.17	1.93	2.46
REGIONAL TOTALS	50	3,354	8,252	2.46	4.19	4.15
SOUTHEASTERN REGION						
CARBON	13	699	823	1.18	0.87	0.41
EMERY	26	2,778	5,680	2.04	3.47	2.85
GRAND	8	473	1,913	4.04	0.59	0.96
SAN JUAN	10	596	1,008	1.69	0.75	0.51
REGIONAL TOTALS	57	4,548	9,425	2.07	5.68	4.74
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	1,234	80,076	199,007	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, 1983-90.

Region and County	Year							
	1983	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>								
Box Elder	3.50	3.19	2.18	3.18	3.46	3.41	2.83	2.73
Cache	2.48	2.05	2.34	1.92	1.79	1.92	2.24	1.67
Davis	1.32	1.66	1.53	1.24	1.18	1.51	1.31	1.53
Morgan	2.65	1.91	1.72	2.04	3.00	2.36	1.03	1.73
Rich	3.08	6.69	2.28	3.72	0.00	2.63	1.26	1.95
Summit	2.08	3.89	1.92	1.08	2.50	2.19	1.61	7.00
Weber	1.81	1.55	1.68	1.63	1.15	1.21	1.88	1.48
<u>REGIONAL TOTALS</u>	2.43	2.27	1.92	2.26	2.19	2.09	2.20	2.02
<u>Central Region</u>								
Juab	5.35	4.44	5.16	4.54	2.95	3.25	4.45	3.70
Salt Lake	2.14	1.95	1.91	1.95	1.36	1.84	2.18	2.37
Sanpete	3.64	2.98	2.71	3.51	1.88	2.75	2.40	3.06
Tooele	2.74	2.90	2.55	2.87	2.17	2.31	2.88	1.90
Utah	2.10	2.21	2.50	2.14	2.30	1.97	2.08	2.05
Wasatch	0.83	2.20	1.50	1.97	0.82	1.20	1.22	2.42
<u>REGIONAL TOTALS</u>	2.64	2.60	2.71	2.72	2.11	2.23	2.55	2.41
<u>Southern Region</u>								
Beaver	5.62	3.45	3.43	2.02	1.72	3.50	4.35	1.71
Garfield	3.07	1.80	0.60	0.20	1.67	3.86	2.27	2.34
Iron	3.60	3.07	4.99	3.54	3.10	3.71	2.91	4.38
Kane	4.38	5.76	2.54	1.06	3.06	1.71	3.11	1.00
Millard	4.63	4.25	4.30	3.58	2.83	3.01	3.54	4.42
Piute	1.65	1.94	1.60	1.62	1.67	4.17	0.00	1.45
Sevier	2.73	2.11	2.33	1.82	2.15	2.03	2.70	2.18
Washington	4.34	2.62	3.17	3.90	2.68	3.37	2.12	2.81
Wayne	2.50	2.00	2.47	2.57	5.65	2.29	3.53	0.61
<u>REGIONAL TOTALS</u>	3.80	3.22	3.53	2.85	2.62	2.90	3.01	3.20
<u>Northeastern Region</u>								
Daggett	1.34	1.48	0.00	1.20	0.83	0.00	0.25	2.00
Duchesne	2.79	1.83	2.50	2.70	2.46	2.83	1.42	1.85
Uintah	2.33	2.61	2.39	1.91	2.82	2.68	2.33	3.17
<u>REGIONAL TOTALS</u>	2.39	2.20	2.39	2.05	2.55	2.68	1.82	2.46
<u>Southeastern Region</u>								
Carbon	2.06	2.13	2.76	2.76	1.94	2.06	0.75	1.18
Emery	2.00	2.24	3.28	1.62	2.41	2.87	1.77	2.04
Grand	2.85	2.46	2.00	4.28	2.41	2.00	2.18	4.04
San Juan	3.70	3.51	3.38	3.26	4.08	2.91	4.22	1.69
<u>REGIONAL TOTALS</u>	2.41	2.41	3.01	2.54	2.76	2.56	1.85	2.07
Unknown Counties	7.20	0.00	0.00	0.00	1.93	1.30	2.86	0.00
<u>STATE TOTALS</u>	2.62	2.71	2.59	2.65	2.61	2.28	2.49	2.49

Table 5. Percentage distribution of mourning dove harvest by region and county, 1983-90.

Region and County	Year							
	1983	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>								
Box Elder	11.40	9.96	5.48	10.36	11.51	10.31	12.06	9.95
Cache	4.85	4.71	3.85	2.46	2.99	2.94	4.87	3.34
Davis	2.71	3.35	2.91	2.08	1.93	3.27	2.01	2.57
Morgan	0.64	0.30	0.76	0.44	0.18	0.61	0.44	0.59
Rich	0.54	0.77	0.55	1.08	0.00	0.66	0.26	0.38
Summit	0.12	0.25	0.84	0.12	0.18	0.65	0.32	0.51
Weber	4.31	3.57	4.21	2.71	2.12	3.67	3.54	3.54
REGIONAL TOTALS	24.56	22.92	18.61	19.26	18.92	22.15	23.50	20.88
<u>Central Region</u>								
Juab	8.93	9.42	10.97	11.09	8.36	8.09	9.79	9.45
Salt Lake	7.34	7.90	5.59	5.50	5.39	4.37	3.56	5.71
Sanpete	3.44	3.49	4.08	5.54	2.88	4.30	4.34	3.23
Tooele	9.46	8.67	7.42	11.39	8.55	10.92	8.58	6.37
Utah	14.14	13.94	17.75	14.38	20.06	16.17	16.27	12.83
Wasatch	0.24	0.86	0.98	0.52	0.61	0.90	0.54	1.08
REGIONAL TOTALS	43.56	44.27	46.79	48.42	45.87	44.78	43.08	38.67
<u>Southern Region</u>								
Beaver	1.65	2.31	1.55	1.82	1.67	1.76	2.28	1.29
Garfield	0.90	0.26	0.02	0.01	0.12	0.25	1.09	0.92
Iron	2.71	1.68	4.05	3.82	3.24	3.22	3.07	6.20
Kane	0.84	1.41	0.28	0.30	0.66	0.33	0.64	0.07
Millard	6.17	10.20	10.25	9.42	9.80	11.73	9.92	13.35
Piute	0.41	0.45	0.56	0.19	0.24	0.46	0.00	0.57
Sevier	3.23	3.98	3.24	3.50	4.67	3.59	6.11	4.05
Washington	3.70	2.37	2.44	3.26	2.28	1.10	2.62	4.99
Wayne	0.12	0.11	0.35	0.33	1.35	0.14	0.73	0.11
REGIONAL TOTALS	19.74	22.77	22.75	22.64	24.05	22.63	26.46	31.57
<u>Northeastern Region</u>								
Daggett	0.21	0.42	0.00	0.16	0.12	0.00	0.02	0.06
Duchesne	1.53	0.99	1.42	1.05	0.76	1.27	0.85	1.62
Uintah	2.49	2.66	2.78	1.92	2.81	2.46	1.70	2.46
REGIONAL TOTALS	4.24	4.07	4.20	3.14	3.70	3.73	2.57	4.15
<u>Southeastern Region</u>								
Carbon	2.28	2.39	2.93	1.65	0.74	1.67	0.44	0.41
Emery	2.37	1.45	3.35	1.83	2.66	3.70	2.23	2.85
Grand	0.99	0.88	0.27	1.24	0.84	0.18	0.26	0.96
San Juan	2.08	1.24	1.10	1.81	2.54	0.59	1.24	0.51
REGIONAL TOTALS	7.73	5.97	7.65	6.54	6.80	6.16	4.17	4.74
Unknown counties	0.18	0.00	0.00	0.00	0.64	0.53	0.22	0.00
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, 1983-90.

Region and County	Year							
	1983	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>								
Box Elder	8.84	8.10	6.68	8.50	7.59	7.07	10.62	9.07
Cache	5.29	5.97	4.37	3.34	3.81	3.59	5.43	4.96
Davis	5.57	5.24	5.04	4.38	3.75	5.08	3.80	4.19
Morgan	0.65	0.41	1.18	0.57	0.13	0.61	1.06	0.85
Rich	0.48	0.30	0.64	0.76	0.00	0.59	0.52	0.49
Summit	0.16	0.17	1.15	0.28	0.16	0.70	0.49	0.18
Weber	6.45	5.97	6.66	4.35	4.22	7.11	4.70	5.94
<u>REGIONAL TOTALS</u>	<u>27.45</u>	<u>26.16</u>	<u>25.74</u>	<u>22.17</u>	<u>19.69</u>	<u>24.77</u>	<u>26.62</u>	<u>25.67</u>
<u>Central Region</u>								
Juab	4.53	5.50	5.64	6.37	6.47	5.82	5.49	6.35
Salt Lake	9.30	10.51	7.75	7.36	9.02	5.52	4.07	5.99
Sanpete	2.57	3.04	4.00	4.12	3.51	3.65	4.51	2.62
Tooele	9.39	7.76	7.73	10.36	8.99	11.08	7.41	8.33
Utah	18.28	16.38	18.88	17.53	19.93	19.18	19.53	15.52
Wasatch	0.78	1.01	1.73	0.69	1.70	1.77	1.11	1.11
<u>REGIONAL TOTALS</u>	<u>44.85</u>	<u>44.21</u>	<u>45.73</u>	<u>46.43</u>	<u>49.64</u>	<u>47.09</u>	<u>42.12</u>	<u>39.91</u>
<u>Southern Region</u>								
Beaver	0.80	1.74	1.20	2.34	2.22	1.18	1.30	1.88
Garfield	0.80	0.37	0.11	0.12	0.16	0.15	1.20	0.98
Iron	2.05	1.42	2.15	2.82	2.38	2.03	2.63	3.52
Kane	0.52	0.63	0.29	0.73	0.49	0.46	0.52	0.18
Millard	3.62	6.23	6.33	6.86	7.89	9.11	6.98	7.50
Piute	0.68	0.60	0.93	0.31	0.32	0.26	0.05	0.98
Sevier	3.20	4.89	3.69	4.99	4.96	4.14	5.65	4.63
Washington	2.31	2.35	2.04	2.18	1.94	0.76	3.07	4.42
Wayne	0.13	0.15	0.38	0.33	0.54	0.15	0.52	0.46
<u>REGIONAL TOTALS</u>	<u>14.11</u>	<u>18.38</u>	<u>17.12</u>	<u>20.68</u>	<u>20.95</u>	<u>18.26</u>	<u>21.92</u>	<u>24.54</u>
<u>Northeastern Region</u>								
Daggett	0.42	0.75	0.07	0.35	0.32	0.06	0.22	0.08
Duchesne	1.49	1.40	1.51	1.02	0.71	1.05	1.49	2.18
Uintah	2.90	2.65	3.09	2.63	2.27	2.14	1.82	1.93
<u>REGIONAL TOTALS</u>	<u>4.81</u>	<u>4.80</u>	<u>4.66</u>	<u>4.00</u>	<u>3.31</u>	<u>3.26</u>	<u>3.53</u>	<u>4.19</u>
<u>Southeastern Region</u>								
Carbon	3.00	2.91	2.82	1.56	0.87	1.90	1.44	0.87
Emery	3.23	1.68	2.71	2.96	2.52	3.02	3.15	3.47
Grand	0.94	0.93	0.35	0.76	0.79	0.21	0.30	0.59
San Juan	0.53	0.91	0.87	1.44	1.42	0.48	0.73	0.75
<u>REGIONAL TOTALS</u>	<u>8.71</u>	<u>6.44</u>	<u>6.75</u>	<u>6.72</u>	<u>5.62</u>	<u>5.62</u>	<u>5.62</u>	<u>5.68</u>
Unknown counties	0.07	0.02	0.00	0.00	0.76	0.96	0.19	0.00
<u>STATE TOTALS</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>

Table 7. Statewide summary of mourning dove harvest statistics, 1951-90.

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
1990	22,700	199,007	80,076	2.49	8.77
<hr/>					
TOTALS					
(1951-90)	888,667	8,323,851	2,744,077	(134.42)	(363.08)
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AVERAGES					
(1951-89)	22,204	208,329	68,308	3.38	9.08

*Estimated.

**Bag Limit increased to 15.

***Bag Limit reduced to 10.

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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	
Northern Region												
Box Elder	36	82	362	181	50	19	48	290	110	38	2.29	
Cache	20	38	67	47	70	1	1	3	0	0	0	
Davis	19	33	37	50	135	7	13	21	23	110	1.77	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	14	25	51	27	53	7	12	26	10	39	0.83	
REGIONAL TOTALS	89	178	517	305	59	34	74	340	143	42	1.93	
Central Region												
Juab	92	255	931	909	98	65	152	608	705	116	4.60	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	--	--	--	--	--	--	--	--	
Tooele	9	32	141	77	54	1	1	4	10	285	10.00	
Utah	310	681	2,548	1,446	58	232	505	1,092	1,229	65	2.43	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	411	968	3,620	2,432	67	298	658	1,704	1,944	114	2.95	
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	48	131	463	394	85	5	9	67	70	104	7.78	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	--	--	--	--	--	--	--	--	--	--	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	48	131	463	394	85	5	9	67	70	104	7.78	
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	--	--	--	--	--	--	--	--	--	--	--	
Uintah	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	
Emery	20	48	148	185	125	11	32	122	154	127	4.00	
Grand	--	--	--	--	--	--	--	--	--	--	--	
San Juan	6	11	33	47	147	2	3	14	18	129	6.00	
REGIONAL TOTALS	26	59	180	232	129	13	35	136	172	127	4.90	
LEHI CHECK STATION	310	681	2,548	1,446	58	232	505	1,092	1,229	65	2.43	
NEPHI CHECK STATION*	48	131	463	394	85	5	9	67	70	104	7.78	
STATE TOTALS	574	1,336	4,780	3,363	70	350	776	2,247	2,329	104	3.00	

*Includes Millard

Table 9. Mourning dove hunter success trend determined by field bag checks, 1984-90.

Region and County	1984		1985		1986		1987		1988		1989		1990	
	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	101	4.35	50	1.94	131	5.98	143	5.52	81	3.21	110	4.55	38	2.29
Cache	--	--	--	--	163	5.33	--	--	0	0.00	--	--	--	--
Davis	116	2.42	--	--	81	2.74	64	1.20	33	0.50	160	5.00	110	1.77
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	156	6.25	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Weber	182	6.20	--	--	--	--	--	--	--	--	40	0.71	39	0.83
REGIONAL TOTALS	103	4.36	50	1.94	129	5.72	140	5.20	80	3.10	109	4.42	42	1.93
Central Region														
Juab	--	--	--	--	68	4.30	--	--	--	--	133	6.39	116	4.60
Salt Lake	--	--	--	--	333	3.33	--	--	--	--	37	1.30	--	--
Sanpete	--	--	--	--	20	0.56	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	241	8.09	--	--	--	--	--	--	285	10.00
Utah	62	1.33	40	2.00	53	1.80	--	--	--	--	91	3.47	65	2.43
Wasatch	--	--	23	1.00	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	62	1.33	34	1.63	75	3.84	--	--	--	--	108	4.28	114	2.95
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	--	--	--	--	180	5.65	--	--	--	--	--	--	--	--
Millard	101	4.85	300	6.00	172	6.20	64	2.75	175	1.08	--	--	104	7.78
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	2.15*	75	1.50	--	--	--	--	333	10.00	--	--	--	--
Washington	--	--	--	--	343	6.86	--	--	206	5.54	369	1.20	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	94	6.09	397	7.94	203	6.41	126	5.23	213	3.68	444	1.33	104	7.78
Northeastern Region														
Daggett	--	--	--	--	59	1.11	--	--	--	--	--	--	--	--
Duchesne	135	3.45	2,300	11.00	100	1.00	--	--	--	--	--	--	--	--
Uintah	50	0.94	500	15.00	124	2.38	111	3.33	111	3.33	214	8.57	--	--
REGIONAL TOTALS	90	1.93	925	12.33	87	1.61	111	3.33	111	3.33	214	8.57	--	--
Southeastern Region														
Carbon	750	9.38	103	10.33	177	3.65	--	--	85	2.80	--	--	--	--
Emery	428	15.00	182	3.50	233	3.50	641	7.05	139	4.00	--	--	127	4.00
Grand	--	--	--	--	--	--	--	--	--	--	92	2.00	--	--
San Juan	188	4.45	200	4.00	261	5.64	397	7.38	200	4.00	--	--	129	6.00
REGIONAL TOTALS	358	7.33	150	4.36	215	4.43	485	7.22	113	3.40	92	2.00	127	4.90
NEPHI CHECK STATION	56	2.61	167	7.47	37	1.68	114	5.09	89	5.12	133	6.39	104	7.78
LEHI CHECK STATION	135	6.50	62	2.37	50	2.39	78	3.23	50	2.19	91	3.47	65	2.43
STATE TOTALS	87	3.80	87	3.42	64	2.94	110	4.33	71	3.05	110	4.31	104	3.00

Table 10. Age composition (Immatures/100 Adults) of mourning doves harvested, 1981-90.

Region and County	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1981-89 Avg.
	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	107 (700)	124 (716)	143 (515)	135 (1172)	146 (137)	131 (1086)	128 (770)	--	82 (435)	239 (487)	
Cache	--	--	67 (5)	--	181 (45)	--	325 (17)	--	--	--	
Davis	--	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	107 (700)	135 (815)	143 (617)	133 (1237)	138 (443)	131 (1086)	132 (787)	--	82 (435)	239 (487)	125 (765)
Central Region											
Juab	--	--	--	--	--	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	--	--	--	--	--	--	--	
Tooele	78 (71)	80 (137)	--	--	--	--	--	--	--	--	
Utah	--	100 (32)	--	--	--	--	--	--	--	--	
Wasatch	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	78 (71)	89 (169)	--	--	--	--	--	--	--	--	84 (120)
Southern Region											
Beaver	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	
Millard	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	--	--	
Sevier	--	--	--	--	--	--	--	--	--	--	
Washington	--	--	--	--	--	--	--	--	--	--	
Wayne	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
Northeastern Region											
Daggett	--	--	--	--	--	--	--	--	--	--	
Duchesne	--	--	--	--	--	--	--	--	--	--	
Uintah	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
Southeastern Region											
Carbon	--	160 (138)	--	--	--	--	--	--	--	128 (73)	
Emery	260 (18)	76 (88)	--	--	--	52 (64)	80 (187)	70 (187)	85 (37)	79 (143)	
Grand	--	--	--	--	--	--	--	--	50 (10)	--	
San Juan	50 (84)	--	--	--	--	53 (227)	63 (275)	31 (42)	56 (39)	93 (137)	
REGIONAL TOTALS	65 (102)	119 (226)	--	--	--	53 (291)	69 (462)	61 (229)	72 (86)	93 (353)	73 (233)
NEPHI CHECK STATION	105 (1067)	62 (754)	108 (1239)	198 (1130)	107 (1678)	140 (1137)	180 (1004)	104 (671)	64 (955)	134 (829)	119 (1,037)
LEHI CHECK STATION	75 (2075)	83 (1075)	84 (1021)	96 (1517)	107 (1391)	137 (1396)	130 (1283)	114 (741)	92 (978)	116 (1,446)	102 (1,275)
STATE TOTALS	87 (4015)	91 (3143)	106 (2877)	131 (3884)	117 (3512)	127 (3910)	137 (3536)	100 (1641) ^a	77 (881)	127 (2,967)	108 (3,044)

^a missing northern region data.

Table 11. Percent of harvest by hatching date of immature mourning doves in northern Utah, 1981-90.

Date Hatched	Age* (Days)	PERCENT OF HARVEST BY HATCH DATE										S A M P L E S I Z E										
		1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	
Aug 3	29	none	46.1	32.6	22.8	43.1	44.7	31.2	34.8	--	41.3	52.2	166	152	77	304	115	192	155	--	81	254
Jul 31	32	1	33.6	24.9	21.3	29.4	26.8	35.0	21.8	--	30.1	26.7	121	116	72	207	69	215	97	--	59	130
Jul 25	38	2	14.2	21.7	21.0	19.0	14.0	15.6	17.5	--	18.4	13.1	51	101	71	134	36	96	78	--	36	64
Jul 18	45	3	5.0	7.7	14.8	6.0	3.9	8.6	10.6	--	6.6	4.3	18	36	50	42	10	53	47	--	13	21
Jul 9	54	4	0.6	4.7	9.2	2.1	1.9	4.7	5.7	--	2.6	2.3	2	22	31	15	5	29	25	--	5	11
Jun 30	63	5	--	4.1	6.2	0.4	1.6	2.8	4.3	--	0.5	0.6	0	19	21	3	4	17	19	--	1	3
Jun 21	72	6	--	2.8	2.1	0.0	0.0	1.3	3.8	--	0.0	0.4	0	13	7	0	0	8	17	--	0	2
Jun 8	85	7	--	1.3	2.4	--	0.0	0.5	1.1	--	0.5	--	0	6	8	0	0	3	5	--	1	--
May 22	102	8	0.3	0.2	0.0	--	0.0	0.3	0.2	--	0.0	--	1	1	1	0	0	2	1	--	0	--
Apr 27	127	9	0.3	--	--	--	0.0	0.0	0.2	--	0.0	0.4	1	0	0	0	0	0	1	--	0	2
Apr 21	133	10	--	--	--	--	7.0	0.0	0.0	--	0.0	0.0	0	0	0	0	18	0	0	--	0	--
			100	100	100	100	100	100	100	--	100	100	888	360	466	338	705	257	445	--	196	487

*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, 1990.

Date Hatched (Days)	Age*	P	PERCENT OF HARVEST BY HATCH DATE										S A M P L E S I Z E									
			N Region		Nephi CS		Lehi CS		C Region		SE Region		N Region		Nephi CS		Lehi CS		C Region		SE Region	
			Total	Region	Total	Region	Total	Region	Total	Region	Total	Region	Total	Region	Total	Region	Total	Region	Total	Region	Total	Region
Aug 3	29	none	52.2		37.2		49.7		43.3		58.8		254		77		98		175		100	
Jul 31	32	1	26.7		35.7		30.0		32.9		24.1		130		74		59		133		41	
Jul 25	38	2	13.1		17.4		12.2		14.9		10.0		64		36		24		60		17	
Jul 18	45	3	4.3		5.3		4.6		5.0		4.1		21		11		9		20		7	
Jul 9	54	4	2.3		1.4		3.6		2.5		1.8		11		3		7		10		3	
Jun 30	63	5	0.6		2.9		--		1.5		1.2		3		6		--		6		2	
Jun 21	72	6	0.4		--		--		--		--		2		--		--		--		--	
Jun 8	85	7	--		--		--		--		--		--		--		--		--		--	
May 22	102	8	--		--		--		--		--		--		--		--		--		--	
Apr 27	127	9	0.4		--		--		--		--		2		--		--		--		--	
Apr 21	133	10	--		--		--		--		--		--		--		--		--		--	
			100.00		99.90		100.10		100.10		100.00		487		207		197		404		170	

*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 1990 band-tailed pigeon harvest is in Table 13. Permits were required in 1990 and a questionnaire was sent to participants. Only 22 hunters purchased the \$2.00 band-tailed pigeon permit in 1990. Harvest trends since 1970 are shown in Table 15.

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Band-tailed pigeon hunters	9	-61	-82
Band-tailed pigeon harvest	7	-71	-95
Hunter-days afield	28	-82	-78
Pigeons per hunter-day	0.26	+73	-74
Pigeons per hunter	0.8	-20	-72

Total harvest decreased in 1990 and was well below average.

Table 13. Band-tailed pigeon harvest statistics, 1990.

Area Hunted	Participating Hunters		Hunter Days		Harvest		Pigeons/ Hunter-Day	Percent of Pressure**	Percent of Harvest
	Reported	Calc.	Reported	Calc.	Reported	Calc.			
Beaver County	*	*	*	*	*	*	*	*	*
Blue Mountain-Elk Ridge	3	4	12	15	0	0	0.0	53	0
Carbon County	*	*	*	*	*	*	*	*	*
Davis County***	*	*	*	*	*	*	*	*	*
Garfield County	*	*	*	*	*	*	*	*	*
Iron County	*	*	*	*	*	*	*	*	0
Kane County	1	1	1	1	2	2	2.0	4	29
LaSal Mountain	1	1	2	2	0	0	0.0	7	0
Millard County	2	2	8	10	4	5	0.5	36	71
Piute County	*	*	*	*	*	*	*	*	*
Utah County	*	*	*	*	*	*	*	*	*
Washington County	*	*	*	*	*	*	*	*	*
Wayne County	*	*	*	*	*	*	*	*	*
Mixed Counties (Washington and Iron)	*	*	*	*	*	*	*	*	*
Totals	7	9	23	28	6	7	0.26	100	100

**Based on hunter-days.

***This county was closed to band-tailed pigeon hunting in 1990. One hunter reported harvesting 10 birds. Birds harvested are suspected of being feral pigeons.

Projection Factor = 1.2222 (22 permits issued; 18 questionnaires returned).

Table 14. Band-tailed pigeon harvest trend, 1970-90.

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
1990	9	7	28	0.26	0.8
TOTALS (1970-90)	789	2,168	2,083	(15.84)	(45.10)
AVERAGES (1970-89)	52	144	137	1.04	2.95

CHUKAR PARTRIDGE

SUMMARY

The statewide breeding population of chukars decreased in 1990 following the fifth straight year of drought over much of Utah. Late winter and early spring precipitation, critical to successful chukar production, was only average.

Results of the brood survey indicated that brood production was below average. Chukar density decreased during 1990, and was below average.

Harvest statistics from mail questionnaires reflected a decrease in harvest. Hunter success (chukars per hunter-day) remained about the same as in 1989. Again, 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 increased hunter success.



Brood Counts

Results of the annual random brood survey for 1990 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 1990 compared to 1989 and the 10-year (1980-89) average:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Total chukars observed	308	-12	-57
Young per 100 adults	285	-13	-35
Mean brood size	5.50	-3	-32
Chukars observed per 100 hours	244	-53	-54
Total hours effort	126	+88	-11

Harvest data for 1989 indicated breeding populations for 1990 were still significantly below statewide averages. The 1989-90 winter weather was reasonably mild with below average precipitation and above normal temperatures statewide except in February. Late winter and early spring precipitation (January-April) was about average over the entire state (Figure 4). However, drought continued over most of Utah for the fifth straight year.

Effort on chukar brood counts increased in 1990 but remained below average.

Brood count sample sizes were again small for all regions except the Central region. The Central Region counted 15, the Northern Region counted 3, and the Southeastern Region counted 2 of the state total of 20 broods. Chukar density was below the 10-year average and production was down from 1989.

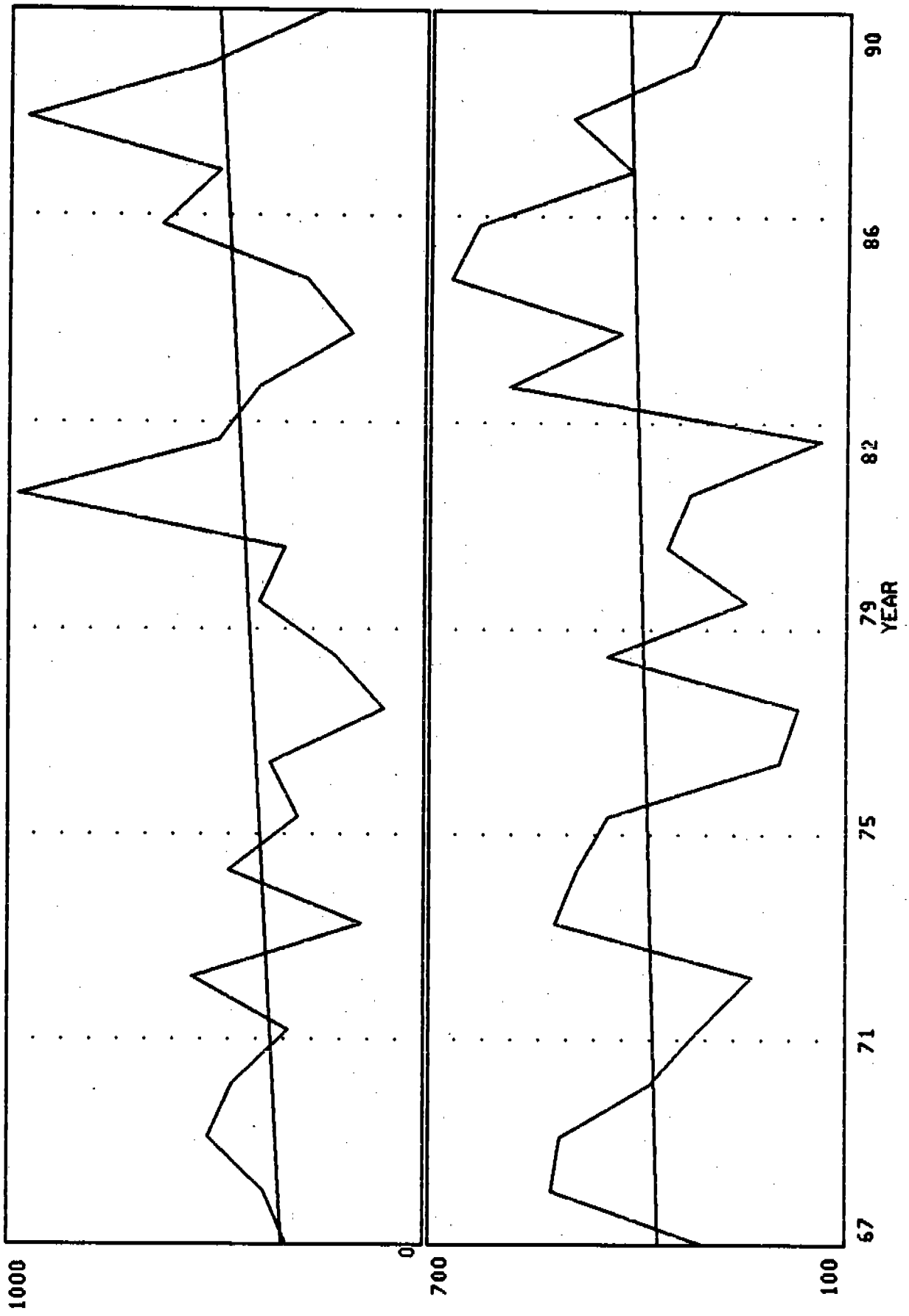
Harvest

Hunter Questionnaire

Results of the hunter questionnaire survey for 1990 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 Figures 2 and 3. Following is a comparison of 1990 harvest statistics to 1989 and the previous 32-year average:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Chukar hunters	11,195	+3	-21
Chukars harvested	26,486	-4	-34
Hunter-days afield	38,463	-5	-9
Chukars per hunter-day	0.69	+1	-24
Chukars per hunter	2.37	-6	-14

FIGURE 1. CHUKAR PRODUCTION INDICES, 1967-90.



CHU/100H

YNG/100A

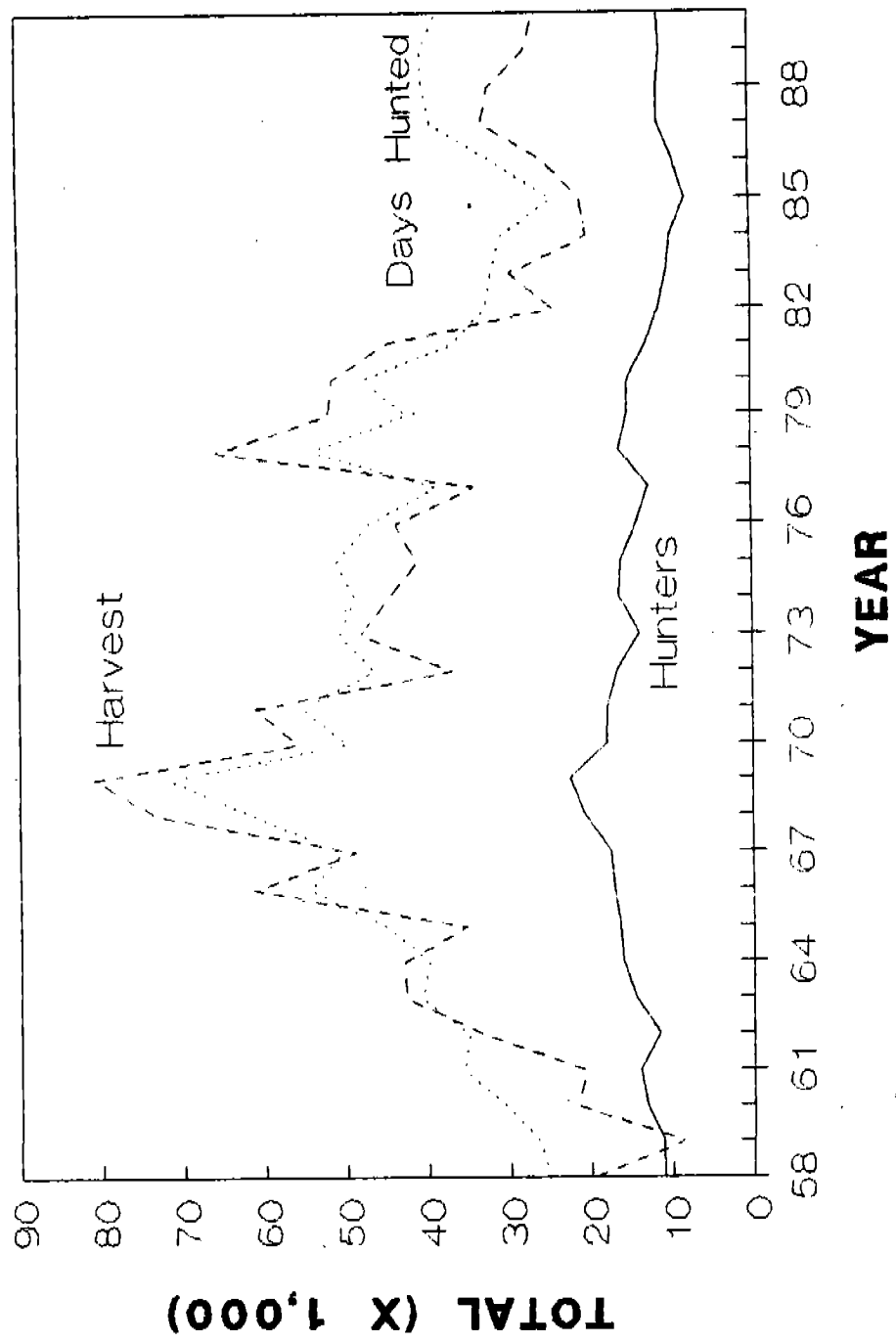


Figure 2. Statewide trends of chukar partridge harvest statistics, 1958-90.

CHUKARS PER HUNTER AND PER DAY

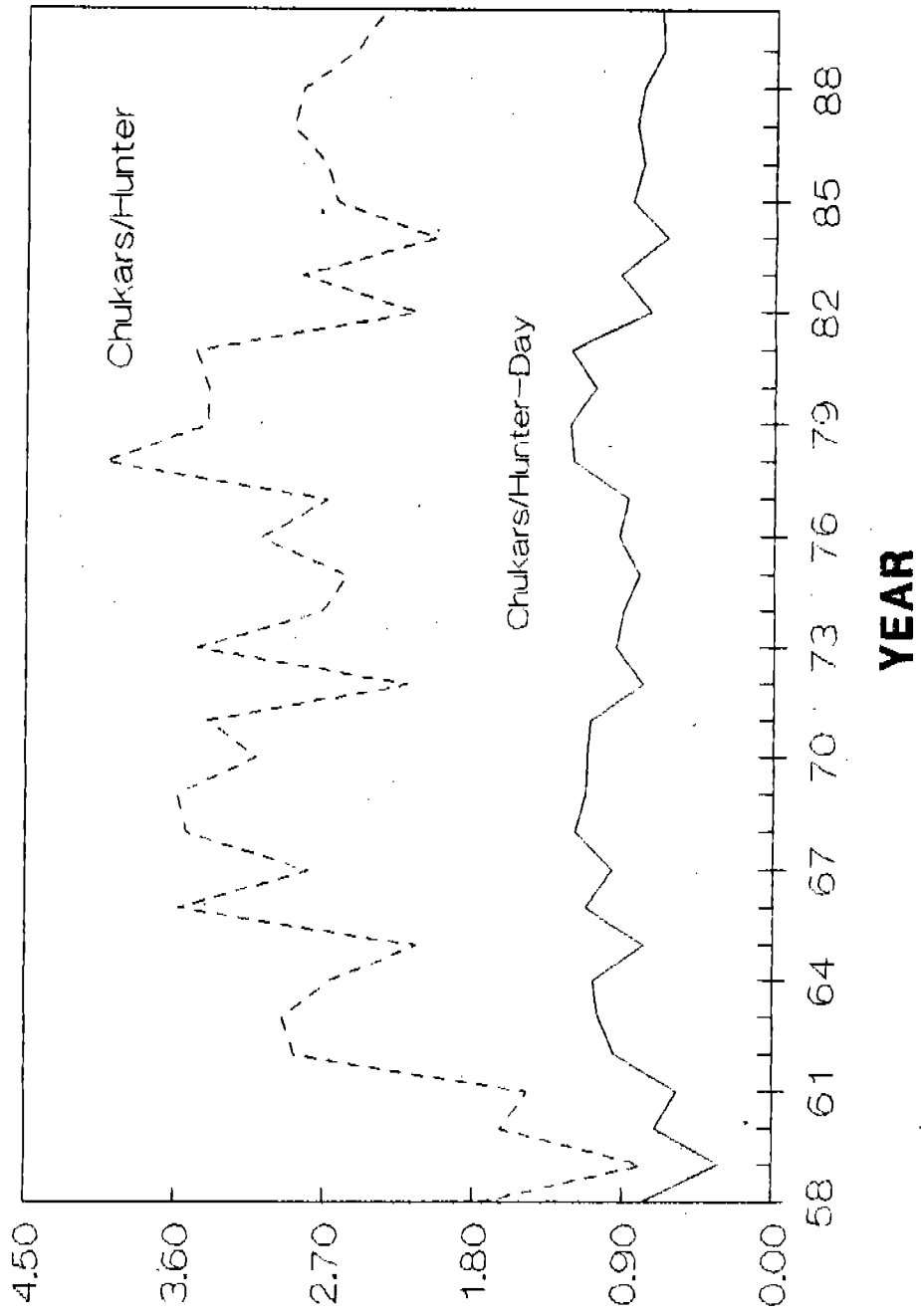


Figure 3. Statewide trends of chukar hunter success rates, 1958-90.

YOUNG/100 ADULTS & PRECIP. INDEX

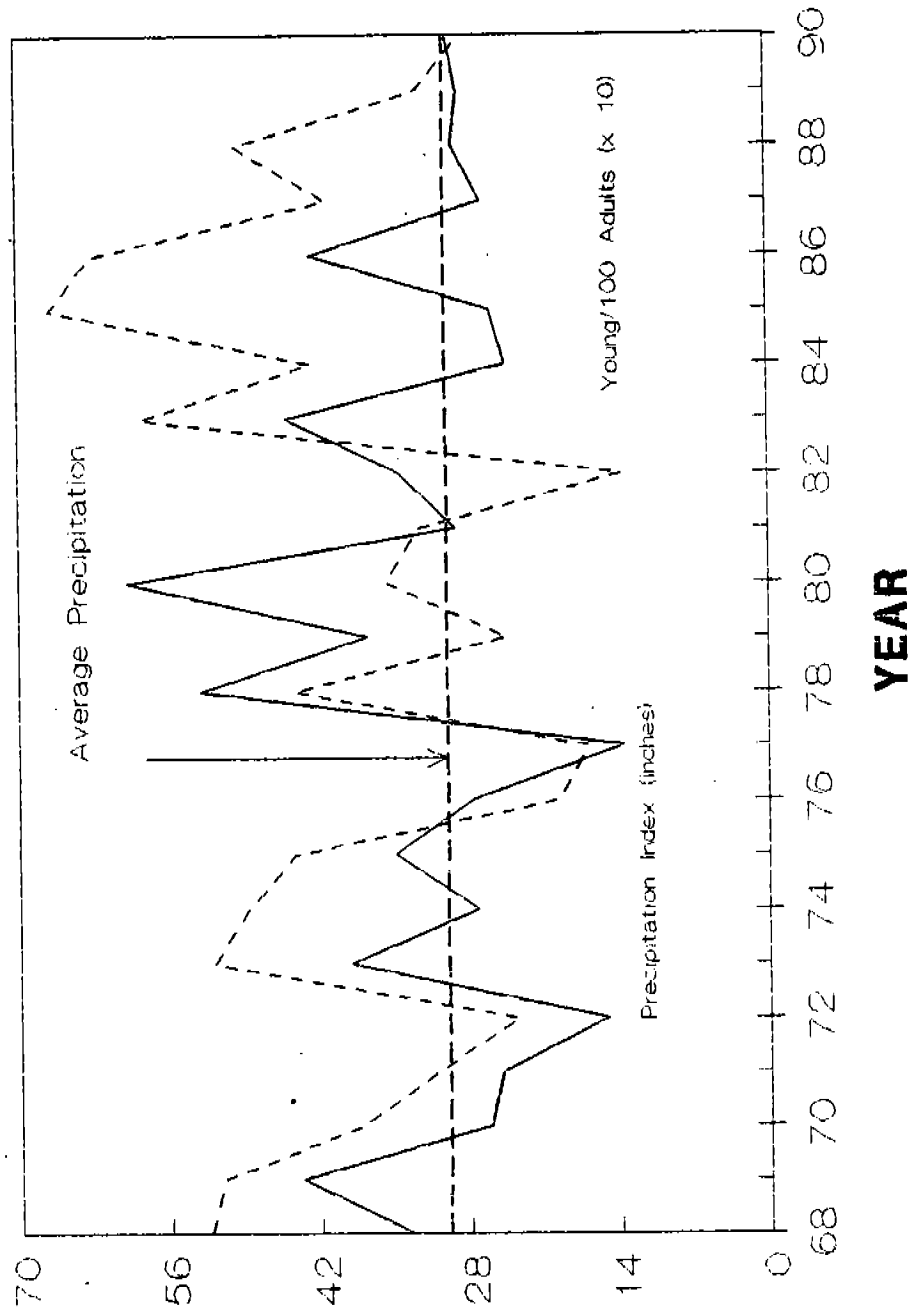
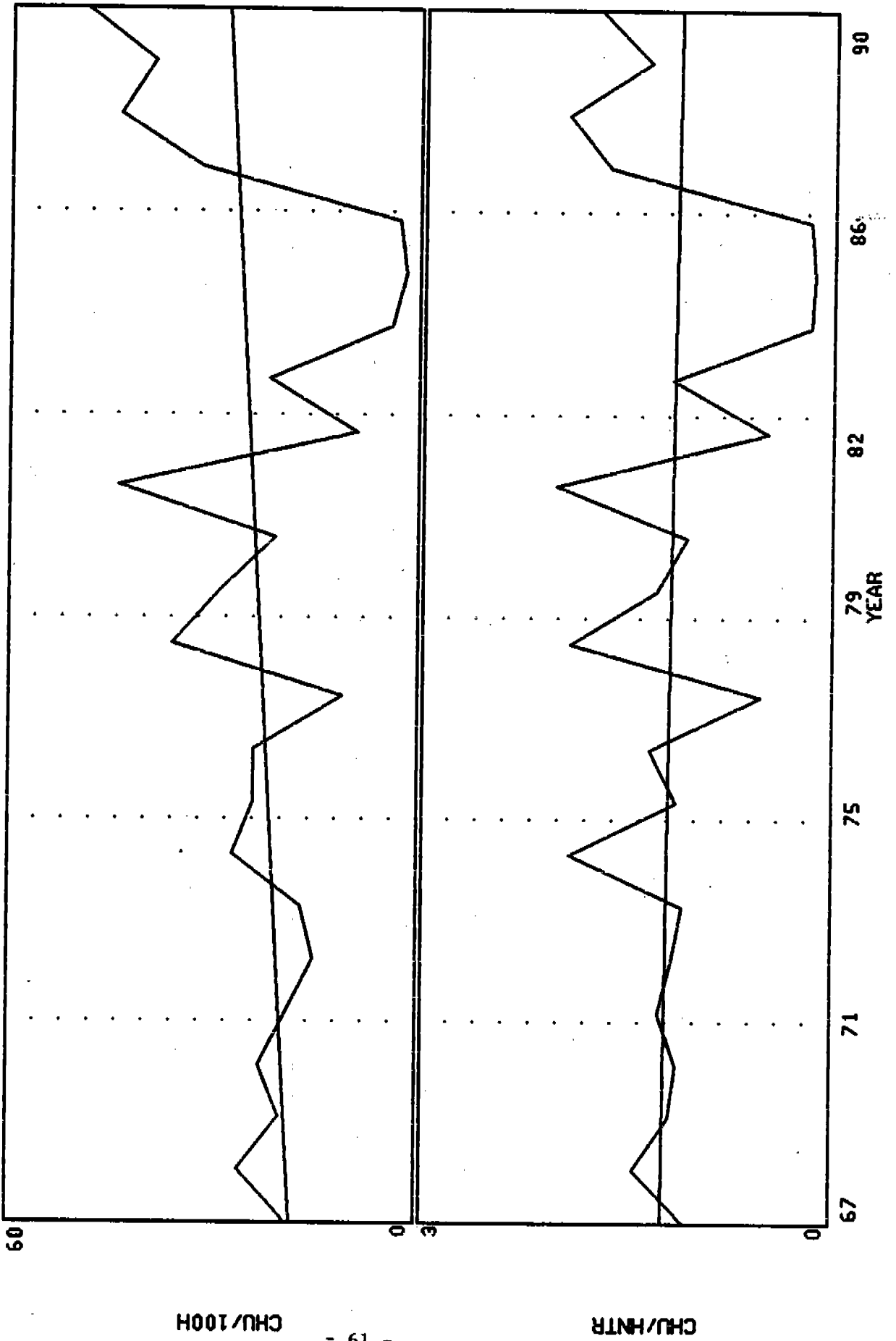


Figure 4. Relationship between late, winter and early spring (Jan.-April) precipitation and chukar production.

FIGURE 5. CHUKAR FIELD BAG CHECK INDICES, 1967-90.



As in the previous year, chukar hunters and hunter effort were virtually the same. Chukars per hunter-day was the same and was 24 percent below the statewide average. Total harvest declined 4 percent. The Central Region again had the highest percentage of the harvest (55%) in 1990, and also had the highest percentage of hunter pressure (47%).

Field Bag Check

A summary of field bag check data for 1990 is shown in Table 10. The hunter success trend determined by field bag checks since 1985 is shown in Table 11 and Figure 5. Data for the 1990 season compared to 1989 and the 10-year (1980-89) average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Total hunters checked	43	+2	-83
Total hours hunted	155	+6	-87
Chukars per hunter (complete hunts)	1.44	+27	+69
Chukars bagged per 100 hours (complete hunts)	49	+26	+120
Average hours per hunter-day (complete hunts)	2.9	0	-34
Hours hunted per chukar bagged (complete hunts)	2.0	-23	-87

Field bag checks indicated hunter success on opening weekend was up from 1989 and was above average (69%). This may be the result of higher vulnerability of birds as they congregated around water sources. However, sample sizes were extremely small.

Table 1. Chukar summer inventory summary, 1990.

Region and County	Distinct Broods		Mixed Yng & Adults		Mean Brood	Total Yng	Total Adults	Total Yng w/o Yng	Total Adults	Total Yng	Young/100 Ad	Veh. Miles	Hours of Effort		Birds/100 Hr
	# Ad	Yng	Ad	Yng									Veh.	Veh.	
Northern Region															
Box Elder	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cache	2	2	27	13.50	3	15	0	5	42	848	16	0	0	16	294
Davis	1	2	12	12.00	0	0	1	3	12	400	1	0	4	5	333
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	3	4	39	13.00	3	15	1	8	54	675	17	0	4	21	295
Central Region															
Juab	3	3	13	4.30	12	75	0	15	88	587	790	27	0	18	45
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	12	12	41	3.40	16	28	16	44	69	157	400	29	0	3	365
Utah	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	15	15	54	3.60	28	103	16	59	157	266	1,190	56	0	21	281
Southern Region															
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Northeastern Region															
Daggett	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	0	0	0	--	0	0	0	0	0	0	85	8	0	0	8
REGIONAL TOTALS	0	0	0	--	0	0	0	0	0	0	85	8	0	0	8
Southeastern Region															
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Emery	2	2	17	8.50	0	0	5	7	17	243	50	5	0	0	480
Grand	0	0	0	--	0	0	6	16	0	--	120	9	0	0	67
San Juan	0	0	0	--	0	0	0	0	0	--	65	6	0	0	--
REGIONAL TOTALS	2	2	17	8.50	0	0	11	13	17	131	235	20	0	0	150
STATE TOTALS	20	21	110	8.50	31	118	28	80	228	285	1,510	101	0	25	126

Table 2. Trend of chukar young per 100 adults, 1980-90.

Region and County	Year										Average 1980-89	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		1990
Northern Region												
Box Elder	111	326	120	--	--	4,200	700	283	136	--	--	--
Cache	--	--	--	600	--	--	--	850	300	--	--	848
Davis	43	65	7	--	--	--	--	24	--	--	--	400
Morgan	--	--	--	750	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	750	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	53	193	27	262	--	4,200	560	125	117	--	675	692
Central Region												
Juab	557	315	600	--	800	--	739	600	462	120	587	--
Salt Lake	--	400	50	--	--	--	--	--	--	--	--	--
Sanpete	767	--	400	--	--	--	--	--	--	--	--	--
Tooele	697	359	585	--	436	550	566	535	484	263	157	--
Utah	243	--	--	--	--	300	--	875	--	472	--	--
Wasatch	--	--	--	800	--	--	--	--	--	--	--	--
REGIONAL TOTALS	572	348	512	800	481	457	642	591	468	240	266	511
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	122	--	--	--	125	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	340	--	--	--	--	--	--	--	--	--	--	--
Millard	550	200	--	--	--	--	--	--	550	927	--	--
Piute	--	938	642	--	--	--	--	370	--	--	--	--
Sevier	600	800	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	600	737	--	--	--	--	--	--	--	--
REGIONAL TOTALS	425	410	389	737	--	--	125	370	550	927	--	492
Northeastern Region												
Daggett	--	--	--	--	--	--	--	0	--	--	--	--
Duchesne	--	163	--	--	--	--	--	0	--	--	--	--
Uintah	--	--	--	--	--	--	--	267	--	--	--	--
REGIONAL TOTALS	--	78	--	--	--	--	--	267	--	--	--	173
Southeastern Region												
Carbon	700	--	--	--	359	--	1,300	1,014	600	--	--	--
Emery	--	--	220	--	--	--	--	500	--	--	243	--
Grand	--	577	518	617	775	730	730	573	621	64	0	0
San Juan	--	533	--	--	337	--	--	--	--	200	0	--
REGIONAL TOTALS	700	575	426	617	392	408	287	631	620	93	131	475
STATE TOTALS	358	326	138	586	426	670	631	411	496	327	285	437

Table 3. Trend of chukar mean brood size from 1980-90.

Region and County	Year										Average 1980-89	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		1990
Northern Region												
Box Elder	--	8.33	12.00	--	--	9.00	--	8.50	7.50	--	--	--
Cache	--	--	--	6.00	--	--	--	--	6.00	--	13.50	--
Davis	--	--	--	--	--	--	--	--	--	14.00	12.00	--
Morgan	--	--	--	7.50	--	--	--	--	--	7.00	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	7.50	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	8.33	3.00	7.00	--	9.00	--	8.50	7.00	10.50	13.00	7.62
Central Region												
Juab	7.70	5.45	6.00	--	8.00	--	7.45	8.00	6.75	5.50	4.30	--
Salt Lake	--	4.00	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	9.91	8.92	10.60	--	6.00	8.43	7.86	8.00	7.43	6.40	3.40	--
Utah	4.00	--	--	--	--	10.00	--	10.50	--	3.00	--	--
Wasatch	6.00	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	8.16	7.13	10.14	--	6.80	8.63	7.68	8.23	7.07	5.00	3.60	7.65
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield*	--	--	--	--	--	--	2.00	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	10.00	--	--	--	--	--	--	--	7.75	7.50	--	--
Piute	--	10.50	3.00	--	--	--	--	5.00	--	--	--	--
Sevier	--	8.00	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	9.00	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	10.00	9.67	7.00	--	--	--	--	5.00	7.75	7.50	--	6.99
Northeastern Region												
Daggett	--	9.00	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	10.00	--	--	--	10.00	--	--	--	--
REGIONAL TOTALS	--	9.00	--	10.00	--	--	--	10.00	--	--	--	9.67
Southeastern Region												
Carbon	--	--	--	--	5.50	--	12.50	9.67	6.00	--	--	--
Emery	--	--	--	--	--	5.00	--	5.00	--	--	8.50	--
Grand	12.50	--	11.90	8.25	7.75	9.00	--	8.57	9.11	1.00	--	--
San Juan	--	--	5.33	--	--	--	--	--	--	4.00	--	--
REGIONAL TOTALS	12.50	--	11.30	8.25	7.00	7.67	10.40	8.25	8.95	2.50	8.50	8.54
STATE TOTALS	10.35	8.23	9.48	8.00	6.91	8.46	8.13	7.93	8.00	5.65	5.50	8.11

Table 4. Trend of chukars observed per 100 hours, 1980-90.

Region and County	Year										Average 1980-89	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		1990
Northern Region												
Box Elder	43	645	90	--	--	239	168	40	236	--	--	--
Cache	--	--	--	700	--	--	--	83	35	--	294	--
Davis	760	810	1,127	100	--	--	22	313	500	250	333	--
Morgan	--	--	--	850	--	--	--	--	--	500	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	140	502	479	227	--	155	102	91	111	135	295	216
Central Region												
Juab	206	692	363	--	200	--	2,611	850	913	500	229	--
Salt Lake	--	500	43	--	--	--	--	--	--	--	--	--
Sanpete	248	--	857	--	--	--	--	--	--	--	--	--
Tooele	1,468	985	1,013	--	441	681	1,046	1,123	653	314	365	--
Utah	533	--	38	--	--	578	--	1,950	--	2,100	--	--
Wasatch	350	--	--	491	--	--	--	--	--	--	--	--
REGIONAL TOTALS	440	722	578	164	291	542	1,424	844	822	623	281	645
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	500	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	236	1,467	--	--	--	--	--	--	1,486	1,596	--	--
Piute	--	1,660	433	--	--	--	--	1,567	--	--	--	--
Sevier	1,400	900	17	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	700	3,350	--	--	--	--	--	--	--	--
REGIONAL TOTALS	525	1,436	266	3,350	--	--	1,567	1,486	1,596	--	1,461	--
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	300	790	--	--	--	--	--	--	--	--	--
Uintah	--	614	454	86	--	--	0	856	--	--	--	--
REGIONAL TOTALS	--	533	348	27	--	--	0	241	--	--	--	230
Southeastern Region												
Carbon	1,600	--	--	--	420	--	--	7,800	350	--	--	--
Emery	--	--	--	--	--	833	--	771	--	--	480	--
Grand	--	2,891	1,167	2,871	291	424	2,075	1,167	3,783	240	67	--
San Juan	--	1,120	--	--	1,750	--	--	--	--	225	--	--
REGIONAL TOTALS	1,600	2,338	1,578	2,871	858	530	2,075	1,335	3,293	225	150	1,670
STATE TOTALS	336	978	496	398	176	286	633	496	959	522	244	528

Table 5. Summary of chukar hunter success and distribution of harvest and hunting pressure by region and county, 1990.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	101	5,453	4,877	0.89	14.18	18.42
CACHE	37	2,284	1,173	0.51	5.94	4.43
DAVIS	7	288	226	0.79	0.75	0.85
MORGAN	6	349	246	0.71	0.91	0.93
RICH	4	185	308	1.67	0.48	1.17
SUMMIT	4	144	308	2.14	0.37	1.17
WEBER	12	535	391	0.73	1.39	1.48
REGIONAL TOTALS	171	9,240	7,532	0.82	24.02	28.44
CENTRAL REGION						
JUAB	39	1,872	1,358	0.73	4.87	5.13
SALT LAKE	10	658	761	1.16	1.71	2.87
SANPETE	24	1,584	2,140	1.35	4.12	8.08
TOOELE	154	9,713	7,470	0.77	25.25	28.21
UTAH	76	4,074	2,716	0.67	10.59	10.26
WASATCH	3	61	41	0.67	0.16	0.16
REGIONAL TOTALS	306	17,966	14,488	0.81	46.71	54.70
SOUTHERN REGION						
BEAVER	14	1,358	576	0.42	3.53	2.18
GARFIELD	2	226	0	0.00	0.59	0.00
IRON	4	329	82	0.25	0.86	0.31
KANE	1	20	0	0.00	0.05	0.00
MILLARD	24	1,337	823	0.62	3.48	3.11
PIUTE	10	782	226	0.29	2.03	0.85
SEVIER	34	2,449	1,255	0.51	6.37	4.74
WASHINGTON	1	102	0	0.00	0.27	0.00
WAYNE	1	20	0	0.00	0.05	0.00
REGIONAL TOTALS	91	6,626	2,963	0.45	17.23	11.19
NORTHEASTERN REGION						
DAGGETT	2	226	0	0.00	0.59	0.00
DUCHESNE	12	761	205	0.27	1.98	0.78
UINTAH	8	452	41	0.09	1.18	0.16
REGIONAL TOTALS	22	1,440	246	0.17	3.75	0.93
SOUTHEASTERN REGION						
CARBON	12	1,028	164	0.16	2.68	0.62
EMERY	24	1,975	987	0.50	5.14	3.73
GRAND	6	185	102	0.56	0.48	0.39
SAN JUAN	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	42	3,189	1,255	0.39	8.29	4.74
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	632	38,463	26,486	0.69	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 6. Summary of chukars bagged per hunter-day by region and county, 1983-90.

Region and County	Year							
	1983	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>								
Box Elder	1.00	0.30	0.55	0.49	0.62	0.63	0.54	0.89
Cache	0.42	0.43	0.13	0.14	0.85	0.58	0.73	0.51
Davis	0.17	0.53	0.43	0.50	0.20	1.65	0.42	0.79
Morgan	1.02	0.10	0.30	0.00	1.33	1.08	0.56	0.71
Rich	0.83	0.80	0.00	0.00	1.00	1.43	0.70	1.67
Summit	1.38	0.67	0.00	0.00	1.25	0.68	0.20	2.14
Weber	0.61	2.46	0.18	0.00	0.44	0.45	1.07	0.73
<u>REGIONAL TOTALS</u>	<u>0.91</u>	<u>0.41</u>	<u>0.46</u>	<u>0.39</u>	<u>0.64</u>	<u>0.69</u>	<u>0.58</u>	<u>0.82</u>
<u>Central Region</u>								
Juab	1.00	0.92	1.63	0.87	1.10	0.90	0.66	0.73
Salt Lake	0.95	1.59	0.96	1.08	1.16	0.69	1.05	1.16
Sanpete	0.77	1.14	1.28	0.88	0.58	1.26	1.06	1.35
Tooele	0.94	0.95	1.12	0.90	0.84	0.82	0.69	0.77
Utah	0.85	0.62	0.71	0.65	0.71	0.64	0.78	0.67
Wasatch	0.61	0.07	0.07	0.00	0.83	1.00	0.60	0.67
<u>REGIONAL TOTALS</u>	<u>0.90</u>	<u>0.88</u>	<u>1.06</u>	<u>0.84</u>	<u>0.86</u>	<u>0.83</u>	<u>0.78</u>	<u>0.81</u>
<u>Southern Region</u>								
Beaver	1.80	1.60	0.00	0.13	0.63	0.35	0.50	0.42
Garfield	0.38	1.83	0.00	0.33	0.40	1.13	0.63	0.00
Iron	--	2.00	0.00	0.00	0.00	0.00	0.00	0.25
Kane	0.38	0.67	0.00	0.00	0.00	0.00	0.00	0.00
Millard	1.28	0.80	1.55	1.88	1.09	0.95	0.57	0.62
Piute	0.68	0.50	0.71	0.13	0.81	0.30	0.54	0.29
Sevier	0.40	0.37	0.21	0.48	0.57	0.67	0.47	0.51
Washington	--	0.50	0.00	0.00	0.00	0.00	0.00	0.00
Wayne	0.50	0.00	1.00	0.00	2.00	1.83	0.27	0.00
<u>REGIONAL TOTALS</u>	<u>0.71</u>	<u>0.63</u>	<u>0.72</u>	<u>0.92</u>	<u>0.82</u>	<u>0.72</u>	<u>0.50</u>	<u>0.45</u>
<u>Northeastern Region</u>								
Daggett	--	--	0.00	0.00	3.00	0.00	0.00	0.00
Duchesne	0.50	0.22	2.00	0.00	0.20	2.12	0.73	0.27
Uintah	1.00	1.45	1.00	0.00	1.68	0.69	2.14	0.09
<u>REGIONAL TOTALS</u>	<u>0.63</u>	<u>0.90</u>	<u>1.09</u>	<u>0.00</u>	<u>1.44</u>	<u>1.42</u>	<u>1.81</u>	<u>0.17</u>
<u>Southeastern Region</u>								
Carbon	0.88	0.42	0.42	0.89	0.87	1.29	0.42	0.16
Emery	1.54	0.44	0.62	0.74	0.90	0.95	0.29	0.50
Grand	1.61	0.37	1.31	1.57	1.19	1.26	0.92	0.56
San Juan	1.82	0.25	0.00	0.86	1.67	0.50	0.00	0.00
<u>REGIONAL TOTALS</u>	<u>1.43</u>	<u>0.40</u>	<u>0.65</u>	<u>1.05</u>	<u>1.07</u>	<u>1.03</u>	<u>0.50</u>	<u>0.39</u>
Unknown Counties	1.27	0.00	0.00	0.00	0.00	0.00	1.00	0.00
<u>STATE TOTALS</u>	<u>0.93</u>	<u>0.66</u>	<u>0.86</u>	<u>0.80</u>	<u>0.84</u>	<u>0.80</u>	<u>0.68</u>	<u>0.69</u>

Table 7. Percentage distribution of chukar harvest by region and county, 1983-90.

Region and County	Year							
	1983	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>								
Box Elder	23.59	6.64	8.39	7.64	10.59	10.15	13.21	18.42
Cache	1.49	1.81	0.20	0.24	1.64	2.29	4.05	4.43
Davis	0.09	1.61	0.61	0.16	0.07	1.71	0.83	0.85
Morgan	2.16	0.30	0.31	0.00	0.29	0.67	1.43	0.93
Rich	0.22	0.41	0.00	0.00	0.07	0.52	0.53	1.17
Summit	1.31	0.20	0.00	0.00	0.37	0.88	0.08	1.17
Weber	1.40	3.22	0.41	0.00	0.59	0.26	1.13	1.48
REGIONAL TOTALS	30.25	14.18	9.92	8.04	13.65	16.51	21.25	28.44
<u>Central Region</u>								
Juab	3.16	7.24	11.67	7.89	12.68	7.18	5.33	5.13
Salt Lake	4.15	7.04	5.12	3.33	4.32	1.87	3.15	2.87
Sanpete	3.56	2.51	8.90	4.72	2.83	7.96	9.83	8.08
Tooele	20.34	26.66	32.85	27.07	20.44	24.63	19.67	28.21
Utah	12.76	11.97	10.75	9.02	9.77	9.06	15.09	10.26
Wasatch	0.63	0.10	0.10	0.00	0.37	0.20	0.23	0.16
REGIONAL TOTALS	44.60	55.53	69.40	52.03	50.44	50.93	53.30	54.70
<u>Southern Region</u>								
Beaver	0.40	0.80	0.00	0.16	1.41	1.09	1.05	2.18
Garfield	0.13	1.11	0.00	0.24	0.14	0.46	0.75	0.00
Iron	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.31
Kane	0.27	0.20	0.00	0.00	0.00	0.00	0.00	0.00
Millard	4.55	10.96	10.64	18.78	13.13	8.22	4.65	3.11
Piute	0.94	3.22	1.53	0.40	1.26	0.52	1.13	0.85
Sevier	2.34	3.72	0.72	5.93	5.67	8.80	5.26	4.74
Washington	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00
Wayne	0.09	0.00	0.31	0.00	0.14	0.57	0.30	0.00
REGIONAL TOTALS	8.73	20.32	13.20	25.53	21.79	19.68	13.14	11.19
<u>Northeastern Region</u>								
Daggett	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.00
Duchesne	0.22	0.20	0.20	0.00	0.07	1.87	0.60	0.78
Uintah	0.31	1.61	1.02	0.00	2.38	0.57	5.78	0.16
REGIONAL TOTALS	0.53	1.81	1.23	0.00	2.68	2.44	6.38	0.93
<u>Southeastern Region</u>								
Carbon	1.94	2.51	1.33	2.60	0.97	0.93	1.13	0.62
Emery	8.12	2.72	3.17	4.15	3.20	7.18	1.35	3.73
Grand	4.28	2.81	1.74	7.15	6.86	2.23	2.70	0.39
San Juan	0.90	0.10	0.00	0.49	0.37	0.05	0.00	0.00
REGIONAL TOTALS	15.24	8.15	6.24	14.39	11.41	10.41	5.18	4.74
Unknown Counties	0.63	0.00	0.00	0.00	0.00	0.00	0.75	0.00
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, 1983-90.

Region and County	Year							
	1983	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>								
Box Elder	22.01	14.54	13.02	12.36	14.35	12.95	16.59	14.18
Cache	3.27	2.77	1.04	1.43	1.63	3.16	3.80	5.94
Davis	0.50	1.98	1.23	0.26	0.31	0.83	1.34	0.75
Morgan	1.97	1.98	0.88	0.91	0.18	0.49	1.75	0.91
Rich	0.25	0.33	0.09	0.07	0.06	0.29	0.51	0.48
Summit	0.88	0.20	0.09	0.07	0.25	1.04	0.26	0.37
Weber	2.14	0.86	1.93	1.50	1.12	0.45	0.72	1.39
REGIONAL TOTALS	31.01	22.67	18.66	16.59	17.93	19.24	24.96	24.02
<u>Central Region</u>								
Juab	2.93	5.15	6.16	7.22	9.65	6.41	5.55	4.87
Salt Lake	4.07	2.91	4.58	2.47	3.13	2.16	2.05	1.71
Sanpete	4.32	1.45	5.98	4.29	4.13	5.03	6.37	4.12
Tooele	20.16	18.44	25.26	24.14	20.50	24.07	19.62	25.25
Utah	13.87	12.62	13.02	11.13	11.53	11.32	13.20	10.59
Wasatch	0.96	0.99	1.32	0.20	0.37	0.16	0.26	0.16
REGIONAL TOTALS	46.31	41.57	56.34	49.45	49.34	49.18	47.05	46.71
<u>Southern Region</u>								
Beaver	0.21	0.33	1.85	0.98	1.88	2.49	1.44	3.53
Garfield	0.33	0.39	0.97	0.59	0.31	0.33	0.82	0.59
Iron	0.08	0.07	0.00	0.00	0.00	0.00	0.36	0.86
Kane	0.67	0.20	0.89	0.26	0.06	0.00	0.00	0.05
Millard	3.31	8.99	5.89	8.00	10.09	6.95	5.60	3.48
Piute	1.30	4.23	1.85	2.47	1.31	1.37	1.44	2.03
Sevier	5.45	6.61	2.99	9.95	8.33	10.53	7.60	6.37
Washington	0.00	0.13	1.06	0.00	0.12	0.00	0.00	0.27
Wayne	0.17	0.20	0.26	0.00	0.06	0.24	0.77	0.05
REGIONAL TOTALS	11.51	21.14	15.76	22.25	22.19	21.94	18.03	17.23
<u>Northeastern Region</u>								
Daggett	0.08	0.00	0.00	0.00	0.06	0.00	0.00	0.59
Duchesne	0.42	0.59	0.09	0.00	0.31	0.70	0.56	1.98
Uintah	0.29	0.73	0.88	0.78	1.19	0.66	1.85	1.18
REGIONAL TOTALS	0.79	1.32	0.97	0.78	1.56	1.37	2.41	3.75
<u>Southeastern Region</u>								
Carbon	2.05	3.90	2.73	2.34	0.94	0.58	1.85	2.68
Emery	4.90	4.10	4.40	4.49	3.00	6.03	3.18	5.14
Grand	2.47	5.02	1.14	3.64	4.82	1.41	2.00	0.48
San Juan	0.46	0.26	0.00	0.46	0.18	0.08	0.00	0.00
REGIONAL TOTALS	9.89	13.28	8.27	10.93	8.96	8.11	7.04	8.29
Unknown Counties	0.46	0.00	0.00	0.00	0.00	0.12	0.51	0.00
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, 1958-90.

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
1990	11,195	26,486	38,463	0.69	2.37
TOTALS (1958-90)	465,134	1,309,562	1,395,534	(29.93)	(90.49)
AVERAGES (1958-89)	14,186	40,096	42,408	0.91	2.75

Table 10. Chukar field bag check summary, 1990.

Region and County	ALL HUNTS				COMPLETE HUNTS				Total Birds/100 Hr Hunter
	Total Parties	Total Hunters	Total Hours	Total Birds/100 Hr	Total Complete Hunts	Total Hunters	Total Hours	Total Birds	
<u>Northern Region</u>									
Box Elder	4	7	25	7 28	1	1	3	4 133	4.00
Cache	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	4	7	25	7 28	1	1	3	4 133	4.00
<u>Central Region</u>									
Juab	--	--	--	--	4	12	24	28 116	7.00
Salt Lake	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--
Tooele	12	30	102	13 12	3	6	18	0	--
Utah	1	4	20	2 10	1	4	20	2 10	2.00
Wasatch	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	13	34	122	15 12	7	22	62	30 48	1.36
<u>Southern Region</u>									
Beaver	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--
<u>Northeastern Region</u>									
Daggett	--	--	--	--	--	--	--	--	--
Duchesne	1	2	8	3 38	1	2	8	3 38	1.50
Uintah	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	1	2	8	3 38	1	2	8	3 38	1.50
<u>Southeastern Region</u>									
Carbon	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	1	2	6	2 33	1.00
Grand	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	1	2	6	2 33	1.00
STATE TOTALS	18	43	155	25 16	10	27	79	39 49	1.44

Table 11. Chukar hunter success trend as determined by field bag checks, 1985-90.

Region and County	1985		1986		1987		1988		1989		1990	
	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	--	0.01	7	0.27	31	1.41	13	0.43	50	2.50	133	4.00
Cache	--	--	--	--	38	1.37	52	2.00	--	--	--	--
Davis	--	--	--	--	25	1.00	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	0.01	7	0.27	33	1.39	23	0.82	50	2.50	133	4.00
<u>Central Region</u>												
Juab	36	1.36	--	--	--	--	75	2.57	95	1.90	116	7.00
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	22	2.00	67	1.71	2	0.09	--	--
Utah	--	--	--	--	--	--	--	--	50	1.00	10	2.00
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	36	1.36	--	--	22	2.00	73	2.29	31	1.00	48	1.36
<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	--	--	--	--	--	--	--	--	--	--	38	1.50
Uintah	--	--	--	--	--	--	87	3.71	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	87	3.71	--	--	38	1.50
<u>Southeastern Region</u>												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	100	3.00	--	--	--	--	133	4.00	33	1.00
Grand	40	3.14	45	1.52	17	0.67	49	2.54	75	1.50	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	40	3.14	51	1.69	17	0.67	49	2.54	100	2.30	33	1.00
STATE TOTALS	2	0.12	3	0.15	32	1.37	44	1.63	39	1.13	49	1.44

SAGE GROUSE

SUMMARY

Harvest data for 1989 indicated average breeding populations of sage grouse for 1990. Strutting ground surveys indicated an increase in the average male grouse attendance from 1989 and populations were above average.

Brood surveys showed increased production throughout the state. Birds observed per 100 hours remained the same as in 1989, and was 15 percent below average. The ratio of young to adults increased 24 percent compared to 1989 and was above average.

The increase in production, as indicated from brood counts, in 1990, was apparent in harvest statistics collected from questionnaires and from field bag checks. Hunter success rates increased. However, hunters and days hunted were similar to 1989. Harvest was above the 36-year average. Age ratios derived from wings also indicated a 37 percent increase in young per 100 adults but was still 10 percent below average.



Strutting Ground Counts

The status of the sage grouse breeding population for 1990, as indicated by strutting ground counts, is shown in Table 1 and Figure 1 of this section. Results of this survey for 1990 compared to 1989 and the 1967-89 average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Number of grounds counted	130	+9	+19
Total male grouse counted	2,660	+30	+29
Average male grouse per ground	20	+18	+6
Percent change from previous year (comparable grounds)	-2		

Access for spring 1990 strutting ground counts was generally good in most regions of the state. The numbers of male grouse observed increased statewide. Harvest data for 1989 indicated average populations going into the winter of 1989-90, but the numbers of juvenile birds observed during the summer indicated increased production compared to 1989. Loss of habitat continues to be the trend in many areas of the state.

Brood Counts

Results of the summer inventory survey for 1990 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 1990 are compared to 1989 and the previous 10-year (1980-89) average as follows:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Total sage grouse counted	756	-2	-51
Young per 100 adults	183	+24	+20
Mean brood size	4.71	+8	+6
Sage grouse observed per 100 hours	279	-3	-15
Total hours effort	241	-10	-48

The effort devoted to sage grouse brood counts was 48 percent below average, and the total number of grouse counted was 51 percent below average.

Sage grouse density remained about the same as in 1989, production of young per 100 adults increased 24 percent. The average brood size was slightly above the 10-year average. Continued drought conditions may have negatively influenced brood survival or caused an earlier dispersal of broods.

FIGURE 1. SAGE GROUSE STRUTTING GROUND COUNTS, 1959-90.

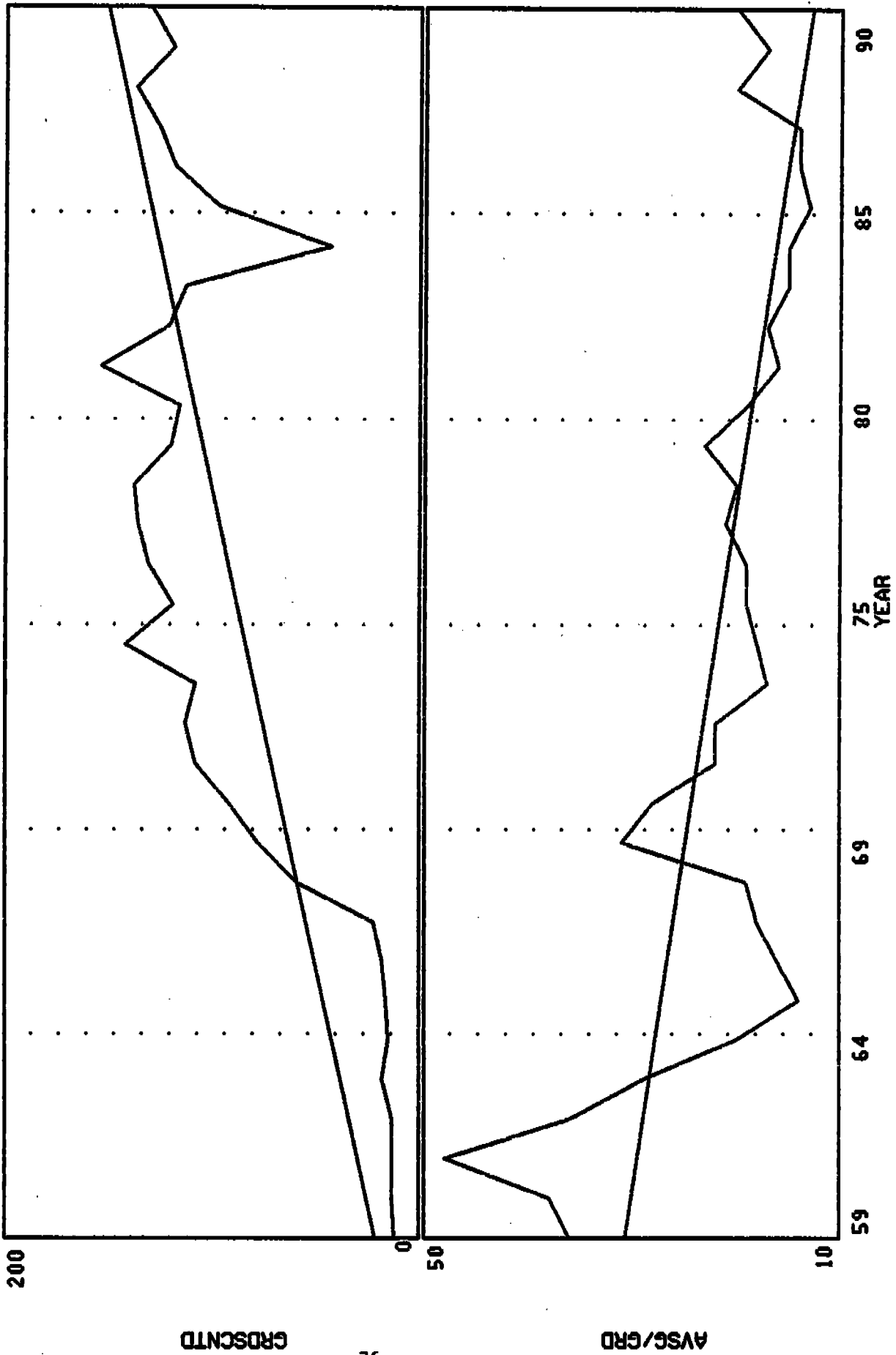
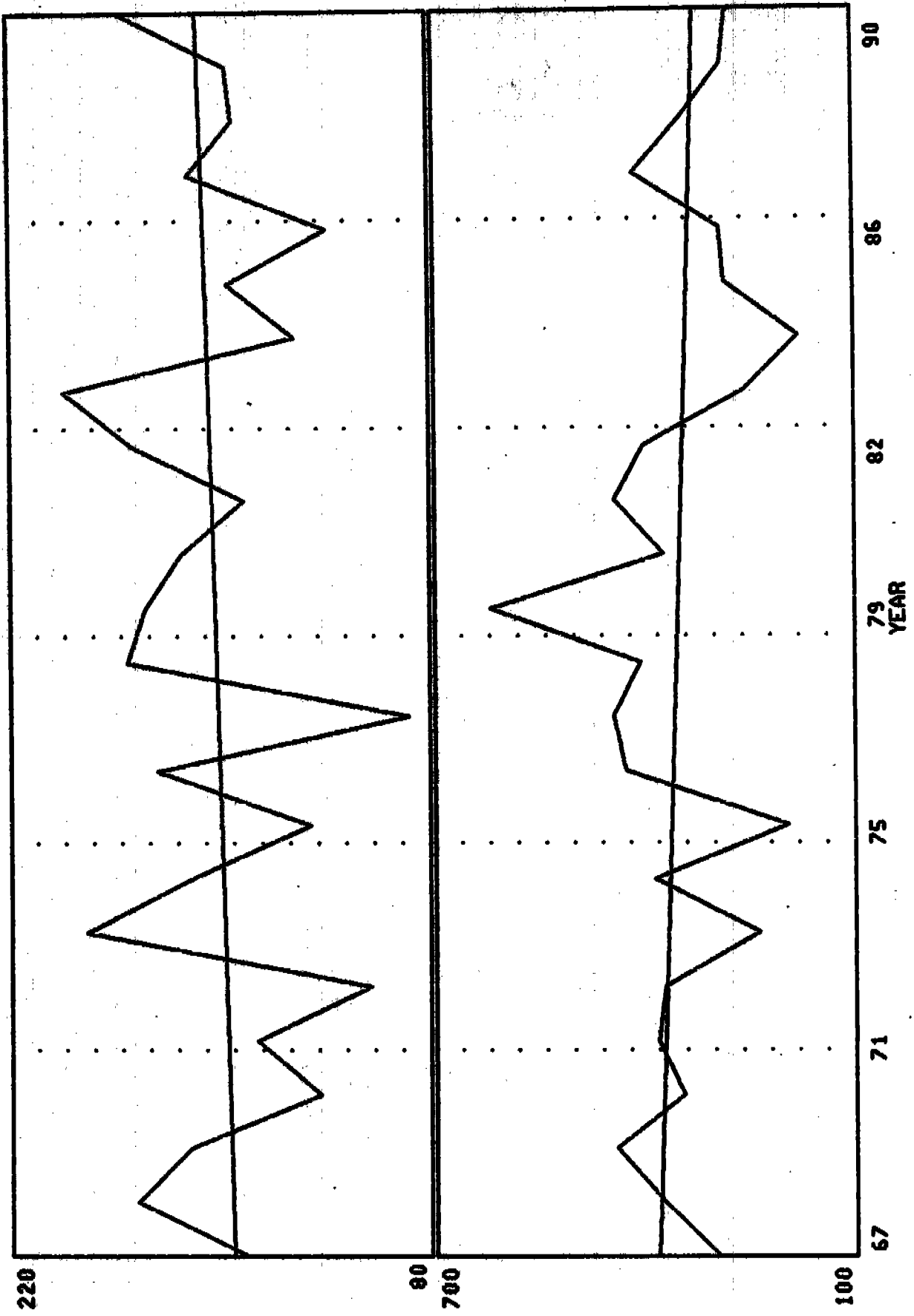


FIGURE 2. SAGE GROUSE PRODUCTION INDICES, 1967-90.



YNG/100A

SC/100HR

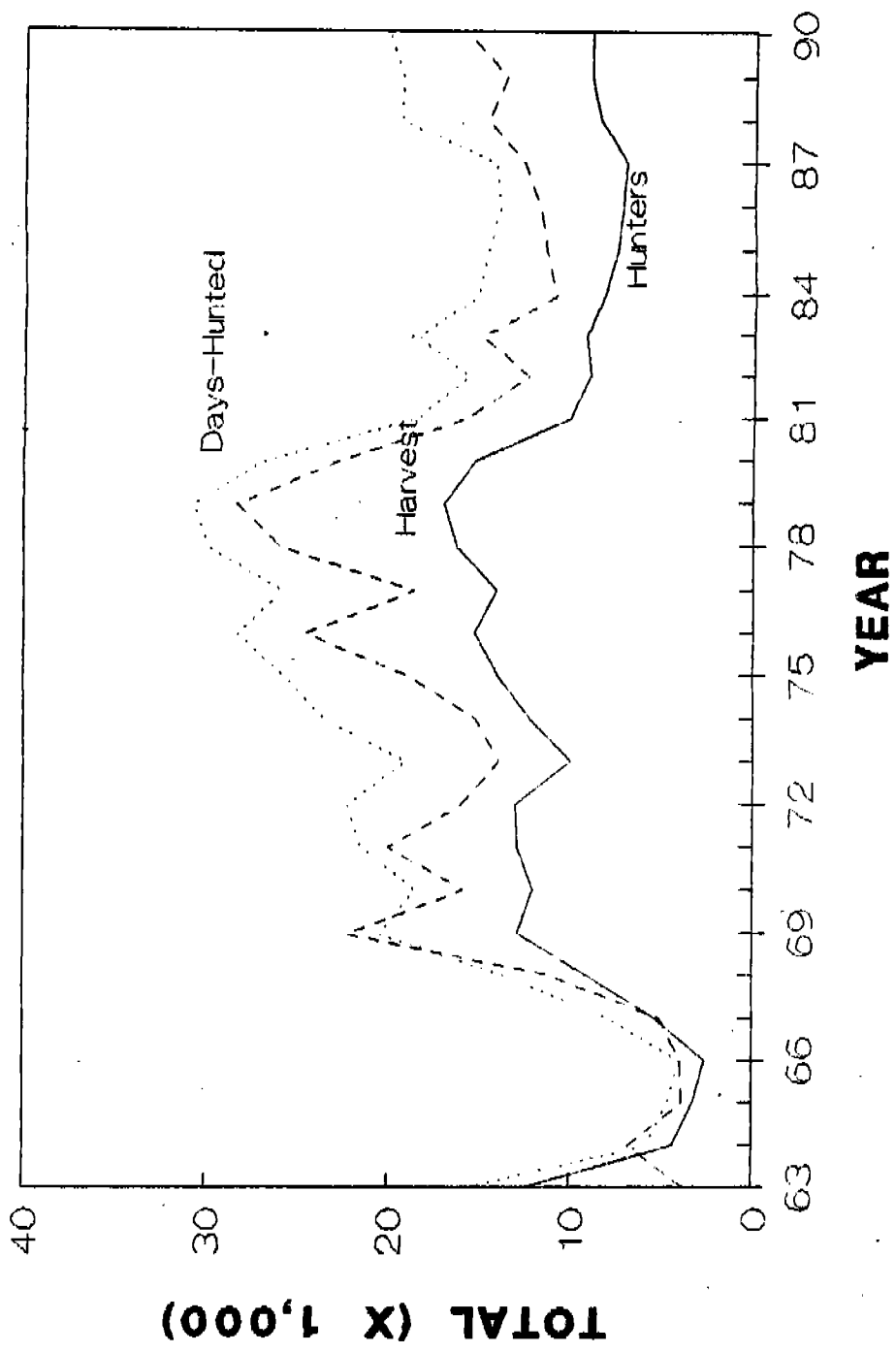


Figure 3. Statewide trend of sage grouse harvest statistics, 1963-90.

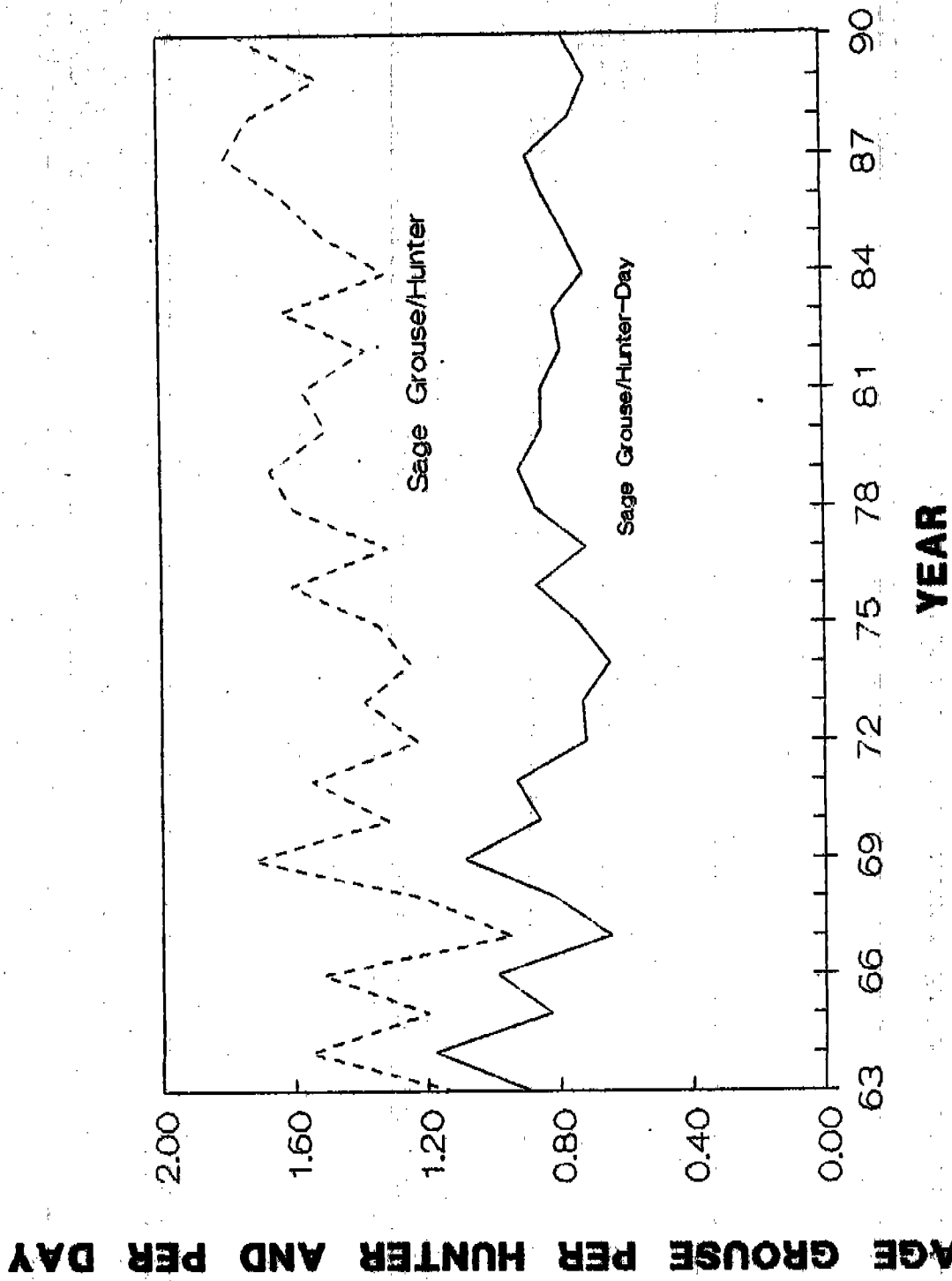
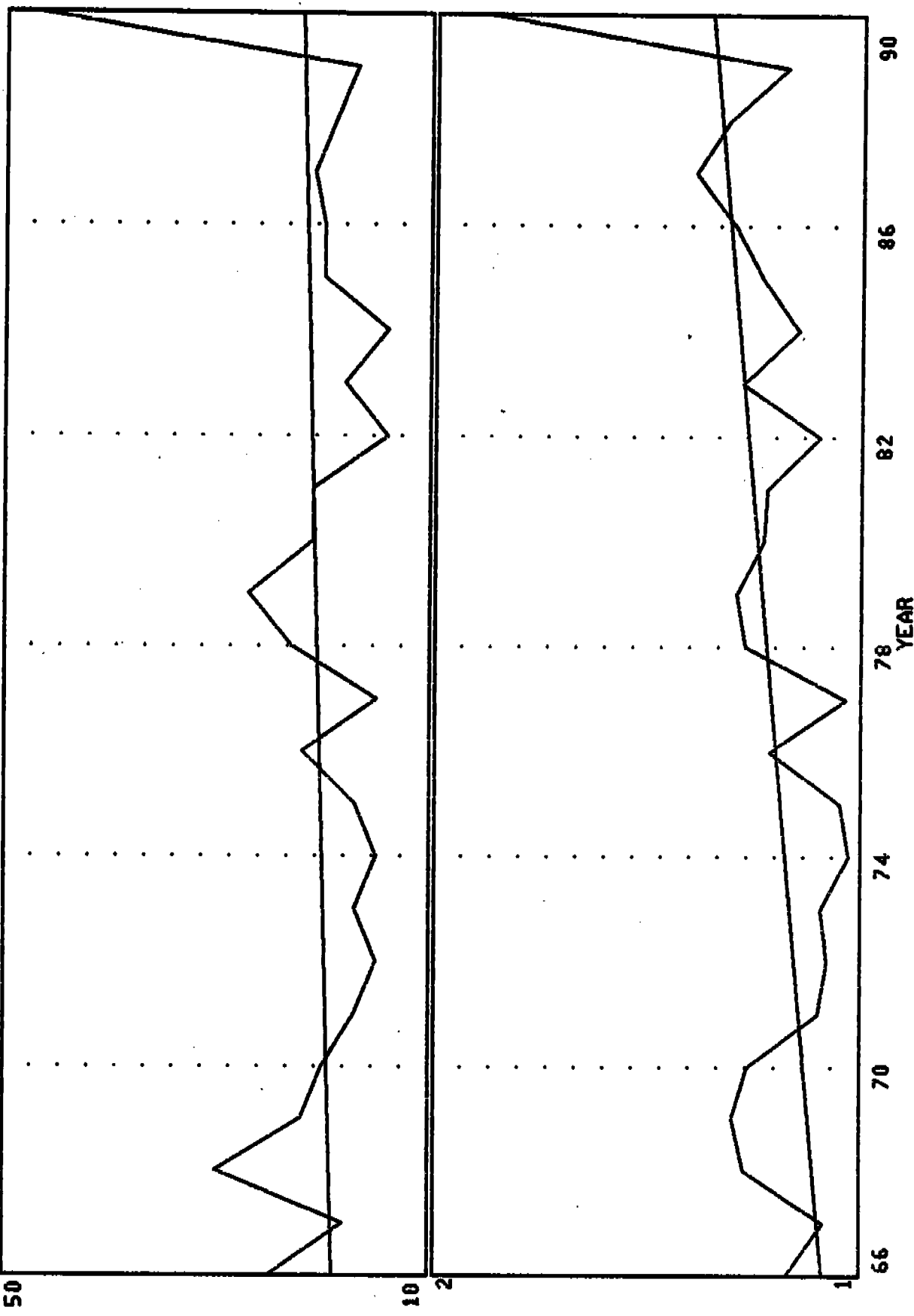


Figure 4. Statewide trend of sage grouse hunter success rates, 1963-90.

FIGURE 5. S. GROUSE FIELD BAG CHECK INDICES, 1966-90.



SGR/100H

- 08 -

SGR/HNTR

Harvest

Hunter Questionnaire

Results of the 1990 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 1990 hunting season compared to 1989 and the previous 27-year average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Sage grouse hunters	9,014	0	-12
Sage grouse harvested	15,784	+15	+8
Hunter-days afield	20,147	+4	+10
Sage grouse per hunter-day	0.78	+10	-6
Sage grouse per hunter	1.75	+15	+21

Sage grouse per hunter-day success rate increased 10 percent in 1990. Total statewide harvest increased 15 percent, and there was no change in total sage grouse hunters. Hunter success increased 9 percent in the Northern Region where four of the seven counties were closed to sage grouse hunting. Nevertheless, 42 percent of the harvest and 44 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 1990 is shown in Table 11. Hunter success trends determined via this method are shown in Table 12 and Figure 5. Results of the 1990 survey compared to 1989 and the 1980-89 average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Total hunters checked	463	-66	-65
Total hours hunted	1,637	-71	-73
Sage grouse per hunter (complete hunts)	1.83	+115	+96
Sage grouse bagged per 100 hours	47	+176	+166
Average hours per hunter-day (complete hunts)	3.88	-21	-24
Hours hunted per grouse bagged (complete hunts)	2.12	-63	-62

Much of Utah was again dry with birds concentrated around available water. Hunter success rates from field bag checks showed larger increased than for the mail questionnaire success rates. Both were up last year.

Sex and Age Composition of the Harvest

A summary of the sex and age composition of harvested sage grouse in 1990 is found in Table 13 and the trend from 1987-90 in Table 14.

Following are data derived from wing surveys in 1990 compared to 1989 and the 1973-89 average:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Sample size	942	+2	-18
Percent males	42	+20	+2
Percent females	58	-11	-2
Young per 100 adults	134	+37	-10
Young per 100 hens (adult)	205	+59	-9

Analysis of wings collected at checking stations during the 1990 season indicates that statewide production was up compared to 1989, and was below the previous 17-year average. This corresponds with brood counts.

Table 1. Summary of sage grouse strutting ground counts by region and county, 1980-90.

Region and County	Year										
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
NORTHERN REGION											
BOX ELDER											
No. strutting grounds counted	28	35	15	17	8	32	10	18	15	11	20
Total male grouse counted	899	711	384	322	216	309	288	324	419	343	327
County average (all strutting grounds)	32	20	26	19	27	10	29	18	28	31	23
% change from previous year - comparable grounds	+9	-35	-24	-29	-8	+7	+17	-12	+33	-3	-17
CACHE											
No. strutting grounds counted	1	3	1	0	1	0	2	1	1	2	—
Total male grouse counted	18	18	19	0	5	—	8	0	9	15	—
County average (all strutting grounds)	18	6	19	—	5	—	4	0	9	8	—
% change from previous year - comparable grounds	+20	-33	+58	—	—	—	—	—	+100	+40	—
MORGAN											
No. strutting grounds counted	3	3	3	3	1	3	3	2	1	—	—
Total male grouse counted	131	57	65	31	2	33	22	26	19	—	—
County average (all strutting grounds)	44	19	22	10	2	11	7	13	19	—	—
% change from previous year - comparable grounds	+76	-57	+16	-31	-91	+1,000	-33	+18	-21	—	—
RICH											
No. strutting grounds counted	11	13	7	9	6	18	11	12	3	6	19
Total male grouse counted	236	259	153	188	103	399	296	431	319	281	853
County average (all strutting grounds)	21	20	22	21	17	22	27	36	53	46.8	41
% change from previous year - comparable grounds	-40	+5	-21	+2	-2	+49	-28	+53	-10	+5	-7
SUMMIT											
No. strutting grounds counted	1	7	2	7	1	0	7	7	10	—	—
Total male grouse counted	15	60	11	46	16	—	23	25	17	—	—
County average (all strutting grounds)	15	9	6	7	16	—	3	4	2	—	—
% change from previous year - comparable grounds	+15	+13	-50	-9	+78	—	—	-65	-32	—	—
REGIONAL TOTALS											
No. strutting grounds counted	44	61	28	36	17	53	33	40	33	19	39
Total male grouse counted	1,299	1,105	632	587	342	741	637	806	783	639	1,190
Average grouse per ground (all strutting grounds)	30	18	23	16	20	14	19	20	24	34	31
% change from previous year - comparable grounds	-2	-27	-20	-22	-9	+27	-8	+16	+11	+5	—

Table 1 (continued)

Region and County	Year										
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
SOUTHERN REGION											
GARFIELD											
No. strutting grounds counted	8	11	9	8	7	--	8	9	8	8	10
Total male grouse counted	97	298	359	197	133	--	152	175	251	126	244
County average (all strutting grounds)	12	27	39	25	19	--	19	19	31	16	24
% change from previous year - comparable grounds	-48	+114	+78	-12	-46	--	+13	0	+24	-50	--
WAYNE											
No. strutting grounds counted	8	14	14	1*	(12)*	--	13	13	13	13	10
Total male grouse counted	32	284	300	123	(89)	--	120	182	326	268	259
County average (all strutting grounds)	4	20	21	123	(7)	--	9	14	25	21	26
% change from previous year - comparable grounds	--	--	--	--	--	--	-15	+52	+79	-18	--
BEAVER											
No. strutting grounds counted	5	7	7	7	4	3	4	4	3	5	2
Total male grouse counted	113	140	131	117	48	45	55	52	46	71	33
County average (all strutting grounds)	23	20	19	17	12	15	14	13	15	14	16
% change from previous year - comparable grounds	+1	+6	-6	-11	+78	--	+22	-5	--	-7	--
IRON											
No. strutting grounds counted	6	7	9	4	--	5	6	4	6	6	3
Total male grouse counted	84	101	111	105	--	81	131	64	111	127	60
County average (all strutting grounds)	14	14	12	26	--	16	22	16	19	21	20
% change from previous year - comparable grounds	+1	+20	-3	+27	--	--	+49	-11	-13	+14	--
SEVIER											
No. strutting grounds counted	--*	2	4	--	--	--	2	--	2	--	--
Total male grouse counted	--	0	5	--	--	--	0	--	0	--	--
County average (all strutting grounds)	--	0	1	--	--	--	--	--	--	--	--
% change from previous year - comparable grounds	--	--	--	--	--	--	--	--	--	--	--
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										
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
REGIONAL TOTALS											
No. strutting grounds counted	9	9	9	10	10	10	10	9	10	10	10
Total male grouse counted	185	100	57	90	80	118	199	150	155	132	146
Average grouse per ground (all strutting grounds)	21	11	6	9	8	12	18	17	16	13	15
% change from previous year - comparable grounds	-24	-51	-43	+58	-11	+48	+170	-25	-3	-16	+11
NORTHEASTERN REGION											
DAGGETT											
No. strutting grounds counted	5	6	6	6	—	5	6	6	6	7	6
Total male grouse counted	51	68	18	45	—	25	22	26	46	25	42
County average (all strutting grounds)	10	11	3	7	—	5	3	4	8	4	7
% change from previous year - comparable grounds	-19	+20	-57	+56	—	-43	—	+16	+77	-24	+24
DUCHESNE											
No. strutting grounds counted	16	16	15	15	—	13	14	14	7	11	15
Total male grouse counted	120	112	156	178	—	121	117	104	9	76	173
County average (all strutting grounds)	8	7	10	12	—	9	8	7	1	7	12
% change from previous year - comparable grounds	+5	0	+15	+17	—	-29	—	-12	-83	+167	+22
UINTAH											
No. strutting grounds counted	12	10	12	16	—	12	14	14	22	20	20
Total male grouse counted	126	174	242	273	—	190	216	159	468	266	321
County average (all strutting grounds)	11	17	20	17	—	16	15	11	21	13	16
% change from previous year - comparable grounds	-67	+56	+40	-21	—	-21	—	-26	+66	-45	0
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										
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
REGIONAL TOTALS											
No. strutting grounds counted	33	32	33	37	--	30	34	34	37	40	41
Total male grouse counted	297	354	416	396	--	336	339	289	550	389	536
Average grouse per ground (all strutting grounds)	9	11	13	13	--	11	10	9	15	10	13
% change from previous year - comparable grounds	-48	+27	+17	-3	--	-26	--	-18	+37	-37	+9
SOUTHEASTERN REGION											
CARBON											
No. strutting grounds counted	--	6	1	1	--	--	2	7	10	10	9
Total male grouse counted	--	2	0	16	--	--	32	55	196	181	146
County average (all strutting grounds)	--	3	--	16	--	--	16	8	20	18	16
% change from previous year - comparable grounds	--	--	--	+100	--	--	--	-27	+142	-8	-38
EMERY											
No. strutting grounds counted	--	--	2	--	--	1	1	2	2	2	2
Total male grouse counted	--	--	9	--	--	12	11	10	12	28	5
County average (all strutting grounds)	--	--	5	--	--	12	11	5	6	14	3
% change from previous year - comparable grounds	--	--	--	--	--	--	-8	-18	+20	+167	-82
SAN JUAN											
No. strutting grounds counted	5	4	4	6	4	4	4	4	4	4	4
Total male grouse counted	41	63	47	59	57	39	29	35	32	39	41
County average (all strutting grounds)	8	16	12	10	14	10	7	9	8	10	10
% change from previous year - comparable grounds	-33	+65	-25	+52	-14	-29	-26	+28	-9	+22	+5
REGIONAL TOTALS											
No. strutting grounds counted	5	10	7	7	4	4	7	13	16	16	15
Total male grouse counted	41	65	56	75	57	39	72	100	240	248	192
Average grouse per ground (all strutting grounds)	8	7	8	11	14	10	10	8	15	16	13
% change from previous year - comparable grounds	-33	+58	-28	+34	-14	-29	-26	0	+74	+3	-35
STATE TOTALS											
No. strutting grounds counted	116	154	121	113	43	97	118	126	137	119	130
Total male grouse counted	2,148	2,459	2,089	1,711	664	1,234	1,708	1,818	2,734	2,041	2,660
Average grouse per ground (all strutting grounds)	19	16	17	15	15	13	14	14	20	17	20
% change from previous year - comparable grounds	-20	-9	-1	-8	-18	-1	+5	+2	+51	+14	-2

* No counts because of snow conditions.

Table 2. Sage grouse summer inventory summary, 1990.

Region and County	Distinct Broods		Mixed Yng & Adults		Mean Brood	Total Yng	Total Adults	Total Yng w/o Adults	Total Adults	Total Yng	Young/100 Ad	Veh. Miles	Hours of Effort		Birds/100 Hr
	# Ad	Yng	Ad	Yng									Veh.	Horse	
Northern Region															
Box Elder	4	4	17	2	7	3	9	24	267	35	3	3	5	11	303
Cache	2	2	10	0	0	0	2	10	500	140	10	0	0	10	126
Davis	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	3	3	6	0	0	3	6	6	100	1	21	0	22	41	
Summit	0	0	0	0	0	0	0	0	--	0	4	24	2	30	
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	9	9	33	2	7	6	17	40	235	175	18	48	7	73	78
Central Region															
Juab	4	4	19	14	28	6	24	47	196	411	14	0	8	22	323
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	8	8	25	8	19	24	40	44	110	--	5	49	2	56	150
Utah	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	3	3	20	0	0	0	3	20	667	33	7	3	1	11	209
REGIONAL TOTALS	15	15	64	4.27	22	47	30	67	166	444	26	51	11	89	200
Southern Region															
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	3	3	12	6	29	36	45	41	91	45	9	4	0	13	661
Iron	4	4	24	13	21	0	17	45	264	--	0	9	0	9	689
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	4	4	17	4.30	24	96	67	113	168	45	7	10	3	20	900
REGIONAL TOTALS	11	11	53	4.82	43	146	75	129	154	90	16	23	3	42	781
Northeastern Region															
Daggett	1	1	6	6.00	2	10	0	3	533	39	3	0	0	3	585
Duchesne	1	1	6	6.00	0	0	1	6	600	15	1	0	1	2	350
Uintah	14	14	78	5.60	6	31	11	109	352	190	24	0	1	25	566
REGIONAL TOTALS	16	16	90	5.63	8	41	11	35	374	244	28	0	2	30	553
Southeastern Region															
Carbon	0	0	0	--	18	6	0	18	33	30	3	0	1	4	685
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	0	0	0	--	1	2	0	1	50	40	3	0	0	3	120
REGIONAL TOTALS	0	0	0	--	19	8	0	19	88	70	6	0	1	7	386
STATE TOTALS	51	51	240	4.71	94	249	122	267	183	1,023	94	122	24	241	279

Table 3. Trend of sage grouse young per 100 adults, 1980-90.

Region and County	Year										Average 1980-89
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	
Northern Region											
Box Elder	84	68	127	135	75	265	178	94	108	167	267
Cache	300	122	--	--	--	--	--	--	--	--	500
Davis	--	--	--	--	--	--	--	--	--	--	--
Morgan	89	120	--	240	--	300	--	500	--	117	--
Rich	33	85	85	--	164	96	91	116	153	--	100
Summit	74	114	80	67	--	--	400	167	50	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	67	82	91	145	126	130	103	115	135	156	235
Central Region											
Juab	204	245	--	--	--	--	--	--	380	250	196
Salt Lake	--	--	--	--	--	--	--	--	--	--	--
Sanpete	267	348	314	305	--	--	--	--	--	--	--
Tooele	143	101	107	176	100	125	106	207	100	194	110
Utah	--	--	--	--	--	--	--	--	150	--	--
Wasatch	170	236	166	157	175	43	200	209	300	--	667
REGIONAL TOTALS	171	171	209	214	155	64	120	209	135	177	166
Southern Region											
Beaver	142	104	32	--	400	43	--	35	--	--	--
Garfield	383	84	128	133	140	229	125	144	144	40	91
Iron	269	113	148	150	63	--	250	198	146	155	264
Kane	--	--	--	1,000	--	--	--	400	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	38	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	525	--
Washington	--	--	--	--	--	--	--	--	--	--	--
Wayne	291	263	193	104	411	152	44	455	86	--	168
REGIONAL TOTALS	235	154	130	98	92	137	105	216	127	135	154
Northeastern Region											
Baggett	200	230	369	88	250	170	100	124	181	433	533
Duchesne	248	235	305	240	145	297	180	137	288	217	600
Uintah	401	253	183	375	67	261	127	192	164	148	352
REGIONAL TOTALS	297	242	237	265	126	255	131	159	172	155	374
Southeastern Region											
Carbon	--	64	--	--	238	400	133	150	--	56	33
Emery	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--
San Juan	400	350	--	57	500	88	60	--	200	50	50
REGIONAL TOTALS	450	83	--	57	267	122	81	150	200	55	88
STATE TOTALS	163	142	179	202	125	147	114	160	145	147	183

Table 4. Trend of sage grouse mean brood size, 1980-90.

Region and County	Year										Average 1980-89	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		1990
Northern Region												
Box Elder	3.36	3.97	3.92	5.00	5.75	5.31	3.57	3.88	3.80	3.80	4.25	
Cache	1.00	3.50	--	--	--	--	--	--	--	--	5.00	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	5.60	5.14	--	4.20	--	3.00	--	5.00	--	7.00	--	
Rich	3.36	3.67	4.45	--	3.92	3.96	5.08	5.00	4.27	--	2.00	
Summit	3.78	3.67	2.67	3.33	--	--	4.00	5.00	4.00	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	3.61	3.94	4.00	4.25	4.36	4.39	4.74	4.82	4.17	4.30	3.67	4.26
Central Region												
Juab	5.00	2.00	--	--	--	--	--	--	6.33	4.00	4.75	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	5.58	4.80	6.36	5.83	--	--	--	--	--	--	--	
Tooele	4.09	3.00	3.33	4.33	3.33	3.29	3.25	3.60	3.50	3.00	3.13	
Utah	--	--	--	--	--	--	--	--	--	--	--	
Wasatch	4.09	3.83	4.81	3.14	4.90	2.00	5.00	6.94	6.00	--	6.67	
REGIONAL TOTALS	4.41	3.44	5.32	4.37	4.54	2.56	3.60	5.42	4.29	3.40	4.27	4.14
Southern Region												
Beaver	4.14	5.50	4.00	--	4.00	5.00	--	5.00	--	--	--	
Garfield	5.00	4.50	3.43	3.43	4.00	4.50	2.00	4.00	4.60	--	4.00	
Iron	4.12	3.57	6.40	3.00	3.50	--	4.00	4.64	3.67	4.66	6.00	
Kane	--	--	--	5.00	--	--	--	4.00	--	--	--	
Millard	--	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	--	--	--	--	--	--	--	--	7.00	--	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	4.60	3.96	4.43	3.67	5.00	3.57	6.00	6.14	6.29	--	4.30	
REGIONAL TOTALS	4.48	3.93	4.52	3.62	4.27	4.00	4.29	4.89	4.89	4.66	4.82	4.36
Northeastern Region												
Daggett	4.75	4.11	5.13	5.80	4.63	3.00	1.00	4.00	4.45	4.30	6.00	
Duchesne	4.42	3.91	5.32	4.59	3.77	4.73	4.29	3.54	3.60	2.17	6.00	
Uintah	5.55	5.27	4.95	5.13	3.00	5.00	5.44	5.55	4.05	5.15	5.60	
REGIONAL TOTALS	5.05	4.50	5.10	5.00	3.96	4.43	4.94	4.59	4.09	4.58	5.63	4.62
Southeastern Region												
Carbon	--	--	--	--	4.33	4.00	4.00	1.50	--	4.50	--	
Emery	--	--	--	--	--	--	--	--	--	--	--	
Grand	--	--	--	--	--	--	--	--	--	--	--	
San Juan	--	3.50	--	4.00	5.00	3.50	3.00	--	--	2.00	--	
REGIONAL TOTALS	--	3.50	--	4.00	4.50	3.67	3.40	1.50	--	3.67	--	3.46
STATE TOTALS	4.51	4.05	4.85	4.58	4.27	4.04	4.53	4.86	4.29	4.37	4.71	4.44

Table 5. Trend of sage grouse observed per 100 hours, 1980-90.

Region and County	Year										Average 1980-89
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	
Northern Region											
Box Elder	575	571	236	90	195	380	384	475	694	431	303
Cache	154	232	--	--	11	--	--	0	3	--	125
Davis	--	--	--	--	--	--	--	--	--	--	--
Morgan	427	471	77	93	--	19	--	19	--	100	--
Rich	393	648	188	--	198	288	282	364	287	--	41
Summit	111	135	100	81	--	--	21	480	300	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	315	440	144	82	110	186	198	251	271	64	78
Central Region											
Juab	206	380	--	--	--	0.00	--	--	150	311	323
Salt Lake	--	--	--	--	--	--	--	--	--	--	--
Sanpete	319	303	426	214	--	--	--	--	--	--	--
Tooele	710	627	207	203	105	242	746	742	150	252	150
Utah	--	--	--	--	--	--	--	--	125	--	--
Wasatch	360	147	362	41	122	267	92	792	27	19	209
REGIONAL TOTALS	410	347	342	111	118	244	310	776	118	154	200
Southern Region											
Beaver	920	613	62	767	167	429	--	575	--	--	--
Garfield	229	480	291	300	257	295	225	275	452	207	661
Iron	342	1,085	315	71	260	--	466	1,331	1,517	1,000	689
Kane	--	--	--	275	--	--	--	500	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	316	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	417	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--
Wayne	338	538	783	612	381	358	344	793	542	--	900
REGIONAL TOTALS	346	653	429	392	304	342	300	732	574	705	478
Northeastern Region											
Daggett	489	800	300	467	308	284	114	492	474	168	585
Duchesne	446	574	845	433	454	325	165	382	141	123	350
Uintah	474	398	1,036	866	314	888	813	642	830	1,191	566
REGIONAL TOTALS	483	507	800	631	364	490	474	509	589	741	533
Southeastern Region											
Carbon	5	219	--	--	415	--	200	28	--	125	685
Emery	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--
San Juan	100	50	--	50	57	231	400	--	--	150	120
REGIONAL TOTALS	36	141	--	50	194	235	271	28	--	129	386
STATE TOTALS	374	444	401	258	180	284	291	415	347	288	279

Table 6. Summary of sage grouse hunter success and distribution of harvest and hunter pressure by region and county, 1990.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	81	2,963	2,716	0.92	14.71	17.21
CACHE	31	1,420	823	0.58	7.05	5.22
DAVIS**	6	164	41	0.25	0.82	0.26
MORGAN**	7	370	123	0.33	1.84	0.78
RICH	75	2,798	2,366	0.85	13.89	14.99
SUMMIT**	7	267	205	0.77	1.33	1.30
WEBER**	14	905	391	0.43	4.49	2.48
REGIONAL TOTALS	221	8,890	6,667	0.75	44.13	42.24
CENTRAL REGION						
JUAB**	6	308	61	0.20	1.53	0.39
SALT LAKE**	4	102	0	0.00	0.51	0.00
SANPETE**	8	185	185	1.00	0.92	1.17
TOOELE**	9	267	308	1.15	1.33	1.96
UTAH	17	843	329	0.39	4.19	2.09
WASATCH**	7	226	123	0.55	1.12	0.78
REGIONAL TOTALS	51	1,934	1,008	0.52	9.60	6.39
SOUTHERN REGION						
BEAVER	7	267	102	0.38	1.33	0.65
GARFIELD	27	1,522	1,131	0.74	7.56	7.17
IRON	10	391	226	0.58	1.94	1.43
KANE	5	267	144	0.54	1.33	0.91
MILLARD	4	144	452	3.14	0.72	2.87
PIUTE	7	205	102	0.50	1.02	0.65
SEVIER	21	987	1,070	1.08	4.90	6.78
WASHINGTON	4	164	267	1.63	0.82	1.69
WAYNE	28	967	1,008	1.04	4.80	6.39
REGIONAL TOTALS	113	4,918	4,506	0.92	24.41	28.55
NORTHEASTERN REGION						
DAGGETT	16	823	596	0.73	4.09	3.78
DUCHESNE	12	637	761	1.19	3.17	4.82
UINTAH	50	2,160	1,872	0.87	10.73	11.86
REGIONAL TOTALS	78	3,622	3,231	0.89	17.98	20.47
SOUTHEASTERN REGION						
CARBON	13	493	144	0.29	2.45	0.91
EMERY	3	102	20	0.20	0.51	0.13
GRAND	4	185	205	1.11	0.92	1.30
SAN JUAN**	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	20	782	370	0.47	3.88	2.35
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	483	20,147	15,784	0.78	100.00	100.00

**Closed to sage grouse hunting in 1990.

Table 7. Summary of sage grouse bagged per hunter-day by region and county, 1983-90.

Region and County	Year							
	1983	1984	1985	1986	1987	1988	1989	1990
Northern Region								
Box Elder	0.88	0.80	0.73	0.94	1.05	0.78	0.94	0.92
Cache	0.47	0.54	0.21*	0.18*	0.38*	0.47*	0.45*	0.58
Davis	0.45*	0.18*	0.25*	0.25*	0.00*	0.00*	0.72*	0.25*
Morgan	0.15	0.32	0.25*	0.47*	1.25*	0.36*	0.50*	0.33*
Rich	0.44	0.50	0.30	0.58	0.88	0.81	0.63	0.85
Summit	0.50	0.23	0.20*	0.50*	0.55*	0.57*	0.71*	0.77*
Weber	0.47	0.67	0.43*	0.57*	0.56*	0.64*	0.27*	0.43*
REGIONAL TOTALS	0.58	0.55	0.49	0.67	0.76	0.66	0.69	0.75
Central Region								
Juab	0.36*	0.33*	4.00*	3.00*	0.60*	0.88*	0.22*	0.20*
Salt Lake	0.50*	0.25*	0.08*	2.54*	0.00*	0.50*	0.30*	0.00*
Sanpete	0.33*	0.64*	0.44*	0.38*	0.62*	0.23*	0.61*	1.00*
Tooele	0.30*	0.53*	0.23*	1.54*	1.10*	0.27	0.41*	1.15*
Utah	1.08*	0.77*	0.45*	0.42	0.62	0.42	0.33	0.39
Wasatch	0.65	0.28	0.19	0.65*	0.58	0.48*	1.50*	0.55*
REGIONAL TOTALS	0.63	0.51	0.46	0.85	0.70	0.36	0.42	0.52
Southern Region								
Beaver	0.95	1.29	0.33	0.90	1.08	0.76	0.42	0.38
Garfield	1.33	1.33	0.78	0.68	1.50	1.17	1.14	0.74
Iron	1.35	1.00	1.85	0.82	1.29	0.61	0.62	0.58
Kane	—	0.00	0.50	0.13	0.00	1.00	0.75	0.54
Millard	1.88*	0.67*	2.00*	0.50*	1.00*	0.00*	0.09*	3.14*
Piute	1.30	1.44	0.95	0.50	0.58	0.95	1.87	0.50
Sevier	0.67	0.67	0.40	0.43	1.00	0.67	0.39	1.08
Washington	—	0.00*	0.50*	0.00	0.00*	0.00*	0.00*	1.63*
Wayne	1.26	1.25	1.19	1.19	0.60	1.30	1.05	1.04
REGIONAL TOTALS	0.16	1.19	0.92	0.75	0.99	0.91	0.86	0.92
Northeastern Region								
Daggett	1.04	0.16	0.92	0.45	1.00	1.20	0.33*	0.73
Duchesne	1.31	0.50	0.67	1.00	0.91	1.00	1.14	1.19
Uintah	1.15	0.98	1.08	1.30	1.25	1.12	0.98	0.87
REGIONAL TOTALS	1.17	0.76	0.95	1.16	1.17	1.11	0.93	0.89
Southeastern Region								
Carbon	0.27*	0.33*	0.60	1.24	1.09	1.04	0.44	0.29
Emery	0.08*	1.50*	0.63	2.71	1.00	0.77	0.95	0.20*
Grand	—	0.00	1.00	0.40	2.00	0.00	1.50	1.11
San Juan	1.00*	0.00*	0.00	1.33	0.00	10.00	0.00*	0.00*
REGIONAL TOTALS	0.26	0.90	0.60	1.44	1.13	1.40	0.63	0.47
Unknown counties	—	7.50	5.67	2.00	0.00	1.63	0.00	0.00
Closed areas	(5.89)	(29.95)	(9.04)	(10.58)	(6.06)	(3.25)	(4.65)	(9.65)
STATE TOTALS	0.81	0.72	0.78	0.84	0.89	0.76	0.71	0.78

*Closed season.

Table 8. Percentage distribution of sage grouse harvest by region and county, 1983-90.

Region and County	Year							
	1983	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>								
Box Elder	15.56	18.95	14.20	19.61	16.63	16.47	22.39	17.21
Cache	4.56	4.83	1.31*	0.88*	5.02*	4.77*	2.72*	5.22
Davis	2.86*	0.92*	0.18*	0.35*	0.00*	0.00*	2.72*	0.26*
Morgan	0.44	2.60	0.37*	2.45*	0.96*	1.36*	1.06*	0.78*
Rich	3.48	3.90	2.80	4.90	8.12	12.04	11.65*	14.99
Summit	3.13	1.86	0.37*	0.88*	1.16*	1.81*	0.76*	1.30*
Weber	1.52	3.34	1.12*	2.80*	0.96*	2.61*	2.12*	2.48*
REGIONAL TOTALS	31.55	36.43	20.37	31.87	32.88	39.09	43.42	42.24
<u>Central Region</u>								
Juab	0.35*	0.37*	2.98*	2.10*	0.58*	0.79*	0.30*	0.39*
Salt Lake	0.71*	0.18*	0.18*	5.78*	0.00*	0.11*	0.45*	0.00*
Sanpete	1.42*	1.30*	1.49*	1.58*	3.48*	1.25*	2.57*	1.17*
Tooele	0.62*	1.48*	0.56*	3.50*	4.25*	1.81	2.27	1.96*
Utah	5.72*	5.02*	4.67*	3.85	4.64	2.15	3.18	2.09
Wasatch	1.34	1.86	0.75	2.63*	1.35	1.81*	0.91	0.78*
REGIONAL TOTALS	10.17	10.22	10.65	19.44	14.31	7.95	9.68*	6.39
<u>Southern Region</u>								
Beaver	1.87	1.67	1.12	1.58	5.41	1.81	0.76	0.65
Garfield	10.46	9.66	6.54	4.38	4.64	3.86	8.62	7.17
Iron	3.13	1.30	4.48	2.45	3.48	1.59	2.42	1.43
Kane	0.00	0.00	0.18	0.18	0.00	0.11	0.45	0.91
Millard	2.68*	0.74*	1.87*	0.18*	0.38*	0.00*	0.15*	2.87*
Piute	2.32	4.27	3.36	0.35	1.35	2.04	4.24	0.65
Sevier	2.86	1.48	1.12	1.75	2.32	5.00	1.97	6.78
Washington	0.00*	0.00*	0.37*	0.00*	0.00*	0.00*	0.00*	1.69*
Wayne	9.21	7.44	8.03	6.65	2.32	8.40	6.51	6.39
REGIONAL TOTALS	32.54	26.58	27.10	17.50	19.92	22.84	25.11	28.55
<u>Northeastern Regio</u>								
Daggett	2.14	0.55	2.24	0.88	2.32	2.04	0.76*	3.78
Duchesne	5.72	2.60	5.23	3.68	4.06	2.61	3.63	4.82
Uintah	16.99	15.98	19.43	18.21	23.21	17.61	12.41	11.86
REGIONAL TOTALS	24.85	19.15	26.91	22.78	29.59	22.27	16.79	20.47
<u>Southeastern Regio</u>								
Carbon	0.53*	0.92*	1.12	3.68	2.32	2.95	1.66	0.91
Emery	0.09*	3.90*	0.93	3.33	0.19	1.13	2.87	0.13*
Grand	--	0.00	0.18	0.35	0.77	0.00	0.45	1.30
San Juan	0.27*	0.00*	0.00	0.70	0.00	2.27	0.00*	0.00*
REGIONAL TOTALS	0.89	4.83	2.24	8.06	3.28	6.36	4.99	2.35
Unknown counties	0.00	2.78	12.71	0.35	0.00	1.47	0.00	0.00
Closed areas	(15.25)	(14.83)	(11.47)	(23.09)	(16.79)	(14.51)	(14.52)	(13.81)
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, 1983-90.

Region and County	Year							
	1983	1984	1985	1986	1987	1988	1989	1990
Northern Region								
Box Elder	14.33	16.89	15.15	17.53	14.11	15.99	16.81	14.71
Cache	7.89	6.38	4.71*	4.12*	11.87*	7.65*	4.28*	7.05
Davis	5.14*	3.72*	0.58*	1.18*	0.34*	1.63*	2.68*	0.82*
Morgan	2.39	5.85	1.16*	4.42*	0.68*	2.83*	1.50*	1.84*
Rich	6.44	5.58	7.28	7.07	8.26	11.26	13.17	13.89
Summit	5.07	5.71	1.46*	1.47*	1.89*	2.40*	0.75*	1.33*
Weber	2.60	3.59	2.04*	4.12*	1.54*	3.09*	5.57	4.49*
REGIONAL TOTALS	43.87	47.74	32.51	39.91	38.72	44.88	44.75	44.13
Central Region								
Juab	0.79*	0.79*	0.58*	0.59*	0.86*	0.68*	0.96*	1.53*
Salt Lake	1.15*	0.53*	1.75*	1.91*	0.17*	0.17*	1.07*	0.51*
Sanpete	3.55*	1.46*	2.62*	3.53*	4.99*	4.12*	3.00*	0.92*
Tooele	1.66*	1.99*	1.89*	1.91*	3.44*	5.07	3.96	1.33*
Utah	4.27*	4.65*	8.01*	7.81	6.71	3.86	6.85	4.19
Wasatch	1.66	4.78	3.06	3.39*	2.06	2.83*	0.43*	1.12*
REGIONAL TOTALS	13.09	14.23	17.93	19.15	18.24	16.76	16.27	9.60
Southern Region								
Beaver	1.59	0.93	2.62	1.47	4.47	1.80	1.28	1.33
Garfield	6.37	5.18	6.56	5.45	2.75	2.49	5.35	7.56
Iron	1.88	0.93	1.89	2.50	2.40	1.97	2.78	1.94
Kane	0.65	0.00	0.29	1.18	0.00	0.08	0.43	1.33
Millard	1.15*	0.79*	0.73*	0.29*	0.34*	0.00*	1.18*	0.72*
Piute	1.45	2.12	2.77	0.59	2.06	1.63	1.61	1.02
Sevier	3.47	1.59	2.18	3.39	2.06	5.67	3.53	4.90
Washington	0.14*	0.13*	0.58*	0.00	0.34*	0.42*	0.00*	0.82*
Wayne	5.93	4.25	5.24	4.71	3.44	4.90	4.39	4.80
REGIONAL TOTALS	22.64	15.96	22.88	19.59	17.89	18.99	20.56	24.41
Northeastern Region								
Daggett	1.66	2.25	1.89	1.62	2.06	1.28	1.61*	4.09
Duchesne	3.54	3.84	6.12	3.09	3.95	1.97	2.25	3.17
Uintah	11.95	11.70	13.99	11.78	16.52	11.95	8.99	10.73
REGIONAL TOTALS	17.15	17.95	22.01	16.59	22.54	15.21	12.85	17.98
Southeastern Region								
Carbon	1.59*	1.99*	1.46	2.50	1.89	2.14	2.68	2.45
Emery	0.94*	1.86*	1.16	1.03	0.17	1.11	2.14	0.51*
Grand	0.00	0.00	0.14	0.74	0.34	0.00	0.21	0.92
San Juan	0.22*	0.00*	0.14	0.44	0.17	0.17	0.54*	0.00*
REGIONAL TOTALS	2.75	3.85	2.91	4.71	2.57	3.43	5.57	3.88
Unknown counties	0.50	0.26	1.75	0.15	0.00	0.68	0.00	0.00
Closed areas	(20.60)	(17.91)	(26.21)	(26.90)	(26.46)	(25.82)	(23.57)	(15.94)
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, 1951-90.

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
1990	9,014	15,784	20,147	0.78	1.75
<hr/>					
TOTALS					
(1963-1990)	286,820	411,218	513,933	(23.24)	(40.93)
<hr/>					
AVERAGES					
(1963-1989)	10,289	14,646	18,288	0.83	1.45

*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, 1996.

Region and County	ALL HUNTS					COMPLETE HUNTS				
	Total Parties	Total Hunters	Total Hours	Total Birds	Birds/100 Hr	Total Hunts	Total Hunters	Total Hours	Total Birds	Birds/100 Hr
Northern Region										
Box Elder	32	92	395	97	25	7	13	94	23	1.77
Cache	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--
Rich	23	63	194	23	12	4	12	64	8	0.67
Summit	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	55	155	589	120	20	11	25	158	31	1.24
Central Region										
Juab	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--
Southern Region										
Beaver	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--
Plute	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--
Wayne	--	139	479	--	--	--	--	--	112	0.81
REGIONAL TOTALS	--	139	479	--	--	--	--	--	112	0.81
Northeastern Region										
Daggett	8	25	88	11	13	5	15	52	10	0.67
Duchesne	1	1	2	1	50	1	1	2	1	1.00
Uintah	61	143	479	95	20	40	77	242	66	0.86
REGIONAL TOTALS	70	169	569	107	19	46	93	296	77	0.83
Southeastern Region										
Carbon	--	--	--	--	--	2	3	16	2	0.67
Emery	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	2	3	16	2	0.67
STATE TOTALS	125	463	1,637	227	14	59	121	470	222	1.83

Table 12. Sage grouse hunter success trend determined by field bag checks, 1985-90.

Region and County	1985		1986		1987		1988		1989		1990	
	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter
Northern Region												
Box Elder	16	0.98	17	1.06	19	1.39	16	1.21	21	1.28	25	1.77
Cache	--	--	19	0.71	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	18	0.68	14	0.57	17	0.70	18	0.60	8	0.38	13	0.67
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	11	0.44	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	16	0.95	17	0.93	19	1.20	17	1.06	16	0.87	20	1.24
Central Region												
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	--	--
Southern Region												
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	137	0.74	22	1.23	21	0.95	23	1.12	--	--	23	0.81
REGIONAL TOTALS	62	0.78	22	1.20	22	0.97	24	1.15	227	0.51	23	0.81
Northeastern Region												
Daggett	23	1.09	47	1.78	80	1.67	40	0.67	6	0.33	19	0.67
Duchesne	25	0.33	94	2.00	75	1.50	--	--	--	--	50	1.00
Uintah	40	1.10	49	1.17	36	1.05	26	0.91	20	0.87	27	0.86
REGIONAL TOTALS	36	1.06	52	1.33	40	1.12	27	0.90	18	0.84	26	0.83
Southeastern Region												
Carbon	--	--	200	1.00	50	1.00	--	--	22	0.77	13	0.67
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	13	0.67
STATE TOTALS	20	0.93	20	1.02	21	1.15	19	1.04	17	0.85	47	1.83

Table 13. Sex and age composition of harvested sage grouse, 1990.

Region and County	Sample Size	Adults			Young			Young/ 100 Adults	Young/ 100 Hens
		M	F	Total	M	F	Total		
Northern Region									
Box Elder	267	53	73	126	63	78	141	119	193
Cache	15	2	7	9	4	2	6	67	85
Davis	---	---	---	---	---	---	---	---	---
Morgan	---	---	---	---	---	---	---	---	---
Rich	141	17	37	54	34	42	76	156	232
Summit	---	---	---	---	---	---	---	---	---
Weber	---	---	---	---	---	---	---	---	---
REGIONAL TOTALS	499	72	117	189	101	122	223	118	190
Central Region									
Juab	---	---	---	---	---	---	---	---	---
Salt Lake	---	---	---	---	---	---	---	---	---
Sanpete	---	---	---	---	---	---	---	---	---
Tooele	---	---	---	---	---	---	---	---	---
Utah	---	---	---	---	---	---	---	---	---
Wasatch	---	---	---	---	---	---	---	---	---
REGIONAL TOTALS	---	---	---	---	---	---	---	---	---
Southern Region									
Beaver	---	---	---	---	---	---	---	---	---
Garfield	---	---	---	---	---	---	---	---	---
Iron	---	---	---	---	---	---	---	---	---
Kane	---	---	---	---	---	---	---	---	---
Millard	---	---	---	---	---	---	---	---	---
Plute	---	---	---	---	---	---	---	---	---
Sevier	---	---	---	---	---	---	---	---	---
Washington	---	---	---	---	---	---	---	---	---
Wayne	366	43	100	143	110	113	223	156	223
REGIONAL TOTALS	366	43	100	143	110	113	223	156	223
Northeastern Region									
Daggett	---	---	---	---	---	---	---	---	---
Duchesne	---	---	---	---	---	---	---	---	---
Uintah	---	---	---	---	---	---	---	---	---
REGIONAL TOTALS	---	---	---	---	---	---	---	---	---
Southeastern Region									
Carbon	77	---	---	---	---	---	---	64	86
Emery	---	---	---	---	---	---	---	---	---
Grand	---	---	---	---	---	---	---	---	---
San Juan	---	---	---	---	---	---	---	---	---
REGIONAL TOTALS	77	---	---	---	---	---	---	64	86
STATE TOTALS	942	115	217	332	211	235	446	134	205

Table 14. Sex and age composition of harvested sage grouse from 1987-90.

Region and County	1987						1988						1989						1990						Averages 1980-89															
	Sex Ratio %			Young/100H			Sex Ratio %			Young/100A			Sex Ratio %			Young/100H			Sex Ratio %			Young/100A			Sex Ratio %			Young/100H			Sex Ratio %			Young/100A						
	n	M	F	n	M	F	n	M	F	n	M	F	n	M	F	n	M	F	n	M	F	n	M	F	n	M	F	n	M	F	n	M	F							
Northern Region																																								
Box Elder	336	44	56	265	155	232	36	64	130	89	283	37	63	175	116	267	43	57	193	119																				
Cache					100																																			
Davis																																								
Morgan																																								
Rich	77	47	53	233	175	59	32	68	123	84	99	35	65	178	136	141	39	61	232	156																				
Summit																																								
Weber																																								
REGIONAL TOTALS	413	45	55	258	158	291	35	65	128	88	382	37	63	176	122	499	42	58	190	180																				
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	230	43	57	278	233	335	45	55	263	186	209	32	68	116	97	366	42	58	233	156																				
REGIONAL TOTALS	230	43	57	278	233	335	45	55	263	186	209	32	68	116	97	366	42	58	233	156																				
Northeastern Re																																								
Daggett																																								
Duchesne																																								
Uintah	82	48	52	767	531	71	49	51	321	173	242	36	64	98	78																									
REGIONAL TOTALS	82	48	52	767	531	71	49	51	321	173	242	36	64	98	78																									
Southeastern Re																																								
Carbon	63	19	81	84	75	133	29	71	109	87	65	29	71	84	67	77																								
Emery																																								
Grand	12	33	67	125	71																																			
San Juan																																								
REGIONAL TOTALS	75	21	79	89	74	133	29	71	109	87	65	29	71	84	67	77																								
STATE TOTALS	800	42	58	256	181	942	31	69	166	114	921	35	65	133	98	942	42	58	205	134	1,021	40	60	221	147															

n = wing sample size.

FOREST GROUSE

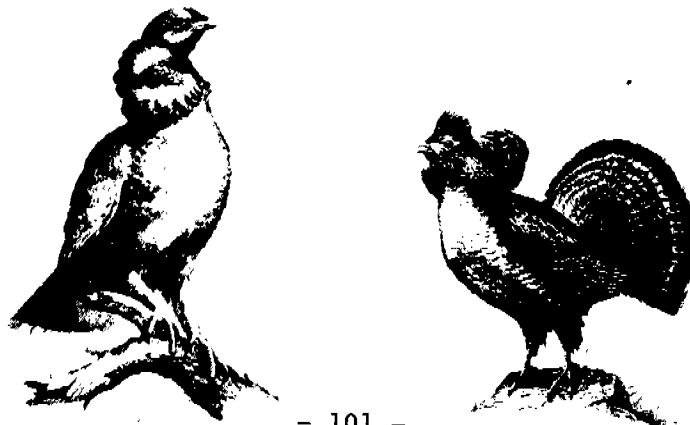
SUMMARY

Judging from harvest statistics for the fall of 1989, the 1990 breeding populations of blue and ruffed grouse were below average. However, ruffed grouse observed per 100 hours of effort during summer brood counts in 1990 increased 15 percent.

Production of blue grouse increased from 1989 but was below the 10-year average. Blue grouse observed per 100 hours of effort increased 15 percent from the previous year. A total of 59 forest grouse broods were observed during 1990 compared with 46 in 1989, 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 45,489 in 1989 to 38,922 in 1990, a 14 percent decrease. The largest decline was for ruffed grouse. Total hunters and days afield also declined. Field bag check sample sizes were small but indicated increased forest grouse numbers.

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 1990 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 1990 compared to 1989 and the previous 10-year average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Total ruffed grouse observed	73	+49	-30
Young per 100 adults	356	+29	+16
Mean brood size	4.75	+44	+11
Ruffed grouse observed per 100 hours	30	+15	-15
Total hours effort	240	+28	-37

Harvest statistics for 1989 indicated a below average breeding population for 1990.

Effort on brood surveys increased by 28 percent but was 37 percent below average.

Grouse observed per 100 hours was 15 percent below average, while mean brood size was 11 percent above average indicating improved production.

Blue Grouse

Results of the annual random brood survey for 1990 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 1990 compared to 1989 and the previous 10-year average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Total blue grouse observed	333	+42	-28
Young per 100 adults	274	+22	+14
Mean brood size	4.19	+16	+12
Blue grouse observed per 100 hours	93	+15	-13
Total hours effort (forest grouse)	357	+24	-21

Harvest statistics for 1989 indicated the blue grouse breeding population for 1990 was again above average.

The 1990 summer surveys on blue grouse indicated that production increased (22 percent) from 1989 and was above average.

This may have resulted from another dryer and warmer spring than normal statewide.

Total observations increased 42 percent, with only a 24 percent increase in effort. The number of grouse observed per 100 hours of effort increased from 1989 but was still 13 percent below average.

Harvest

Hunter Questionnaire

Results of the 1990 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 Figures 1 and 2. Forest grouse season length, bag limits and harvest statistics, 1963-1990 are listed in Table 17. Harvest statistics for 1990 compared to 1989 and the previous 27-year average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Forest grouse hunters	14,591	-14	-1
Forest grouse harvested	38,922	-14	+10
Hunter-days afield	44,452	-12	+23
Forest grouse per hunter-day	0.83	-8	-15
Forest grouse per hunter	2.53	-6	+10
Percent ruffed grouse	28.3	-21	-28
Percent blue grouse	67.1	+10	+23
Percent unidentified	4.6	+53	-27

Results from the harvest questionnaire did not confirm increasing forest grouse populations in 1990. The decrease was in ruffed grouse. Ruffed grouse hunter success was 36 percent below average. Total harvest decreased 33 percent from 1989 and was 19 percent below average. Blue grouse hunter success increased and was 11 percent above average. Total harvest decreased 6 percent from 1989 but was 32 percent above average. Overall, hunter success (grouse per hunter-day) was 15 percent below average, but the number of grouse harvested per hunter was 10 percent above average. Hunter pressure decreased but was still 23 percent above the 27-year average.

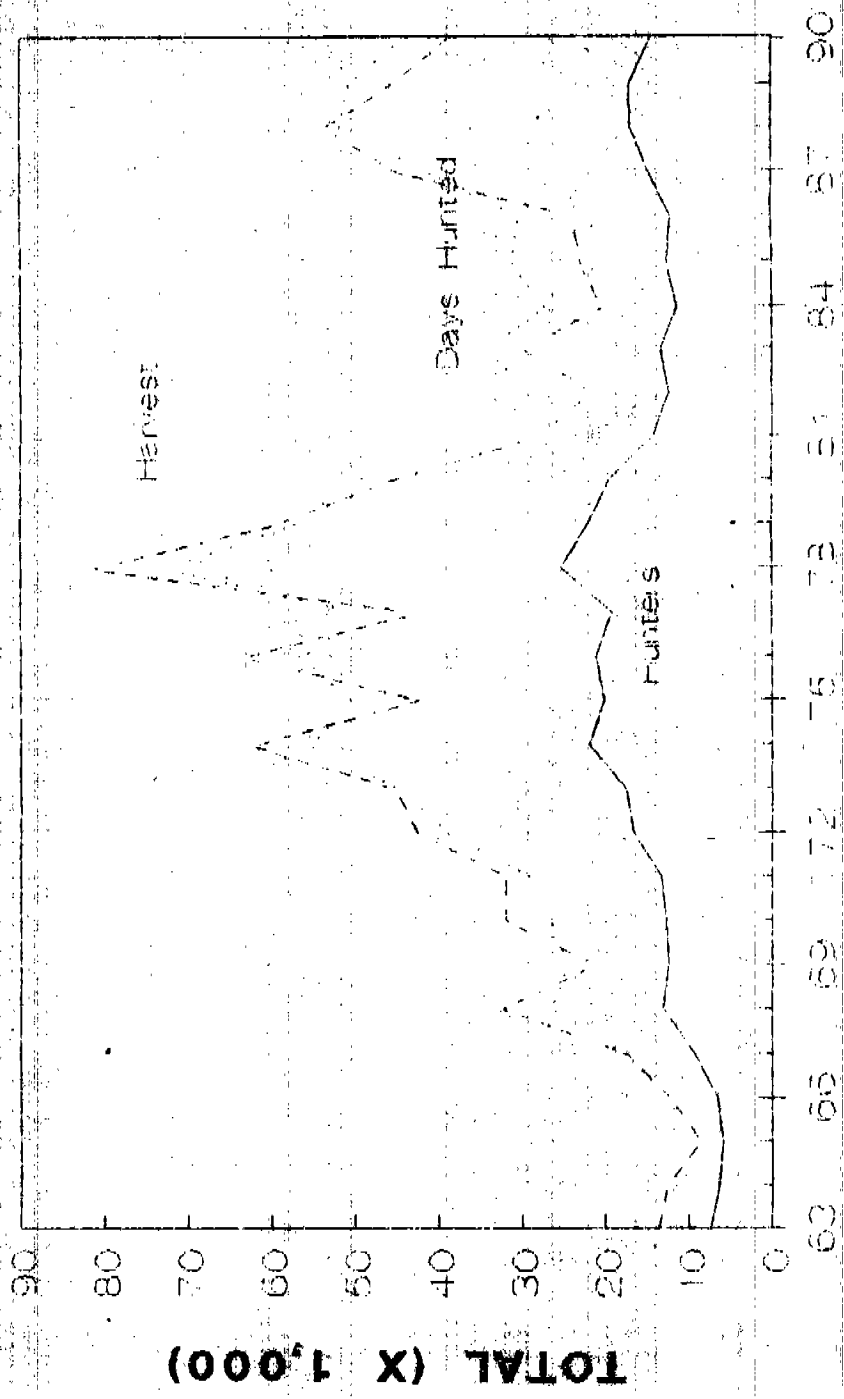


Figure 1. Game Management Trends of Forest Game Management Statistics, 1963-90.

FOREST GROUSE PER HUNTER AND PER DAY

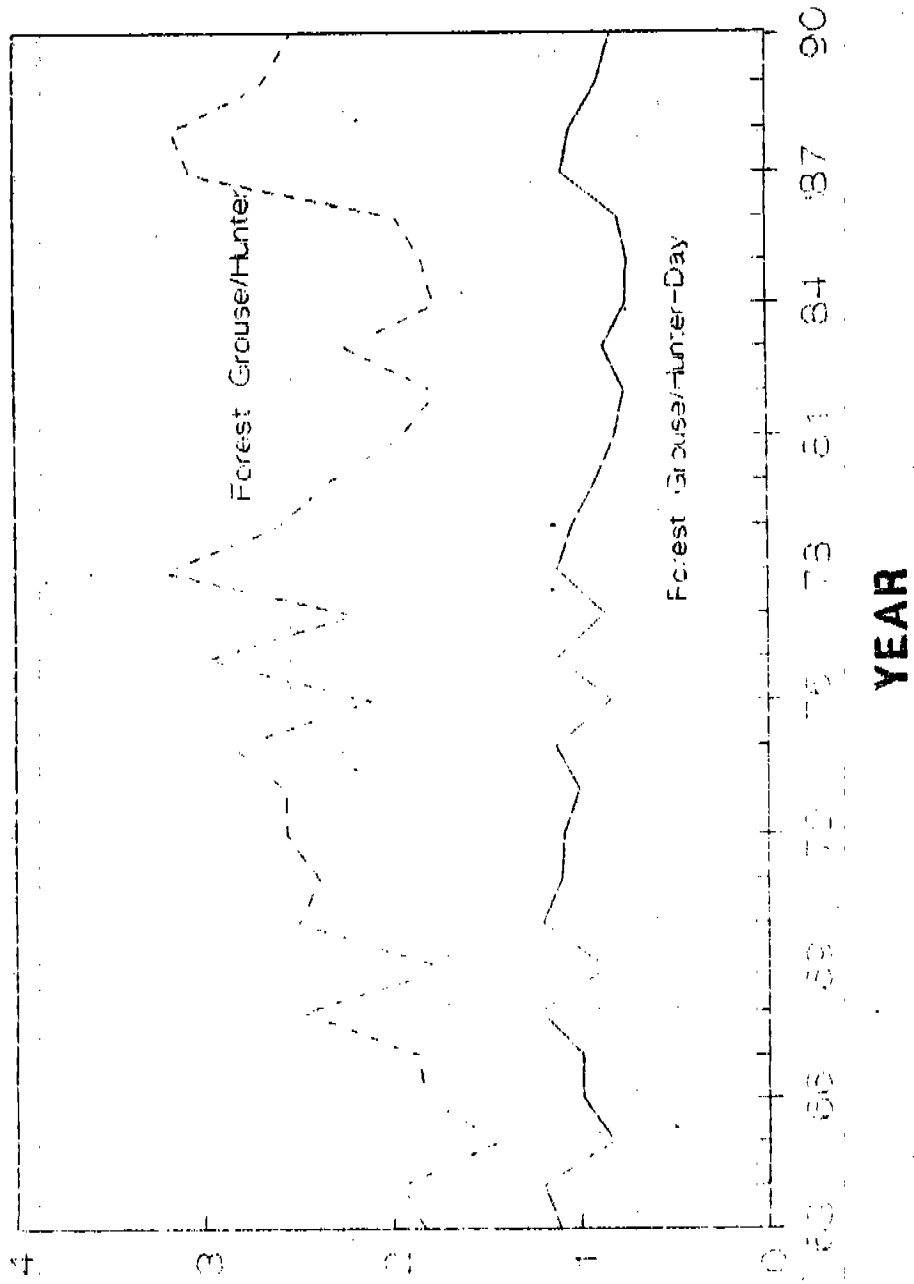


Figure 2. Annual success rates of forest grouse hunter success rates, 1963-90.

Field Bag Checks

A summary of field bag check data for 1990 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 1990 survey compared to 1989 and the previous 10-year (1980-89) average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Total hunters checked	182	-76	-79
Total hours hunted	662	-78	-81
Forest grouse per hunter (complete hunts)	1.14	+68	+94
Forest grouse bagged per 100 hours	33	+106	+134
Average hours per hunter-day (complete hunts)	3.51	-20	-14
Hours hunted per grouse bagged (complete hunts)	3.07	-52	-59

There was a substantial decrease in numbers of hunters checked in 1990. Field bag check trends were not consistent with harvest results of the mail questionnaire. This may have been due to small sample sizes of field bag checks. Hunter success (grouse per hunter) increased 68 percent from 1989 and was 94 percent above average. This plus the fact that average hours per hunter day decreased, and it took 59 percent less time to bag a grouse in 1990 than average, indicates hunters had good success on opening weekend.

Table 1. Ruffed grouse summer inventory, 1990.

Region and County	Distinct Broods		Mixed Yng & Adults		Mean Brood	Total Yng	Total Adults	Total Yng/100 Ad	Veh. Miles	Hours of Effort		Birds/100 Hr			
	# Ad	Yng	Ad	Yng						Veh. Miles	Veh. Horse Walk		Total		
<u>Northern Region</u>															
Box Elder	1	1	3	3.00	0	0	0	3	300	62	6	0	5	11	64
Cache	1	1	3	3.00	0	0	1	3	150	--	55	33	4	92	5
Davis	0	0	0	--	0	0	0	0	--	58	8	0	9	17	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Summit	2	2	9	4.50	0	0	0	9	450	51	4	24	2	30	40
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	4	4	15	3.75	0	0	1	15	300	171	73	57	20	150	13
<u>Central Region</u>															
Juab	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	0	0	0	0	0	0	0	0	--	0	0	0	2	2	--
Sanpete	0	0	0	0	0	0	0	0	--	235	22	0	2	24	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	3	3	14	4.70	0	0	2	14	280	190	17	0	24	41	46
REGIONAL TOTALS	3	3	14	4.70	0	0	2	14	280	425	39	0	28	67	28
<u>Southern Region</u>															
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	0	0	0	--	0	0	0	0	--	30	3	0	0	3	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	0	0	0	--	0	0	0	0	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	2	2	10	5.00	0	0	1	10	333	--	--	--	--	--	--
REGIONAL TOTALS	2	2	10	5.00	0	0	1	10	333	30	3	0	0	3	433
<u>Northeastern Region</u>															
Daggett	0	0	0	--	0	0	0	0	--	97	7	0	0	7	--
Duchesne	2	2	12	6.00	0	0	0	2	600	78	7	0	1	8	175
Uintah	1	1	6	6.00	0	0	0	1	600	10	1	2	2	5	280
REGIONAL TOTALS	3	3	18	6.00	0	0	0	3	600	185	15	2	3	20	105
<u>Southeastern Region</u>															
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
STATE TOTALS	12	12	57	4.75	0	0	4	16	57	811	130	59	51	240	30

Table 2. Trend of ruffed grouse young per 100 adults, 1980-90.

Region and County	Year										Average 1980-89	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		1990
Northern Region												
Box Elder	--	--	--	300	--	--	433	150	50	--	300	
Cache	138	--	--	700	--	350	100	300	267	300	150	
Davis	--	--	--	--	--	--	--	--	136	--	--	
Morgan	600	--	--	200	--	0	--	--	--	--	--	
Rich	--	--	--	--	--	667	200	--	267	--	--	
Summit	200	200	--	--	--	200	400	500	--	300	450	
Weber	500	267	--	--	--	150	--	380	220	--	--	
REGIONAL TOTALS	217	250	--	286	--	308	300	337	141	300	300	267
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	
Salt Lake	200	92	--	--	--	--	150	0	--	--	--	
Sarpete	373	390	476	475	--	700	--	--	--	--	--	
Tooele	--	--	300	--	--	--	--	--	--	--	--	
Utah	217	300	275	--	--	--	460	320	300	300	--	
Wasatch	--	--	--	300	--	--	--	--	--	--	280	
REGIONAL TOTALS	295	282	414	392	--	700	322	320	300	300	280	369
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	--	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	600	500	--	--	--	--	--	--	450	--	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	--	--	--	--	--	--	--	--	--	--	333	
REGIONAL TOTALS	600	500	--	--	--	--	--	--	450	--	333	517
Northeastern Region												
Daggett	--	475	--	--	--	--	--	--	--	150	--	
Duchesne	--	700	--	--	--	--	--	--	--	400	600	
Uintah	300	--	--	--	--	--	--	400	--	267	600	
REGIONAL TOTALS	300	520	--	--	--	--	--	300	--	250	600	343
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	
Emery	--	--	--	--	--	--	--	300	--	--	--	
Grand	--	--	--	--	--	--	--	--	--	--	--	
San Juan	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	--	--	--	--	--	--	--	--	300	--	--	300
STATE TOTALS	294	311	404	353	--	336	312	306	160	277	356	306

Table 3. Trend of ruffed grouse mean brood size, 1980-90.

Region and County	Year										Average 1980-89	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		1990
<u>Northern Region</u>												
Box Elder	--	--	--	3.00	--	--	2.00	3.00	3.00	--	3.00	--
Cache	3.67	--	--	7.00	--	3.50	1.00	3.14	4.00	3.00	3.00	--
Davis	--	--	--	--	--	--	--	--	4.00	--	--	--
Morgan	6.00	--	--	5.00	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	6.67	3.00	--	3.00	--	--	--
Summit	4.00	2.00	--	--	--	3.33	4.00	5.00	--	3.00	4.50	--
Weber	5.00	4.00	--	--	--	3.00	--	4.75	3.67	--	--	--
REGIONAL TOTALS	4.33	3.33	--	5.00	--	4.44	2.60	3.93	3.64	3.00	3.75	3.78
<u>Central Region</u>												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	2.00	2.20	--	--	--	--	--	--	--	--	--	--
Sanpete	5.14	5.47	5.47	4.75	--	7.00	--	--	--	--	--	--
Tooele	--	--	4.00	--	--	--	--	--	--	--	--	--
Utah	3.25	3.00	--	--	--	--	4.60	3.20	3.00	3.00	--	--
Wasatch	--	--	--	9.00	--	--	--	--	--	--	4.70	--
REGIONAL TOTALS	4.25	4.57	5.13	5.22	--	7.00	4.60	3.20	3.00	3.00	4.70	4.44
<u>Southern Region</u>												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	6.00	5.00	--	--	--	--	--	--	4.50	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	5.00	--
REGIONAL TOTALS	6.00	5.00	--	--	--	--	--	--	4.50	--	5.00	5.17
<u>Northeastern Region</u>												
Daggett	--	4.75	--	--	--	--	--	--	--	3.00	--	--
Duchesne	--	7.00	--	--	--	--	--	--	--	4.00	6.00	--
Uintah	6.00	--	--	--	--	--	--	4.00	--	4.00	6.00	--
REGIONAL TOTALS	6.00	5.20	--	--	--	--	--	4.00	--	3.75	6.00	4.74
<u>Southeastern Region</u>												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	3.00	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	3.00	--	--	--	3.00
STATE TOTALS	4.52	4.57	5.13	5.15	--	4.70	3.60	3.75	3.71	3.30	4.75	4.27

Table 4. Trend of ruffed grouse observed per 100 hours, 1980-90.

Region and County	Year										Average 1980-89	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		1990
Northern Region												
Box Elder	--	--	--	29	--	--	80	31	100	--	64	
Cache	25	--	3	6	--	17	20	58	17	46	5	
Davis	--	--	--	--	--	--	--	--	114	--	--	
Morgan	20	--	--	57	--	2	--	--	--	--	--	
Rich	--	--	--	--	--	1,150	53	--	50	--	--	
Summit	21	--	--	--	--	52	36	900	--	9	40	
	17	31	--	--	--	21	--	267	178	--	--	
REGIONAL TOTALS	19	10	1	12	--	26	30	56	62	22	13	26
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	150	70	--	--	--	--	167	--	--	--	--	--
Sanpete	200	515	293	271	--	160	--	--	--	--	--	--
Tooele	--	--	880	--	--	--	--	--	--	--	--	--
Utah	37	14	38	3	--	--	400	50	133	133	--	
Wasatch	48	3	--	--	86	--	--	25	--	--	46	
REGIONAL TOTALS	47	98	144	63	86	14	88	30	133	133	28	84
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	3	2	--	--	--	--	--	--	138	--	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	3	2	--	--	--	--	--	--	138	--	433	48
Northeastern Region												
Daggett	--	164	--	--	--	--	--	--	--	109	--	
Duchesne	--	12	--	--	--	--	--	4	--	33	175	
Uintah	--	350	--	--	--	--	--	68	--	28	180	
REGIONAL TOTALS	350	26	--	--	--	--	--	28	--	28	105	108
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	0	400	--	--	--	--
Grand	--	--	--	--	--	--	0	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	0	400	--	--	--	200
STATE TOTALS	20	27	66	19	--	22	47	45	46	26	30	35

Table 5. Blue grouse summer inventory summary, 1990.

Region and County	Distinct Broods		Mean		Mixed Yng & Adults		Total Adults	Total Yng	Total Young/100 Ad Miles	Veh. Miles	Hours of Effort		Birds/100 Hr			
	# Ad	Yng	Brood	Ad	Yng	w/o Yng					Veh. Horse	Walk		Total		
Northern Region																
Box Elder	4	4	13	3.20	0	0	5	13	144	62	6	0	5	11	200	
Cache	13	13	48	3.70	5	15	3	21	300	--	55	33	4	92	108	
Davis	6	8	39	6.50	3	19	1	12	480	58	8	0	9	17	426	
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Summit	4	4	16	4.00	0	0	5	9	178	51	4	24	2	30	100	
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	27	29	116	4.30	8	34	14	51	149	292	171	73	57	20	150	133
Central Region																
Juab	1	1	7	7.00	0	0	0	1	7	700	8	1	0	0	1	800
Salt Lake	0	0	0	--	0	0	0	0	--	0	0	0	0	2	2	--
Sanpete	0	0	0	--	0	0	1	1	0	235	22	0	2	24	4	--
Tooele	8	8	25	3.13	5	10	11	13	36	276	76	6	11	4	21	233
Utah	4	4	20	5.00	0	0	3	7	20	286	192	17	7	0	24	113
Wasatch	0	0	0	--	0	0	0	0	--	190	17	0	24	41	--	--
REGIONAL TOTALS	13	13	52	4.00	5	10	15	22	63	286	701	63	18	32	113	75
Southern Region																
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	0	0	0	--	0	0	3	3	0	30	3	0	0	3	100	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	1	0	3	3.00	0	0	0	3	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	1	0	3	3.00	0	0	3	3	3	30	3	0	0	3	200	200
Northeastern Region																
Daggett	4	4	14	3.50	0	0	2	6	14	233	97	7	0	0	7	286
Duchesne	2	2	12	6.00	0	0	0	2	12	600	78	7	0	1	79	175
Uintah	0	0	0	--	4	3	1	5	3	60	10	1	2	2	5	320
REGIONAL TOTALS	6	6	26	4.33	4	3	3	13	29	223	185	15	2	3	91	46
Southeastern Region																
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
STATE TOTALS	47	48	197	4.19	17	47	35	89	244	274	1,087	154	77	55	357	93

Table 6. Trend of blue grouse young per 100 adults, 1980-90.

Region and County	Year										Average 1980-89	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		1990
<u>Northern Region</u>												
Box Elder	600	360	--	125	350	--	100	--	--	700	144	
Cache	83	254	--	467	--	167	--	300	363	257	300	
Davis	600	--	--	300	250	183	150	222	248	200	480	
Morgan	233	200	--	--	300	900	--	433	--	--	--	
Rich	300	--	--	--	--	--	350	--	--	--	--	
Summit	400	389	--	--	500	450	--	500	--	200	178	
Weber	425	221	400	--	--	400	--	380	400	--	--	
REGIONAL TOTALS	217	271	400	220	300	269	222	300	279	244	292	272
<u>Central Region</u>												
Juab	124	300	--	400	400	0	180	--	--	--	700	
Salt Lake	350	200	38	--	--	--	--	--	--	--	--	
Sanpete	--	--	471	--	--	--	--	600	--	80	--	
Tooele	141	138	--	138	--	168	167	218	650	650	276	
Utah	279	88	100	200	--	175	--	256	267	267	286	
Wasatch	--	--	200	250	--	--	--	--	--	--	--	
REGIONAL TOTALS	167	153	317	156	400	157	169	273	486	317	286	260
<u>Southern Region</u>												
Beaver	--	200	214	700	250	200	267	133	109	--	--	
Garfield	--	--	340	300	241	200	245	160	--	23	--	
Iron	340	--	--	--	--	--	--	300	--	--	--	
Kane	--	--	--	267	--	255	500	475	250	--	--	
Millard	--	--	235	--	100	300	200	425	60	--	--	
Piute	--	387	350	--	200	300	300	--	--	--	--	
Sevier	179	155	238	100	80	417	--	150	90	--	--	
Washington	--	500	--	367	--	--	233	533	--	--	--	
Wayne	--	--	--	400	--	600	--	350	375	--	--	
REGIONAL TOTALS	193	253	245	237	164	282	279	230	118	23	202	
<u>Northeastern Region</u>												
Daggett	336	442	469	500	--	--	282	331	318	364	233	
Duchesne	409	257	382	340	--	--	228	129	190	--	600	
Uintah	354	380	238	311	--	--	140	500	233	138	60	
REGIONAL TOTALS	366	371	381	402	--	--	235	305	254	268	223	323
<u>Southeastern Region</u>												
Carbon	350	200	--	700	300	150	500	--	--	--	--	
Emery	--	--	--	--	--	--	--	400	100	--	--	
Grand	--	100	--	--	25	200	260	--	227	300	--	
San Juan	200	300	--	100	175	300	--	300	213	300	--	
REGIONAL TOTALS	275	208	--	200	140	206	300	140	200	75	--	194
STATE TOTALS	219	274	297	272	190	229	225	268	207	225	274	241

Table 7. Trend of blue grouse mean brood size, 1980-90.

Region and County	Year										Average 1980-89
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	
<u>Northern Region</u>											
Box Elder	6.00	3.60	--	5.00	7.00	--	2.00	--	--	7.00	3.20
Cache	3.75	3.67	--	4.33	--	3.33	--	3.67	3.63	3.60	3.70
Davis	6.00	--	--	3.00	5.50	3.67	3.00	2.83	4.00	4.50	6.50
Morgan	3.00	2.00	--	--	3.00	9.00	--	4.33	--	--	--
Rich	3.00	--	--	--	--	--	--	--	--	--	--
Summit	4.00	3.89	--	--	5.00	4.50	--	5.00	--	3.00	4.00
Weber	4.25	3.57	4.00	--	--	5.33	4.00	4.75	4.00	--	--
REGIONAL TOTALS	3.90	3.65	4.00	4.20	4.83	4.73	3.25	3.88	3.84	3.86	4.30
<u>Central Region</u>											
Juab	3.67	4.00	--	4.00	4.00	0.00	--	--	--	--	7.00
Salt Lake	3.50	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	5.44	--	--	--	--	6.00	--	2.00	--
Tooele	3.58	3.20	--	3.83	--	3.38	3.20	3.43	6.00	6.00	3.13
Utah	3.00	7.00	3.00	4.00	--	3.50	--	3.45	5.00	5.00	5.00
Wasatch	--	--	3.00	5.00	--	--	--	--	--	--	--
REGIONAL TOTALS	3.37	3.89	5.05	4.00	4.00	3.43	3.20	3.62	5.67	4.20	4.00
<u>Southern Region</u>											
Beaver	--	4.00	2.60	7.00	3.33	2.00	2.67	4.00	4.00	--	--
Garfield	--	--	3.40	3.00	3.22	--	4.50	3.29	--	--	--
Iron	4.25	--	--	--	--	--	--	3.50	--	--	--
Kane	--	--	--	4.00	--	--	1.00	4.75	4.00	--	--
Millard	--	--	3.64	--	2.67	4.00	4.00	4.25	1.50	--	3.00
Piute	--	4.67	3.50	--	4.00	3.00	3.00	--	--	--	--
Sevier	4.95	3.44	4.04	2.50	2.00	4.16	--	4.57	2.33	--	--
Washington	--	5.00	--	3.67	--	--	3.50	5.33	--	--	--
Wayne	--	--	--	4.00	--	6.00	--	3.50	3.75	--	--
REGIONAL TOTALS	4.82	4.15	3.70	3.58	2.95	3.21	3.53	4.12	2.71	--	3.00
<u>Northeastern Region</u>											
Daggett	7.20	4.45	4.91	4.33	--	--	3.75	4.71	3.20	3.89	3.50
Duchesne	5.00	3.60	3.88	3.40	--	--	3.25	2.50	2.50	--	6.00
Uintah	3.70	4.75	2.71	5.60	--	--	4.00	5.00	3.50	2.20	--
REGIONAL TOTALS	4.90	4.35	4.00	4.63	--	--	3.56	4.52	3.00	3.29	4.33
<u>Southeastern Region</u>											
Carbon	3.50	2.00	--	7.00	3.00	3.00	5.00	--	--	--	--
Emery	--	--	--	--	--	--	--	4.00	4.00	--	--
Grand	--	2.50	--	--	--	3.00	3.25	--	2.78	3.00	--
San Juan	4.00	3.00	--	4.00	1.75	3.00	--	3.00	3.00	3.00	--
REGIONAL TOTALS	3.67	2.60	--	5.50	2.17	3.00	3.60	3.50	2.93	3.00	--
STATE TOTALS	4.20	3.97	4.06	4.29	3.18	3.56	3.44	4.00	3.22	3.61	4.19

Table 8. Trend of blue grouse observed per 100 hours, 1980-90.

Region and County	Year										Average 1980-89	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		1990
<u>Northern Region</u>												
Box Elder	58	230	--	64	38	--	20	0	--	--	200	
Cache	44	74	--	14	--	77	--	71	56	114	108	
Davis	92	7	--	33	110	94	50	232	300	120	426	
Morgan	86	30	--	4	200	23	4	59	--	17	--	
Rich	--	--	--	--	--	--	53	0	0	--	--	
Summit	18	293	--	--	12	38	--	900	--	21	100	
Weber	58	174	71	4	--	167	100	267	56	--	--	
REGIONAL TOTALS	57	121	20	15	28	58	27	109	90	79	133	60
<u>Central Region</u>												
Juab	336	73	--	29	125	30	156	0	--	--	800	
Salt Lake	450	36	48	14	--	--	--	400	--	--	--	
Sanpete	--	--	281	--	--	--	--	1,400	--	14	4	
Tooele	248	271	--	344	--	536	444	206	1,000	1,000	233	
Utah	104	52	36	32	--	165	--	229	367	367	113	
Wasatch	3	--	53	50	--	--	--	0	--	--	--	
REGIONAL TOTALS	122	55	127	94	17	183	254	194	683	72	75	180
<u>Southern Region</u>												
Beaver	--	46	220	133	233	33	137	175	164	--	--	
Garfield	--	--	--	--	141	122	141	195	--	--	100	
Iron	275	--	--	--	--	--	--	1,200	--	--	--	
Kane	--	--	--	122	--	213	257	383	127	--	--	
Millard	--	--	248	15	107	133	200	525	100	--	--	
Piute	--	557	225	--	200	67	266	--	--	--	--	
Sevier	68	20	48	50	72	155	--	275	738	--	--	
Washington	--	800	--	117	--	--	333	950	--	--	--	
Wayne	--	--	--	--	--	700	--	450	475	--	--	
REGIONAL TOTALS	74	41	74	80	122	140	178	309	247	--	200	141
<u>Northeastern Region</u>												
Daggett	600	736	389	632	--	--	300	1,255	230	265	286	
Duchesne	130	75	126	51	--	--	51	64	121	--	175	
Uintah	256	308	54	239	--	--	600	55	37	48	320	
REGIONAL TOTALS	220	228	138	232	--	--	126	286	120	95	46	181
<u>Southeastern Region</u>												
Carbon	35	17	--	80	53	33	60	--	--	--	--	
Emery	--	--	--	--	--	--	--	500	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	70	--	
Grand	--	--	--	--	50	360	120	300	--	89	--	
San Juan	46	218	--	100	73	53	--	400	--	400	--	
REGIONAL TOTALS	38	128	--	90	60	123	96	400	--	85	--	128
STATE TOTALS	93	93	91	83	55	101	110	197	166	81	93	107

Table 9. Summary of effort expended on forest grouse brood counts, 1990.

Region and County	Vehicle Miles Traveled	Hours Effort Expended			Total
		Vehicle	Horseback	Walking	
Northern Region					
Box Elder	62	6	0	5	11
Cache	--	55	33	4	92
Davis	58	8	0	9	17
Morgan	--	--	--	--	--
Rich	--	--	--	--	--
Summit	51	4	24	2	30
Weber	--	--	--	--	--
REGIONAL TOTALS	171	73	57	20	150
Central Region					
Juab	8	1	0	0	1
Salt Lake	0	0	0	2	2
Sanpete	235	22	0	2	24
Tooele	76	6	11	4	21
Utah	192	17	7	0	24
Wasatch	190	17	0	24	41
REGIONAL TOTALS	701	63	18	32	113
Southern Region					
Beaver	--	--	--	--	--
Garfield	30	3	0	0	3
Iron	--	--	--	--	--
Kane	--	--	--	--	--
Millard	--	--	--	--	--
Piute	--	--	--	--	--
Sevier	--	--	--	--	--
Washington	--	--	--	--	--
Wayne	--	--	--	--	--
REGIONAL TOTALS	30	3	0	0	3
Northeastern Region					
Daggett	97	7	0	0	7
Duchesne	78	7	0	1	79
Uintah	10	1	2	2	5
REGIONAL TOTALS	185	15	2	3	91
Southeastern Region					
Carbon	--	--	--	--	--
Emery	--	--	--	--	--
Grand	--	--	--	--	--
San Juan	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--
STATE TOTALS	1,087	154	77	55	357

Table 10. Summary of blue grouse hunter success and distribution of harvest and hunting pressure by region and county, 1990.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	27	1,831	1,790	0.98	6.94	6.86
CACHE	60	4,527	3,704	0.82	17.15	14.18
DAVIS	11	514	596	1.16	1.95	2.29
MORGAN	8	740	740	1.00	2.81	2.84
RICH	12	864	514	0.60	3.27	1.97
SUMMIT	18	802	658	0.82	3.04	2.52
WEBER	23	2,119	1,893	0.89	8.03	7.25
REGIONAL TOTALS	159	11,401	9,898	0.87	43.18	37.91
CENTRAL REGION						
JUAB	4	144	205	1.43	0.55	0.79
SALT LAKE	2	82	102	1.25	0.31	0.39
SANPETE	26	1,420	1,584	1.12	5.38	6.07
TOOELE	25	1,749	1,769	1.01	6.63	6.78
UTAH	34	2,099	2,593	1.24	7.95	9.93
WASATCH	11	802	514	0.64	3.04	1.97
REGIONAL TOTALS	102	6,297	6,770	1.08	23.85	25.93
SOUTHERN REGION						
BEAVER	5	432	535	1.24	1.64	2.05
GARFIELD	7	267	329	1.23	1.01	1.26
IRON	7	617	473	0.77	2.34	1.81
KANE	4	288	226	0.79	1.09	0.87
MILLARD	14	493	823	1.67	1.87	3.15
PIUTE	9	576	1,111	1.93	2.18	4.26
SEVIER	29	2,798	2,551	0.91	10.60	9.77
WASHINGTON	0	0	0	0.00	0.00	0.00
WAYNE	4	246	329	1.33	0.94	1.26
REGIONAL TOTALS	79	5,721	6,379	1.12	21.67	24.43
NORTHEASTERN REGION						
DAGGETT	7	411	329	0.80	1.56	1.26
DUCHESNE	6	288	185	0.64	1.09	0.71
UINTAH	19	1,090	1,543	1.42	4.13	5.91
REGIONAL TOTALS	32	1,790	2,057	1.15	6.78	7.88
SOUTHEASTERN REGION						
CARBON	5	473	246	0.52	1.79	0.95
EMERY	7	432	391	0.90	1.64	1.50
GRAND	6	288	370	1.29	1.09	1.42
SAN JUAN	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	18	1,193	1,008	0.84	4.52	3.86
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	390	26,404	26,115	0.99	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, 1990.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	15	1,255	802	0.64	7.82	7.29
CACHE	41	2,881	1,852	0.64	17.95	16.82
DAVIS	11	493	617	1.25	3.08	5.61
MORGAN	9	699	473	0.68	4.36	4.30
RICH	12	823	535	0.65	5.13	4.86
SUMMIT	15	720	617	0.86	4.49	5.61
WEBER	19	1,708	1,049	0.61	10.64	9.53
REGIONAL TOTALS	122	8,581	5,947	0.69	53.46	54.02
CENTRAL REGION						
JUAB	3	144	82	0.57	0.90	0.75
SALT LAKE	3	102	164	1.60	0.64	1.50
SANPETE	12	699	514	0.74	4.36	4.67
TOOELE	9	884	555	0.63	5.51	5.05
UTAH	21	1,522	637	0.42	9.49	5.79
WASATCH	13	576	555	0.96	3.59	5.05
REGIONAL TOTALS	61	3,930	2,510	0.64	24.49	22.80
SOUTHERN REGION						
BEAVER	1	123	41	0.33	0.77	0.37
GARFIELD	3	123	123	1.00	0.77	1.12
IRON	1	20	41	2.00	0.13	0.37
KANE	1	144	41	0.29	0.90	0.37
MILLARD	5	205	246	1.20	1.28	2.24
PIUTE	4	329	123	0.38	2.05	1.12
SEVIER	15	1,008	843	0.84	6.28	7.66
WASHINGTON	0	0	0	0.00	0.00	0.00
WAYNE	1	123	41	0.33	0.77	0.37
REGIONAL TOTALS	31	2,078	1,502	0.72	12.95	13.65
NORTHEASTERN REGION						
DAGGETT	1	102	144	1.40	0.64	1.31
DUCHESNE	9	391	349	0.89	2.44	3.18
UINTAH	7	555	205	0.37	3.46	1.87
REGIONAL TOTALS	17	1,049	699	0.67	6.54	6.36
SOUTHEASTERN REGION						
CARBON	4	164	185	1.13	1.03	1.68
EMERY	1	102	41	0.40	0.64	0.37
GRAND	1	20	20	1.00	0.13	0.19
SAN JUAN	2	123	102	0.83	0.77	0.93
REGIONAL TOTALS	8	411	349	0.85	2.56	3.18
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	239	16,052	11,010	0.69	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, 1990.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	45	2,490	2,407	0.97	5.60	6.51
CACHE	129	7,655	5,721	0.75	17.22	15.47
DAVIS	31	1,193	1,214	1.02	2.69	3.28
MORGAN	21	1,296	1,214	0.94	2.92	3.28
RICH	37	2,057	1,070	0.52	4.63	2.89
SUMMIT	48	2,593	1,275	0.49	5.83	3.45
WEBER	62	4,095	2,984	0.73	9.21	8.07
REGIONAL TOTALS	373	21,382	15,887	0.74	48.10	42.96
CENTRAL REGION						
JUAB	10	329	288	0.88	0.74	0.78
SALT LAKE	9	329	267	0.81	0.74	0.72
SANPETE	48	2,449	1,996	0.82	5.51	5.40
TOOELE	49	2,407	2,469	1.03	5.42	6.68
UTAH	68	3,560	3,231	0.91	8.01	8.74
WASATCH	27	1,296	1,070	0.83	2.92	2.89
REGIONAL TOTALS	211	10,372	9,322	0.90	23.33	25.21
SOUTHERN REGION						
BEAVER	10	699	596	0.85	1.57	1.61
GARFIELD	15	720	535	0.74	1.62	1.45
IRON	10	740	514	0.69	1.67	1.39
KANE	6	329	267	0.81	0.74	0.72
MILLARD	22	720	1,070	1.49	1.62	2.89
PIUTE	15	987	1,234	1.25	2.22	3.34
SEVIER	50	2,860	2,922	1.02	6.44	7.90
WASHINGTON	1	102	0	0.00	0.23	0.00
WAYNE	6	432	370	0.86	0.97	1.00
REGIONAL TOTALS	135	7,593	7,511	0.99	17.08	20.31
NORTHEASTERN REGION						
DAGGETT	12	637	514	0.81	1.44	1.39
DUCHESNE	16	740	514	0.69	1.67	1.39
UINTAH	31	1,666	1,811	1.09	3.75	4.90
REGIONAL TOTALS	59	3,045	2,840	0.93	6.85	7.68
SOUTHEASTERN REGION						
CARBON	12	1,049	493	0.47	2.36	1.34
EMERY	10	535	432	0.81	1.20	1.17
GRAND	8	349	391	1.12	0.79	1.06
SAN JUAN	2	123	102	0.83	0.28	0.28
REGIONAL TOTALS	32	2,057	1,420	0.69	4.63	3.84
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	810	44,452	36,982	0.83	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 13. Summary of forest grouse bagged per hunter-day by region and county, 1984-90.

Region and County	Year						
	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>							
Box Elder	0.60	0.45	0.60	0.68	1.03	0.99	0.97
Cache	0.76	0.90	0.96	1.07	1.24	0.84	0.75
Davis	0.66	0.50	0.50	0.71	0.98	0.78	1.02
Morgan	0.44	0.88	0.64	1.00	0.99	1.23	0.94
Rich	0.86	0.75	0.39	1.56	0.92	0.42	0.52
Summit	0.54	0.70	0.63	1.25	0.86	0.89	0.49
Weber	0.60	0.60	0.85	1.41	0.99	1.00	0.73
REGIONAL TOTALS	0.66	0.71	0.76	1.12	1.07	0.88	0.74
<u>Central Region</u>							
Juab	0.43	1.00	0.14	1.14	0.86	0.71	0.88
Salt Lake	1.25	0.65	0.75	1.05	0.87	0.77	0.81
Sanpete	0.99	0.72	0.67	1.12	0.84	0.65	0.82
Tooele	0.40	1.00	0.89	1.24	1.33	1.75	1.03
Utah	0.84	0.86	0.59	1.04	1.08	0.99	0.91
Wasatch	0.43	0.59	0.51	.94	0.74	0.78	0.83
REGIONAL TOTALS	0.78	0.75	0.62	1.07	0.97	0.90	0.90
<u>Southern Region</u>							
Beaver	1.05	0.59	1.00	0.91	1.31	0.86	0.85
Garfield	0.67	0.79	0.27	0.57	1.00	1.27	0.74
Iron	0.59	0.94	1.21	0.74	1.08	0.79	0.69
Kane	0.67	0.78	0.14	2.33	1.50	1.25	0.81
Millard	0.64	0.50	1.14	0.75	1.36	1.26	1.49
Piute	1.27	0.94	1.42	1.19	1.34	1.00	1.25
Sevier	0.73	0.77	0.88	1.00	1.18	1.23	1.02
Washington	0.00	2.14	2.01	0.17	0.10	0.00	0.00
Wayne	0.34	1.09	0.33	0.90	0.25	0.76	0.86
REGIONAL TOTALS	0.82	0.82	0.98	0.93	1.16	1.13	0.99
<u>Northeastern Region</u>							
Daggett	0.47	0.94	1.19	1.10	0.65	0.42	0.81
Duchesne	0.67	0.60	1.07	1.29	0.98	0.92	0.69
Uintah	1.23	0.94	1.19	1.63	0.91	0.67	1.09
REGIONAL TOTALS	0.96	0.83	1.16	1.43	0.88	0.69	0.93
<u>Southeastern Region</u>							
Carbon	0.00	0.71	0.83	0.92	0.48	0.37	0.47
Emery	0.90	0.35	0.65	0.96	1.06	0.60	0.81
Grand	1.60	0.64	1.29	1.91	0.81	1.14	1.12
San Juan	0.67	0.20	0.67	1.00	0.67	1.00	0.83
REGIONAL TOTALS	0.86	0.52	0.81	1.14	0.79	0.57	0.69
Unknown Counties	1.00	1.00	0.00	0.55	0.70	0.76	0.00
STATE TOTALS	0.75	0.74	0.79	1.09	1.04	0.90	0.83

Table 14. Percentage distribution of forest grouse harvest by region and county, 1984-90.

Region and County	Year						
	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>							
Box Elder	3.38	2.23	2.59	1.62	3.83	5.02	6.51
Cache	15.72	17.35	21.23	14.98	21.10	15.18	15.47
Davis	4.48	5.66	2.50	1.83	3.14	1.96	3.28
Morgan	2.88	3.90	3.02	1.13	2.64	6.93	3.28
Rich	3.78	4.26	2.24	4.05	4.55	2.60	2.89
Summit	2.49	3.52	2.93	4.65	3.55	4.61	3.45
Weber	7.86	4.91	10.44	6.65	9.53	10.35	8.07
REGIONAL TOTALS	49.59	41.85	44.96	34.93	48.37	46.65	42.96
<u>Central Region</u>							
Juab	1.19	1.02	0.26	1.29	1.12	1.32	0.78
Salt Lake	4.48	2.41	1.81	1.18	1.40	1.50	0.72
Sanpete	6.97	5.84	4.57	6.43	4.70	4.56	5.40
Tooele	1.00	2.87	4.74	3.94	4.17	5.02	6.68
Utah	13.34	9.65	8.02	10.22	9.47	7.62	8.74
Wasatch	2.58	5.01	3.02	3.94	3.05	5.47	2.89
REGIONAL TOTALS	29.56	26.80	22.43	27.04	23.94	25.49	25.21
<u>Southern Region</u>							
Beaver	2.09	2.13	0.86	1.56	0.65	0.82	1.61
Garfield	1.39	1.39	0.26	0.64	0.74	1.73	1.45
Iron	1.59	2.87	3.53	1.40	1.77	1.41	1.39
Kane	0.59	0.65	0.08	0.37	0.18	0.23	0.72
Millard	0.70	0.65	3.45	1.13	1.77	3.51	2.89
Piute	5.57	1.48	2.33	2.05	2.80	0.96	3.34
Sevier	4.38	4.45	6.56	11.35	10.84	9.90	7.90
Washington	0.00	1.39	0.52	0.05	0.03	0.00	0.00
Wayne	0.40	1.11	0.17	0.48	0.09	0.73	1.00
REGIONAL TOTALS	16.72	16.14	17.77	19.09	18.92	19.92	20.31
<u>Northeastern Region</u>							
Daggett	0.89	1.48	3.19	1.73	0.93	0.46	1.39
Duchesne	1.59	2.50	2.67	4.75	1.55	1.60	1.39
Uintah	7.56	6.21	6.03	8.27	3.64	4.33	4.90
REGIONAL TOTALS	10.05	10.20	11.91	14.76	6.14	6.38	7.68
<u>Southeastern Region</u>							
Carbon	0.00	2.23	0.86	0.64	0.43	0.50	1.34
Emery	1.79	1.11	0.95	1.29	1.15	0.41	1.17
Grand	0.79	1.48	0.77	1.13	0.68	0.36	1.06
San Juan	0.40	0.18	0.34	0.43	0.12	0.18	0.28
REGIONAL TOTALS	2.99	5.01	2.93	3.51	2.40	1.46	3.84
Unknown Counties	0.10	0.00	0.00	0.64	0.21	0.73	0.00
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, 1984-90.

Region and County	Year						
	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>							
Box Elder	4.25	3.63	4.65	2.60	3.84	4.55	5.60
Cache	15.35	14.18	14.69	15.26	17.65	16.22	17.22
Davis	5.07	8.29	3.90	2.84	3.32	2.25	2.69
Morgan	4.91	3.29	3.15	1.24	2.77	5.08	2.92
Rich	3.28	4.18	4.05	2.84	5.13	5.53	4.63
Summit	3.42	3.70	4.50	4.08	4.26	4.63	5.83
Weber	9.69	6.02	9.00	5.14	9.94	9.34	9.21
REGIONAL TOTALS	45.97	43.29	43.93	34.02	46.93	47.60	48.10
<u>Central Region</u>							
Juab	2.08	0.75	1.50	1.24	1.35	1.68	0.74
Salt Lake	2.68	2.74	2.40	1.24	1.67	1.76	0.74
Sanpete	5.29	5.96	4.65	6.27	5.77	6.31	5.51
Tooele	1.86	2.12	3.90	3.49	3.26	2.58	5.42
Utah	11.84	8.29	10.49	10.76	9.10	6.88	8.01
Wasatch	4.54	6.23	4.50	4.61	4.29	6.31	2.92
REGIONAL TOTALS	28.31	26.09	27.44	27.63	25.46	25.52	23.33
<u>Southern Region</u>							
Beaver	1.49	2.67	1.05	1.89	0.51	0.86	1.57
Garfield	1.56	1.30	1.05	1.24	0.77	1.23	1.62
Iron	2.01	2.26	2.25	2.07	1.71	1.60	1.67
Kane	0.67	0.61	0.75	0.17	0.12	0.16	0.74
Millard	0.82	0.96	1.35	1.65	1.35	2.50	1.62
Piute	3.28	1.16	1.20	1.89	2.16	0.86	2.22
Sevier	4.47	4.24	6.30	12.48	9.52	7.21	6.44
Washington	0.00	0.48	0.30	0.35	0.32	0.08	0.23
Wayne	0.89	0.75	0.75	0.59	0.38	0.86	0.97
REGIONAL TOTALS	15.20	14.45	15.00	22.36	16.88	15.36	17.08
<u>Northeastern Region</u>							
Daggett	1.41	1.16	2.10	1.71	1.48	0.98	1.44
Duchesne	1.79	3.08	3.45	4.02	1.64	1.56	1.67
Uintah	4.62	4.86	4.35	5.56	4.13	5.82	3.75
REGIONAL TOTALS	7.82	9.10	9.90	11.30	7.26	8.36	6.85
<u>Southeastern Region</u>							
Carbon	0.30	2.33	0.45	0.76	0.93	1.23	2.36
Emery	1.49	2.33	1.80	1.47	1.12	0.61	1.20
Grand	0.37	1.71	0.75	0.65	0.87	0.29	0.79
San Juan	0.44	0.68	0.75	0.47	0.19	0.16	0.28
REGIONAL TOTALS	2.61	7.05	3.75	3.37	3.12	2.29	4.63
Unknown Counties	0.07	0.00	0.00	1.30	0.32	0.86	0.00
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, 1963-90.

Year	Total			Total Harvest			Hunter-Days			Grouse/Hunter-Day			Grouse Per Hunter		
	Hunters	Ruffed	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
1990	14,591	11,010	(28.3)	26,115	(67.1)	1,797	(4.6)	38,922	44,452	0.25	0.59	0.83	0.75	1.79	2.53
TOTALS	410,945	377,736	(38.9)	599,262	(54.8)	61,441	(6.3)	998,439	1,019,777	(10.79)	(14.83)	(27.22)	(24.95)	(35.61)	(64.42)
(1963-89)	14,680	13,582	(39.3)	19,746	(54.4)	2,209	(6.3)	35,538	36,123	0.39	0.53	0.98	0.90	1.25	2.29

AVERAGES

Table 17. Blue and ruffed grouse harvest statistics and hunt regulations, 1963-1990.

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	Hunter Days Afield	Open	Close	Days	Daily Possession	Aggregate Bag Limits	
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	8	21	4	4	8	
1965	3,225	4,924	8,669	6,005	10,504	9/25	10/22	28	4	8	28	4	4	8	
1966	6,966	4,659	12,321	6,683	12,387	9/24	10/21	28	4	8	28	4	4	8	
1967	8,476	6,773	17,526	9,420	17,773	9/23	10/31	39	4	8	39	4	4	8	
1968	17,048	12,604	32,414	13,061	26,537	9/28	10/29	32	4	8	32	4	4	8	
1969	9,490	10,419	21,498	12,523	24,572	9/27	11/2	37	4	8	37	4	4	8	
1970	15,590	13,515	31,898	12,775	26,619	9/26	11/6	42	4	8	42	4	4	8	
1971	15,759	13,749	31,901	13,363	29,100	9/25	11/30	67	4	8	67	4	4	8	
1972	20,648	19,221	42,518	16,640	38,940	9/23	11/30	69	4	8	69	4	4	8	
1973	7,153	36,846	45,232	17,588	44,738	9/22	11/30	70	4	8	70	4	4	8	
1974	24,561	32,236	62,439	21,920	55,258	9/28	11/30	64	4	8	64	4	4	8	
1975	15,750	23,138	42,461	20,102	50,579	9/20	11/30	72	4	8	72	4	4	8	
1976	23,551	35,660	63,436	21,186	56,422	9/18	11/30	74	4	8	74	4	4	8	
1977	15,766	23,455	42,477	19,188	48,746	9/17	11/30	75	4	8	75	4	4	8	
1978	30,340	46,651	81,558	25,318	72,732	9/16	11/30	76	4	8	76	4	4	8	
1979	23,156	33,070	59,851	21,993	57,404	9/15	11/30	77	4	8	77	4	4	8	
1980	15,457	27,588	45,522	19,511	49,899	9/20	11/30	72	4	8	72	4	4	8	
1981	8,557	17,852	27,894	14,329	34,305	9/19	11/30	73	4	8	73	4	4	8	
1982	7,509	12,138	21,778	12,384	28,767	9/18	11/30	74	4	8	74	4	4	8	
1983	11,366	16,955	30,088	13,414	34,530	9/17	11/30	75	4	8	75	4	4	8	
1984	6,780	12,647	20,396	11,511	27,244	9/15	11/30	77	4	8	77	4	4	8	
1985	8,701	13,416	23,097	12,646	31,290	9/14*	11/30	78	4	8	78	4	4	8	
1986	8,819	14,156	23,869	12,117	30,312	9/13	11/30	79	4	8	79	4	4	8	
1987	15,811	28,068	45,326	14,831	41,428	9/12	11/30	80	4	8	80	4	4	8	
1988	19,100	31,556	53,562	16,947	51,726	9/11	11/30	82	4	8	82	4	4	8	
1989	16,323	27,794	45,487	16,987	50,631	9/09	11/30	82	4	8	82	4	4	8	
1990	11,010	26,115	38,922	14,591	44,452	9/08	11/30	82	4	8	82	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, 1990.

Region and County	ALL HUNTS				COMPLETE HUNTS				Birds/100 Hr Hunter	
	Total Parties	Total Hunters	Total Hours	Total Birds	Total Complete Hunts	Total Hunters	Total Hours	Total Birds		
Northern Region										
Box Elder	2	2	2	4	2	2	2	4	200	2.00
Cache	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--
Weber	3	5	14	4	2	3	12	4	33	1.33
REGIONAL TOTALS	5	7	16	8	4	5	14	8	57	1.60
Central Region										
Juab	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--
Tooele	12	38	136	43	5	9	30	14	47	1.60
Utah	34	66	225	57	35	73	229	71	31	0.97
Wasatch	1	1	2	0	--	--	--	--	--	--
REGIONAL TOTALS	47	105	363	100	40	82	259	85	33	1.04
Southern Region										
Beaver	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--
Northeastern Region										
Daggett	6	16	94	19	5	10	70	6	9	0.60
Duchesne	3	5	14	2	2	3	13	0	--	--
Uintah	18	49	175	51	11	19	62	37	60	1.95
REGIONAL TOTALS	27	70	283	72	18	32	145	43	30	1.34
Southeastern Region										
Carbon	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--
STATE TOTALS	79	182	662	180	62	119	418	136	33	1.14

Table 19. Forest grouse hunter success trend determined by field bag checks, 1985-90.

Region and County	1985		1986		1987		1988		1989		1990	
	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	--	--	35	1.42	39	3.50	50	2.83	42	2.60	200	2.00
Cache	15	0.70	15	0.57	17	0.74	28	1.15	8	0.63	--	--
Davis	--	--	--	0.00	16	0.56	16	0.50	40	0.50	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	6	0.23	6	0.2	10	0.44	14	0.52	7	0.32	--	--
Summit	--	--	200	2.00	--	--	--	--	--	--	--	--
Weber	26	0.86	10	0.38	29	0.93	20	0.56	19	0.53	33	1.33
REGIONAL TOTALS	14	0.58	14	0.50	16	0.71	23	0.88	14	0.62	57	1.60
<u>Central Region</u>												
Juab	--	--	--	--	--	--	108	3.25	56	2.30	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	33	0.86	--	--
Tooele	46	1.50	--	--	13	0.51	133	3.00	29	2.00	47	1.60
Utah	4	0.13	10	0.39	--	--	20	0.86	39	1.90	31	0.97
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	7	0.27	10	0.39	13	0.51	26	1.07	33	1.41	33	1.04
<u>Southern Region</u>												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	10	0.33	25	1.00	--	--	--	--	550	2.75	--	--
Iron	--	--	--	--	--	--	200	3.75	--	2.25	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	0	0.00	16	0.60	82	2.00	150	3.00	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	50	1.50	--	--	--	--	500	4.00	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	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	9	0.60
Duchesne	0	0.00	16	0.55	33	1.00	--	--	--	--	--	--
Uintah	32	1.22	12	0.43	53	1.46	24	0.47	7	0.32	60	1.95
REGIONAL TOTALS	25	1.08	13	0.45	50	1.37	26	0.52	9	0.40	30	1.34
<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	0.57	14	0.50	18	0.75	25	0.94	16	0.68	33	1.14

Table 20. Sex and age composition of harvested blue grouse, 1990.

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*	128	--	--	--	--	--	--	106	336
<u>Central Region</u>									
Juab	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--
Tooele	42**	6	7	13	13	15	28	215	400
Utah	62	5	7	12	14	36	50	417	714
Wasatch	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	104	11	14	25	27	61	88	352	629
<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	104	11	14	25	27	61	88	352	629

*Includes portions of Box Elder, Cache, Rich, and Weber counties: not included in state totals.

**Includes one unclassified bird.

Table 21. Sex and age composition of harvested ruffed grouse, 1990.

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**	20	---	---	---	---	---	---	122	---
<u>Central Region</u>									
Juab	---	---	---	---	---	---	---	---	---
Salt Lake	---	---	---	---	---	---	---	---	---
Sanpete	---	---	---	---	---	---	---	---	---
Tooele	---	---	---	---	---	---	---	---	---
Utah	3	1	2	3	---	---	---	---	---
Wasatch	---	---	---	---	---	---	---	---	---
REGIONAL TOTALS	3	1	2	3	---	---	---	---	---
<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 portions of Cache, Rich, and Weber counties.

*** Insufficient sample size to calculate.

QUAIL

SUMMARY

The 1990 breeding populations of California quail were higher than in 1989, and were above average. Production of Gambel's quail increased from 1989, but was below average. Production statewide increased in 1990 and was above average.

Statewide harvest statistics, when compared to 1989, showed a decrease in total hunters and a decline in total harvest. Hunter success (birds per hunter-day) declined 17 percent and remained below average statewide. There was no change in hunter days afield. Total harvest of Gambel's quail reported in Washington County decreased significantly.

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

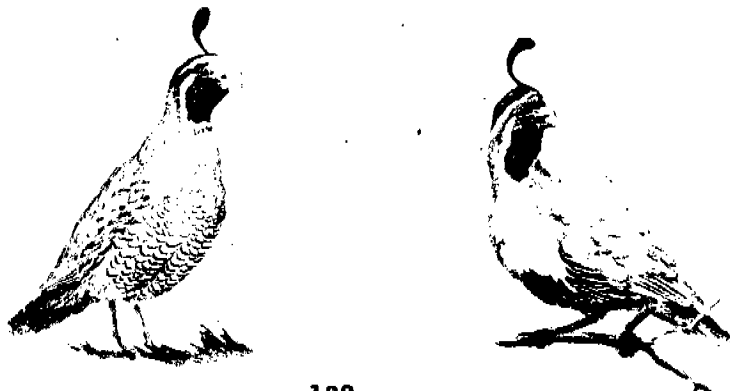
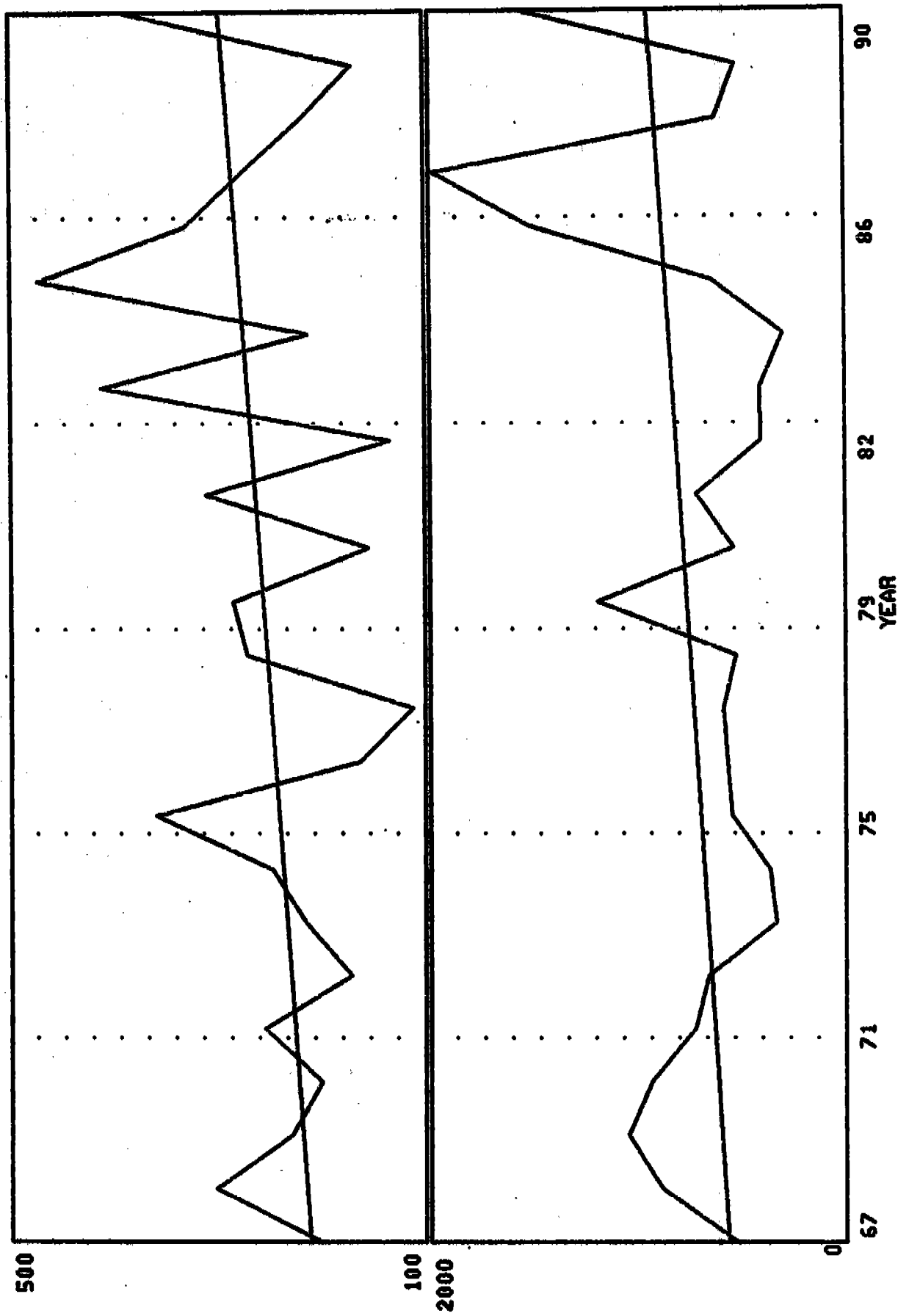


FIGURE 1. QUAIL PRODUCTION INDICES, 1967-90.



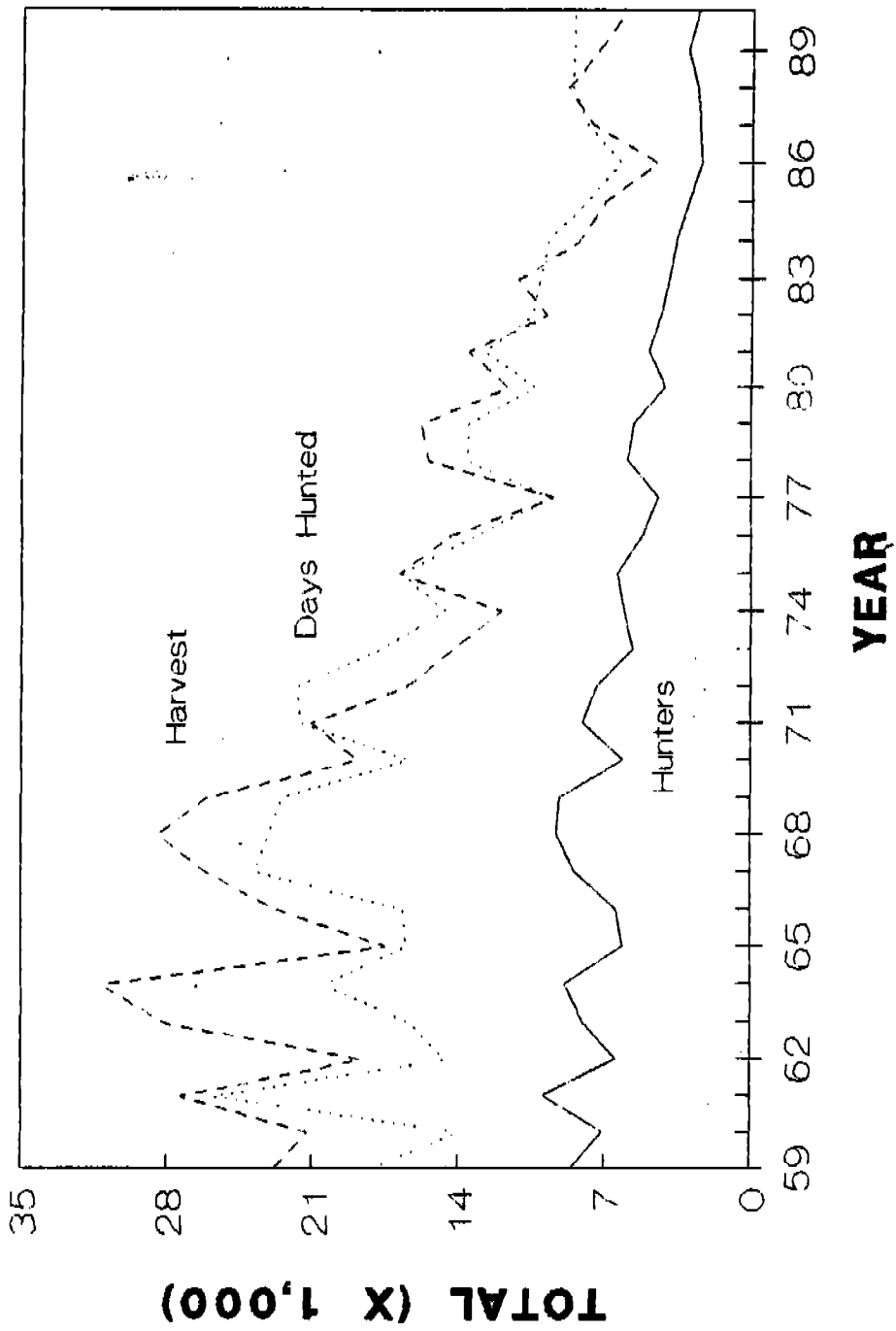


Figure 2. Statewide trend of quail harvest statistics, 1959-90.

Brood Counts

Results of the annual random brood counts for 1990 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 1990 compared to 1989 and the previous 10-year average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Total quail observed	172	+93	-58
Young per 100 adults	391	+130	+45
Mean brood size	10.45	+132	+56
Quail observed per 100 hours	1,564	+198	+104
Total hours effort	11	-35	-83

Harvest statistics for 1989 indicated a decreased breeding population of quail statewide. In Washington County hunter success rates declined from the previous year.

Brood count effort decreased in 1990 due to Division specialization of conservation officer and biologist duties and no staffing of additional biologists under Phase I of reorganization. Only 172 quail were observed in 1990 which was 58 percent below average. Total hours of effort on brood counts was 11 compared to 71 hours average for the last 10 years. The production index of young per 100 adults for Gambel's quail was 112 percent higher than what it was the previous year, however, sample sizes were extremely small. Production statewide increased from 1989 and was above average.

Temperatures and precipitation were above average in the Dixie climatic subdivision April through July. The winter was mild. The drought continued.

Harvest

Results of the annual hunter questionnaire for 1990 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 1990 season to 1989 and the previous 31-year average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Quail hunters	2,614	-16	-56
Quail harvested	6,091	-18	-63
Hunter-days afield	8,561	-1	-43
Quail per hunter-day	0.71	-17	-35
Quail per hunter	2.33	-2	-14

Harvest for 1990 decreased 18 percent from 1989 and was 63 percent below average. This was inconsistent with decreased production of quail, probably an artifact of low quail brood count data.

In Washington County (Gambel's quail), hunter success decreased 52 percent and hunter days afield decreased 5 percent from 1989. Total harvest decreased 81 percent. Only eighteen percent of the statewide harvest of quail was taken in Washington County during 1990 compared to 32 percent in 1989, 28 percent in 1988, 43 percent in 1987, 29 percent in 1986 and 36 percent in 1985.

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

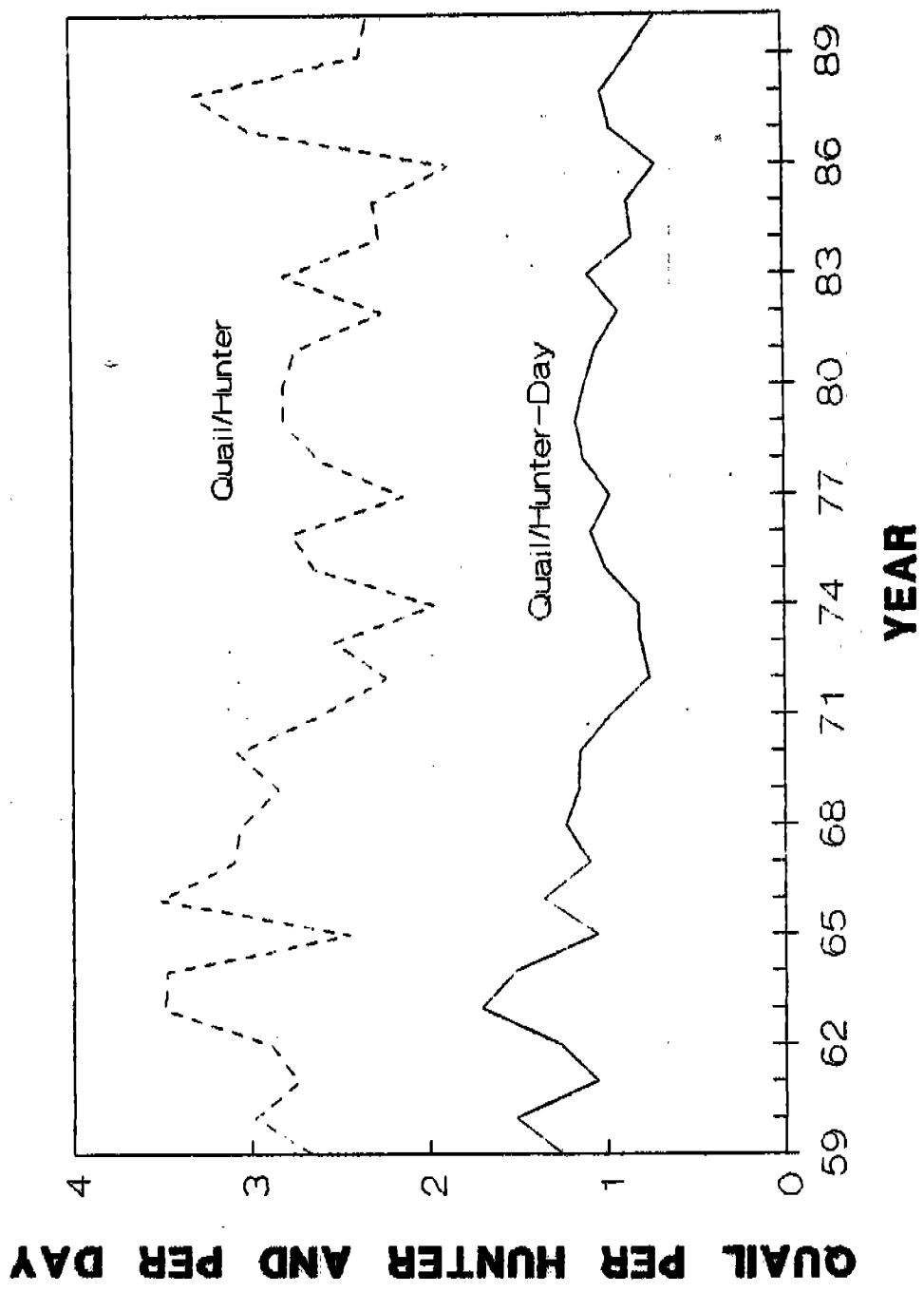


Figure 3. State-wide trend of quail hunter success rates, 1959-90.

Table 1. Quail summer inventory summary, 1990.

Region and County	Distinct Broods		Mean Brood	Mixed Yng & Adults		Total Adults	Total Yng	Total Young/100 Ad	Veh. Miles	Hours of Effort		Birds/100 Hr	
	# Ad	Yng		Ad	Yng					Veh.	Horse Walk		Total
<u>Northern Region</u>													
Box Elder	--	--	--	--	--	--	--	--	--	--	--	--	
Cache	--	--	--	--	--	--	--	--	--	--	--	--	
Davis	5	9	11.80	0	0	9	59	656	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	5	9	11.80	0	0	9	59	656	--	--	--	--	
<u>Central Region</u>													
Juab	--	--	--	--	--	--	--	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	
Tooele	--	--	--	--	--	--	--	--	--	--	--	--	
Utah	--	--	--	--	--	--	--	--	--	--	--	--	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	
<u>Southern Region</u>													
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	--	
Millard	2	4	12.50	0	0	14	25	179	97	4	0	4	
Piute	--	--	--	--	--	--	--	--	--	--	--	--	
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	
Washington	1	1	11.00	8	22	9	33	367	--	0	0	4	
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	3	5	36	8	22	10	23	58	252	97	4	8	
<u>Northeastern Region</u>													
Daggett	--	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--	
Uintah	3	3	6.70	0	0	3	20	667	--	0	0	3	
REGIONAL TOTALS	3	3	6.70	0	0	3	20	667	--	0	0	3	
<u>Southeastern Region</u>													
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	
Emery	--	--	--	--	--	--	--	--	--	--	--	--	
Grand	--	--	--	--	--	--	--	--	--	--	--	--	
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	
STATE TOTALS	11	17	11.5	8	22	10	35	137	391	97	4	11	
										0	3	11	1,564

Table 2. Trend of quail young per 100 adults, 1980-90.

Region and County	Year										Average 1980-89	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		1990
Northern Region												
Box Elder	--	440	--	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	94	35	--	--	--	--	--	--	224	--	656	--
Morgan	--	--	--	550	1,050	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	125	125	--	1,400	--	--	--	--	--
REGIONAL TOTALS	94	128	--	130	125	1,050	1,400	224	--	656	450	--
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	400	67	40	40	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	714	100	--	--	700	700	220	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	656	72	40	40	700	700	220	--	--	--	347	--
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
*Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	156	540	300	133	138	44	545	790	--	179	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	250	--	--	--	--	--	--	--	--	--
*Washington	93	226	152	624	224	571	412	250	126	194	367	--
*Wayne	--	550	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	114	439	162	544	213	434	456	272	242	194	252	307
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	114	583	600	--	--	--	--	300	--	--	--	--
Uintah	338	305	411	--	--	--	--	135	420	667	--	--
REGIONAL TOTALS	282	367	286	--	--	--	--	177	420	667	306	--
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	391	270

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

Table 3. Trend of quail mean brood size from 1980-90.

Region and County	Year										Average 1980-89	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		1990
<u>Northern Region</u>												
Box Elder	--	11.00	--	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	5.00	1.33	--	--	--	--	--	--	6.33	--	11.80	--
Morgan	--	--	--	11.00	--	10.50	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	3.75	--	--	--	14.00	--	--	--
REGIONAL TOTALS	5.00	6.85	--	5.20	--	10.50	--	14.00	6.33	--	11.80	7.98
<u>Central Region</u>												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	4.00	--	--	3.00	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	5.00	3.00	--	--	--	7.00	7.50	11.00	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	4.50	3.00	--	3.00	--	7.00	7.50	11.00	--	--	--	6.00
<u>Southern Region</u>												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
*Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	5.63	8.54	--	3.00	4.00	9.00	1.80	12.00	11.28	--	12.50	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--
*Washington	5.22	6.42	6.00	13.50	5.09	8.43	7.85	5.59	4.64	--	11.00	--
*Wayne	--	5.50	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	5.45	7.97	6.00	11.17	5.06	8.56	6.64	6.16	7.22	--	11.00	7.14
<u>Northeastern Region</u>												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	4.00	9.00	--	--	--	--	--	--	9.00	--	--	--
Uintah	3.55	12.80	6.17	--	--	--	--	--	8.50	4.50	6.70	--
REGIONAL TOTALS	3.59	11.71	6.17	--	--	--	--	--	8.15	4.50	6.70	6.82
<u>Southeastern Region</u>												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	4.50	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	4.50	--	--	--	--	--	--	--	--	4.50
STATE TOTALS	4.52	8.09	6.05	9.71	5.06	8.62	6.70	6.62	7.25	4.50	10.45	6.71

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

Table 4. Trend of quail observed per 100 hours, 1980-90.

Region and County	Year										Average 1980-89	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		1990
Northern Region												
Box Elder	--	1,800	--	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	729	525	--	--	--	--	1,100	--	--	--	--	--
Morgan	--	--	--	222	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	825	--	--	1,500	--	--	--	--	--
REGIONAL TOTALS	729	891	--	511	--	--	1,500	1,100	--	--	--	946
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	167	63	527	1,400	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	900	75	--	--	--	320	2,000	1,600	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	296	258	414	247	--	320	2,000	1,600	--	--	--	734
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
*Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	1,536	3,911	800	350	177	344	867	1,303	1,271	--	975	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	1,400	--	--	--	--	--	--	--	--	--
*Washington	675	275	771	605	380	783	1,604	2,029	530	53	1,050	--
*Wayne	--	--	650	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	867	1,053	691	580	357	663	1,484	1,958	527	53	1,013	823
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	79	205	27	42	--	--	--	--	356	--	--	--
Uintah	613	708	328	100	--	--	--	1,800	371	767	--	--
REGIONAL TOTALS	314	406	123	58	--	--	--	717	371	767	--	332
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	400	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	400	--	--	--	--	--	--	--	--	--	400
STATE TOTALS	541	720	408	411	297	645	1,519	1,984	622	524	1,564	767

*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, 1990.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	8	349	246	0.71	4.09	4.05
CACHE	4	205	20	0.10	2.40	0.34
DAVIS	8	535	82	0.15	6.25	1.35
MORGAN	1	20	41	2.00	0.24	0.68
RICH	0	0	0	0.00	0.00	0.00
SUMMIT	1	61	0	0.00	0.72	0.00
WEBER	12	658	329	0.50	7.69	5.41
REGIONAL TOTALS	34	1,831	720	0.39	21.39	11.83
CENTRAL REGION						
JUAB	3	555	102	0.19	6.49	1.69
SALT LAKE	4	391	164	0.42	4.57	2.70
SANPETE	1	20	0	0.00	0.24	0.00
TOOELE	3	102	61	0.60	1.20	1.01
UTAH	27	1,378	1,028	0.75	16.11	16.89
WASATCH	1	20	0	0.00	0.24	0.00
REGIONAL TOTALS	39	2,469	1,358	0.55	28.85	22.30
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	7	329	349	1.06	3.85	5.74
PIUTE	1	20	0	0.00	0.24	0.00
SEVIER	0	0	0	0.00	0.00	0.00
WASHINGTON	22	1,790	1,070	0.60	20.91	17.57
WAYNE	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	30	2,140	1,420	0.66	25.00	23.31
NORTHEASTERN REGION						
DAGGETT	0	0	0	0.00	0.00	0.00
DUCHESNE	8	473	432	0.91	5.53	7.10
UINTAH	13	864	843	0.98	10.10	13.85
REGIONAL TOTALS	21	1,337	1,275	0.95	15.63	20.95
SOUTHEASTERN REGION						
CARBON	3	185	205	1.11	2.16	3.38
EMERY	4	576	1,070	1.86	6.73	17.57
GRAND	1	20	41	2.00	0.24	0.68
SAN JUAN	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	8	782	1,317	1.68	9.13	21.62
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	132	8,561	6,091	0.71	100.00	100.00

*Total hunter-trips from questionnaire returns.

**Closed to quail hunting in 1990.

Table 6. Summary of quail bagged per hunter-day by region and county, 1984-90.

Region and County	Year						
	1984	1985	1986	1987	1988	1989	1990
Northern Region							
Box Elder	0.21	0.50	0.00	0.23	0.80	0.90	0.71
Cache	0.00	0.00	1.00	0.43	0.22*	0.20*	0.10*
Davis	0.43	0.45	0.44	0.43	0.74	0.67	0.15
Morgan	0.00	1.00	1.00	2.00	1.00*	0.00*	2.00*
Rich	0.00	0.00	0.00	0.00	1.00*	0.00*	0.00*
Summit	0.00	0.00	0.40	0.00	0.00*	0.00*	0.00*
Weber	0.64	0.71	0.69	0.11	0.35	0.21	0.50*
REGIONAL TOTALS	0.40	0.54	0.50	0.35	0.60	0.38	0.39
Central Region							
Juab	0.33	0.00	2.00	0.00	1.38	0.00	0.19
Salt Lake	0.32	1.88	0.43	0.83	1.18	0.50	0.42
Sanpete	0.00	1.50	1.00	0.86	0.80*	0.25*	0.00*
Tooele	0.22	1.50	0.33	1.00	1.24*	3.25*	0.60*
Utah	0.82	0.60	0.72	0.59	0.46	0.84	0.75
Wasatch	1.25	0.00	0.00	0.50	1.13*	0.00	0.00*
REGIONAL TOTALS	0.65	0.85	0.69	0.63	0.80	0.87	0.55
Southern Region							
Beaver	0.00	1.83	0.00	0.00	5.00	0.00	0.00
Garfield	0.00	0.00	0.00	0.00	5.00	0.00	0.00
Iron	1.50	0.00	0.00	0.00	0.00	1.67	0.00
Kane	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Millard	1.00	0.63	1.55	0.96	0.00	0.90	1.06
Piute	0.50	0.00	1.00	2.25	0.00	0.00	0.00
Sevier	0.86	1.80	0.00	0.00	1.50	0.00	0.00
Washington	1.98	1.23	1.27	2.33	2.30	1.26	0.60
Wayne	0.00	0.00	0.00	0.00	2.00	0.80	0.00
REGIONAL TOTALS	1.64	1.21	1.15	1.93	2.08	1.19	0.66
Northeastern Region							
Daggett	0.00	0.00	0.00	0.50	0.00	0.00	0.00
Duchesne	0.08	0.70	0.44	1.86	0.89	0.62	0.91
Uintah	0.72	1.00	0.70	0.52	0.87	0.73	0.98
REGIONAL TOTALS	0.54	0.86	0.63	0.81	0.88	0.68	0.95
Southeastern Region							
Carbon	0.00	1.00	0.00	1.00	0.38	5.00	1.11
Emery	0.00	0.31	1.14	1.06	1.11	0.50	1.86
Grand	0.00	0.00	0.00	0.50	0.80	0.00	2.00
San Juan	0.00	0.00	0.00	0.00	0.00	8.00	0.00
REGIONAL TOTALS	0.00	0.62	0.29	0.85	0.77	2.00	1.68
Unknown counties	0.00	0.00	0.00	0.00	2.00	0.00	0.00
STATE TOTALS	0.85	0.88	0.72	0.97	1.02	0.86	0.71

*Closed Season

Table 7. Percentage distribution of quail harvest by region and county, 1984-90.

Region and County	Year						
	1984	1985	1986	1987	1988	19889	1990
Northern Region							
Box Elder	0.98	0.30	0.00	0.96	1.50	2.53	4.05
Cache	0.00	0.00	0.44	1.92	0.37*	0.28*	0.34*
Davis	6.11	5.16	3.59	1.92	6.98	1.69	1.35
Morgan	0.00	0.60	0.90	0.64	0.18*	0.00*	0.68*
Rich	0.00	0.00	0.00	0.00	0.18*	0.00*	0.00*
Summit	0.00	0.00	0.90	0.00	0.00*	0.00*	0.00*
Weber	2.19	6.07	4.94	0.32	1.32	1.97	5.41
REGIONAL TOTALS	9.29	12.15	10.80	5.76	10.56	6.46	11.83
Central Region							
Juab	0.48	0.00	0.90	0.00	4.15	0.00	1.69
Salt Lake	1.46	9.11	2.69	1.60	3.77	0.84	2.70
Sanpete	0.00	0.91	0.44	3.84	0.75*	0.56*	0.00*
Tooele	0.98	0.91	0.90	0.64	6.79*	3.65*	1.01*
Utah	18.33	12.45	34.24	18.58	9.43	21.35	16.89
Wasatch	1.22	0.00	0.00	0.64	5.09*	0.00*	0.00*
REGIONAL TOTALS	22.49	23.40	39.18	25.32	30.00	26.41	22.30
Southern Region							
Beaver	0.00	3.33	0.00	0.00	0.00	0.00	0.00
Garfield	0.00	0.00	0.00	0.00	2.83	0.00	0.00
Iron	0.72	0.00	0.00	0.00	1.88	1.40	0.00
Kane	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Millard	7.82	1.52	7.65	7.69	0.00	5.34	5.74
Piute	0.48	0.00	0.44	2.88	0.00	0.00	0.00
Sevier	1.46	2.72	0.00	0.00	0.56	0.00	0.00
Washington	46.45	35.56	29.27	42.62	27.73	32.30	17.57
Wayne	0.00	0.00	0.00	0.00	0.75	1.12	0.00
REGIONAL TOTALS	56.97	43.16	37.39	53.20	33.77	40.17	23.31
Northeastern Region							
Daggett	0.00	0.00	0.00	0.32	0.00	0.00	0.00
Duchesne	0.48	5.77	1.79	4.16	6.41	9.55	7.10
Uintah	10.76	9.11	7.19	3.84	11.32	12.92	13.85
REGIONAL TOTALS	11.24	14.89	9.00	8.33	17.73	22.47	20.95
Southeastern Region							
Carbon	0.00	4.85	0.00	0.32	0.56	1.40	3.38
Emery	0.00	1.52	3.59	5.44	1.88	0.84	17.57
Grand	0.00	0.00	0.00	1.60	0.75	0.00	0.68
San Juan	0.00	0.00	0.00	0.00	0.00	2.25	0.00
REGIONAL TOTALS	0.00	6.38	3.59	7.37	3.20	4.49	21.62
Unknown counties	0.00	0.00	0.00	0.00	4.71	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 quail hunting pressure by region and county, 1984-90.

Region and County	Year						
	1984	1985	1986	1987	1988	1989	1990
Northern Region							
Box Elder	3.93	0.53	1.94	4.02	1.92	2.41	4.09
Cache	0.61	1.06	0.32	4.33	1.73*	1.20*	2.40*
Davis	12.00	10.18	5.85	4.33	9.61	2.17	6.25
Morgan	0.41	0.53	0.65	0.30	0.19*	0.96*	.24*
Rich	0.00	0.00	0.00	0.00	0.19*	0.00*	0.00*
Summit	0.00	0.00	1.63	0.30	0.57*	0.00*	0.72*
Weber	2.90	7.51	5.20	2.78	3.84	7.95	7.69
REGIONAL TOTALS	19.87	19.83	15.63	16.08	18.07	14.70	21.39
Central Region							
Juab	1.23	0.26	0.3	0.30	3.07	0.00	6.49
Salt Lake	3.93	4.28	4.55	1.85	3.26	1.45	4.57
Sanpete	0.61	0.53	0.32	4.33	0.96*	1.93*	0.24*
Tooele	3.72	0.53	1.94	0.61	5.57*	0.96*	1.20
Utah	19.04	18.23	34.19	30.65	20.76	21.69	16.11
Wasatch	0.83	0.53	0.00	1.23	4.61*	0.00*	0.24*
REGIONAL TOTALS	29.39	24.39	41.37	38.99	38.26	26.03	28.85
Southern Region							
Beaver	0.00	1.60	1.63	0.00	0.00	0.00	0.00
Garfield	0.00	0.00	0.00	0.00	0.57	0.00	0.00
Iron	0.41	0.80	0.65	0.00	0.38	0.72	0.00
Kane	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Millard	6.62	2.14	3.57	7.73	2.50	5.06	3.85
Piute	0.83	0.00	0.32	1.23	0.00	0.00	0.24
Sevier	1.45	1.34	0.65	0.00	0.38	0.00	0.00
Washington	19.87	25.47	16.60	17.64	12.30	21.93	20.91
Wayne	0.20	0.00	0.00	0.00	0.38	1.20	0.00
REGIONAL TOTALS	29.39	31.36	23.44	26.62	16.52	28.92	25.00
Northeastern Region							
Daggett	0.00	0.00	0.00	0.61	0.00	0.00	0.00
Duchesne	4.97	7.23	2.92	2.16	7.30	13.25	5.53
Uintah	12.63	8.03	7.48	7.12	13.26	15.18	10.10
REGIONAL TOTALS	17.59	15.27	10.42	9.90	20.57	28.44	15.63
Southeastern Region							
Carbon	2.90	4.28	6.83	0.30	1.53	0.24	2.16
Emery	0.61	4.28	2.28	4.95	1.73	1.45	6.73
Grand	0.20	0.26	0.00	3.09	0.96	0.00	0.24
San Juan	0.00	0.26	0.00	0.00	0.00	0.24	0.00
REGIONAL TOTALS	3.72	9.11	9.11	8.34	4.22	1.93	9.13
Unknown counties	0.00	0.00	0.00	0.00	2.30	0.00	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, 1951-1990.

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
1990	2,614	6,091	8,561	0.71	2.33
<hr/>					
TOTALS (1959-90)	187,171	521,832			
<hr/>					
AVERAGES (1959-89)	5,953	16,637	14,992	1.09	2.72

Table 10. Gambel's quail long period waterhole count trend on the west slope of the Beaver Dam Mountains, Washington County, 1975-90. These counts have been conducted since 1962.

Index	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Total young	145	61	--	67	253	72	37	85	114	166	47	163	348	59	35	33
Total adults	20	53	--	29	77	52	25	33	14	86	11	48	139	47	18	9
Total quail	165	114	17	86	330	124	62	118	128	252	58	211	487	106	53	42
Young per 100 adults	725	115	--	353	329	138	148	258	814	193	427	340	250	126	194	367

HUNGARIAN PARTRIDGE

SUMMARY

Harvest data for 1989 indicated below average breeding populations for 1990. Limited brood data was collected in Box Elder and Cache counties and indicated a slight decrease in Hun production.

The 1990 hunt data indicated increased hunting pressure on Huns when compared to 1989. The number of Huns harvested increased 73 percent in 1990. Hunters afield increased 8 percent. Total hunters, days afield and harvest were still 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. We believe that increases in hunter success since 1985 reflect increased partridge populations as a direct result of CRP. Exceptions (declines) in 1988 and 1989 were probably due to drought. 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 1990 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 1990 compared to 1989 and the previous 10-year average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Total Huns observed	155	+638	+146
Young per 100 adults	400	-6	-17
Mean brood size	8.90	+5	-13
Huns observed per 100 hours	517	--	+149
Total hours effort	30	--	-52

Harvest data for 1989 indicated a below average breeding population for 1990. Hungarian partridge should have overwintered well since December through March were dryer than normal but temperatures in the Western and North Central climatic subdivisions were below normal in February. It was a relatively mild winter for partridge. However, this is the fifth year of drought. Young per 100 adults decreased 36 percent from the previous year and was 17 percent below average.

Harvest

Hunter Questionnaire

Results of the annual hunter questionnaire for 1990 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 1990 season compared to 1989 and the previous 31-year average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Hungarian partridge hunters	2,305	+8	-37
Hungarian partridge harvest	6,770	+73	-12
Hunter-days afield	6,976	+16	-22
Huns per hunter-day	0.97	+49	+19
Huns per hunter	2.94	+61	+47

Hungarian partridge hunters and hunting pressure increased. Success increased 49 percent from 1989. Harvest was 12 percent below the 31-year average.

Long-term Hun harvest statistics are shown in Figures 1 and 2.

Field Bag Checks

Results of the survey for 1990 are shown in Table 10. Hunter success trends determined via this method are shown in Table 11. Indices obtained for 1990 compared to 1989 and the previous 10-year average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Total hunters checked	15	-35	-89
Total hours hunted	45	-24	-94
Huns per hunter (complete hunts)	--	--	--
Huns bagged per 100 hours	--	--	--
Average hours per hunter-day (complete hunts)	3	-43	-34
Hours hunted per Hun bagged (complete hunts)	--	--	--

Field bag check data submitted in 1990 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.

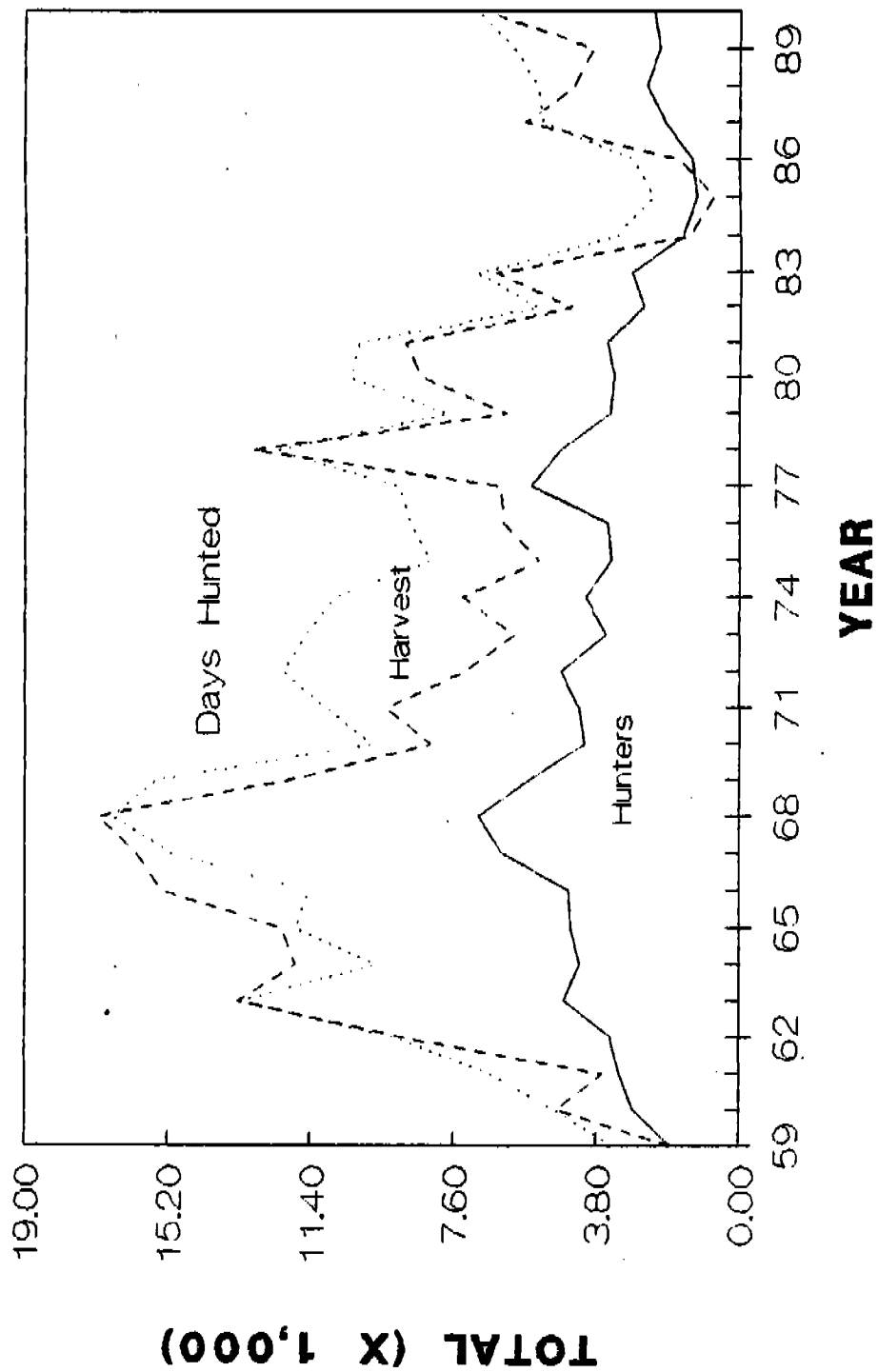


Figure 1. Statewide trend of Hungarian partridge harvest statistics, 1959-90.

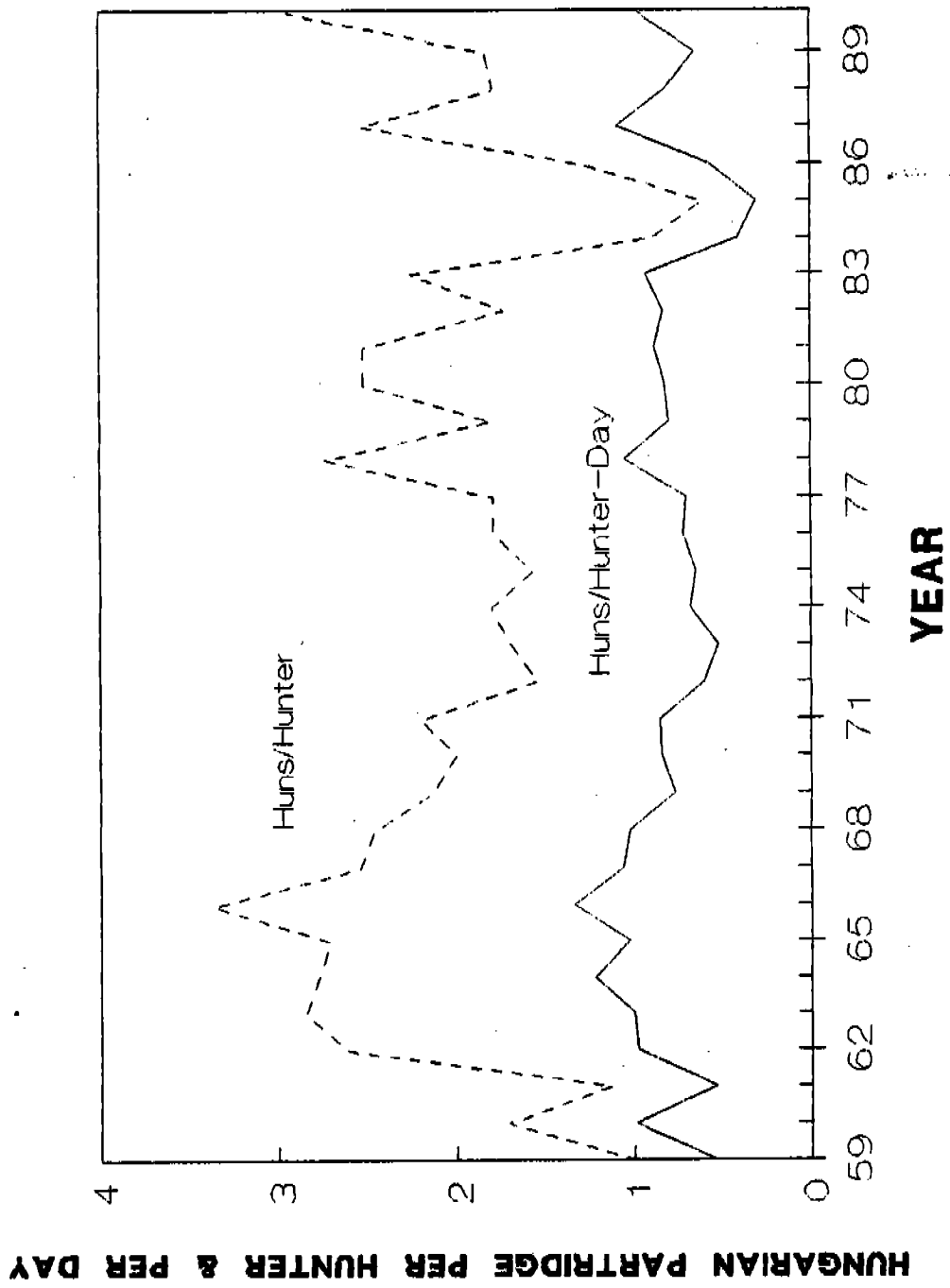


Figure 2. Statewide trend of Hungarian partridge hunter success rates, 1959-90.

Table 1. Hungarian partridge summer inventory summary, 1990.

Region and County	Distinct Broods		Mean Brood	Mixed Yng & Adults		Total Adults w/o Yng	Total Yng	Total Young/100 Ad	Veh. Miles	Hours of Effort		Birds/100 Hr			
	# Ad	Yng		Ad	Yng					Veh.	Horse		Walk	Total	
Northern Region															
Box Elder	8	16	74	12	37	0	28	111	393	17	7	3	27	529	
Cache	1	1	6	6.00	2	7	0	3	---	3	0	0	3	538	
Davis	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	9	17	80	8.90	14	44	31	124	400	393	20	7	3	30	517
Central Region															
Juab	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Tooele	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Utah	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
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	9	17	80	8.90	14	44	31	124	400	393	20	7	3	30	517

Table 2. Trend of Hungarian partridge young per 100 adults, 1980-90.

Region and County	Year										Average 1980-89	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		1990
Northern Region												
Box Elder	688	671	409	400	--	--	450	569	307	--	396	
Cache	--	--	--	--	--	--	--	400	--	--	433	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	700	300	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	691	600	409	400	--	--	450	569	324	425	400	484
Central Region												
Juab	500	--	--	--	--	--	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	--	--	--	--	--	--	--	--	
Tooele	--	--	--	--	--	--	--	--	--	--	--	
Utah	--	0	--	--	--	--	--	--	--	--	--	
Wasatch	--	--	--	--	--	--	400	--	400	--	--	
REGIONAL TOTALS	0	--	--	--	--	--	400	--	400	--	267	
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	663	600	409	400	--	--	440	569	328	425	400	479

Table 3. Trend of Hungarian partridge mean brood size from 1980-90.

Region and County	Year										Average 1980-89	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		1990
<u>Northern Region</u>												
Box Elder	11.00	12.00	11.25	10.67	--	--	18.00	11.88	8.60	8.50	9.25	
Cache	--	--	--	--	--	--	--	--	--	--	6.00	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	7.00	6.00	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	9.50	10.80	11.25	10.67	--	--	18.00	11.88	8.60	8.50	8.90	11.15
<u>Central Region</u>												
Juab	--	--	--	--	--	--	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	--	--	--	--	--	--	--	--	
Tooele	--	--	--	--	--	--	--	--	--	--	--	
Utah	--	--	--	--	--	--	--	--	--	--	--	
Wasatch	--	--	--	--	--	--	4.00	--	4.00	--	--	
REGIONAL TOTALS	--	--	--	--	--	--	4.00	--	4.00	--	--	4.00
<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	9.50	10.80	11.25	10.67	--	--	11.00	11.88	7.83	8.50	8.90	10.18

Table 4. Trend of Hungarian partridge observed per 100 hours, 1980-90.

Region and County	Year										Average 1980-89	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		1990
<u>Northern Region</u>												
Box Elder	154	570	144	67	--	0	96	561	438	--	529	
Cache	--	--	--	--	--	--	--	--	--	88	538	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	158	639	144	67	--	0	50	435	240	--	517	217
<u>Central Region</u>												
Juab	600	--	--	--	--	--	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	--	--	--	--	--	--	--	--	
Tooele	--	--	--	--	--	--	--	--	--	--	--	
Utah	--	--	--	--	--	--	--	--	--	--	--	
Wasatch	33	--	--	--	--	--	500	--	500	--	--	
REGIONAL TOTALS	17	--	--	--	--	--	500	--	500	--	--	339
<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	144	565	144	67	--	0	60	435	248	--	517	208

Table 5. Summary of hungarian partridge hunter success and distribution of harvest and hunting pressure by region and county, 1990.

REGION AND COUNTY	SAMPLE SIZE**	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	72	3,704	4,115	1.11	53.10	60.80
CACHE	28	2,428	2,099	0.86	34.81	31.01
DAVIS	0	0	0	0.00	0.00	0.00
MORGAN	1	164	0	0.00	2.36	0.00
RICH	5	164	349	2.13	2.36	5.17
SUMMIT	0	0	0	0.00	0.00	0.00
WEBER	1	20	20	1.00	0.30	0.30
REGIONAL TOTALS	107	6,482	6,585	1.02	92.93	97.28
CENTRAL REGION						
JUAB*	1	41	0	0.00	0.59	0.00
SALT LAKE*	0	0	0.00	0.00	0.00	0.00
SANPETE*	0	0	0	0.00	0.00	0.00
TOOELE	6	267	123	0.46	3.84	1.82
UTAH*	0	0	0	0.00	0.00	0.00
WASATCH*	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	7	308	123	0.40	4.43	1.82
SOUTHERN REGION						
BEAVER*	1	82	0	0.00	1.18	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	20	61	3.00	0.30	0.91
WASHINGTON*	0	0	0	0.00	0.00	0.00
WAYNE*	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	2	102	61	0.60	1.48	0.91
NORTHEASTERN REGION						
DAGGETT*	0	0	0	0.00	0.00	0.00
DUCHESNE*	0	0	0	0.00	0.00	0.00
UINTAH*	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	0	0	0	0.00	0.00	0.00
SOUTHEASTERN REGION						
CARBON*	0	0	0	0.00	0.00	0.00
EMERY*	1	82	0	0.00	1.18	0.00
GRAND*	0	0	0	0.00	0.00	0.00
SAN JUAN*	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	1	82	0	0.00	1.18	0.00
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	117	6,976	6,770	0.97	100.00	100.00

* Closed to Hungarian partridge hunting in 1990.

**Total hunter-trips from questionnaire returns.

Table 6. Summary of Hungarian partridge bagged per hunter-day by region and county, 1984-90.

Region and County	Year						
	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>							
Box Elder	0.44	0.25	0.60	1.28	0.95	0.62	1.11
Cache	0.15	2.00	0.00	1.05	0.50	0.94	0.86
Davis	0.00	0.00	0.00	0.00	0.00	2.67	0.00
Morgan	0.00	0.00	0.00	0.67	0.00	1.33	0.00
Rich	0.00	0.00	0.00	1.50	0.000	0.00	2.13
Summit	0.00	0.00	0.00	2.00	3.00	0.00	0.00
Weber	1.00	0.00	0.00	1.25	1.17	1.00	1.00
REGIONAL TOTALS	0.41	0.26	0.59	1.23	0.89	0.67	1.02
<u>Central Region</u>							
Juab	0.00	0.00	0.00	0.30	0.00*	0.00*	0.00*
Salt Lake	0.50	0.50	0.00	0.00	0.09*	0.67*	0.00*
Sanpete	0.00	0.00	0.00	0.00	0.00*	0.00*	0.00*
Tooele	0.00	0.46	0.00	0.00	0.33	0.47	0.46
Utah	2.00	0.00	0.00	0.33	0.31*	0.00*	0.00*
Wasatch	1.00	1.50	0.00	0.00	0.00*	0.00*	0.00*
REGIONAL TOTALS	0.55	0.48	0.00	0.20	0.24	0.41	0.40
<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	0.00	0.00	2.00	0.00	0.00*	0.00*	0.00*
Piute	0.00	0.00	0.00	0.00	0.00	0.00*	0.00*
Sevier	0.00	0.00	0.20	2.00	0.00*	0.00*	3.00*
Washington	0.00	0.00	0.00	0.00	2.14*	0.00*	0.00*
Wasatch	1.00	0.00	0.00	0.00	0.00*	0.00*	0.00*
REGIONAL TOTALS	0.55	0.00	0.78	1.33	2.14	0.00	0.60
<u>Northeastern Region</u>							
Daggett	0.00	1.00	0.00	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	1.00*	0.00*
REGIONAL TOTALS	0.00	0.00	0.50	0.00	0.00	0.00	0.00
<u>Southeastern Region</u>							
Carbon	0.00	0.00	0.00	0.00	0.00	0.00*	0.00*
Emery	0.00	0.00	0.00	0.00	1.00*	0.00*	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*	1.50*	0.00*
REGIONAL TOTALS	0.00	0.00	0.00	0.00	1.00	1.50	0.00
Unknown Counties	0.00	0.00	0.00	0.30	0.00	0.00	0.00
STATE TOTALS	0.41	0.31	0.57	1.09	0.82	0.65	0.97

*Closed Season

Table 7. Percentage distribution of Hungarian partridge harvest by region and county, 1984-90.

Region and County	Year						
	1983	1984	1985	1986	1987	1988	1989
Northern Region							
Box Elder	79.04	60.34	91.14	80.25	78.86	76.20	60.80
Cache	2.94	5.94	0.00	9.87	6.03	8.47	31.01
Davis	0.00	0.00	0.00	0.00	0.00	4.23	0.00
Morgan	0.00	0.00	0.00	0.85	0.00	2.12	0.00
Rich	0.00	0.00	0.00	1.28	0.00	0.00	5.17
Summit	0.00	0.00	0.00	0.85	2.26	0.00	0.00
Weber	8.90	0.00	0.00	2.14	2.64	2.12	0.30
REGIONAL TOTALS	91.03	66.62	91.14	95.27	89.81	93.13	97.28
Central Region							
Juab	0.00	0.00	0.00	1.28	0.00*	0.00*	0.00*
Salt Lake	1.47	2.97	0.00	0.00	0.37*	1.06*	0.00*
Sanpete	0.00	0.00	0.00	0.00	0.00*	0.00*	0.00*
Tooele	0.00	18.10	0.00	0.00	1.88	3.70	1.82
Utah	5.96	0.00	0.00	0.42	1.88*	0.00*	0.00*
Wasatch	1.47	9.05	0.00	0.00	0.00*	0.00*	0.00*
REGIONAL TOTALS	8.90	30.27	0.00	1.71	4.15	4.76	1.82
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	0.00	0.00	7.59	0.00	0.00*	0.00*	0.00*
Piute	0.00	0.00	0.00	0.00	0.00	0.00*	0.00*
Sevier	0.00	0.00	1.27	1.71	0.00*	0.00*	0.91*
Washington	0.00	0.00	0.00	0.00	5.66*	0.00*	0.00*
Wayne	0.00	0.00	0.00	0.00	0.00*	0.00*	0.00*
REGIONAL TOTALS	0.00	0.00	8.86	1.71	5.66	0.00*	0.91
Northeastern Region							
Daggett	0.00	2.97	0.00	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	0.53*	0.00*
REGIONAL TOTALS	0.00	2.97	0.00	0.00	0.00	0.53	0.00
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	0.37	0.00*	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	1.59*	0.00*
REGIONAL TOTALS	0.00	0.00	0.00	0.00	0.37	1.59	0.00
Unknown counties	0.00	0.00	0.00	1.28	0.00	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, 1984-90.

Region and County	Year						
	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>							
Box Elder	73.62	74.98	87.68	68.22	68.42	80.42	53.10
Cache	7.95	0.91	0.72	10.28	9.90	5.84	34.81
Davis	1.81	0.00	0.00	1.40	1.23	1.03	0.00
Morgan	3.66	1.82	0.00	1.40	0.30	1.03	2.36
Rich	0.60	0.00	0.72	0.93	0.00	0.69	2.36
Summit	0.00	0.00	0.00	0.46	0.61	0.00	0.00
Weber	3.66	0.00	0.00	1.86	1.85	1.37	0.30
REGIONAL TOTALS	91.39	77.79	89.13	84.57	82.36	90.39	92.93
<u>Central Region</u>							
Juab	0.00	0.00	0.72	4.67	0.00*	0.00*	0.59*
Salt Lake	1.21	1.82	0.00	0.00	3.40*	1.03*	0.00*
Sanpete	0.00	0.91	0.72	0.46	0.00*	0.00*	0.00*
Tooele	3.66	12.01	0.72	2.80	4.64	5.16	3.84
Utah	1.21	2.77	1.44	1.40	4.95*	0.34*	0.00*
Wasatch	0.60	1.82	0.00	0.00	1.23*	1.03*	0.00*
REGIONAL TOTALS	6.74	19.45	3.62	9.34	14.24	7.56	4.43
<u>Southern Region</u>							
Beaver	1.21	0.00	0.72	0.00	0.00*	0.00*	1.18*
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	0.00	0.00	2.17	0.00	0.00*	0.00*	0.00*
Piute	0.16	0.00	0.00	0.00	0.00*	0.00*	0.00*
Sevier	0.00	0.00	3.62	0.93	0.00*	0.69*	0.30*
Washington	0.00	0.00	0.00	0.46	2.16*	0.00*	0.00*
Wayne	0.00	0.00	0.00	0.00	0.00*	0.00*	0.00*
REGIONAL TOTALS	1.21	0.00	6.52	1.39	2.15	0.69	1.48
<u>Northeastern Region</u>							
Daggett	0.00	0.91	0.00	0.00	0.00*	0.00*	0.00*
Duchesne	0.00	0.00	0.00	0.00	0.30*	0.00*	0.00*
Uintah	0.60	0.91	0.72	0.00	0.00*	0.34*	0.00*
REGIONAL TOTALS	0.60	1.82	0.72	0.00	0.29	0.34	0.00*
<u>Southeastern Region</u>							
Carbon	0.00	0.00	0.00	0.00	0.61*	0.34*	0.00*
Emery	0.00	0.00	0.00	0.00	0.30*	0.00*	1.18*
Grand	0.00	0.91	0.00	0.00	0.00*	0.00*	0.00*
San Juan	0.00	0.00	0.00	0.00	0.00*	0.69*	0.00
REGIONAL TOTALS	0.00	0.91	0.00	0.00	0.92	1.03	1.18
Unknown counties	0.00	0.00	0.00	4.67	0.00	0.00	0.00
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00

*Closed Season

Table 9. Statewide summary of Hungarian partridge harvest statistics, 1955-90.

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
1990	2,305	6,770	6,976	0.97	2.94
TOTAL (1959-90)	114,887	245,542	284,041	(26.18)	(65.11)
AVERAGES (1959-89)	3,632	7,702	8,938	0.81	2.01

Table 10. Hungarian partridge field bag check summary, 1990.

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 Hunter
<u>Northern Region</u>									
Box Elder	7	15	45	6 13	1	1	3	0	--
Cache	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	7	15	45	6 13	1	1	3	0	--
<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	7	15	45	6 13	1	1	3	0	--

NO DATA

NOT APPLICABLE

NOT APPLICABLE

NOT APPLICABLE

Table 11. Hungarian partridge hunter success trend determined by field bag checks, 1985-90.

Region and County	1985		1986		1987		1988		1989		1990	
	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter	Birds/ 100 Hr Hunter
Northern Region												
Box Elder	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	--	--
Central Region												
Juab												
Salt Lake												
Sanpete												
Tooele												
Utah												
Wasatch												
REGIONAL TOTALS												
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	3	0.16	2	0.16	31	1.69	24	1.04	181	9.50	--	--

WILD TURKEY

SUMMARY

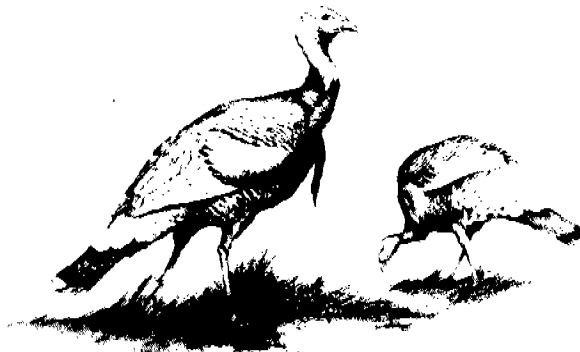
Turkey populations remain high and well above the 21 year average, but percent success dropped below average for the first time in 10 years. The percent of hunters observing turkeys also declined. While Rio Grande populations appear to be increasing, Merriam populations appear to be down since 1984.

Hunter success and turkey observation data for the 1990 spring season indicated that the East Zion area had an average year as total harvest and percent success again declined 17 and 20 percent respectively. Twenty-nine birds were reported harvested for this unit. The Boulder Mountains and LaSal Mountains had above average but no longer growing populations. Harvest statistics indicate the Boulder population was down from the previous year while the LaSal population increased slightly. The remaining units of the state were closed to hunting. Rio Grande turkeys have been released in a number of locations, but none were considered to be huntable in 1990. A fall turkey hunting season was not held anywhere in 1990.

Spring hunting pressure was up again in 1990 and was well above average. Complaints about hunters interfering with each other due to over-crowding were made by 6 of 494 voluntary responses. One hunter complained about conflicts with bear hunters. To reduce opening weekend pressure, the season opened Tuesday, May 1, rather than the Saturday nearest May 1. The popularity and demand for turkey hunting in Utah is very great.

Hunter success was again down (17 percent) from the previous year. A total of 52 turkeys were harvested in the spring hunt of 1990 compared to 59 taken in 1989 and 66 in 1988 and 60 in 1987. Observations of turkeys remained higher than average in 1990, but it dropped on the Boulder and East Zion areas.

This was the third year of drought in southern Utah and may be adversely affecting brood survival.



Harvest

Spring Gobbler Season

Results of the 1990 spring season are shown in Table 1 of this section. The trend of these data since 1968 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 1990 spring season compared to 1989 and the previous 21-year average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Permits sold	579	+10	+173
Hunters afield	531	+11	+178
Turkeys harvested	52	-12	+120
Hunter-days afield	1,812	+16	+239
Percent hunter success	10	-17	-12
Turkeys bagged per hunter-day	0.03	-25	-25
Percent of hunters who observed turkeys	51	-7	+26

Again, permit sales and hunters afield increased from 1989 and were well above average. And again, total harvest decreased (from 59 in 1989 to 52 in 1990), which is twelve percent below the previous year. In 1990, total harvest decreased for the second consecutive year after an all time high in 1988. Hunter success rates dropped again for the third consecutive year since 1987 and dropped below the 21-year average. The proportion of hunters who reported having observed turkeys was 26 percent above average. The East Zion unit accounted for 47 percent of the hunting pressure based on hunter-days afield, compared with 49 percent in 1989 and 54 percent in 1988. The East Zion unit yielded 56 percent of the 1990 statewide harvest.

The trend of spring turkey harvest statistics is shown in Figures 1 and 2. Nine percent of the hunters (34) used bows and 1 percent used rifles (2) which were illegal. Three turkeys were reported crippled and not recovered. Three of 44 known kills were suspected of being females and another five are suspected of being jakes.

Twenty-five percent of the harvest (10 of 40) occurred on opening day (Tuesday) 10 percent the following day, 10 percent the first weekend and 13 percent the last weekend of the hunt. Twenty-five percent of the harvest occurred on weekends compared with 33 percent last year (1989) and 44 percent in 1988. It appears that opening the season on May 1 instead of Saturday nearest May 1, is doing what was intended by spreading harvest and pressure out over the season.

Sixteen of 494 hunters commented that the spring hunting season should be opened 1-3 weeks earlier. Twelve commented that they would like more turkeys. Six suggested that there's not enough access to private property. Six complained about too many predators. Six would like to see a fall turkey hunt.

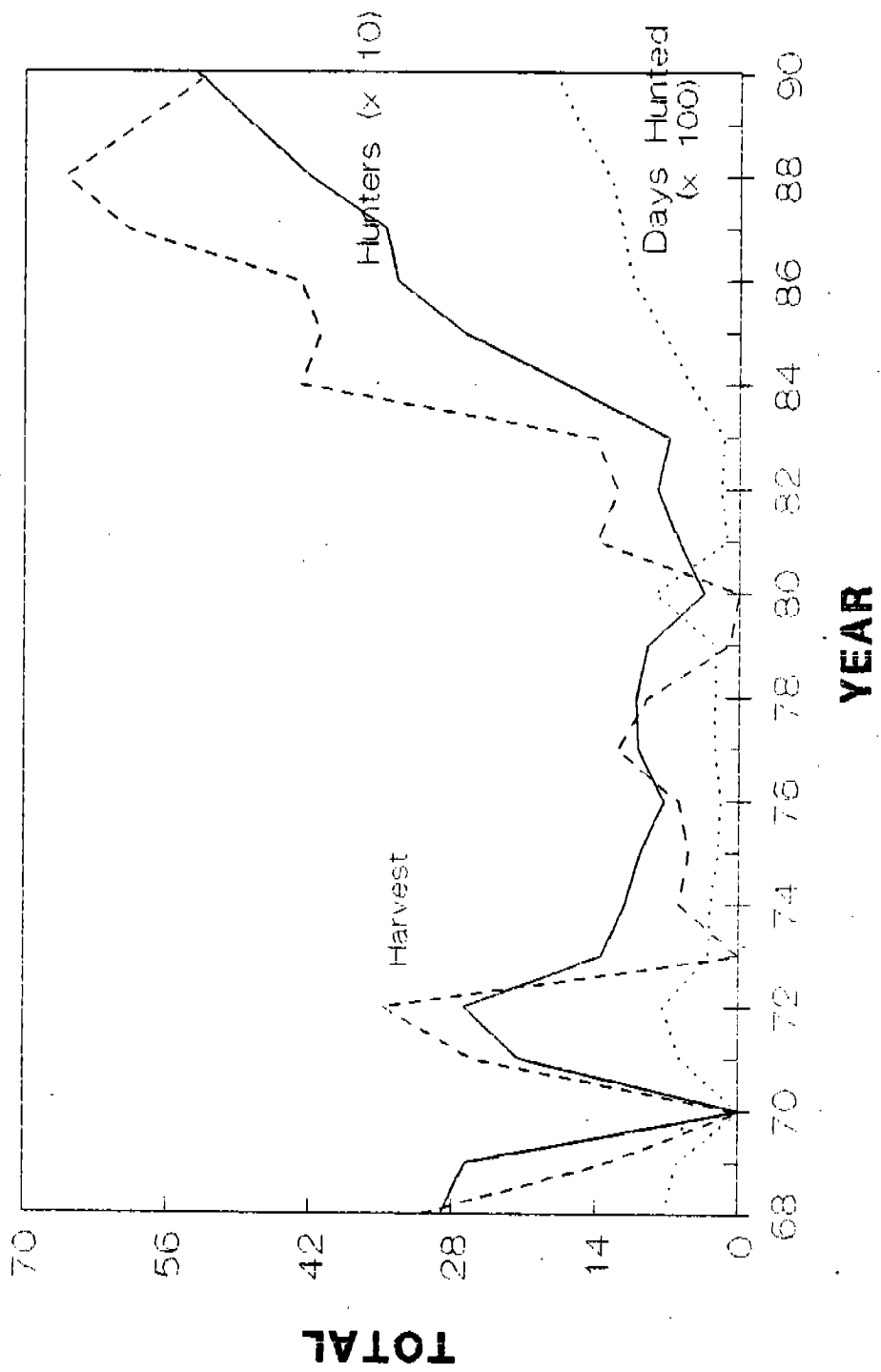


Figure 1. Spring wild turkey hunters, harvest, and days hunted, 1968-90.

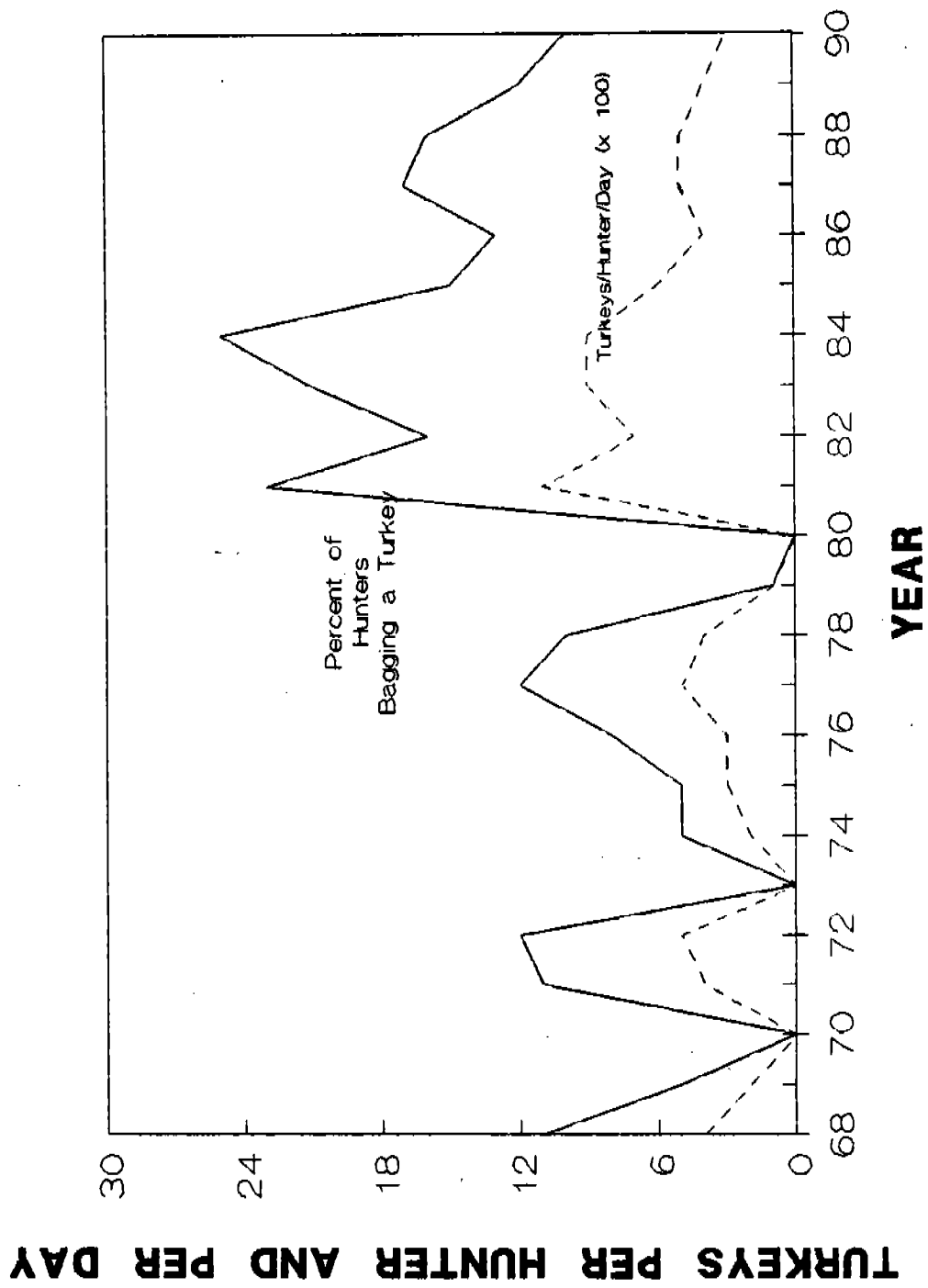


Figure 2. Spring wild turkey hunting success, 1968-89.

Table 1. Summary of the 1990 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															579	--
No hunts															41	48
Hunters afield															453	531
Hunter-days														13 ^a	(15)	(36)
Turkeys bagged														0	0	1,546
Percent success														--	--	44
Turkeys bagged per hunter-day														--	--	10
Reported crippling loss (loss/100 bagged)														--	--	0.03
Turkeys observed																7
Gobblers																1,646
Hens																357
Unidentified																963
Number of hunters who saw turkeys																271
Percent of hunters who saw turkeys																225
																51

Projection factor = 579 permits sold/494 questionnaires returned = 1.1720648

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

aFigures do not sum because these hunters hunted another unit as their primary hunting area and were not counted twice. Hunters afield and days by unit were as follows: Boulder (9-22), six of these were from E. Zion and three were from LaSal as their primary units; East Zion (1-3), from Boulder; LaSal (3-6), from East Zion.

Table 2. Summary of turkey harvest statistics for spring gobbler seasons, 1967-90.

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			
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				
1990	250	850	29	12	0.03		60				

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			Hunter-day			
BOULDER MOUNTAINS	1967	17		2	43		12	0.05		75	
	1968	134		15	330		10	0.05		33	
	1969	141		6	300		4	0.02		16	
	1970					N O	S E A S O N				
	1971	27		1	64		4	0.02		13	
	1972	42		3	107		8	0.03		28	
	1973	22		0	52		0	0.00		6	
	1974	23		0	56		0	0.00		25	
	1975	16		1	34		7	0.04		8	
	1976	12		0	25		0	0.00		10	
	1977	6		0	13		0	0.00		40	
	1978	16		1	31		0	0.00		14	
	1979	5		0	10		0	0.00		0	
	1980					N O	S E A S O N				
	1981					N O	S E A S O N				
	1982					N O	S E A S O N				
	1983	6		1	7		20	0.17		40	
	1984	33		9	85		27	0.11		73	
	1985	73		7	187		10	0.04		46	
	1986	123		8	354		7	0.02		44	
1987	105		11	363		7	0.03		40		
1988	134		11	383		8	0.03		50		
1989	138		13	417		10	0.03		47		
1990	250		29	850		12	0.03		60		
1990	185		11	585		6	0.02		42		

Table 2. (continued)

Hunting Unit	Year	Hunters		Total Harvest	Hunter-days Afield	Percent Success*	Turkeys per Hunter-day	Percent of Hunters Observing Turkeys	Total Permits**	
		Afield								
LASAL MOUNTAINS	1967	6	0	0	16	0	0.00	33		
	1968	17	0	0	44	0	0.00	62		
	1969	39	3	3	102	9	0.03	24		
	1970				NO SEASON					
	1971	17	1	1	34	6	0.03	20		
	1972	50	3	3	129	7	0.03	29		
	1973	23	0	0	53	0	0.00	16		
	1974	20	0	0	66	0	0.00	11		
	1975	11	0	0	30	0	0.00	33		
	1976	8	0	0	25	0	0.00	14		
	1977	24	4	4	53	15	0.07	45		
	1978	32	2	2	78	7	0.03	38		
	1979	34	0	0	74	0	0.00	7		
	1980				NO SEASON					
	1981	18	1	1	31	6	0.03	24		
	1982	18	1	1	50	6	0.02	35		
	1983	12	1	1	27	10	0.10	30		
	1984	24	4	4	70	19	0.06	88		
	1985	72	10	10	194	14	0.05	42		
	1986	51	4	4	192	7	0.02	45		
1987	74	6	6	218	9	0.03	50			
1988	65	11	11	199	16	0.06	70			
1989	104	11	11	352	8	0.03	41			
1990	95	12	12	340	13	0.03	48			

Table 2. (continued)

Hunting Unit	Year	Hunters		Total Harvest	Hunter-days		Percent Success*	Turkeys per		Percent of Hunters		Total Permits**
		Afield	Afield		Afield	Afield		Hunter-day	Observing	Turkeys	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	50					
	1979											
	1980											
	1981											
	1982											
	1983											
1984												
1985												
1986												
1987												
1988												
1989												
1990												

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					
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								
1990***			NO SEASON								

Table 2 (continued)

Hunting Unit	Year	Hunters		Total Harvest	Hunter-days		Percent Success*	Turkeys per Hunter-day		Percent of Hunters Observing Turkeys	Total Permits**
		Afield			Afield						
BLUE MOUNTAIN	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				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				
	1990				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					
MIXED UNITS	1971	15	15	4	--	15	--	61	50	61	50
	1972	25	25	5	89	18	0.05	0	0	0	0
	1973	12	12	0	38	0	0.00	12	12	12	12
	1974	9	9	0	36	0	0.00	22	22	22	22
	1975	11	11	0	32	0	0.00	100	100	100	100
	1976	4	4	1	17	25	0.07	50	50	50	50
	1977	9	9	1	29	13	0.04	67	67	67	67
	1978	3	3	0	11	0	0.00	20	20	20	20
	1979	6	6	0	27	0	0.00	0	0	0	0
	1980	0	0	0	0	0	0.00	100	100	100	100
	1981	1	1	0	2	0	0.00	0	0	0	0
	1982	0	0	0	0	0	0.00	0	0	0	0
	1983	0	0	0	0	0	0.00	33	33	33	33
	1984	4	4	0	15	0	0.00	67	67	67	67
	1985	4	4	0	6	0	0.00	60	60	60	60
	1986	12	12	0	36	0	0.00	0	0	0	0
	1987	11	11	0	28	0	0.00	75	75	75	75
	1988	12	12	0	31	0	0.00	50	50	50	50
	1989	6	6	1	12	25	0.13	54	54	54	54
	1990	15	15	0	36	0	0.00				

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					
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
	1990	531		52	1,812		10	0.03	51	579
STATE TOTALS (1968-90)		4,543		548	13,050		(248)	(.96)	(903)	5,038
STATE AVERAGES (1968-89)		191		24	535		11	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, 1989, and 1990 by proclamation.

Table 3. Date of kill, beard and spur length of turkeys harvested during Spring 1990.

Hunting Unit	Date of Kill	Beard Length (Inches)	Spur Length (1/8 Inches)
EAST ZION	-- *	9.00	--
	5/01*	--	--
	5/01	5.00	2.00
	5/01	10.00	--
	5/01	6.00	8.00
	5/02	7.00	6.00
	5/02	9.00	--
	5/02	5.00	--
	5/03	8.00	4.00
	5/03	9.00	4.00
	5/04	8.00	4.00
	5/05*	2.00	5.00
	5/06	9.00	4.00
	5/06	8.00	6.00
	5/10	9.00	7.00
	5/10*	4.00	--
	5/12	6.00	1.00
	5/13	9.00	11.00
	5/15	9.00	--
	5/18*	1.00	1.00
	5/18	6.00	5.00
	5/19	8.00	--
	5/19	7.00	--
5/20	8.00	8.00	
5/20	8.00	--	
LA SAL	--*	5.00	2.00
	--*	7.00	8.00
	--*	7.00	8.00
	5/01	4.00	4.00
	5/01	3.00	4.00
	5/04	8.00	7.00
	5/04	6.00	--
	5/12	9.00	--
	5/17*	2.00	1.00
	5/19	9.00	--
BOULDER	5/01	8.00	7.00
	5/01	8.00	4.00
	5/01	6.00	4.00
	5/01	10.00	10.00
	5/02	8.00	7.00
	5/06	9.00	7.00
	5/10	9.00	4.00
	5/11	9.00	5.00
5/18*	4.00	--	

*Possible violation of season date, sex, or weapon. All successful turkey hunters reported using shotguns.

Table 4. Statewide summary of fall wild turkey harvest statistics, 1964-90.

Year	Permits Sold		Hunters Afield		Hunter-days Afield		Turkeys Bagged		Percent Success**		Turkeys/ Hunter-Day		Crippling Loss/ 100 Bagged		% Hunters Observing Turkeys	
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***	--	--	--	--	--	--	--	--	--							
1990***	--	--	--	--	--	--	--	--	--							
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 LaSalle Mountains a one-bird limit; from 1969 through 1972, all areas had a two-bird limit. Hunter success was based on the number of successful hunters rather than total turkeys bagged.

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 1990. Since 1988, the number of birds present on active dancing grounds has been substantially greater than in recent years (Table 1.). In the last two years several "new" grounds have been located. It appears sharp-tailed grouse have made a moderate recovery in core areas. Numbers on the fringe of their range appear to be low. 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).



Table 1. Summary of sharp-tailed grouse dancing ground counts, 1977-90.

County	No.	Name	Dancing Ground																	
			1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990				
Box Elder	1.	West Hills #1 (located 1977)	21	--	12	3	12	0	12	0	0	0	0	0	0	0	0	0		
	2.	West Hills #2 (located 1977)	7	--	3	1	0	0	2	0	18	40	33	40**	--	--	--	--		
	3.	West Hills #3 (located 1977)	13	--	0	0	0	0	0	0	0	6	0	0	0	0	0	0		
	4.	Hunsaker's Field (located 1977)	13	16	3	0	0	0	0	0	0	18	0	3	0	0	0	0		
	5.	Whites Valley (located 1977)	12	--	0	0	0	6	0	0	2	0	6	7	3	75	--	--		
	6.	North Whites Valley (located 1977)	10	15	--	0	0	0	0	0	0	--	18	11	9**	--	--	--		
	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**	11	--	--	--		
	9.	Pocatello Valley #3 (located 1978)	4	0	0	0	0	0	0	0	--	--	--	--	0	--	--	--		
	10.	Pocatello Valley #4 (located 1978)	6	0	0	0	0	--	0	0	0	--	--	--	0	--	--	--		
	11.	Ag. Station					3	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	2	11	6	8	12	11	2				
Total grouse counted			104	102	71	24	57	31	28	5	29	84	90	80	77	86				
Average number of grouse/ground			10.4	11.3	4.7	1.5	3.4	2.1	2.5	2.5	2.6	14.0	11.3	6.7	7.0	43.0				

*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. 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 1989-90 winter was relatively mild in northern Utah.

No spring survey of breeding territories was made in 1990.

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

Hunter Success

Seventeen hunters bought \$2.00 permits to hunt ptarmigan in Utah in 1990 (Table 3). An estimated 11 hunters actually pursued ptarmigan and 17 birds were killed. Hunter success was 0.63 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.



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Table 1. Summary of white-tailed ptarmigan breeding territories (pairs); 1980-90.

County	Location	1980	1981	(6/12-17)	(6/12-14)	(6/16-17)	(6/18-19)	1983	1984	1985	1986	1987	1988	1989(3)	1990
Summit	Lake Blanchard		2											--	
Duchesne	Painter Basin													--	
Duchesne	Gilbert Basin					C ²		C ²		C ²					N
Duchesne	Atwood Basin					A		A		A					O
Duchesne	Yellowstone River	2				N		N		N					S
Summit	Henry's Fork					C		C		C					U
Summit	Flat Top Mtn.					E		E		E					R
						L		L		L					V
						L		L		L					V
						E		E		E					V
						D	1	D		D		3			Y
Summit	Beaver Creek	0													
Summit	Smith's Fork	1													
Uintah	Leidy Peak	0 ¹													

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, 1981-90.

Area:	DATE									
	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	8/90
<u>Painter Basin</u>										
n	12	0 ^b	2 ^c	3						
mean brood	3.67		4.50							
young/100 adult hens	314		450							
hens w/o broods	2		0							
adult males	14		0							
<u>Henry's Fork</u>										
n	4	0	0	0		4	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										
<u>Yellowstone</u>										
n	4								2	1
mean brood	4.50	4.25							4.00	4.00
young/100 adult hens	450								366	400
hens w/o broods	0								4	0
adult males									18	0
<u>Smith's Fork</u>										
n	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										
mean brood										
young/100 adult hens										
hens w/o broods										
adult males										

Table 2. (continued)

Area:	DATE									
Statistics	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	8/90
<u>Flat Top Mountain</u>										
n			1	6.00			1	3		
mean brood							6.00	4.33		
young/100 adult hens							900	433		
hens w/o broods			1				0	9e		
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										
mean brood										
young/100 adult hens										
hens w/o brood										
adult males										
<u>Gilbert Basin</u>										
n										
mean brood										
young/100 adult hens										
hens w/o broods										
adult males										
<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:	DATE									
	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	8/90
<u>East F. Black's Fork</u>										
n										
mean brood										
young/100 adult hens										
hens w/o broods										
adult males										
<u>Joulious Creek</u>										
n										
mean brood										
young/100 adult hens										
hens w/o broods										
adult males										
TOTAL										
n	20	5	4	4	4	4	7	6	2	1
mean brood	4.00	4.20	4.00	4.00	3.50	3.75	3.86	3.33	4.00	4.00
young/100 adult hens	364		400		350	375	236	333	366	400
hens w/o brood	2		0		0	0	7	19 ^e	4	0
adult males	14		0		0	0	0	0	0	0
Total birds observed	116		20		18	19	47	45	18	5

^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, 1982-90. Estimates are calculated based upon 100 percent samples or projection factors.

Year	Permits Sold		Hunters		Hunter-days		Ptarmigan Bagged		Birds/Hunter		Ptarmigan/Hunter-Day		Crippling Loss/100 Bagged		Ptarmigan Observed		% Hunters Observing Ptarmigan		Immatures Per 100 Adults		
	1982	1983	1984	1985	1986	1987	1988	1989	1990	Afield	Afield	Afield	Afield	Afield	Day	Day	Day	Day	Day	Day	Day
1982	48	21	33	0	0.00	0.00	0	0	0	0.00	0.00	0	0	0	0	0	0	0	0	0	0
1983	31	13	21	14	1.08	0.67	14	14	1.08	0.67	0.67	0	0	25	25	30	30	30	30	30	30
1984	28	20	25	36	1.80	1.44	36	36	1.80	1.44	1.44	0	0	0	0	0	0	0	0	0	0
1985	55	10	13	7	0.70	0.54	7	7	0.70	0.54	0.54	14	14	9	9	14	14	14	14	14	14
1986	49	14	21	8	0.57	0.36	8	8	0.57	0.36	0.36	0	0	8	8	22	22	22	22	22	22
1987	45	9	9	8	0.89	0.89	8	8	0.89	0.89	0.89	0	0	0	0	0	0	0	0	0	0
1988	28**	15	15	22	1.47	1.47	22	22	1.47	1.47	1.47	0	0	59	59	59	59	59	59	59	59
1989	20	3	18	13	4.33	0.72	13	13	4.33	0.72	0.72	0	0	35	35	35	35	35	35	35	35
1990	17	11	27	17	1.55	0.63	17	17	1.55	0.63	0.63	0	0	28	28	28	28	28	28	28	28
																					4.5(11)

**For the first time a handling fee of \$2.00 per permit was charged.
 Projection Factor = 1.4166 (17 permits issued; 12 questionnaires returned)

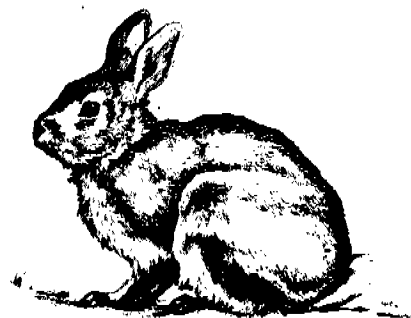
RABBITS AND HARES

SUMMARY

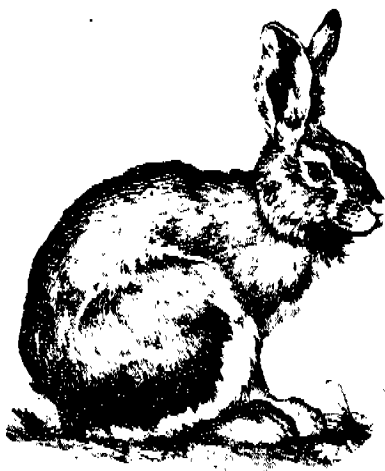
A decreased breeding population for 1990 was indicated by the 1989 harvest statistics. Cottontail populations decreased from a short term high in 1988 and are below the 10 year average.

Summer roadside counts indicated a decreased population density statewide. Harvest statistics indicated similar hunter success, as in the previous year, but, is still 10 percent below average. Field bag checks on opening weekend indicated above average hunter success.

Cottontail Rabbits



Snowshoe Hares



The 1990 snowshoe hare hunting season indicated a slight decrease in populations.

Hunter pressure decreased 16 percent from the previous year and remained 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.

COTTONTAIL RABBIT

Roadside Counts

Results of the annual roadside counts for 1990 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 1990 compared to 1989 and the previous 10-year average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Total miles driven	879	+1	-47
Total cottontails counted	344	-16	-44
Cottontails observed per mile	0.39	-17	+8
Young observed per 100 adults	73	+14	-14

A decreased breeding population for 1990 was again indicated by 1989 harvest statistics for the fifth year in a row. Production data from roadside counts indicated a decline in population. The cottontail per mile index decreased 17 percent but was above average. However, production was only 14 percent below the average.

Harvest

Hunter Questionnaire

Results of the 1990 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 Figures 2 and 3. Results of the 1990 season compared to 1989 and the 23-year average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Cottontail hunters	23,070	+1	-7
Cottontail harvest	127,389	+6	-22
Hunter-days afield	93,515	+2	-8
Cottontails per hunter-day	1.36	+3	-10
Cottontails per hunter	5.52	+5	-11

Total hunters and effort remained about the same in 1990. Total harvest increased slightly from 1989. Total harvest was 22 percent below average. Hunter success was 10 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 five winters have not been harsh.

Field Bag Checks

Results of field bag checks for 1990 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 1990 field bag check data to 1989 and the previous 10-year average.

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Total hunters checked	77	-4	-38
Total hours hunted	209	+37	-29
Cottontails per hunter (complete hunts)	4.59	+113	+157
Cottontails bagged per 100 hours	143	+51	+126
Hours per hunter-day (complete hunts)	3.22	+42	+8
Hours per cottontail bagged (complete hunts)	1.43	+35	-35

Hunter success (cottontails per hunter) increased and was well above average. Only 77 hunters were checked. Sample sizes were small which may account for the inconsistency with mail questionnaire results.

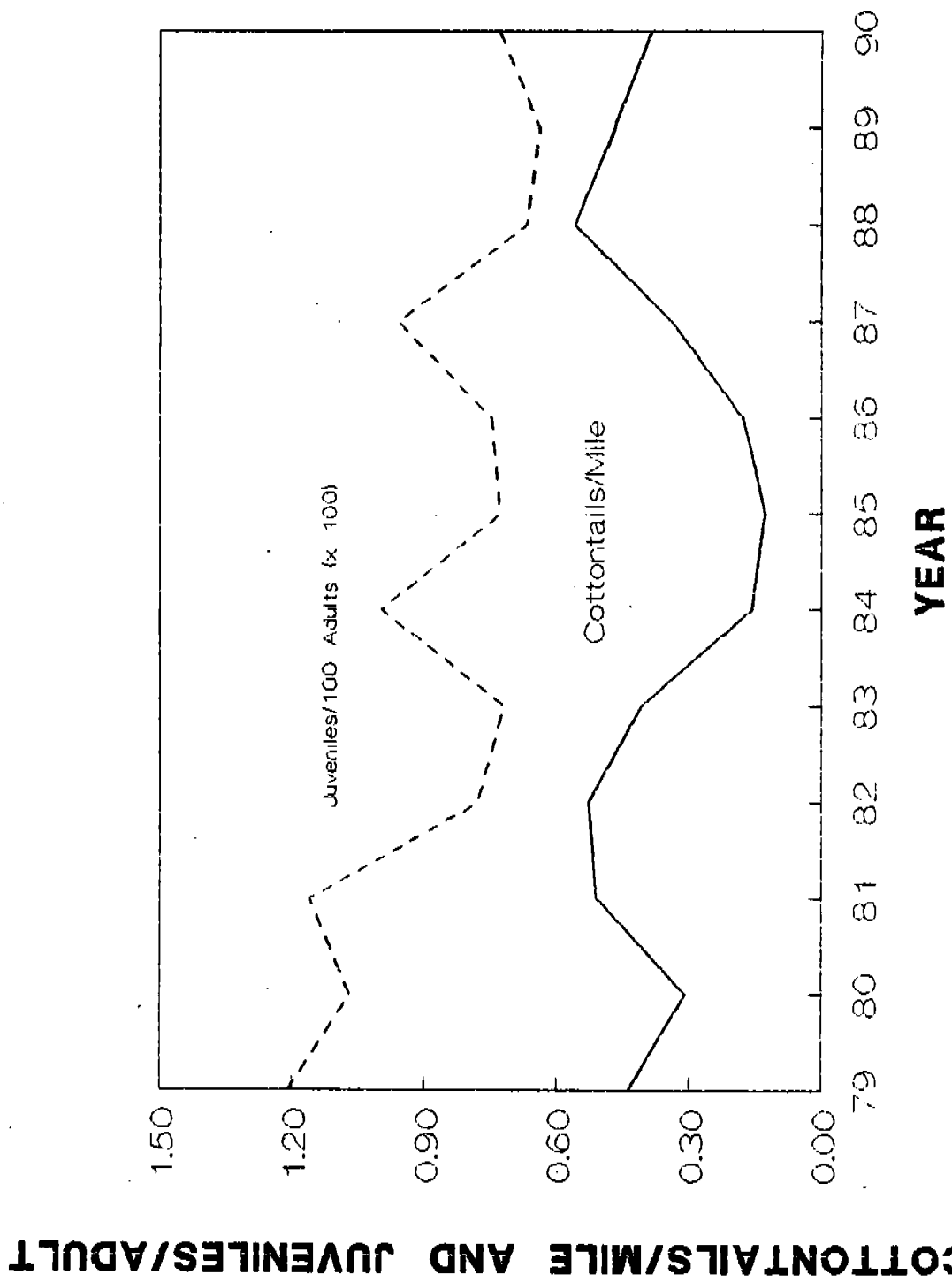


Figure 1. Cottontail rabbit population indices trend.

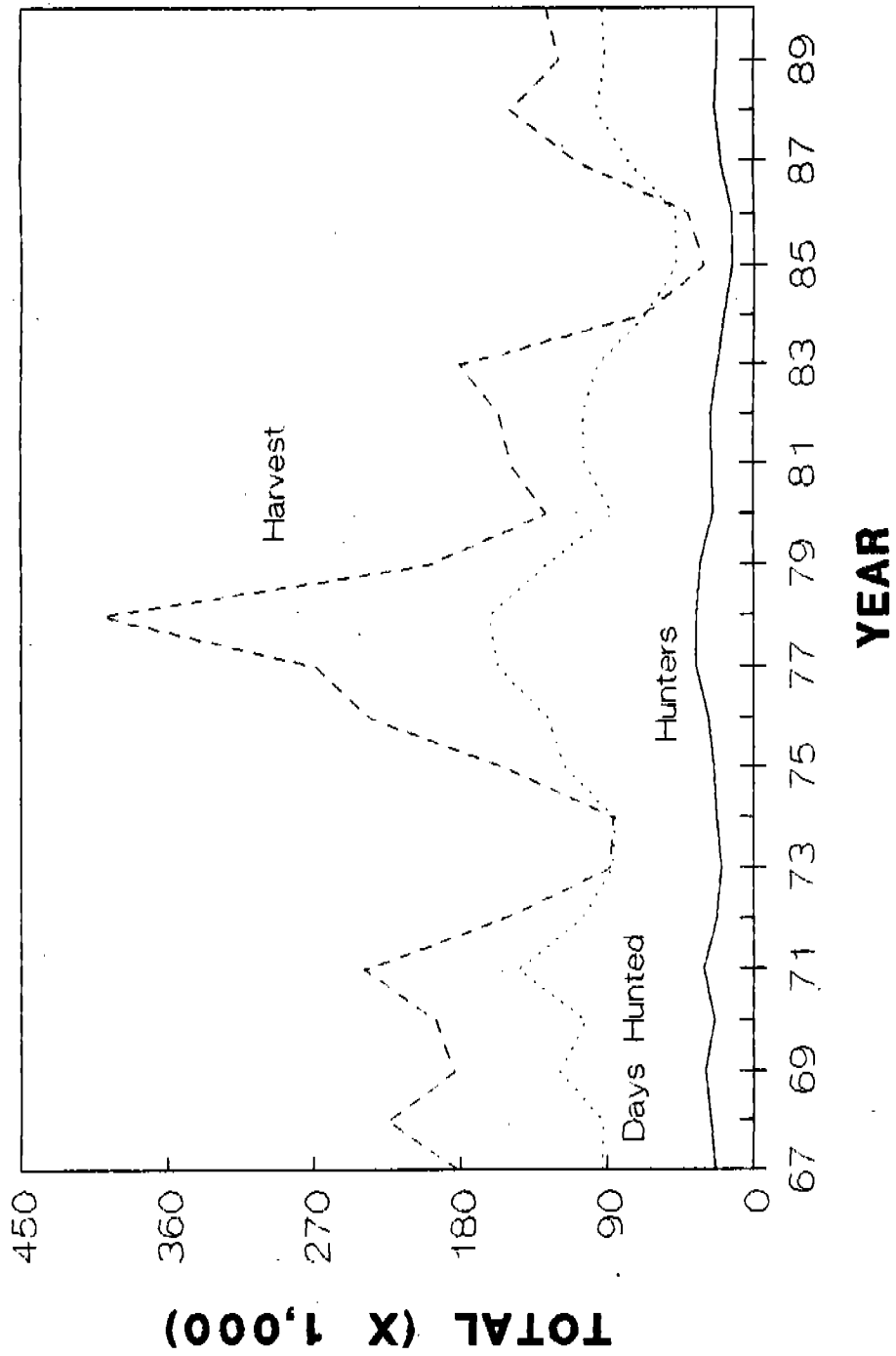


Figure 2. Statewide trend of cottontail rabbit harvest statistics, 1967-90.

COTTONTAILS PER HUNTER AND PER DAY

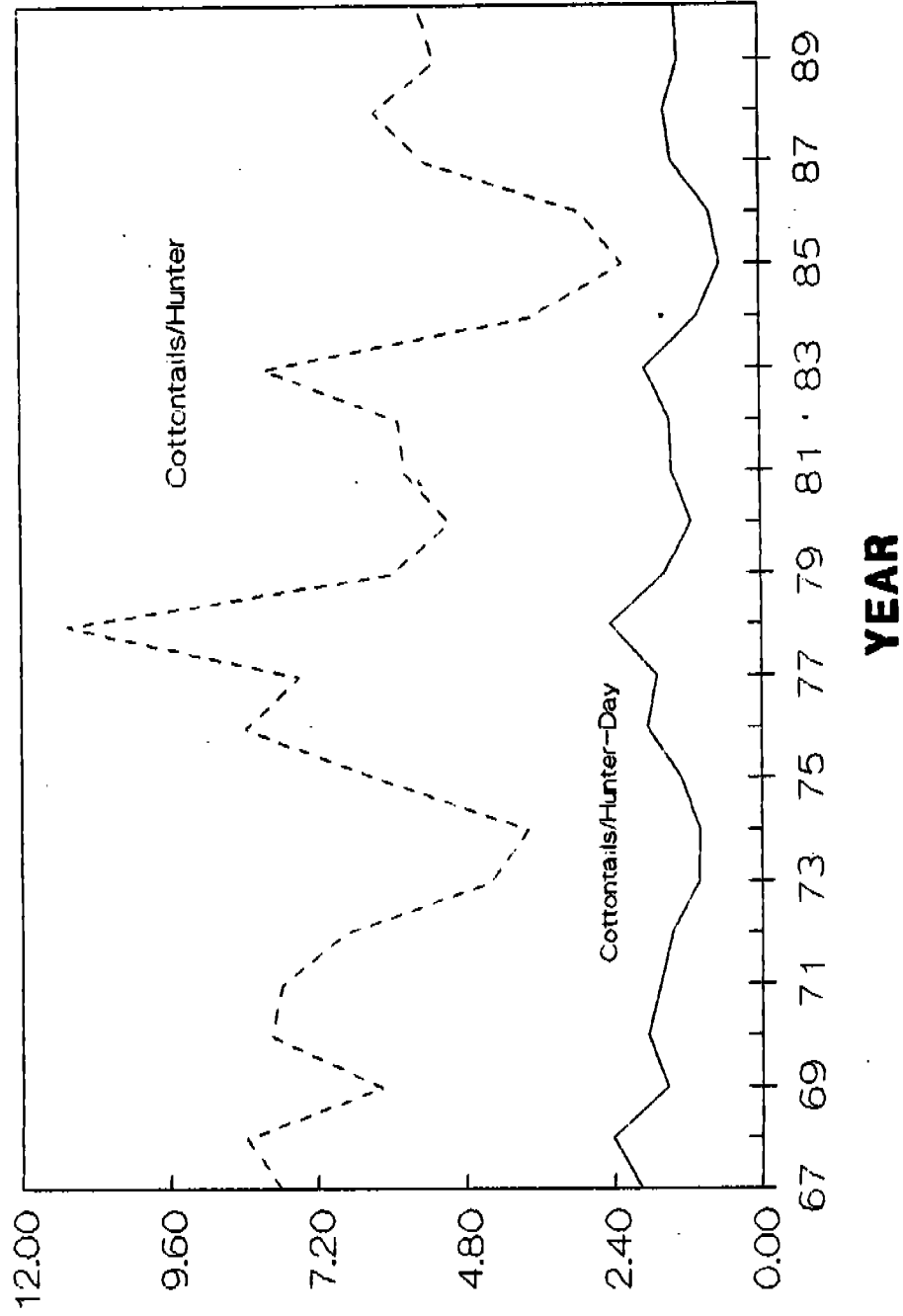


Figure 3. Statewide trend of cottontail rabbit hunter success rates, 1967-90.

FIGURE 4. COTTONTAIL PRODUCTION INDICES, 1967-90.

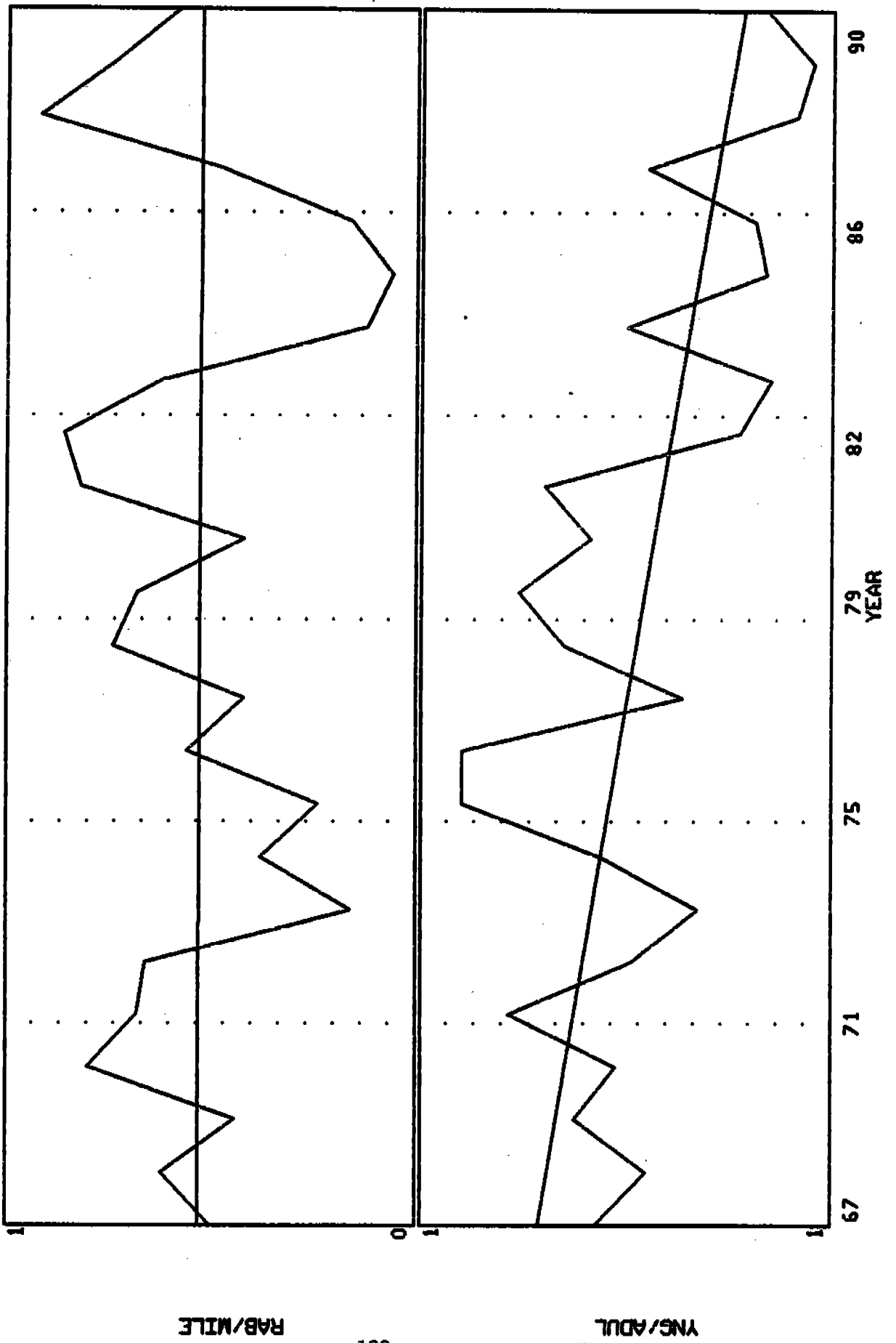


Table 1. Cottontail rabbit summer inventory summary, 1990.

Region and County	Miles Driven	Rabbits Observed			Young Per 100 Adults	Rabbits Per Mile	
		Adults	Young	Unclass.			
Northern Region							
Box Elder	150	17	34	7	58	200	0.39
Cache	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--
REGIONAL TOTALS	150	17	34	7	58	200	0.39
Central Region							
Juab	30	7	0	0	7	--	0.23
Salt Lake	--	--	--	--	--	--	--
Sanpete	32	15	6	0	21	40	0.65
Tooele	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--
REGIONAL TOTALS	62	22	6	0	28	27	0.45
Southern Region							
Beaver	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--
Millard	97	4	4	0	8	100	0.08
Piute	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--
REGIONAL TOTALS	97	4	4	0	8	100	0.08
Northeastern Region							
Daggett	123	38	21	9	68	55	0.55
Duchesne	47	10	0	1	11	--	0.23
Uintah	40	19	18	4	41	95	1.00
REGIONAL TOTALS	210	67	39	14	120	58	0.57
Southeastern Region							
Carbon	90	1	4	11	16	400	0.02
Emery	90	0	0	36	36	--	0.40
Grand	90	0	0	6	6	--	0.01
San Juan	90	42	25	5	72	60	0.80
REGIONAL TOTALS	360	43	29	58	130	67	0.36
STATE TOTALS	879	153	112	79	344	73	0.39

Table 2. Summary of cottontail rabbits observed per mile during summer inventory, 1980-90.

Region and County	Year										Average 1980-89	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		1990
Northern Region												
Box Elder	--	0.37	0.01	--	--	--	0.02	0.03	--	0.03	0.39	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	0.11	0.13	0.16	--	--	0.02	--	--	--	--	--	--
Summit	--	--	--	0.18	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	0.11	0.26	0.06	0.18	--	0.02	0.03	0.03	--	0.03	0.39	0.10
Central Region												
Juab	0.29	1.12	0.38	--	0.00	0.00	0.02	0.00	0.54	0.30	0.23	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	1.06	1.29	0.78	0.57	--	--	--	--	0.47	0.22	0.65	--
Tooele	0.26	0.13	0.10	--	0.02	0.00	0.01	0.02	0.18	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	0.54	0.85	0.43	0.57	0.01	0.00	0.01	0.02	0.36	0.26	0.45	0.31
Southern Region												
Beaver	0.06	0.19	0.12	0.04	0.01	0.03	0.10	0.04	0.06	--	--	--
Garfield	--	--	0.27	0.25	--	0.06	0.13	--	--	--	--	--
Iron	0.45	--	0.18	0.38	0.27	0.33	0.53	0.26	--	--	--	--
Kane	--	0.69	--	--	--	0.52	0.47	0.97	1.09	--	--	--
Millard	0.18	0.56	0.28	0.16	0.04	0.02	0.08	0.09	0.09	--	0.08	--
Piute	--	0.10	0.13	0.03	--	--	0.06	0.05	--	--	--	--
Sevier	0.27	0.83	0.27	0.23	--	--	--	--	--	--	--	--
Washington	0.10	0.24	0.32	0.38	--	0.23	0.12	0.12	0.36	0.33	--	--
Wayne	0.54	0.49	0.69	--	0.80	--	0.20	0.24	0.34	--	--	--
REGIONAL TOTALS	0.22	0.45	0.29	0.19	0.18	0.19	0.24	0.27	0.33	0.33	0.08	0.27
Northeastern Region												
Daggett	0.40	0.32	0.45	0.58	0.22	0.12	0.22	0.66	0.85	0.50	0.55	--
Duchesne	0.42	1.78	2.28	0.58	0.28	0.13	0.44	0.86	1.49	1.04	0.23	--
Uintah	0.27	0.48	1.97	2.97	0.11	0.00	0.02	0.36	1.26	1.40	1.00	--
REGIONAL TOTALS	0.36	0.81	1.46	1.21	0.21	0.09	0.25	0.65	1.18	0.91	0.57	0.71
Southeastern Region												
Carbon	0.15	0.12	0.10	0.11	--	0.05	0.08	0.33	0.41	0.34	0.02	--
Emery	0.16	0.41	0.18	0.23	0.18	0.20	--	0.40	0.34	0.33	0.40	--
Grand	0.11	0.32	0.67	0.15	0.13	0.67	0.08	--	0.10	0.06	0.01	--
San Juan	0.60	0.42	1.26	0.40	--	0.14	0.37	0.29	0.59	0.55	0.80	--
REGIONAL TOTALS	0.30	0.36	0.58	0.25	0.17	0.13	0.17	0.38	0.36	0.32	0.36	0.30
STATE TOTALS	0.31	0.51	0.53	0.41	0.16	0.13	0.18	0.34	0.56	0.47	0.39	0.36

Table 3. Summary of cottontail rabbits young per 100 adults, 1980-90.

Region and County	Year										Average 1980-89	
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		1990
<u>Northern Region</u>												
Box Elder	--	77	--	--	--	--	0	25	--	200	200	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	67	43	63	67	--	--	50	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	67	71	63	67	--	--	20	25	--	200	200	73
<u>Central Region</u>												
Juab	78	102	53	--	0	0	0	0	20	13	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	352	197	209	225	--	--	--	--	88	40	40	--
Tooele	71	200	80	--	--	--	--	100	120	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	194	147	140	225	0	0	0	100	57	23	27	89
<u>Southern Region</u>												
Beaver	40	55	83	33	--	--	22	--	--	--	--	--
Garfield	--	--	38	120	--	33	38	--	--	--	--	--
Iron	23	--	57	35	40	82	75	--	--	--	--	--
Kane	--	106	--	--	--	100	71	111	149	--	--	--
Millard	96	170	94	125	75	200	170	114	110	--	100	--
Piute	--	--	--	200	--	--	--	--	--	--	--	--
Sevier	350	--	33	61	--	--	--	--	--	--	--	--
Washington	--	123	150	81	--	73	133	175	100	131	--	--
Wayne	308	287	343	--	380	--	360	2,100	244	--	--	--
REGIONAL TOTALS	114	184	145	82	215	85	100	137	136	131	100	133
<u>Northeastern Region</u>												
Daggett	58	104	140	66	33	46	136	116	30	59	55	--
Duchesne	61	42	37	16	22	15	26	24	39	29	--	--
Uintah	160	176	44	76	233	0	100	264	170	239	95	--
REGIONAL TOTALS	73	67	48	63	42	31	58	74	46	82	58	58
<u>Southeastern Region</u>												
Carbon	133	83	66	40	--	--	150	567	500	400	400	--
Emery	70	97	43	75	217	216	--	54	50	--	--	--
Grand	250	137	148	150	33	300	300	--	--	--	--	--
San Juan	68	105	72	43	--	43	61	47	49	80	60	--
REGIONAL TOTALS	79	103	82	54	156	88	69	100	64	110	67	91
STATE TOTALS	107	116	78	72	100	73	75	96	67	64	73	85

Table 4. Summary of cottontail rabbit hunter success and distribution of harvest and hunting pressure by region and county, 1990.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	COTTONTAILS BAGGED	COTTONTAILS HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	138	8,417	12,533	1.49	9.00	9.84
CACHE	25	1,564	1,358	0.87	1.67	1.07
DAVIS	2	82	20	0.25	0.09	0.02
MORGAN	6	144	61	0.43	0.15	0.05
RICH	58	3,066	7,738	2.52	3.28	6.07
SUMMIT	20	1,111	802	0.72	1.19	0.63
WEBER	11	329	349	1.06	0.35	0.27
REGIONAL TOTALS	260	14,714	22,864	1.55	15.74	17.95
CENTRAL REGION						
JUAB	84	4,815	7,470	1.55	5.15	5.86
SALT LAKE	13	1,090	864	0.79	1.17	0.68
SANPETE	65	5,000	4,260	0.85	5.35	3.34
TOOELE	202	13,665	14,776	1.08	14.61	11.60
UTAH	135	9,816	8,293	0.84	10.50	6.51
WASATCH	17	802	555	0.69	0.86	0.44
REGIONAL TOTALS	516	35,191	36,220	1.03	37.63	28.43
SOUTHERN REGION						
BEAVER	9	473	555	1.17	0.51	0.44
GARFIELD	11	1,440	1,481	1.03	1.54	1.16
IRON	19	2,119	2,572	1.21	2.27	2.02
KANE	7	1,275	1,152	0.90	1.36	0.90
MILLARD	52	3,478	6,400	1.84	3.72	5.02
PIUTE	8	576	782	1.36	0.62	0.61
SEVIER	39	2,695	3,910	1.45	2.88	3.07
WASHINGTON	26	2,901	2,572	0.89	3.10	2.02
WAYNE	21	1,028	1,378	1.34	1.10	1.08
REGIONAL TOTALS	192	15,990	20,806	1.30	17.10	16.33
NORTHEASTERN REGION						
DAGGETT	27	1,687	3,025	1.79	1.80	2.37
DUCHESNE	76	5,947	10,886	1.83	6.36	8.55
UINTAH	88	7,058	16,998	2.41	7.55	13.34
REGIONAL TOTALS	191	14,694	30,911	2.10	15.71	24.27
SOUTHEASTERN REGION						
CARBON	48	5,186	7,429	1.43	5.55	5.83
EMERY	44	5,042	5,350	1.06	5.39	4.20
GRAND	11	535	843	1.58	0.57	0.66
SAN JUAN	19	2,160	2,963	1.37	2.31	2.33
REGIONAL TOTALS	122	12,924	16,587	1.28	13.82	13.02
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	1,281	93,515	127,389	1.36	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 5. Summary of cottontail rabbits bagged per hunter-day by region and county, 1983-90.

Region and County	Year							
	1983	1984	1985	1986	1987	1988	1989	1990
Northern Region								
Box Elder	1.44	0.72	0.46	0.73	2.25	1.78	1.29	1.49
Cache	0.77	0.71	0.93	0.18	1.78	0.37	0.66	0.87
Davis	1.05	0.57	0.00	4.00	0.67	0.50	1.00	0.25
Morgan	1.65	1.19	0.55	0.05	1.17	1.50	0.17	0.43
Rich	2.28	1.61	0.52	0.74	1.33	1.86	1.37	2.52
Summit	1.44	0.17	0.35	0.29	1.44	0.92	0.58	0.72
Weber	0.56	0.68	0.13	0.69	2.83	0.61	0.27	1.06
REGIONAL TOTALS	1.43	1.76	0.40	0.57	2.14	1.49	1.09	1.55
Central Region								
Juab	1.21	1.41	0.56	0.78	1.74	1.52	1.52	1.55
Salt Lake	1.74	0.88	0.21	1.06	1.26	0.53	1.35	0.79
Sanpete	1.12	0.48	0.35	0.60	1.25	1.62	1.10	0.85
Tooele	1.21	0.82	0.53	0.71	1.32	1.37	1.20	1.08
Utah	1.02	0.82	0.65	0.94	1.21	1.04	0.90	0.84
Wasatch	0.49	0.69	0.48	0.84	1.28	0.99	1.50	0.69
REGIONAL TOTALS	1.16	0.88	0.53	0.78	1.32	1.27	1.18	1.03
Southern Region								
Beaver	1.25	0.28	0.50	0.61	1.00	1.44	0.41	1.17
Garfield	0.98	0.84	1.00	1.25	0.71	1.41	1.97	1.03
Iron	0.80	1.48	0.60	0.87	0.44	1.58	0.85	1.21
Kane	0.58	2.19	2.07	1.12	0.58	1.41	1.00	0.90
Millard	1.04	0.89	0.86	0.70	0.82	1.09	1.27	1.84
Piute	0.80	0.67	1.00	1.00	1.00	1.25	0.28	1.36
Sevier	0.66	0.79	0.56	0.56	1.04	1.45	0.97	1.45
Washington	0.92	0.93	1.08	0.94	0.95	2.10	0.91	0.89
Wayne	1.52	1.93	1.45	1.53	1.22	1.49	1.05	1.34
REGIONAL TOTALS	0.93	1.06	0.94	0.89	0.85	1.41	1.05	1.30
Northeastern Region								
Daggett	1.77	1.19	1.00	1.96	3.16	3.02	1.65	1.79
Duchesne	3.41	1.62	0.63	1.01	1.63	2.38	1.49	1.83
Uintah	3.09	1.47	0.49	0.49	1.89	2.32	3.16	2.41
REGIONAL TOTALS	3.12	1.51	0.59	0.96	1.95	2.40	2.13	2.10
Southeastern Region								
Carbon	1.73	0.52	0.69	0.49	1.34	1.29	0.97	1.43
Emery	1.61	0.78	0.64	1.05	1.00	1.78	0.80	1.06
Grand	2.27	1.53	1.74	1.28	2.00	2.03	1.00	1.58
San Juan	2.09	1.51	0.89	1.27	2.57	1.67	1.28	1.37
REGIONAL TOTALS	1.79	0.90	0.77	0.93	1.37	1.55	0.93	1.28
Unknown counties	1.78	0.00	1.11	2.50	1.04	1.49	2.00	0.00
STATE TOTALS	1.88	1.02	0.65	0.83	1.43	1.55	1.32	1.36

Table 6. Percentage distribution of cottontail rabbit harvest by region and county, 1983-90.

Region and County	Year							
	1983	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>								
Box Elder	5.93	5.49	3.82	5.68	12.83	12.11	7.20	9.84
Cache	0.33	0.50	0.96	0.25	0.91	0.27	0.47	1.07
Davis	0.16	0.12	0.00	0.41	0.04	0.12	0.07	0.02
Morgan	0.64	0.73	1.16	0.10	0.15	0.19	0.03	0.05
Rich	0.96	2.08	0.89	1.98	0.53	1.05	1.92	6.07
Summit	0.83	0.29	1.16	0.56	0.57	0.77	0.73	0.63
Weber	0.11	0.56	0.27	0.56	1.44	0.42	0.14	0.27
REGIONAL TOTALS	8.95	9.77	8.26	9.53	16.49	14.96	10.55	17.95
<u>Central Region</u>								
Juab	1.95	5.28	2.04	2.84	5.17	6.05	6.32	5.86
Salt Lake	1.16	2.29	0.48	0.91	1.19	0.49	0.40	0.68
Sanpete	1.21	0.82	1.23	2.38	5.61	3.74	3.70	3.34
Tooele	6.53	9.18	10.51	9.99	11.67	13.72	14.73	11.60
Utah	3.44	5.43	8.26	7.66	11.07	8.61	5.20	6.51
Wasatch	0.17	0.91	1.57	1.83	1.73	0.92	0.47	0.44
REGIONAL TOTALS	14.44	23.91	24.09	25.61	36.47	33.55	30.82	28.43
<u>Southern Region</u>								
Beaver	0.30	0.32	1.30	1.12	0.95	0.68	0.40	0.44
Garfield	0.32	0.47	0.61	3.04	0.26	0.42	2.66	1.16
Iron	0.52	1.82	1.23	2.94	0.26	1.54	0.92	2.02
Kane	0.29	2.05	1.98	2.43	0.33	0.84	1.23	0.90
Millard	1.50	3.64	5.66	4.26	3.48	2.99	2.80	5.02
Piute	0.06	0.12	0.20	0.30	0.08	0.22	0.09	0.61
Sevier	0.48	0.56	1.23	0.91	1.22	2.28	1.66	3.07
Washington	1.49	5.05	10.99	6.09	0.77	1.90	2.69	2.02
Wayne	0.61	2.43	2.18	1.17	0.48	0.77	1.02	1.08
REGIONAL TOTALS	5.56	16.46	25.35	22.26	7.88	11.69	13.46	16.33
<u>Northeastern Region</u>								
Daggett	1.36	2.20	1.84	5.58	4.41	2.82	3.21	2.37
Duchesne	16.19	13.17	9.21	7.05	7.68	9.43	12.37	8.55
Uintah	29.37	14.23	5.87	3.35	7.03	13.20	19.31	13.44
REGIONAL TOTALS	46.93	29.61	16.93	15.97	19.13	25.45	34.89	24.27
<u>Southeastern Region</u>								
Carbon	9.60	4.90	7.30	4.87	6.26	4.65	4.56	5.83
Emery	6.98	4.69	9.76	9.53	5.63	5.91	3.78	4.20
Grand	2.15	5.99	4.16	5.07	2.53	0.74	0.26	0.66
San Juan	4.55	4.66	3.41	6.90	2.90	0.77	1.43	2.33
REGIONAL TOTALS	23.28	20.25	24.64	26.37	17.34	12.09	10.04	13.02
Unknown counties	0.84	0.00	0.68	0.25	2.66	2.24	0.24	0.00
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 7. Percentage distribution of cottontail rabbit hunting pressure by region and county, 1983-90.

Region and County	Year							
	1983	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>								
Box Elder	7.73	7.77	5.40	6.52	8.17	10.53	7.34	9.00
Cache	0.79	0.72	0.66	1.18	0.73	1.15	0.93	1.67
Davis	0.29	0.21	1.42	0.08	0.09	0.37	0.09	0.09
Morgan	0.72	0.63	1.37	1.65	0.19	0.20	0.27	0.15
Rich	0.79	1.32	1.11	2.24	0.57	0.87	1.84	3.28
Summit	1.08	1.74	2.13	1.61	0.57	1.30	1.64	1.19
Weber	0.38	0.84	1.33	0.68	0.73	1.06	0.68	0.35
REGIONAL TOTALS	11.79	13.23	13.42	13.97	11.07	15.51	12.80	15.74
<u>Central Region</u>								
Juab	3.05	3.84	2.39	3.05	4.26	6.15	5.48	5.15
Salt Lake	1.25	2.67	1.46	0.72	1.36	1.46	0.39	1.17
Sanpete	2.03	1.74	2.26	3.30	6.45	3.57	4.41	5.35
Tooele	10.12	11.43	12.98	11.68	12.63	15.44	16.16	14.61
Utah	6.26	6.78	8.24	6.81	13.07	12.83	7.61	10.50
Wasatch	0.65	1.35	2.13	1.82	1.94	1.44	0.41	0.86
REGIONAL TOTALS	23.36	27.82	29.46	27.38	39.73	40.90	34.45	37.63
<u>Southern Region</u>								
Beaver	0.44	1.20	1.68	1.52	1.36	0.73	1.27	0.51
Garfield	0.61	0.57	0.40	2.03	0.54	0.46	1.77	1.54
Iron	1.22	1.26	1.33	2.84	0.85	1.51	1.41	2.27
Kane	0.93	0.96	0.62	1.82	0.82	0.92	1.61	1.36
Millard	2.73	4.20	4.30	5.08	6.07	4.24	2.91	3.72
Piute	0.14	0.18	0.13	0.25	0.12	0.27	0.41	0.62
Sevier	1.38	0.72	1.42	1.35	1.68	2.43	2.25	2.88
Washington	3.05	5.52	6.60	5.42	1.17	1.40	3.91	3.10
Wayne	0.75	1.29	0.97	0.63	0.57	0.80	1.27	1.10
REGIONAL TOTALS	11.25	15.91	17.46	20.95	13.23	12.81	16.82	17.10
<u>Northeastern Region</u>								
Daggett	1.45	1.89	1.19	2.37	2.00	1.44	2.57	1.80
Duchesne	8.93	8.34	9.44	5.80	6.74	6.13	10.91	6.36
Uintah	17.87	9.87	7.84	5.71	5.34	8.81	8.05	7.55
REGIONAL TOTALS	28.25	20.11	18.48	13.88	14.09	16.38	21.52	15.71
<u>Southeastern Region</u>								
Carbon	10.42	9.66	6.82	8.34	6.68	5.60	6.20	5.55
Emery	8.18	6.12	9.92	7.58	8.08	5.15	6.23	5.39
Grand	1.78	3.99	1.55	3.30	1.81	0.56	0.34	0.57
San Juan	4.09	3.15	2.48	4.53	1.62	0.72	1.48	2.31
REGIONAL TOTALS	24.46	22.93	20.78	23.74	18.19	12.04	14.25	13.82
Unknown counties	0.89	0.00	0.40	0.08	3.65	2.33	0.16	0.00
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 8. Statewide summary of cottontail rabbit harvest statistics, 1967-90.

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
1990	23,070	127,389	93,515	1.36	5.52
TOTALS (1967-90)	595,933	3,881,317	2,440,861	(36.26)	(148.56)
AVERAGES (1967-89)	24,910	163,214	102,059	1.52	6.22

Table 9. Cottontail rabbit field bag check summary, 1990.

Region and County	ALL HUNTS						COMPLETE HUNTS					
	Parties	Total Hunters	Total Hours	Total Rabbits	Total Rabbits/100 Hr	Total Complete Hunts	Total Hunters	Total Hours	Total Rabbits	Total Rabbits/100 Hr	Rabbits/Hunter	
Northern Region												
Box Elder	2	4	24	6	25	2	4	24	26	25	1.50	
Cache	--	--	--	--	--	--	--	--	--	--	--	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	2	4	24	6	25	2	4	24	6	25	1.50	
Central Region												
Juab	2	5	21	3	14	--	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	--	--	--	--	--	--	--	--	
Tooele	3	8	23	1	4	--	--	--	--	--	--	
Utah	--	--	--	--	--	--	--	--	--	--	--	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	5	13	44	4	9	--	--	--	--	--	--	
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	--	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	--	--	--	--	--	--	--	--	--	--	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	5	11	41	19	47	1	1	2	9	450	9.00	
Uintah	22	49	100	139	139	11	22	61	109	179	8.10	
REGIONAL TOTALS	27	60	141	158	112	12	23	63	118	187	5.10	
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	
Emery	--	--	--	--	--	--	--	--	--	--	--	
Grand	--	--	--	--	--	--	--	--	--	--	--	
San Juan	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	
STATE TOTALS	34	77	209	168	80	14	27	87	124	143	4.59	

Table 10. Cottontail hunter success trend determined by field bag checks, 1985-90.

Region and County	1985		1986		1987		1988		1989		1990	
	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter	Bag/ 100 Hr Hunter
<u>Northern Region</u>												
Box Elder	--	0	0	1.43	28	1.84	44	314	3.14	25	1.50	--
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	25	1.50	--
<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	--	--	--	0	3.33	379	8.00	--	--	--	--	--
Duchesne	--	0	0	63	3.33	104	2.94	--	--	450	9.00	--
Uintah	--	100	1.50	70	1.76	147	4.00	93	2.20	179	8.10	--
REGIONAL TOTALS	--	50	0.75	68	1.93	149	4.01	93	2.20	187	5.10	--
<u>Southeastern Region</u>												
Carbon	--	158	3.80	--	--	0	0.00	--	--	--	--	--
Emery	--	33	1.00	--	--	33	1.00	--	--	--	--	--
Grand	--	--	--	--	--	42	0.83	--	--	--	--	--
San Juan	--	--	--	--	--	20	0.33	--	--	--	--	--
REGIONAL TOTALS	--	133	3.33	--	--	32	0.67	--	--	--	--	--
STATE TOTALS	21	0.80	36	1.21	43	1.68	83	2.69	95	2.15	143	5.19

SNOWSHOE HARE

Harvest

Results of the 1990 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 are shown in Table 15 and Figures 1 and 2. The 1990 season compared to 1989 and the 15-year average follow:

	<u>1990</u>	<u>Percent change from</u>	
		<u>1989</u>	<u>Average</u>
Snowshoe hare hunters	4,095	-16	-22
Snowshoe hares harvested	7,593	-5	-31
Hunter-days afield	10,825	-18	-30
Snowshoes per hunter-day	0.70	+15	+7
Snowshoes per hunter	1.85	+13	-5

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.

Beginning in 1988 questionnaires and in 1989 the Upland Game Proclamation had drawings and descriptions of the various rabbits in an attempt to reduce misidentification. We believe this has been successful. However, use of a color print insert would be better.

Results of the 1990 questionnaire again indicates a 15 percent increase in hunter success compared to 1989. Success was above the 15-year average.

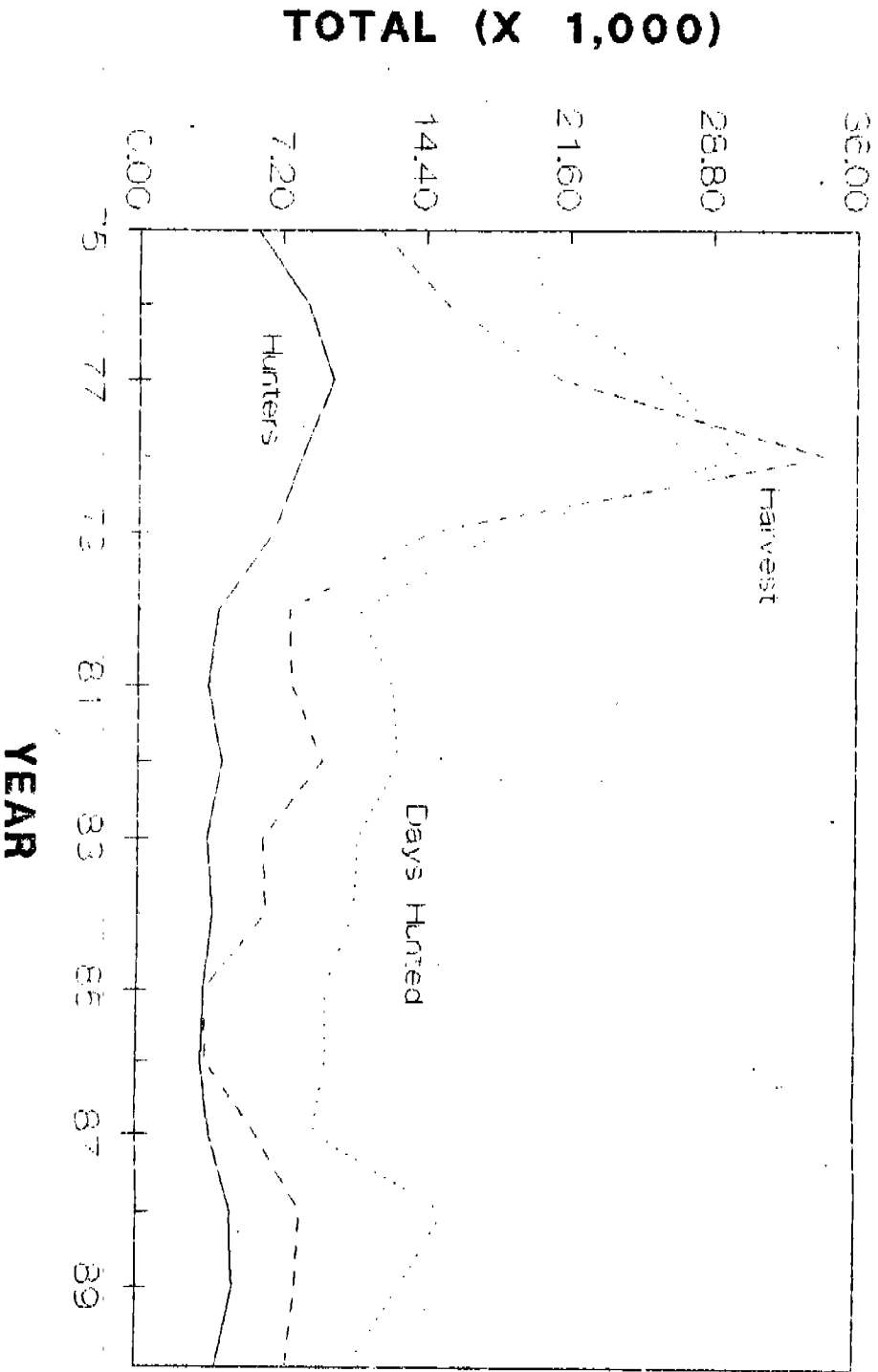


Figure 4. Statewide trend of snovyske hare (a) sex statistics, 1975-90.

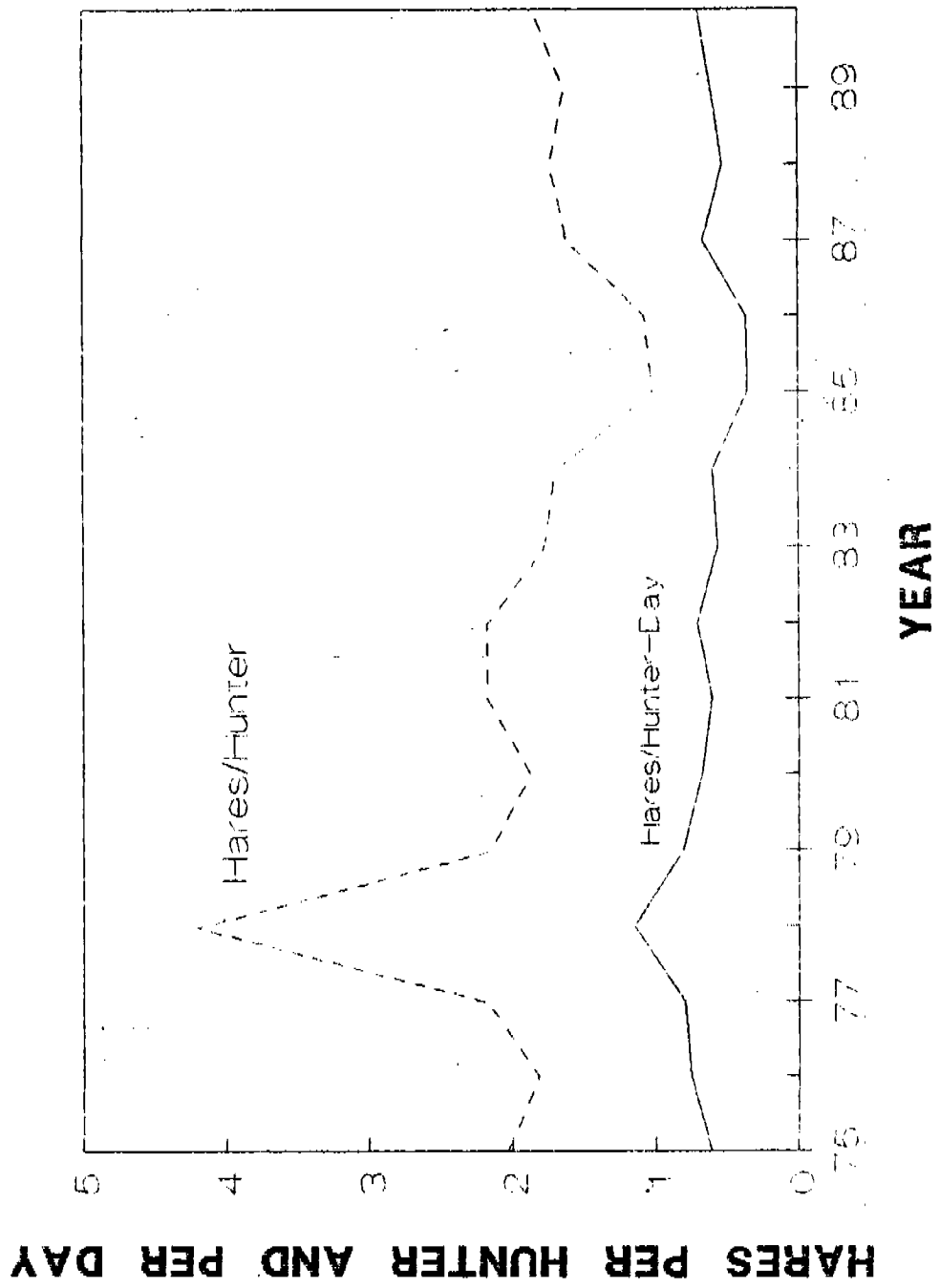


Figure 2. Statewide trend of grouse-hare hunter success rates, 1975-90.

Table 11. Summary of snowshoe hare hunter success and distribution of harvest and hunting pressure by region and county, 1990.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	SNOWSHOES BAGGED	SNOWSHOES/HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	28	1,481	802	0.54	13.69	10.57
CACHE	16	699	391	0.56	6.46	5.15
DAVIS	1	20	0	0.00	0.19	0.00
MORGAN	4	102	82	0.80	0.95	1.08
RICH	24	1,399	1,070	0.76	12.93	14.09
SUMMIT	17	802	843	1.05	7.41	11.11
WEBER	4	82	20	0.25	0.76	0.27
REGIONAL TOTALS	94	4,589	3,210	0.70	42.40	42.28
CENTRAL REGION						
JUAB	8	391	205	0.53	3.61	2.71
SALT LAKE	0	0	0	0.00	0.00	0.00
SANPETE	13	493	535	1.08	4.56	7.05
TOOELE	13	761	246	0.32	7.03	3.25
UTAH	14	720	370	0.51	6.65	4.88
WASATCH	3	123	20	0.17	1.14	0.27
REGIONAL TOTALS	51	2,490	1,378	0.55	23.00	18.16
SOUTHERN REGION						
BEAVER	1	41	20	0.50	0.38	0.27
GARFIELD	2	123	82	0.67	1.14	1.08
IRON	0	0	0	0.00	0.00	0.00
KANE	0	0	0	0.00	0.00	0.00
MILLARD	1	20	0	0.00	0.19	0.00
PIUTE	4	144	61	0.43	1.33	0.81
SEVIER	11	555	535	0.96	5.13	7.05
WASHINGTON	0	0	0	0.00	0.00	0.00
WAYNE	13	637	246	0.39	5.89	3.25
REGIONAL TOTALS	32	1,522	946	0.62	14.07	12.47
NORTHEASTERN REGION						
DAGGETT	3	82	41	0.50	0.76	0.54
DUCHESNE	14	926	1,234	1.33	8.56	16.26
UINTAH	7	329	288	0.88	3.04	3.79
REGIONAL TOTALS	24	1,337	1,564	1.17	12.36	20.60
SOUTHEASTERN REGION						
CARBON	7	288	205	0.71	2.66	2.71
EMERY	10	555	205	0.37	5.13	2.71
GRAND	1	41	82	2.00	0.38	1.08
SAN JUAN	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	18	884	493	0.56	8.17	6.50
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	219	10,825	7,593	0.70	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 12. Summary of snowshoe hares bagged per hunter-day by region and county, 1984-90.

Region and County	Year						
	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>							
Box Elder	2.93	0.14	0.38	0.35	0.78	0.33	0.54
Cache	1.27	0.75	0.00	1.67	0.21	1.10	0.56
Davis	0.29	0.11	0.50	0.25	0.40	1.50	0.00
Morgan	0.14	0.00	0.03	0.00	0.67	0.36	0.80
Rich	0.58	0.06	0.56	1.27	0.33	0.51	0.76
Summit	0.61	0.63	0.29	0.50	0.36	0.73	1.05
Weber	0.31	0.17	1.00	0.38	0.25	0.50	0.25
<u>REGIONAL TOTALS</u>	<u>1.30</u>	<u>0.33</u>	<u>0.29</u>	<u>0.76</u>	<u>0.40</u>	<u>0.63</u>	<u>0.70</u>
<u>Central Region</u>							
Juab	0.33	0.00	1.44	0.00	0.17	0.00	0.53
Salt Lake	0.23	0.17	0.30	0.00	0.48	0.38	0.00
Sanpete	0.80	0.23	0.30	0.57	0.68	0.64	1.08
Tooele	0.68	0.24	0.21	0.75	0.28	0.77	0.32
Utah	0.71	0.64	0.53	0.39	0.44	0.37	0.51
Wasatch	0.44	0.32	0.68	0.56	0.77	1.00	0.17
<u>REGIONAL TOTALS</u>	<u>0.55</u>	<u>0.33</u>	<u>0.54</u>	<u>0.48</u>	<u>0.50</u>	<u>0.65</u>	<u>0.55</u>
<u>Southern Region</u>							
Beaver	0.00	0.00	0.00	0.00	0.00	0.00	0.50
Garfield	0.00	0.40	0.11	0.00	0.00	0.35	0.67
Iron	3.00	0.50	0.00	0.00	0.00	0.00	0.00
Kane	0.00	0.75	0.00	0.00	0.00	0.00	0.00
Millard	0.00	0.00	1.00	2.80	1.20	1.00	0.00
Piute	0.20	0.00	0.00	0.00	3.00	0.64	0.43
Sevier	0.00	0.25	0.63	0.60	0.75	0.55	0.96
Washington	0.00	0.50	0.00	0.00	2.00	0.00	0.00
Wayne	1.22	1.00	0.38	1.14	0.00	0.50	0.39
<u>REGIONAL TOTALS</u>	<u>0.65</u>	<u>0.46</u>	<u>0.45</u>	<u>0.88</u>	<u>0.47</u>	<u>0.50</u>	<u>0.62</u>
<u>Northeastern Region</u>							
Daggett	0.33	1.00	0.50	1.00	1.96	1.00	0.50
Duchesne	0.43	0.30	0.41	0.65	0.63	0.54	1.33
Uintah	0.20	0.49	0.13	1.31	0.89	0.23	0.88
<u>REGIONAL TOTALS</u>	<u>0.30</u>	<u>0.41</u>	<u>0.28</u>	<u>0.91</u>	<u>1.02</u>	<u>0.40</u>	<u>1.17</u>
<u>Southeastern Region</u>							
Carbon	0.13	0.29	0.09	1.00	0.46	1.00	0.71
Emery	0.19	0.67	0.13	0.57	0.94	0.54	0.37
Grand	0.00	0.00	0.75	0.00	0.00	0.00	2.00
San Juan	2.00	0.00	1.00	5.00	1.00	1.67	0.00
<u>REGIONAL TOTALS</u>	<u>0.17</u>	<u>0.37</u>	<u>0.16</u>	<u>0.81</u>	<u>0.83</u>	<u>0.77</u>	<u>0.56</u>
Unknown counties	0.00	0.00	0.00	0.40	0.42	0.00	0.00
<u>STATE TOTALS</u>	<u>0.60</u>	<u>0.36</u>	<u>0.37</u>	<u>0.67</u>	<u>0.53</u>	<u>0.61</u>	<u>0.70</u>

Table 13. Percentage distribution of snowshoe hare harvested by region and county, 1984-90.

Region and County	Year						
	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>							
Box Elder	36.79	3.12	3.49	3.26	14.80	3.11	10.57
Cache	4.40	3.73	0.00	10.20	4.86	11.40	5.15
Davis	0.62	1.87	0.58	0.40	1.21	0.78	0.00
Morgan	0.31	0.00	0.58	0.00	0.40	1.04	1.08
Rich	2.20	0.61	5.80	7.75	3.24	7.77	14.09
Summit	7.85	24.99	6.98	4.89	6.08	4.15	11.11
Weber	1.25	1.22	5.23	1.22	1.82	1.30	0.27
REGIONAL TOTALS	53.46	35.61	22.67	27.75	32.45	29.54	42.28
<u>Central Region</u>							
Juab	0.62	0.00	13.37	0.00	0.81	0.00	2.71
Salt Lake	0.93	0.61	1.74	0.00	2.43	0.78	0.00
Sanpete	1.25	1.87	5.80	6.93	10.14	9.33	7.05
Tooele	4.07	5.60	3.49	4.89	3.24	8.55	3.25
Utah	6.91	9.97	14.53	8.57	6.89	3.89	4.88
Wasatch	5.02	3.73	14.53	8.16	8.31	6.22	0.27
REGIONAL TOTALS	18.87	21.87	53.49	28.57	31.84	28.76	18.16
<u>Southern Region</u>							
Beaver	0.00	0.00	0.00	0.00	0.00	0.00	0.27
Garfield	0.00	1.22	0.58	0.00	0.00	1.81	1.08
Iron	0.93	1.22	0.00	0.00	0.00	0.00	0.00
Kane	0.00	1.87	0.00	0.00	0.00	0.00	0.00
Millard	0.00	0.00	2.33	5.71	1.21	1.55	0.00
Piute	0.31	0.00	0.00	0.00	1.21	1.81	0.81
Sevier	0.00	1.22	2.91	2.44	1.82	2.85	7.05
Washington	0.00	2.48	0.00	0.00	0.40	0.00	0.00
Wayne	6.91	2.48	1.74	3.26	0.00	4.66	3.25
REGIONAL TOTALS	8.16	10.62	7.56	11.42	4.66	12.69	12.47
<u>Northeastern Region</u>							
Daggett	0.31	3.12	0.58	0.81	9.53	0.26	0.54
Duchesne	8.16	9.97	6.98	6.93	6.28	6.74	16.26
Uintah	5.34	11.87	2.33	8.57	5.07	2.33	3.79
REGIONAL TOTALS	13.83	24.99	9.88	16.32	20.89	9.33	20.60
<u>Southeastern Region</u>							
Carbon	3.45	4.37	2.33	5.71	1.21	10.88	2.71
Emery	0.93	2.48	1.16	6.53	6.49	7.51	2.71
Grand	0.00	0.00	1.74	0.00	0.00	0.00	1.08
San Juan	1.25	0.00	1.16	2.04	1.41	1.30	0.00
REGIONAL TOTALS	5.65	6.85	6.40	14.28	9.12	19.69	6.50
Unknown counties	0.00	0.00	0.00	1.63	1.01	0.00	0.00
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 14. Percentage distribution of snowshoe hare hunting pressure by region and county, 1984-90.

Region and County	Year						
	1984	1985	1986	1987	1988	1989	1990
<u>Northern Region</u>							
Box Elder	7.49	8.34	3.46	6.30	10.16	5.64	13.69
Cache	2.06	1.80	2.81	4.10	12.64	6.27	6.46
Davis	1.31	6.09	0.43	1.09	1.62	0.31	0.19
Morgan	1.31	2.25	7.78	0.27	0.32	1.72	0.95
Rich	2.24	3.60	3.89	4.10	5.18	9.25	12.93
Summit	7.68	14.22	8.86	6.57	9.08	3.45	7.41
Weber	2.43	2.71	1.94	2.19	3.89	1.57	0.76
REGIONAL TOTALS	24.53	39.05	29.16	24.65	42.91	28.21	42.40
<u>Central Region</u>							
Juab	1.12	1.13	3.46	0.54	2.59	0.00	3.61
Salt Lake	2.43	1.35	2.16	2.19	2.70	1.25	0.00
Sanpete	0.93	2.93	7.13	8.21	8.00	8.78	4.56
Tooele	3.55	8.34	6.05	4.38	6.27	6.74	7.03
Utah	5.80	5.64	10.15	14.79	8.43	6.43	6.65
Wasatch	6.73	4.29	7.99	9.86	5.72	3.76	1.14
REGIONAL TOTALS	20.60	23.70	36.93	40.00	33.72	26.96	23.00
<u>Southern Region</u>							
Beaver	1.31	0.00	0.00	0.00	1.83	0.63	0.38
Garfield	0.18	1.13	1.94	0.27	0.10	3.13	1.14
Iron	0.18	0.90	0.00	2.19	0.00	0.00	0.00
Kane	0.00	0.90	0.00	0.00	0.00	0.00	0.00
Millard	0.18	0.90	0.86	1.36	0.54	0.94	0.19
Piute	0.93	0.00	0.00	0.27	0.21	1.72	1.33
Sevier	1.31	1.80	1.73	2.73	1.29	3.13	5.13
Washington	0.00	1.80	0.00	0.00	0.10	0.16	0.00
Wayne	3.37	0.90	1.73	1.91	1.18	5.64	5.89
REGIONAL TOTALS	7.49	8.34	6.26	8.76	5.29	15.36	14.07
<u>Northeastern Region</u>							
Daggett	0.55	1.13	0.43	0.54	2.59	0.16	0.76
Duchesne	11.42	12.19	6.26	7.12	5.29	7.52	8.56
Uintah	15.73	8.80	6.48	4.38	3.02	6.27	3.04
REGIONAL TOTALS	27.71	22.12	13.17	12.04	10.91	13.95	12.36
<u>Southeastern Region</u>							
Carbon	16.10	5.41	9.94	3.83	1.40	6.58	2.66
Emery	2.99	1.35	3.24	7.67	3.67	8.46	5.13
Grand	0.18	0.00	0.86	0.00	0.00	0.00	0.38
San Juan	0.37	0.00	0.43	0.27	0.75	0.47	0.00
REGIONAL TOTALS	19.66	6.76	14.47	11.78	5.83	15.52	8.17
Unknown counties	0.00	0.00	0.00	2.73	1.29	0.00	0.00
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 15. Statewide summary of snowshoe hare harvest statistics, 1975-90.

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
1990	4,095	7,593	10,825	0.70	1.85
TOTALS (1975-90)	82,453	172,155	241,349	(10.54)	(31.07)
AVERAGES (1975-88)	5,224	10,971	15,368	0.66	1.95

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 1989-90 winter weather was relatively mild again. Below average precipitation fell between December 1989 and March 1990, while December 1989 through April 1990 temperatures were mostly above average. April and June precipitation was above normal, while May precipitation was below normal across most of the seven climatic subdivisions.

Temperatures remained above average April through November, while precipitation averages stayed mostly 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 1990 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
1990	30.6	28.4	43.7	53.0	56.0	68.1	75.5	71.5	67.2	50.3	37.2	17.7
Departure (degrees)	+3.7	-4.3	+5.0	+6.0	-0.5	+2.4	+1.1	-0.5	+4.8	-0.2	0.0	-10.7
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
1990	41.0	43.0	53.9	61.5	66.2	78.4	83.1	79.6	74.7	63.2	48.6	33.6
Departure (degrees)	+2.3	-0.9	+5.1	+5.1	+0.8	+3.2	+1.1	-0.1	+2.1	+1.7	+0.8	-6.2
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
1990	31.3	30.1	43.8	53.1	56.1	68.2	76.1	73.3	69.4	51.4	39.6	19.8
Departure (degrees)	+4.3	-1.8	+5.2	+5.7	-1.0	+2.3	+1.5	+1.1	+6.3	+0.1	+1.6	-9.1
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
1990	29.6	28.7	41.6	49.5	53.9	66.2	71.5	68.0	64.0	50.3	37.5	20.4
Departure (degrees)	+2.5	-2.9	+4.6	+4.6	-0.1	+3.1	+1.1	0.0	+3.8	+0.5	+0.4	-8.4
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
1990	23.6	23.1	36.3	45.3	49.0	60.4	66.9	64.2	60.7	45.1	33.4	14.6
Departure (degrees)	+2.4	-1.6	+5.7	+5.3	-0.6	+2.8	+1.6	+1.1	+5.7	+0.2	+1.4	-9.0
No. 6 UTAH 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
1990	24.6	22.7	40.6	52.3	56.0	67.5	72.5	69.9	65.2	48.6	34.0	12.4
Departure (degrees)	+7.4	-1.4	+5.1	+6.1	-0.2	+2.6	+0.4	+0.6	+4.9	+0.1	+0.5	-8.8
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
1990	28.3	35.5	46.2	54.8	59.8	72.8	76.6	74.3	68.1	52.8	39.6	22.8
Departure (degrees)	+1.3	+1.7	+5.2	+4.6	0.0	+3.1	0.0	+0.5	+2.7	-0.9	+0.1	-6.5
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
1990	29.9	30.2	43.7	52.8	56.7	68.8	74.6	71.5	67.0	51.7	38.6	20.2
Departure (degrees)	+3.5	-1.6	+5.1	+5.4	-0.2	+2.8	+1.0	+0.3	+4.3	+0.2	+0.7	-8.4

Table 2. Comparison of 1990 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
1990	.53	.60	1.09	1.21	.64	.80	.31	.27	.65	.51	.51	.33
Departure (inches)	-.06	+.03	+.35	+.40	-.27	+.13	-.32	-.45	+.10	-.14	-.11	-.21
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
1990	.86	1.52	.59	1.24	.77	.55	1.06	1.06	1.25	.39	.82	.63
Departure (inches)	-.49	+.16	-.83	+.42	+.11	+.19	+.28	-.05	+.49	-.39	-.17	-.33
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
1990	1.09	.96	1.50	1.69	1.44	1.24	.49	.52	.77	1.17	1.55	1.03
Departure (inches)	-.47	-.43	-.10	-.27	-.16	+.05	-.16	-.43	-.22	-.14	+.21	-.38
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
1990	.62	1.32	1.09	1.28	.52	.83	.88	.77	1.43	.96	.76	1.01
Departure (inches)	-.47	+.26	-.06	+.24	-.42	+.29	-.08	-.54	+.43	+.04	-.22	-.04
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
1990	1.87	1.67	1.53	1.64	1.37	1.48	.79	.70	1.46	1.23	1.67	1.23
Departure (inches)	-.29	-.25	-.36	-.24	-.17	+.31	-.09	-.53	+.31	-.22	-.05	-.75
No. 6 UINTAH BASIN												
Normal	0.51	0.45	0.57	0.68	0.78	0.72	0.58	0.81	0.71	0.87	0.54	0.61
1990	.23	.92	.61	.47	.51	1.13	.65	.32	1.18	1.14	.41	.53
Departure (inches)	-.28	+.47	+.04	-.21	-.27	+.41	+.07	-.49	+.47	+.27	-.13	-.08
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
1990	.65	.53	.73	.69	.37	.40	1.02	.76	1.62	1.10	.58	.57
Departure (inches)	-.07	-.08	+.09	+.08	-.30	.00	+.25	-.29	+.84	+.01	-.15	-.17
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
1990	0.84	1.07	1.02	1.17	0.80	0.92	0.74	0.63	1.19	0.93	0.90	0.76
Departure (inches)	-.30	+.02	-.12	+.06	-.21	+.20	-.01	-.38	+.34	-.08	-.07	-.27

TEMP. DEPARTURE FROM NORMAL

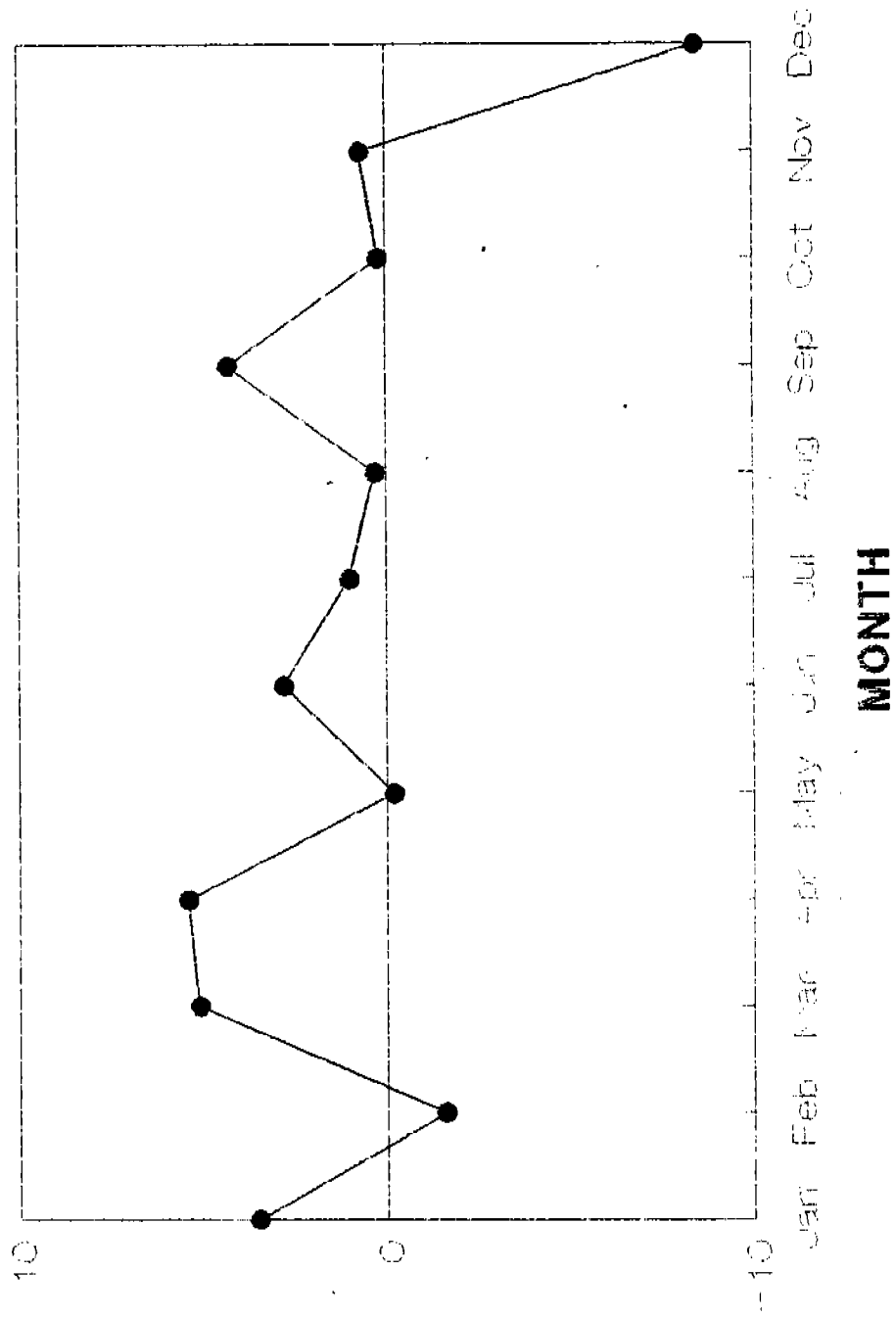


Figure 1. (1990) average temperature departure from normal (degrees F), 1990.

PRECIP. DEPARTURE FROM NORMAL

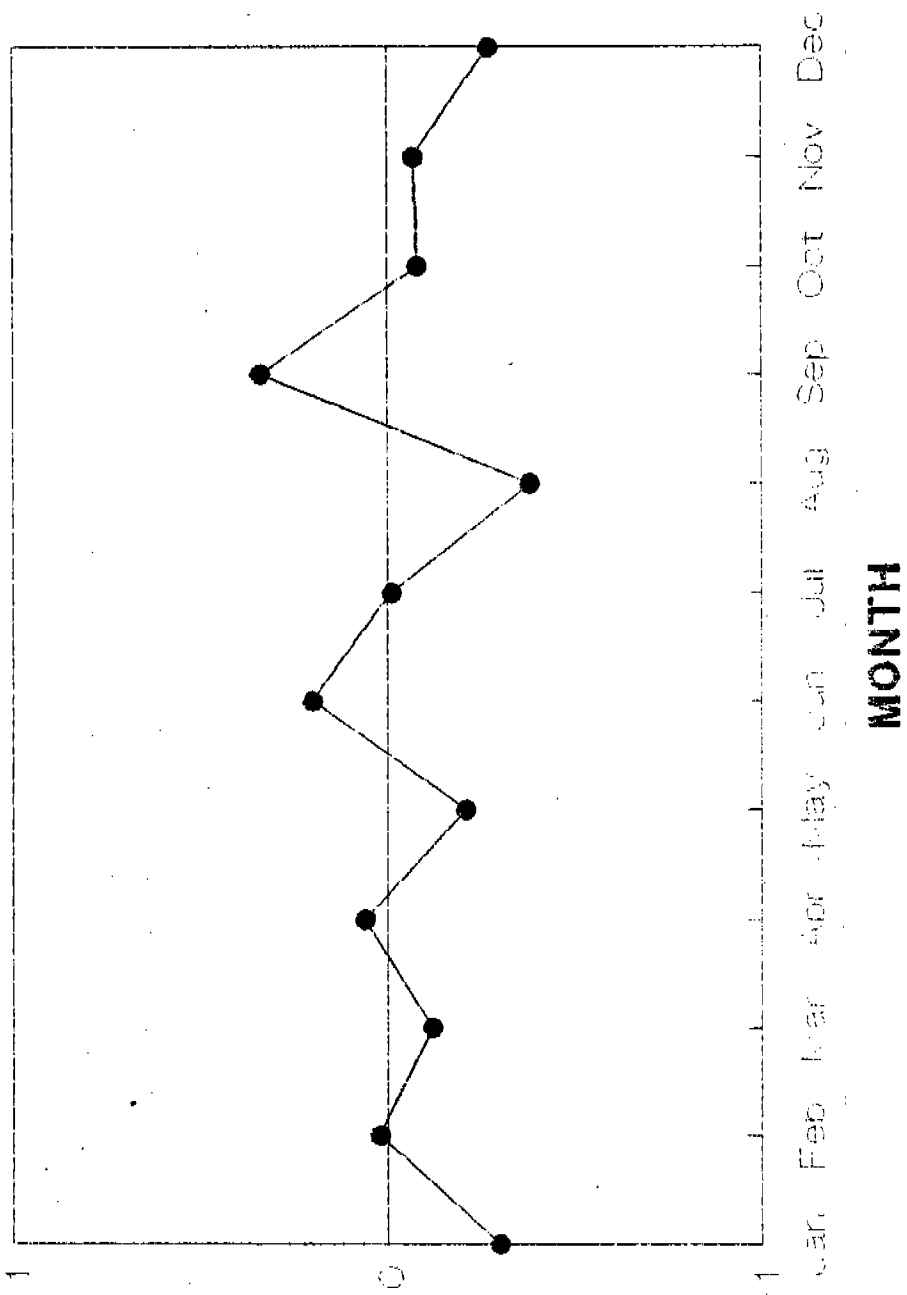


Figure 2. Monthly average precipitation departure from normal (inches), 1990.

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 resident combination decreased slightly in 1990.

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, 1954-90.

Year	Adult Res. <u>Small Game</u>		Juv. Res. <u>Small Game</u>		Non. Res. <u>Small Game</u>		<u>Combination</u>	
	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
1990	24,527	12.00	5,682	6.00	1,279	40.00	76,292	35.00

Table 2. Actual (1971-1990) and projected (1991-2000) 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 ¹	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
1990 ^a	1,722,850	90,532	5.3
1995 ^a	1,842,100	105,000	5.7
2000 ^a	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, 1971-90 (JSG=juvenile small game, RSG=adult resident small game, CMB=combination license, NRS=nonresident small game).

Year	License Fees				Number of Licenses Sold				No. Federal Duck Stamps Sold ³		Total Gross Revenue Attributed to Small Game (\$)			
	JSG	RSG	CMB	NRS	JSG ⁴	RSG	CMB	NRS	JSG ⁴	RSG	CMB ²	NRS	TOTAL ¹	
1971	2.50	4.50	10.00	20.00	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	20.00	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	20.00	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	20.00	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	20.00	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	20.00	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	20.00	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	20.00	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	20.00	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	30.00	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	30.00	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	30.00	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	30.00	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	30.00	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	40.00	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	40.00	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	40.00	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	40.00	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	40.00	5,769	25,845	74,274	1,422	13,857	17,307	310,140	563,691	56,880	891,138
1990	6.00	12.00	35.00	40.00	5,682	24,527	76,292	1,279	15,969	17,046	294,324	543,986	51,160	855,356

¹Value does not include cougar, bear, turkey permits and commercial hunting area licenses. It does not include NRS 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 1990.

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 several years ago. Rumors of similar re-organization may have reduced CO effort on upland game surveys in other regions in 1990. 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, 1971-90.

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
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	--
1990	518	--	509	--	97	--	240	--	90	--	1,454	--
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
1990	--	--	--	--	97	8	--	3	--	--	97	11

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	6,629	812
1972	1,628	323	1,187	143	751	144	2,125	170	1,280	141	6,971	921	6,971	921
1973	3,146	353	927	147	1,171	116	1,952	238	496	41	7,692	895	7,692	895
1974	2,026	321	1,551	115	1,881	193	2,964	248	887	124	9,299	1,001	9,299	1,001
1975	1,254	249	963	123	714	226	1,868	236	1,098	131	5,897	965	5,897	965
1976	1,965	281	426	121	379	183	1,881	227	1,222	161	5,873	973	5,873	973
1977	1,966	305	1,370	133	465	157	1,995	215	928	116	6,724	926	6,724	926
1978	1,408	267	541	124	490	152	1,616	226	879	97	4,934	866	4,934	866
1979	1,051	150	700	132	563	143	1,719	203	279	20	4,312	648	4,312	648
1980	1,003	218	806	150	518	94	1,471	184	278	30	4,076	676	4,076	676
1981	619	194	691	99	285	57	771	163	377	39	2,743	552	2,743	552
1982	1,669	169	762	92	454	83	862	116	--	--	3,747	460	3,747	460
1983	610	158	720	164	284	51	992	125	108	10	2,714	508	2,714	508
1984	1,411	278	283	82	289	54	530	95	151	17	2,664	526	2,664	526
1985	2,164	169	481	74	410	45	666	84	106	9	3,827	381	3,827	381
1986	1,024	197	281	39	169	43	948	94	146	14	2,568	387	2,568	387
1987	1,939	205	172	37	286	50	1,114	124	195	18	3,706	434	3,706	434
1988	2,092	177	678	108	315	66	690	91	--	--	3,775	442	3,775	442
1989	465	108	360	56	46	19	557	61	167	24	1,595	268	1,595	268
1990	175	73	444	89	90	42	244	30	70	7	1,023	241	1,023	241
<u>Hungarian Partridge</u>														
1971	676	85	104	18	--	--	--	--	--	--	780	103	780	103
1972	1,255	119	126	21	--	--	--	--	--	--	1,381	139	1,381	139
1973	1,643	156	12	4	--	--	--	--	--	--	1,655	160	1,655	160
1974	1,035	176	14	2	--	--	--	--	--	--	1,049	178	1,049	178
1975	344	64	0	0	--	--	--	--	--	--	344	64	344	64
1976	940	83	113	21	--	--	--	--	--	--	1,053	104	1,053	104
1977	1,145	156	125	5	--	--	--	--	--	--	1,270	161	1,270	161
1978	1,065	90	197	17	--	--	--	--	--	--	1,262	107	1,262	107
1979	440	27	37	3	--	--	--	--	--	--	477	30	477	30
1980	250	55	50	6	--	--	--	--	--	--	300	61	300	61
1981	270	23	65	3	--	--	--	--	--	--	330	26	330	26
1982	324	39	--	--	--	--	--	--	--	--	324	39	324	39
1983	0	60	--	--	--	--	--	--	--	--	0	60	0	60
1984	815	221	--	--	--	--	--	--	--	--	815	221	815	221
1985	114	38	--	--	--	--	--	--	--	--	114	38	114	38
1986	213	44	--	--	--	--	--	--	--	--	213	44	213	44
1987	300	40	--	--	--	--	--	--	--	--	300	40	300	40
1988	316	30	10	1	--	--	--	--	--	--	326	31	326	31
1989	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1990	393	30	--	--	--	--	--	--	--	--	--	--	--	--

Table 1 (continued)

Species	R E G I O N										STATE TOTALS	
	Northern		Central		Southern		Northeastern		Southeastern		Miles	Hours
<u>Chukar</u>	Miles	Hours	Miles	Hours	Miles	Hours	Miles	Hours	Miles	Hours	Miles	Hours
1971	182	82	929	130	1,103	100	636	50	496	105	3,346	468
1972	712	91	1,423	131	950	37	1,012	69	984	58	5,081	386
1973	1,063	119	1,494	167	72	10	705	48	702	68	4,036	363
1974	125	31	1,591	107	564	43	440	30	1,115	67	3,835	278
1975	188	30	808	85	892	41	908	88	786	55	3,582	299
1976	875	75	964	110	465	32	727	67	687	66	3,718	350
1977	405	50	1,198	120	601	37	600	71	429	44	3,233	322
1978	359	28	459	42	135	14	315	23	536	52	1,804	159
1979	546	54	793	76	415	22	293	23	267	14	2,314	199
1980	283	68	1,668	124	235	12	0	0	53	10	2,239	214
1981	330	56	591	49	147	11	245	21	260	32	1,573	169
1982	473	34	571	56	475	35	260	37	101	9	1,880	171
1983	17	15	190	17	20	2	488	44	103	7	818	85
1984	654	81	303	32	--	--	--	--	118	16	1,075	129
1985	236	73	453	36	--	--	--	--	174	12	903	135
1986	394	65	432	37	--	--	135	14	--	--	961	116
1987	813	119	398	36	0	3	305	32	175	23	1,691	213
1988	379	35	457	49	60	7	--	--	180	14	1,076	105
1989	105	17	505	30	11	8	--	--	144	12	765	67
1990	--	21	1,190	77	--	--	85	8	235	20	1,510	126
<u>Forest Grouse</u>												
1971	1,201	240	785	173	796	249	794	77	440	89	4,016	828
1972	1,370	212	804	103	214	260	1,346	140	351	82	4,085	797
1973	627	127	917	105	296	429	949	147	761	72	3,550	880
1974	967	152	924	157	157	461	1,090	99	1,574	133	4,712	1,002
1975	1,194	199	1,287	160	775	629	1,474	136	1,476	135	6,206	1,259
1976	1,516	351	1,503	216	427	271	1,108	140	1,127	134	5,681	1,112
1977	737	132	1,317	162	610	286	1,040	135	1,079	128	4,783	843
1978	1,300	297	1,171	129	432	219	1,083	147	626	114	4,612	906
1979	746	344	1,312	177	714	275	729	107	435	42	3,936	945
1980	577	201	1,260	158	160	230	502	74	266	39	2,765	702
1981	688	147	958	147	575	295	835	120	184	29	3,240	738
1982	506	74	1,488	157	--	354	742	111	--	--	2,736	696
1983	1,049	218	1,180	93	459	80	636	93	--	20	3,324	504
1984	615	157	364	30	230	78	--	--	--	40	1,209	305
1985	858	202	436	52	564	90	--	--	--	40	1,858	384
1986	997	127	380	41	254	51	412	61	--	--	2,043	280
1987	1,148	147	305	77	200	65	438	58	--	--	2,091	350
1988	1,118	144	55	6	160	53	558	71	--	--	1,891	274
1989	795	109	635	69	45	3	573	75	286	33	2,334	289
1990	171	150	701	113	30	3	185	91	--	--	1,087	375

APPENDIX D: Season dates, bag limits and areas open by upland game species, 1990.

Species	Season Dates	Daily Bag Limit	Possession Limit	Area Open
Pheasant	Nov. 3-16	2 cocks	4 cocks	Statewide
	Nov. 3-Dec. 2	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, Sevier, Tooele and Uintah counties.
Mourning dove	Sept. 1-30	10	20	Statewide (except lands closed under CLOSED AREAS).
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. 8-Nov. 30	5	10	Cache, Davis (except Antelope Island), 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 SR-40 and west of Highway SR-88 and the Book Cliffs Seep Ridge Road; that part of Box Elder County east of Locomotive Springs-Snowville-Stone, Idaho road; and that part of Sevier County north of Interstate 70 from Salina to Cove Fort.

APPENDIX E. Summary of upland game harvest questionnaire returns, 1962-1990

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
1990	12,236	5,264	43.0	5,175	42.3	39.1