

UTAH UPLAND GAME ANNUAL REPORT 1998



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State of Utah
Department of Natural Resources
Division of Wildlife Resources

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

Annual Report

1998

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Annual Performance Report for Federal Aid Project W-16-RD-2

State of Utah
Department of Natural Resources
DIVISION OF WILDLIFE RESOURCES

An Equal Opportunity Employer

John Kimball
Director

"Finding out how many there are left is the least of the purposes of game census.

Measuring the response of game populations to changes - deliberate or accidental - in their environment is the big purpose.

Continuous census is the yardstick of success or failure in conservation."

Aldo Leopold 1932

TABLE OF CONTENTS

	Page
Annual Performance Report	1
Introduction	4
Pheasant	10
Migratory Upland Game Birds	34
Mourning Dove	36
Band-tailed Pigeon	54
Chukar Partridge	60
Sage Grouse	76
Forest Grouse	102
Quail	130
Hungarian Partridge	146
Wild Turkey	160
Sharp-tailed Grouse	176
White-tailed Ptarmigan	182
Rabbits and Hares	192
Cottontail Rabbit	194
Snowshoe Hare	206
Appendices	214
Appendix A: Weather Conditions	216
Appendix B: License Sales	222
Appendix C: DWR Summer Survey Effort	228
Appendix D: Season Dates, Bag Limits, Areas Open - 1998	234
Appendix E: Summary Harvest Questionnaire Returns	240

ANNUAL PERFORMANCE REPORT

State: UTAH

Grant Number: W-16-RD

Segment: 2

Grant Title: Statewide Upland Game Management Surveys and Inventories

Grant Agreement Period: Oct. 1, 1997 thru Sept. 30, 1998

Abstract: This report identifies progress and accomplishments of Segment No. 2 objectives, 1997-98. Results of annual population surveys and inventories conducted during the segment W-16-RD-1 and harvest surveys conducted under W-16-RD-2 along with summaries of long-term trends of population indices derived and harvest estimates will be included in the Utah Upland Game Annual Report 1997. Data obtained in 1997 will be compared to 1996 and long-term averages.

The Federal Aid Annual Performance Report for W-16-RD-1 will be included in the Utah Upland Game Annual Report 1997, rather than this Annual Performance Report because of the annual reporting scheme initiated under W-65-R and because of the way population surveys and inventories and harvest data are collected.

Annual population surveys and inventories are collected during one segment and harvest surveys are conducted during the subsequent segment. The Utah Upland Game Annual Report is an attempt to summarize population survey and inventory data and harvest estimates for the same calendar year.

This reporting scheme may seem awkward, especially when one looks at a Utah Upland Game Annual Report and sees a copy of a Federal Aid Annual Performance Report included for a segment that ended before harvest survey data was actually collected.

Because this reporting scheme is somewhat confusing, but makes the most sense from a biological perspective to report population survey and inventory information for the same calendar year as harvest, it is hoped that the above explanation clarifies any confusion. Further, it is recommended that the reporting scheme remain the same.

The 1997 Utah Upland Game Annual Report (includes survey and inventory data from W-16-RD-1 and harvest data from W-16-RD-2) will be published in January 1999 and the 1998 Utah Upland Game Annual Report (includes survey and inventory data from W-16-RD-2 and harvest data from W-16-RD-3) will be published in March 1999.

I. OBJECTIVES OF GRANT PROPOSAL:

1. To annually monitor and evaluate 16 upland game species harvest and populations in Utah using appropriate surveys and inventories--on-going objective.
2. To administer Utah's upland game programs and to manage 16 upland game species based on population data obtained through Objective 1--on-going objective.
3. In conjunction with the Utah State University Extension Fisheries and Wildlife Specialist, compile, develop and publish a handbook pertaining to field identification, basic biology and ecology and sexing and aging techniques for Utah upland game.

Progress Statement and Summary of Work Completed During The Segment For Each Objective:

1. To annually monitor and evaluate 16 upland game species harvest and populations in Utah using appropriate surveys and inventories.

ANNUAL PERFORMANCE REPORT
UTAH W-16-RD STATEWIDE UPLAND GAME MANAGEMENT SURVEYS AND INVENTORIES

Ongoing Objective. 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, 1997 through February 10, 1998, 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. Pheasant crowing territory counts were selectively conducted by DWR's northern and central regions. Crowing territory counts are used by biologists to determine if habitat improvement projects are successful in increasing populations, and also as another index to local pheasant breeding populations.

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, 1998.

Random brood counts were conducted on chukar and Hungarian partridge, forest grouse (ruffed and blue), sage grouse, sharp-tailed grouse, wild turkey and quail from June 15-August 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 1997 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 (1997) resident small game license file and 1997 combination license file was used. The modified computerized pull-apart mailer was again used to obtain harvest data. Separate questionnaires were mailed to all ptarmigan, band-tailed pigeon 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 processed by the Utah Division of Wildlife Resources Public Services Section. Wild turkey, band-tailed pigeon and ptarmigan questionnaires were analyzed separately by Utah Division of Wildlife Resources Wildlife Section personnel.

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

One ten mile helicopter transect was flown in Utah's west desert in August, 1997 to determine chukar population densities. Index derived was chukars per mile. This survey is flown only in Utah's west desert and nowhere else in Utah.

The winter flock count survey for wild turkey was partially implemented during the winter 1997-98 and will be fully implemented during the winter, 1998-99.

No new sage or sharp-tailed grouse leks were described or mapped during the segment.

ANNUAL PERFORMANCE REPORT

UTAH W-16-RD STATEWIDE UPLAND GAME MANAGEMENT SURVEYS AND INVENTORIES

The project leader worked closely with the waterfowl program coordinator and agency planner in scoping and deciding how best to collect Utah migratory bird hunter data for the federal Migratory Bird Harvest Information Program (HIP) to come on line in 1998. Migratory bird hunters were required to telephone a 1-800 number to register for HIP. The 1998 Utah Legislature authorized a one dollar license fee increase for all small game and combination licenses in an effort to generate revenue for implementing HIP. The license fee increase will go into effect January 1, 1999.

Completion of the 4-Corners Band-tailed Pigeon Management Plan continues to wane. Several sections of the plan are being submitted by outside authors to the project leader who serves on and off as the plan's editor. Personnel changes in other states and higher priority projects in Utah and in the states of Arizona, Colorado and New Mexico have delayed the completion of the plan indefinitely. Further discussion on plan completion will occur at the March (1999) Pacific Flyway Regulations Meeting.

2. Ongoing Objective. To administer Utah's upland game programs and to manage 16 upland game species based on population data obtained through Objective 1.

Data collected in Objective 1 was used by DWR personnel to formulate harvest recommendations for 16 species of upland game in Utah. DWR personnel met in April, 1998 to formulate harvest recommendations for fall 1998 upland game seasons. DWR recommendations were presented at 5 Regional Advisory Councils and the public throughout the state in May. In June, recommendations were presented to the Utah Wildlife Board who made final decisions for recommendations to include in the 1998-99 Utah Upland Game Proclamation.

In September, October and November, 1998, the project leader also presented DWR recommendations for wild turkey conservation permits and limited entry turkey hunting unit permits to 5 Regional Advisory Councils, the public and the Utah Wildlife Board.

3. Objective To Be Completed Over 2 Years. In conjunction with the Utah State University Extension Fisheries and Wildlife Specialist, compile, develop and publish a handbook pertaining to field identification, basic biology and ecology and sexing and aging techniques for Utah upland game.

Objective 3 was not implemented in this segment. The Grant Agreement budget for Objectives 1 and 2 was underestimated and used up the funds intended for Objective 3. The apportionment for Wildlife Restoration Act funding was insufficient to increase the segment budget for Objective 3 and the task could not be implemented with only state funds which were also insufficient. We will continue to apply for sufficient funding, if available, otherwise this objective may not be accomplished in the Grant Period.

Location of Work Performed: Statewide.

Actual Cost:

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.

This is the twenty-eight addition 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-16-RD. Information contained herein was collected and compiled by conservation officers, biologists, wildlife managers and the upland game management staff of the Utah 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. A separate section is devoted to each species of upland game 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 1998, a total of 50,740 Utah sportsmen spent 338,674 days afield in pursuit of various upland game species (Table 1). The harvest of upland game totaled 386,395 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 (from the general mail harvest questionnaire) of each species in Table 3.

The regulations for 1998 upland game hunting seasons are shown in Appendix D.

GENERAL HARVEST QUESTIONNAIRE

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

A total of 14,497 upland game questionnaires, a 15.85 percent sample of Utah's potential upland game hunters, were mailed. Of the total, 1,492 (10.29%) questionnaires were undeliverable. Of the 13,005 questionnaires delivered, 3,862 (29.70 %) useable upland game questionnaires were returned. Of those, 1,681 purchased a license but did not hunt upland game. By dividing the total of 89,848 eligible licensees by the usable returns (3,862), a projection factor of 23.264629 is derived.

The 1998 hunter questionnaire sample size was greater than 10 percent of the total hunter population, so 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 1. Summary of harvest statistics from the general mail questionnaire for 1998.

Species	Hunters Afield	Total Harvest	Hunter-Days Afield	Bag Per Hunter-Day	Bag Per Hunter For Season
Pheasant	35,130	77,889	126,792	0.61	2.22
Mourning Dove	18,030	160,014	67,234	2.38	8.87
Band-Tailed Pigeon	68	67	120	0.56	0.99
Chukar Partridge	9,283	36,013	33,082	1.09	3.88
Sage Grouse	3,559	4,676	8,003	0.58	1.31
Forest Grouse	9,166	27,359	32,523	0.84	3.00
Quail	3,211	12,213	11,562	1.06	3.80
Hungarian Partridge	2,350	9,515	7,281	1.31	4.05
Wild Turkey					
Merriam's	309	95	1,218	0.08	0.31
Rio Grande	254	161	919	0.18	0.63
Sharp-Tailed Grouse	235	172	373	0.46	0.73
White-Tailed Ptarmigan	45	14	84	0.31	0.17
Cottontail Rabbit	10,585	57,137	45,947	1.24	5.40
Snowshoe Hare	1,093	1,070	3,536	0.30	0.98
Total	--	386,395	338,674	--	--

Total hunters afield for all species of upland game = 50,740

Table 2. Number and percent of total upland game hunters afield who reported hunting each species during 1990-98.

Species	Number of Hunters									Percent of Total								
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1990	1991	1992	1993	1994	1995	1996	1997	1998
Pheasant	47,025	42,813	41,640	39,640	36,705	38,391	41,854	37,622	35,130	72.50	69.14	71.27	66.52	74.12	69.60	72.92	69.51	69.24
Mourning Dove	22,700	22,632	18,021	19,725	20,743	20,896	23,180	22,594	18,030	17.30	36.55	30.85	33.10	41.89	37.88	40.38	41.74	35.53
Band-Tailed Pigeon*	9	15	18	8	13	59	37	58	68	0.01	0.02	0.03	0.01	0.03	0.11	0.06	0.11	0.13
Chukar	11,195	10,577	11,125	10,128	8,455	9,097	10,197	9,665	9,283	35.00	17.08	19.04	17.00	17.07	16.49	17.76	17.86	18.30
Sage Grouse	9,014	8,018	7,393	6,594	5,133	5,987	5,574	4,178	3,559	13.90	12.95	12.65	11.07	10.37	10.85	9.71	7.72	7.01
Forest Grouse	14,591	14,421	15,000	12,029	9,827	10,088	15,492	10,206	9,166	22.50	23.29	25.67	20.19	19.85	18.29	26.99	18.86	18.06
Quail	2,614	2,644	2,861	3,649	2,936	4,374	4,622	3,637	3,211	4.00	4.27	4.90	6.12	5.93	7.93	8.05	6.72	6.33
Hungarian Partridge	2,305	2,662	3,198	2,090	1,899	2,294	2,299	2,328	2,350	3.60	4.30	5.47	3.51	3.83	4.16	4.01	4.30	4.63
Wild Turkey*																		
Merriam's	531	532	484	466	285	296	320	339	309	0.80	0.86	0.83	0.78	0.58	0.54	0.56	0.63	0.61
Rio Grande		18	20	41	105	123	166	229	254		0.03	0.03	0.07	0.21	0.22	0.29	0.42	0.50
Sharp-Tailed Grouse*	--	--	--	--	--	--	--	--	235	--	--	--	--	--	--	--	--	0.46
White-Tailed Ptarmigan	11	13	11	9	4	20	12	18	45	0.02	0.02	0.02	0.02	0.01	0.04	0.02	0.03	0.09
Cottontail Rabbit	23,079	21,137	20,509	17,578	12,709	13,840	14,470	12,263	10,585	35.60	34.13	35.10	29.50	25.67	25.09	25.21	22.66	20.86
Snowshoe Hare	4,095	3,427	3,732	2,755	1,565	1,983	2,276	1,912	1,093	6.30	5.53	6.39	4.62	3.16	3.60	3.97	3.53	2.15
Total Hunters**	64,868	61,922	58,423	59,590	49,518	55,159	57,401	54,125	50,740									

*Although wild turkey, sharp-tailed grouse, band-tailed pigeon and white-tailed ptarmigan 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.

**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, 1961-98.

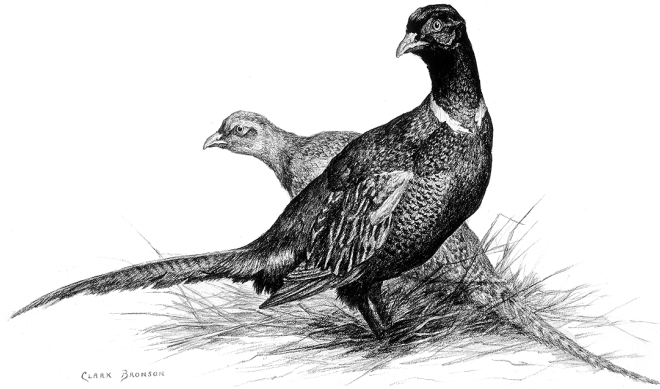
Year	Pheasant			Mourning Dove			Chukar			Sage Grouse			Forest Grouse			Quail			Hungarian Partridge		
	No Bag	Hunting Trips	%	No Bag	Hunting Trips	%	No Bag	Hunting Trips	%	No Bag	Hunting Trips	%	No Bag	Hunting Trips	%	No Bag	Hunting Trips	%	No Bag	Hunting Trips	%
1961	714	3,204	22	51	583	9	318	539	59	--	--	--	--	--	--	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	523	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	39	132	347	28
1969	1,897	5,335	36	214	1,568	14	647	1,250	62	241	648	37	273	656	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	394	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	94	35
1988	1,372	3,953	35	244	1,525	16	308	77	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	39	54	132	41	46	117	39
1991	1,062	2,461	43	205	1,301	16	309	608	51	198	461	43	262	829	32	69	152	45	67	153	44
1992	905	2,760	33	156	1,150	14	298	701	43	169	432	39	208	969	21	68	168	40	67	186	36
1993	1,035	2,086	50	194	1,038	19	354	533	66	191	347	55	346	633	55	85	192	44	75	110	68
1994	889	2,088	43	230	1,180	19	278	481	58	148	292	51	243	559	43	64	167	38	78	108	72
1995	919	2,452	37	224	1,286	17	259	554	47	169	347	49	277	790	35	95	241	39	54	123	44
1996	742	2,259	33	173	1,164	15	225	526	43	119	255	47	187	775	24	81	215	38	38	103	37
1997	743	2,159	34	181	1,193	15	246	537	46	110	220	50	183	641	29	67	181	37	53	118	45
1998	542	1,773	31	141	869	16	175	454	39	65	163	40	160	802	20	42	143	29	32	105	30
AVERAGES (1961-97)			33			14			49			39			35			39			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 band-tailed pigeon, wild turkey, 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.



Pheasant

The 1997-98 winter was fairly mild. Temperatures were above normal in January through March, while precipitation was below normal in October through December.

During the nesting season, statewide monthly average temperatures were below normal (April-June). Average precipitation was above normal (April-July). Pheasants observed on roadside routes was above 1997, but young per hen and the percentage of hens with young was less than in 1997.

Harvest statistics compiled from the questionnaire indicated a decrease in success compared to 1997. Harvest decreased 1 percent from 1997, and remained 60 percent below the long-term average. However, opening weekend success was up compared to the previous year based upon field bag check data.

The pheasant hunt is the most popular upland game hunt in Utah. Despite its popularity among Utah sportsmen, Utah's pheasant population continues to decline steadily. Primary reasons for population declines are due to outright losses of critical habitat and degradation of remaining habitat.

Beginning in 1997, one special youth (ages 12-15) youth pheasant hunt was provided in conjunction with the Box Elder County Cooperative Wildlife Management Unit. Approximately 75 youth hunters, recent graduates from Utah Hunter Education classes, participated in the hunt held on private property during the second Saturday of Utah's general pheasant season. The hunters were divided and allowed to go afield during a morning and afternoon hunt. Pen-reared pheasants were released prior to each hunt. Youth hunters were allowed to go afield, accompanied by a guardian, and had the opportunity to harvest two cock pheasants. Approximately 50% of the released pheasants were harvested.

Prior to going afield, youth hunters were provided with rules for the hunt and safety and ethics training. Upon returning from the field, youth hunters were provided with demonstrations on proper field dressing and game care.

In 1998, two youth pheasant hunts were provided-one on the Willard Bay and one on the James Walter Fitzgerald Wildlife Management areas. Hunts occurred on the second Saturday of the general pheasant season. Each wildlife management area (WMA) was closed to the general public during the youth hunts. A total of 200 youth hunters (100 at each WMA) participated in the 1998 hunts.

The Conservation Reserve Program (CRP), begun in 1985 and reauthorized in 1996, has done little for Utah pheasant populations. Most CRP lands in Utah are in dryland farming areas. Pheasants prefer irrigated agricultural areas.

Breeding Territory Counts

Spring pheasant breeding territory counts have been conducted sporadically since 1993. Data on the number of territorial males per square mile are shown in Table 16. The number of territorial males in 1998 was up 73.14 percent over the 1993-97 average.

Winter Sex Ratio Counts

Winter sex ratio counts provide an index as to how harvest of roosters only is affecting pheasant populations. In Utah, one rooster for every two, three or four hens is most common. One rooster for every ten hens is biologically acceptable in that one rooster can easily service ten hens in the wild. Based on this biological concept, hunting of rooster pheasants only does not appear to be affecting the populations.

Results of the survey for the winter of 1997-98 and long-term trends are shown in Tables 1 and 2 of this section. Statewide comparisons to the winter of 1996-97 and the 10-year (1988-97) average are as follows:

	<u>Winter of</u> <u>1997-98</u>	<u>Percent</u> <u>change</u> <u>from</u> <u>1996-97</u>	<u>Percent</u> <u>change</u> <u>from</u> <u>Average</u>
Total pheasants counted (roadside)	--	--	--
Hens per cock	--	--	--
Pheasants observed per 100 hours	--	--	--
Total hours effort (roadside)	--	--	--

Due to increased demands on biologist's time, winter sex ratio data was not collected in Utah in the winter of 1997-98.

Roadside Counts

A summary of summer roadside pheasant counts for 1998 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. Summer 1998 survey results compared to 1997 and the 10-year (1988-97) average follow:

	<u>1998</u>	<u>Percent</u> <u>change</u> <u>from</u> <u>1997</u>	<u>Percent</u> <u>change</u> <u>from</u> <u>Average</u>
Total pheasants observed	608	+94	-23
Total miles driven	1,066	+40	-17
Pheasants per mile	0.57	+39	-3
Average brood size	5.02	+12	+4
Young per hen	3.53	-6	-2
Percent of hens with young	69	-19	-9

Total pheasants observed increased 94 percent and pheasants per mile increased 39 percent. Percent of hens with young decreased 19 percent while average brood size increased 12 percent.

More pheasants were observed on roadside counts in 1998 than in 1997. However, reproductive success per adult hen and percentage of hens with young was down from the previous year. Lower than normal temperatures and increased precipitation during the nesting season (April-June) may have been responsible for decreased chick survival.

Harvest

Hunter Questionnaire

Results of the hunter questionnaire for 1997 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 1998 harvest statistics to 1997 and the previous 50-year average follow:

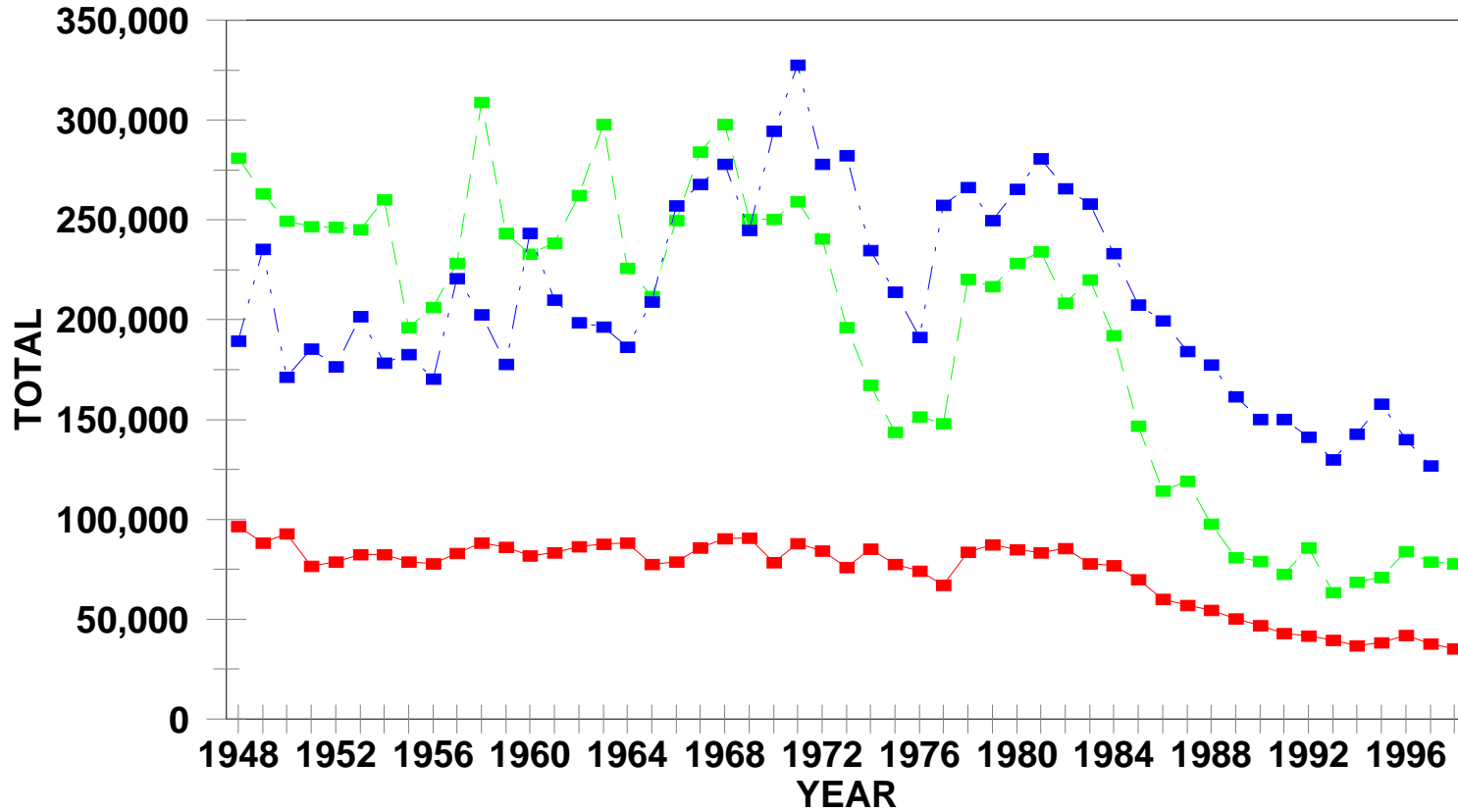
	<u>1998</u>	Percent change from 1997	Percent change from Average
Pheasant hunters	35,130	-7	-52
Pheasants harvested	77,899	-1	-60
Hunter-days afield	126,792	-10	-39
Pheasants per hunter-day	0.61	+9	-31
Pheasants per hunter	2.22	+6	-13

Total hunters decreased 7 percent from 1997 and remained 52 percent below the long-term average. Total harvest decreased 1 percent from 1997. Hunter success (pheasants per hunter-day) increased 9 percent from 1997. Pheasants per hunter increased 6 percent and remains 13 percent below the long-term average.

Long-term trends (1948-97) 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.

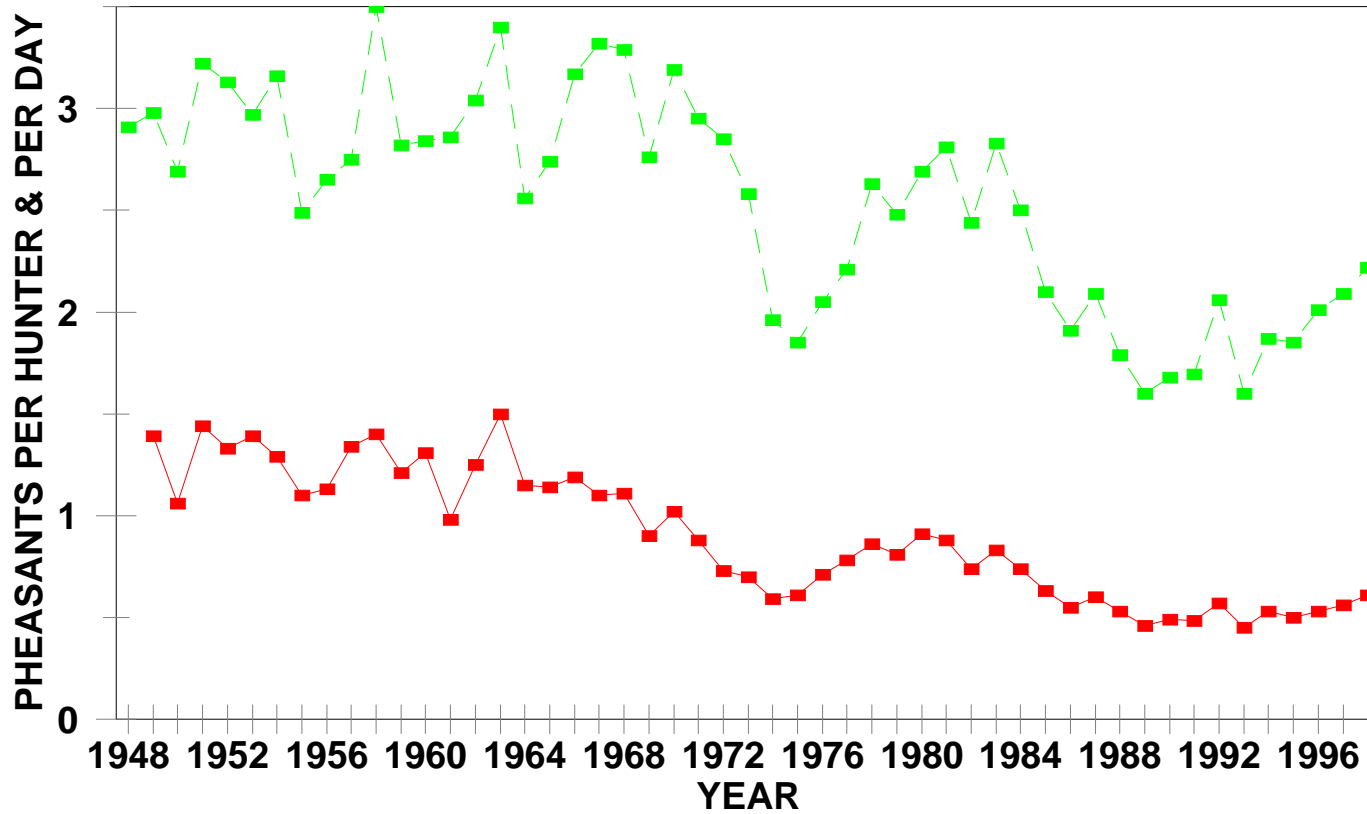
Cache County accounted for 19.21 percent of the entire pheasant harvest, while Utah County accounted for 18.64 percent and Box Elder County for 12.43 percent.

Figure 1. Statewide trends of pheasant harvest statistics, 1948-98.



—■— Hunters -■- Harvest -■- Hunter-Days Afield

Figure 2. Statewide trends of pheasant hunter success rates, 1948-98.



—■— Pheasants Per Hunter-Day —■— Pheasants Per Hunter

Field Bag Checks

Field bag checks provide an index of opening day or weekend hunter harvest success rates.

A summary of pheasant field bag check data for 1998 is shown in Table 14. The hunter success trend determined via bag checks since 1992 is found in Table 15. A comparison of 1998 data, on a statewide basis, to 1997 and the 10-year (1988-97) average follow:

	<u>1998</u>	<u>Percent change from 1997</u>	<u>Percent change from Average</u>
Total hunters checked	195	+39	-77
Total hours hunted	397	+32	-83
Pheasants per hunter (complete hunts)	0.46	+28	+28
Pheasants bagged per 100 hours	24	+41	+48
Average hours per hunter-day (complete hunts)	1.91	-11	-22
Hours hunted per pheasant bagged (complete hunts)	4.12	-19	-36

In 1998, hunters spent 11 percent less time afield on an average day during the opening weekend. Hours hunted per pheasant bagged decreased 19 percent. However, pheasants per hunter increased 28 percent over 1997 and remained at 28 percent above the 10-year average.

Table 2. Trend of pheasant winter sex ratio counts, 1992-98.

Region and County	1992-93		1993-94		1994-95		1995-96		1996-97		1997-98		Average 1992-1997	
	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	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Weber	2.33	333	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	2.33	333	--	--	--	--	--	--	--	--	--	--	2.33	333
Central Region														
Juab	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	1.40	686	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	0.50	19	--	--	--	--	--	--	--	--	--	--
Tooele	3.30	--	--	--	--	--	--	--	--	--	--	--	--	--
Utah	1.82	--	3.91	974	2.33	737	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	2.24	18,857	3.81	641	2.33	737	--	--	--	--	--	--	2.79	6,745
Southern Region														
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	2.87	800	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	2.87	800	--	--	--	--	--	--	--	--	--	--	2.87	800
Northeastern Region														
Daggett	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	0.89	1,700	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	2.00	1,500	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	1.29	1,600	--	--	--	--	--	--	--	--	--	--	1.29	1,600
Southeastern Region														
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--
STATE TOTALS	2.28	1,864	3.81	641	2.33	737	--	--	--	--	--	--	2.81	1,081

Table 3. Pheasant summer inventory, 1998.

Region and County	No. Routes	Total Miles	Total	Distinct Broods Hens	Young	Mixed Obser. Hens	Young	Adults w/o Young Cocks	Hens	Total Hens	Total Young	Total Cocks	Total Pheas.	Pheas./ Mile	Young/ Mile	Mean Brood	Young/ Ad. Hen	%Hens w/Young	
Northern Region																			
Box Elder	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Central Region																			
Juab	1	34.8	0	0	0	0	0	0	1	1	0	0	1	0.03	0.00	0.00	0.00	0	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	3	166.5	9	9	47	8	24	11	14	31	71	11	113	0.68	0.43	5.22	2.29	55	
Tooele	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Utah	3	204.6	14	14	69	11	45	17	17	42	114	17	173	0.85	0.56	4.93	2.71	60	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	7	405.9	23	23	116	19	69	28	32	74	185	28	287	0.71	0.46	5.04	2.50	57	
Southern Region																			
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	2	332	25	25	141	5	44	8	2	32	185	8	225	0.68	0.56	5.64	5.78	94	
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	1	120	11	11	52	2	9	7	4	17	61	7	85	0.71	0.51	4.73	3.59	76	
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	3	452	36	36	193	7	53	15	6	49	246	15	310	0.69	0.54	5.36	5.02	88	
Northeastern Region																			
Daggett	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	2	164.5	4	1	7	0	0	2	0	1	7	2	10	0.06	0.04	1.75	7.00	100	
Uintah	1	44	0	0	0	0	0	1	0	0	0	1	1	0.02	0.00	0.00	0.00	0.00	
REGIONAL TOTALS	3	208.5	4	1	7	0	0	3	0	1	7	3	11	0.05	0.03	1.75	7.00	100	
Southeastern Region																			
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
STATE TOTALS	13	1066	63	60	316	26	122	46	38	124	438	46	608	0.57	0.41	5.02	3.53	69	

Table 4. Trend of pheasants observed per mile during summer roadside pheasant counts, 1988-98.

Region and County	Year											Average
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1988-97
Northern Region												
Box Elder	0.63	0.19	0.32	0.21	0.56	0.34	0.72	0.23	0.31	0.17	--	
Cache	0.13	0.23	0.09	0.41	0.59	1.09	--	--	--	--	--	
Davis	0.7	0.41	0.48	0.39	0.15	0.01	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	0.52	1.26	0.48	1.05	--	--	--	--	--	--	
REGIONAL TOTALS	0.4	0.3	0.42	0.35	0.58	0.24	0.72	0.23	0.31	0.17	--	0.37
Central Region												
Juab	0.38	0.5	0.14	--	0.77	0.16	0.14	0.15	0.00	0.06	0.03	
Salt Lake	--	--	1.26	1.24	--	0.31	--	--	--	--	--	
Sanpete	1.18	1.7	1.23	0.85	0.67	0.35	0.53	0.38	0.72	0.56	0.68	
Tooele	0.15	--	0.17	0.55	0.14	--	0.27	0.00	0.07	--	--	
Utah	2	1	1.45	0.58	2.56	0.93	1.58	0.96	0.98	0.81	0.85	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	1.42	1.5	1.09	0.73	1.79	0.48	0.92	0.61	0.70	0.65	0.71	0.99
Southern Region												
Beaver	0.17	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	0.67	--	0.34	0.38	--	1.38	--	--	--	--	0.68	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	1.3	--	--	--	--	--	--	--	--	--	0.71	
Washington	0.22	0.06	--	--	--	--	--	--	--	--	--	
Wayne	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	0.78	0.06	0.34	0.38	--	1.38	--	--	--	--	0.69	0.59
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	0.58	0.39	0.93	0.59	0.22	0.14	0.22	0.23	0.17	0.13	0.06	
Uintah	0.45	0.24	0.52	0.29	0.18	0.18	0.36	0.34	0.02	0.09	0.02	
REGIONAL TOTALS	0.54	0.32	0.71	0.51	0.17	0.16	0.28	0.28	0.11	0.11	0.05	0.32
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	
Emery	1.06	1	0.61	0.28	0.56	0.39	--	--	--	--	--	
Grand	--	--	--	--	--	--	--	--	--	--	--	
San Juan	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	1.06	1	0.61	0.28	0.56	0.39	--	--	--	--	--	0.65
STATE TOTALS	0.81	0.71	0.71	0.51	0.75	0.40	0.68	0.44	0.46	0.41	0.57	0.59

Table 5. Trend of young observed per mile during summer roadside pheasant counts, 1988-98.

Region and County	Year											Average 1988-97
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Northern Region												
Box Elder	0.39	0.16	0.27	0.14	0.41	0.28	0.52	0.15	0.22	0.12	--	
Cache	0.09	0.14	0.06	0.23	0.42	0.94	--	--	--	--	--	
Davis	0.52	0.22	0.31	0.26	0.04	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	0.39	0.97	0.30	0.77	--	--	--	--	--	--	
REGIONAL TOTALS	0.28	0.20	0.32	0.21	0.41	0.19	0.52	0.15	0.22	0.12	--	0.26
Central Region												
Juab	0.17	0.08	0.09	--	0.62	0.08	0.08	0.12	0.00	0.06	--	
Salt Lake	--	--	0.97	0.93	--	0.24	--	--	--	--	--	
Sanpete	0.96	1.30	0.91	0.67	0.53	0.28	0.34	0.32	0.50	0.44	0.43	
Tooele	0.07	--	0.10	0.53	0.11	--	0.10	--	0.03	--	--	
Utah	1.57	1.00	1.15	0.49	1.97	0.69	1.12	0.72	0.71	0.60	0.56	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	1.11	1.10	0.87	0.59	1.38	0.37	0.63	0.47	0.50	0.49	0.46	0.75
Southern Region												
Beaver	0.10	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	0.50	--	0.31	0.28	--	1.18	--	--	--	--	0.56	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	0.95	--	--	--	--	--	--	--	--	--	0.51	
Washington	0.16	--	--	--	--	--	--	--	--	--	--	
Wayne	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	0.57	--	0.31	0.28	--	1.18	--	--	--	--	0.54	0.58
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	0.32	0.20	0.58	0.42	0.08	0.02	0.10	0.15	0.11	0.07	0.04	
Uintah	0.30	0.14	0.35	0.21	0.10	0.13	0.25	0.25	0.00	0.03	--	
REGIONAL TOTALS	0.32	0.17	0.46	0.37	0.08	0.07	0.17	0.20	0.07	0.06	0.03	0.20
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	
Emery	0.86	1.00	0.43	0.22	0.43	0.29	--	--	--	--	--	
Grand	--	--	--	--	--	--	--	--	--	--	--	
San Juan	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	0.86	1.00	0.43	0.22	0.43	0.29	--	--	--	--	--	0.54
STATE TOTALS	0.63	0.62	0.48	0.38	0.55	0.30	0.46	0.33	0.32	0.30	0.41	0.44

Table 6. Trend of young per adult hen ratios found during summer roadside pheasant counts, 1988-98.

Region and County	Year											Average 1988-97
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Northern Region												
Box Elder	2.21	7.00	5.86	1.92	3.04	4.67	3.32	3.29	3.44	3.50	--	
Cache	2.33	2.60	5.50	1.57	3.38	6.00	--	--	--	--	--	
Davis	6.86	1.30	2.41	3.00	1.00	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	4.80	5.50	2.60	3.35	--	--	--	--	--	--	
REGIONAL TOTALS	3.44	2.90	3.86	2.02	3.05	4.80	3.32	3.29	3.44	3.50	--	3.36
Central Region												
Juab	2.00	0.23	4.00	--	8.00	1.00	1.50	4.00	0.00	--	--	
Salt Lake	--	--	3.80	4.22	--	10.00	--	--	--	--	--	
Sanpete	4.48	3.20	3.34	4.17	4.60	4.77	2.15	9.00	3.00	4.29	2.29	
Tooele	2.00	--	2.00	--	3.00	--	0.60	--	2.00	--	--	
Utah	3.94	3.80	4.31	6.41	4.22	3.76	2.95	3.85	3.08	3.74	2.71	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	4.00	4.70	3.92	5.27	4.28	3.92	2.53	4.51	3.04	3.96	2.50	4.01
Southern Region												
Beaver	1.80	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	3.64	--	15.00	4.86	--	7.23	--	--	--	--	5.78	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	3.77	--	--	--	--	--	--	--	--	--	3.59	
Washington	3.50	--	--	--	--	--	--	--	--	--	--	
Wayne	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	3.61	--	15.00	4.86	--	7.23	--	--	--	--	5.02	7.67
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	2.36	1.68	2.60	3.81	0.86	1.00	3.40	3.67	3.60	4.00	7.00	
Uintah	3.67	2.33	3.30	3.33	1.70	3.33	6.60	6.00	--	1.00	--	
REGIONAL TOTALS	2.64	2.01	2.82	3.73	1.02	2.40	5.00	4.83	3.00	2.29	7.00	2.97
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	
Emery	6.42	3.60	3.50	5.00	6.50	3.71	--	--	--	--	--	
Grand	--	--	--	--	--	--	--	--	--	--	--	
San Juan	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	6.42	3.60	3.50	5.00	6.50	3.71	--	--	--	--	--	4.79
STATE TOTALS	3.68	2.95	3.70	3.81	3.40	4.31	2.84	4.44	3.08	3.75	3.53	3.60

Table 7. Trend of the percent of hens observed with broods during summer roadside pheasant counts, 1988-98.

Region and County	Year											Average
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1988-97
Northern Region												
Box Elder	64	100	100	83	74	89	68	57	89	100	--	
Cache	50	56	67	70	38	100	--	--	--	--	--	
Davis	86	47	50	50	0	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	100	80	60	85	--	--	--	--	--	--	
REGIONAL TOTALS	67	76	74	69	67	90	68	57	89	100	--	76
Central Region												
Juab	50	6	100	--	--	100	50	100	0	--	--	
Salt Lake	--	--	67	89	--	100	--	--	--	--	--	
Sanpete	88	81	78	83	90	85	59	100	71	100	55	
Tooele	50	--	--	--	--	--	40	--	100	--	--	
Utah	81	66	89	76	86	94	75	78	63	83	60	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	82	51	81	80	87	92	68	81	66	88	57	78
Southern Region												
Beaver	40	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	86	--	100	100	--	85	--	--	--	--	94	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	69	--	--	--	--	--	--	--	--	--	76	
Washington	50	--	--	--	--	--	--	--	--	--	--	
Wayne	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	74	--	100	100	--	85	--	--	--	--	88	90
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	39	61	60	84	--	50	60	33	80	67	100	
Uintah	75	56	79	100	--	67	100	100	0	50	0	
REGIONAL TOTALS	46	59	67	86	--	60	80	67	67	57	100	65
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	
Emery	100	64	64	100	83	57	--	--	--	--	--	
Grand	--	--	--	--	--	--	--	--	--	--	--	
San Juan	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	100	64	64	100	83	57	--	--	--	--	--	78
STATE TOTALS	72	64	76	79	85	85	69	76	68	85	69	76

Table 8. Trend of average brood size for pheasants, 1988-98.

Region and County	Year											Average 1988-97
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Northern Region												
Box Elder	4.80	8.00	5.40	3.20	4.00	5.40	6.78	6.67	4.00	--	--	
Cache	4.00	4.00	4.50	5.20	4.67	6.00	--	--	--	--	--	
Davis	6.60	4.50	4.20	6.00	--	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	5.50	4.30	--	4.33	3.94	--	--	--	--	--	--	
REGIONAL TOTALS	5.40	5.40	5.00	4.53	4.03	5.50	6.78	6.67	4.00	--	--	5.26
Central Region												
Juab	4.00	4.00	4.00	--	8.00	2.00	3.00	4.00	0.00	--	0.00	
Salt Lake	3.80	--	5.00	4.25	--	7.00	--	--	--	--	--	
Sanpete	5.80	4.20	4.40	5.00	4.00	5.89	4.18	5.83	4.62	4.29	5.22	
Tooele	4.00	--	3.00	--	--	--	1.00	--	2.00	--	--	
Utah	4.80	5.10	5.00	5.13	5.44	3.78	4.13	4.89	4.72	4.70	4.93	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	5.00	4.40	4.70	4.92	5.35	4.32	4.06	5.03	4.59	4.53	5.04	4.69
Southern Region												
Beaver	4.50	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	4.90	--	3.80	5.40	--	--	--	--	--	--	5.64	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	5.60	--	--	--	--	--	--	--	--	--	4.73	
Washington	7.00	--	--	--	--	--	--	--	--	--	--	
Wayne	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	5.30	--	3.80	5.40	--	--	--	--	--	--	5.36	4.83
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	5.30	2.70	5.30	4.50	0.68	2.00	5.67	--	3.00	4.00	1.75	
Uintah	5.30	4.20	4.90	3.33	3.00	4.75	6.60	6.00	--	--	0.00	
REGIONAL TOTALS	5.30	3.50	5.10	4.18	0.80	3.83	6.25	6.00	3.00	4.00	1.75	4.20
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	
Emery	7.10	5.70	5.60	4.50	7.00	6.50	--	--	--	--	--	
Grand	--	--	--	--	--	--	--	--	--	--	--	
San Juan	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	7.10	5.70	5.60	4.50	7.00	6.50	--	--	--	--	--	6.07
STATE TOTALS	5.30	4.60	4.80	4.61	3.93	5.81	4.68	5.24	4.33	4.49	5.02	4.78

Table 9. Summary of pheasant hunter success and distribution of harvest and hunting pressure by region and county, 1998.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	227	15,052	9,678	0.64	11.87	12.43
CACHE	224	19,076	14,959	0.78	15.05	19.21
DAVIS	90	6,956	2,652	0.38	5.49	3.41
MORGAN	3	116	23	0.20	0.09	0.03
RICH	3	162	116	0.71	0.13	0.15
SUMMIT	1	46	0	0.00	0.04	0.00
WEBER	152	11,050	4,652	0.42	8.72	5.97
REGIONAL TOTALS	700	52,461	32,081	0.61	41.38	41.19
CENTRAL REGION						
JUAB	63	3,954	2,303	0.58	3.12	2.96
SALT LAKE	16	1,000	535	0.53	0.79	0.69
SANPETE	89	5,327	3,047	0.57	4.20	3.91
TOOELE	68	4,257	2,186	0.51	3.36	2.81
UTAH	351	20,752	14,517	0.70	16.37	18.64
WASATCH	4	186	255	1.38	0.15	0.33
REGIONAL TOTALS	591	35,478	22,845	0.64	27.98	29.33
SOUTHERN REGION						
BEAVER	6	418	162	0.39	0.33	0.21
GARFIELD	2	93	69	0.75	0.07	0.09
IRON	7	348	69	0.20	0.28	0.09
KANE	0	0	0	0.00	0.00	0.00
MILLARD	126	10,120	5,583	0.55	7.98	7.17
PIUTE	1	69	23	0.33	0.06	0.03
SEVIER	83	7,258	4,350	0.60	5.72	5.59
WASHINGTON	24	2,140	697	0.33	1.69	0.90
WAYNE	4	325	69	0.21	0.26	0.09
REGIONAL TOTALS	253	20,775	11,027	0.53	16.39	14.16
NORTHEASTERN REGION						
DAGGETT	1	46	23	0.50	0.04	0.03
DUCHESNE	70	4,839	2,861	0.59	3.82	3.67
UINTAH	66	5,327	3,582	0.67	4.20	4.60
REGIONAL TOTALS	137	10,213	6,467	0.63	8.06	8.30
SOUTHEASTERN REGION						
CARBON	25	1,861	1,000	0.54	1.47	1.28
EMERY	61	5,164	3,954	0.77	4.07	5.08
GRAND	4	767	465	0.61	0.61	0.60
SAN JUAN	2	69	46	0.67	0.06	0.06
REGIONAL TOTALS	92	7,863	5,467	0.70	6.20	7.02
Unknown	0	0	0	0.00	0.00	0.00
STATE TOTALS	1,773	126,792	77,889	0.61	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 10. Summary of pheasants bagged per hunter-day by region and county, 1991-98.

Region and County	Year							
	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region								
Box Elder	0.53	0.64	0.44	0.55	0.57	0.67	0.65	0.64
Cache	0.51	0.59	0.48	0.60	0.54	0.67	0.60	0.78
Davis	0.34	0.29	0.21	0.34	0.24	0.24	0.44	0.38
Morgan	(0.15)	(0.00)	0.00	1.06	0.14	0.50	0.75	0.20
Rich	0.00	(0.00)	0.33	1.00	0.50	0.00	0.50	0.71
Summit	(0.05)	(0.00)	0.00	0.00	0.75	0.00	0.13	0.00
Weber	0.37	0.39	0.20	0.29	0.45	0.32	0.26	0.42
REGIONAL TOTALS	0.44	0.50	0.33	0.46	0.47	0.50	0.52	0.61
Central Region								
Juab	0.57	0.66	0.40	0.49	0.71	0.64	0.58	0.58
Salt Lake	0.32	0.39	0.53	0.55	0.30	0.65	0.49	0.53
Sanpete	0.59	0.60	0.44	0.59	0.34	0.55	0.53	0.57
Tooele	0.44	0.24	0.15	0.33	0.50	0.31	0.42	0.51
Utah	0.55	0.65	0.48	0.58	0.55	0.52	0.65	0.70
Wasatch	0.68	(0.30)	0.50	2.00	1.50	0.53	0.78	1.38
REGIONAL TOTALS	0.53	0.59	0.45	0.56	0.53	0.52	0.59	0.64
Southern Region								
Beaver	0.55	0.38	0.28	0.39	0.24	0.18	0.33	0.39
Garfield	0.00	(0.00)	0.00	1.00	0.50	0.00	1.00	0.75
Iron	0.29	0.26	0.29	0.44	0.25	0.25	0.14	0.20
Kane	0.00	(0.00)	0.00	0.00	0.00	2.00	0.00	0.00
Millard	0.59	0.76	0.58	0.62	0.58	0.56	0.50	0.55
Piute	(0.10)	(1.00)	0.25	0.63	0.50	0.91	14.00	0.33
Sevier	0.36	0.49	0.32	0.41	0.27	0.39	0.57	0.60
Washington	0.21	0.61	0.93	0.56	0.45	0.24	0.45	0.33
Wayne	(0.50)	(1.14)	0.29	0.57	0.50	0.20	0.08	0.21
REGIONAL TOTALS	0.45	0.62	0.47	0.52	0.42	0.45	0.58	0.53
Northeastern Region								
Daggett	0.00	(0.00)	1.20	0.00	0.00	0.18	1.50	0.50
Duchesne	0.66	0.79	0.77	0.85	0.90	0.86	0.65	0.59
Uintah	0.47	0.68	0.44	0.80	0.49	0.65	0.73	0.67
REGIONAL TOTALS	0.58	0.74	0.67	0.83	0.74	0.76	0.70	0.63
Southeastern Region								
Carbon	0.22	0.48	0.57	0.30	0.35	0.59	0.50	0.54
Emery	0.50	0.53	0.52	0.62	0.41	0.60	0.54	0.77
Grand	(0.48)	(1.40)	0.57	0.61	0.00	0.50	0.62	0.61
San Juan	(0.36)	(1.00)	0.00	0.00	0.00	0.64	2.00	0.67
REGIONAL TOTALS	0.39	0.53	0.53	0.00	0.38	0.59	0.53	0.70
Unknown Counties	0.00	0.00	1.45	0.53	0.30	6.40	0.50	0.00
STATE TOTALS	0.48	0.57	0.45	0.67	0.50	0.50	0.56	0.61

()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, 1991-98.

Region and County	Year							
	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region								
Box Elder	12.70	11.67	12.59	9.93	12.03	14.74	14.21	12.43
Cache	7.53	9.68	9.76	8.04	11.72	11.55	10.75	19.21
Davis	3.96	4.38	2.92	2.82	3.89	3.30	7.39	3.41
Morgan	(0.21)	(0.07)	(0.00)	0.00	0.44	0.03	0.12	0.03
Rich	0.00	0.00	(0.00)	0.06	0.05	0.05	0.03	0.15
Summit	0.00	0.02	(0.00)	0.00	0.00	0.08	0.00	0.00
Weber	8.39	(8.03)	6.59	5.13	5.55	9.91	11.31	5.97
REGIONAL TOTALS	32.79	33.85	31.86	25.98	33.67	39.67	43.80	41.19
Central Region								
Juab	2.09	2.47	3.21	2.16	3.05	3.74	2.34	2.96
Salt Lake	4.30	2.23	2.51	2.76	2.00	1.53	1.74	0.69
Sanpete	7.92	5.94	5.70	4.32	5.81	2.32	4.17	3.91
Tooele	2.19	1.72	1.24	0.93	1.10	1.67	2.71	2.81
Utah	23.44	27.43	28.75	24.51	25.18	25.42	17.39	18.64
Wasatch	0.00	0.50	(0.06)	0.06	0.05	0.74	0.28	0.33
REGIONAL TOTALS	39.94	40.30	41.47	34.74	37.18	35.41	28.62	29.33
Southern Region								
Beaver	0.73	0.69	0.31	0.48	0.74	0.41	0.25	0.21
Garfield	0.00	0.00	(0.00)	0.00	0.03	0.05	0.10	0.09
Iron	0.50	0.55	0.21	0.39	0.72	0.38	0.65	0.09
Kane	0.00	0.00	(0.00)	0.00	0.00	0.00	0.01	0.00
Millard	8.71	7.62	8.04	7.71	7.72	6.03	5.96	7.17
Piute	(0.08)	(0.02)	(0.19)	0.06	0.13	0.05	0.16	0.03
Sevier	3.94	3.62	3.83	4.53	3.79	2.10	4.42	5.59
Washington	0.78	0.43	0.46	2.52	1.64	1.09	1.15	0.90
Wayne	0.00	(0.02)	(0.17)	0.06	0.20	0.11	0.07	0.09
REGIONAL TOTALS	14.73	12.96	13.19	15.75	14.99	10.24	12.78	14.16
Northeastern Region								
Daggett	0.00	0.00	(0.00)	0.18	0.00	0.00	0.16	0.03
Duchesne	5.71	5.73	5.97	8.49	4.40	8.11	4.33	3.67
Uintah	3.15	3.07	3.58	2.40	3.38	3.00	3.43	4.60
REGIONAL TOTALS	8.86	8.79	9.55	11.07	7.78	11.11	7.92	8.30
Southeastern Region								
Carbon	0.76	0.84	1.28	2.19	1.00	1.06	1.94	1.28
Emery	2.76	2.92	2.44	5.10	4.96	2.13	3.80	5.08
Grand	(0.16)	(0.24)	(0.14)	0.12	0.36	0.00	0.85	0.60
San Juan	0.00	(0.10)	0.06)	0.00	0.00	0.00	0.21	0.06
REGIONAL TOTALS	3.68	4.10	3.94	7.41	6.32	3.19	6.80	7.02
Unknown Counties	0.00	0.00	0.00	5.04	0.05	0.38	0.07	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, 1991-98.

Region and County	Year							
	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region								
Box Elder	10.66	11.21	10.00	11.49	12.92	17.81	14.65	11.87
Cache	9.18	9.40	7.55	10.33	10.74	13.47	13.69	15.05
Davis	6.31	5.78	6.01	6.06	6.97	3.35	7.55	5.49
Morgan	(0.23)	(0.07)	0.15	0.22	0.10	0.11	0.06	0.09
Rich	(0.02)	(0.00)	0.08	0.03	0.05	0.00	0.09	0.13
Summit	(0.23)	(0.00)	0.01	0.01	0.05	0.00	0.12	0.04
Weber	10.47	9.64	11.34	10.23	11.06	6.75	9.74	8.72
REGIONAL TOTALS	37.10	36.11	35.14	38.37	41.90	41.48	45.91	41.38
Central Region								
Juab	2.11	2.79	2.41	3.26	2.64	2.79	3.47	3.12
Salt Lake	3.41	3.71	2.35	1.91	2.55	2.13	1.45	0.79
Sanpete	4.87	5.44	4.41	5.24	3.40	4.34	4.57	4.20
Tooele	1.91	2.99	2.71	1.75	1.65	1.58	3.28	3.36
Utah	24.00	25.12	22.66	22.98	23.13	16.92	15.68	16.37
Wasatch	0.36	(0.12)	0.05	0.01	0.25	0.28	0.13	0.15
REGIONAL TOTALS	36.66	40.18	34.59	35.15	33.62	28.04	28.58	27.98
Southern Region								
Beaver	0.61	0.47	0.78	1.02	0.86	0.08	0.31	0.33
Garfield	0.01	(0.00)	0.00	0.01	0.05	0.00	0.01	0.07
Iron	0.92	0.45	0.60	0.85	0.75	0.30	0.31	0.28
Kane	0.00	(0.02)	0.00	0.00	0.00	0.06	0.00	0.00
Millard	6.27	6.06	5.97	6.58	5.17	6.31	6.44	7.98
Piute	(0.12)	(0.11)	0.11	0.11	0.05	0.28	0.07	0.06
Sevier	4.86	4.48	6.25	4.89	3.89	3.24	4.57	5.72
Washington	1.01	0.43	1.21	1.56	1.20	0.53	1.13	1.69
Wayne	(0.02)	(0.08)	0.09	0.19	0.11	0.03	0.18	0.26
REGIONAL TOTALS	13.82	12.10	15.01	15.20	12.09	10.81	13.02	16.39
Northeastern Region								
Daggett	0.00	(0.00)	0.07	0.00	0.00	0.06	0.06	0.04
Duchesne	4.22	4.33	4.95	2.73	4.48	7.00	3.63	3.82
Uintah	3.16	2.99	2.43	2.23	3.05	4.20	4.32	4.20
REGIONAL TOTALS	7.38	7.32	7.45	4.97	7.53	11.26	8.01	8.06
Southeastern Region								
Carbon	2.21	1.51	1.73	1.75	1.50	2.16	1.68	1.47
Emery	2.80	2.63	4.37	4.21	2.60	4.31	2.45	4.07
Grand	(0.24)	(0.06)	0.09	0.31	0.12	0.80	0.19	0.61
San Juan	(0.13)	(0.04)	0.05	0.00	0.01	0.25	0.01	0.06
REGIONAL TOTALS	5.04	4.23	6.25	6.27	4.23	7.52	4.33	6.20
Unknown Counties	0.00	0.05	1.56	0.04	0.63	0.88	0.15	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 sample size inflated county harvest beyond reasonable estimate for known pheasant populations.

Table 13. Statewide summary of pheasant harvest statistics, 1948-98.

Year	Hunters	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
1991	42,813	72,612	150,096	0.48	1.70
1992	41,640	85,803	150,244	0.57	2.06
1993	39,640	63,336	141,399	0.45	1.60
1994	36,705	68,698	129,872	0.53	1.87
1995	38,391	71,202	142,755	0.50	1.85
1996	41,854	83,987	157,755	0.53	2.01
1997	37,622	78,693	140,135	0.56	2.09
1998	35,130	77,889	126,792	0.61	2.22
Totals					
(1948-98)	3,725,744	9,844,079	10,551,138	--	--
Averages					
(1948-97)	73,812	195,324	208,487	0.89	2.55

Table 14. Pheasant field bag check summary, 1998.

Region and County	All Hunts					Complete Hunts						
	Total Parties	Total Hunters	Total Hours	Total Birds	Birds/100 Hr	Complete Hunts	Total Hunters	Total Hours	Total Birds	Birds/100 Hr	Birds/Hunter	
Northern Region												
Box Elder	--	--	--	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	99	195	397	85	21	54	127	243	59	24	0.46	
Grand	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	99	195	397	85	21	54	127	243	59	24	0.46	
STATE TOTALS	99	195	397	85	21	54	127	243	59	24	0.46	

Table 15. Pheasant hunter success trend as determined by field check, 1992-98.

Region and County	1992		1993		1994		1995		1996		1997		1998	
	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter
Northern Region														
Box Elder	--	0.30	--	0.23	--	--	--	--	--	--	--	--	--	--
Cache	--	--	12	0.63	--	--	8	0.27	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	0.30	60	0.26	--	--	8	0.27	--	--	--	--	--	--
Central Region														
Juab	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	13	0.52	12	0.50	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	14	0.63	13	0.29	--	--	--	--	--	--	--	--
Utah	26	0.76	12	0.36	--	--	10	0.32	0	0.00	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	22	0.70	12	0.39	13	0.29	10	0.32	0	0.00	--	--	--	--
Southern Region														
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	7	0.38	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	7	0.38	--	--	--	--	--	--	--	--	--	--
Northeastern Region														
Daggett	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	16	1.13	--	--	--	--	6	0.20	--	--	--	--	--	--
Uintah	50	0.50	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	18	0.92	--	--	--	--	6	0.20	--	--	--	--	--	--
Southeastern Region														
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Emery	34	0.51	22	0.29	15	0.33	28	0.55	17	0.38	17	0.36	24	0.46
Grand	--	--	42	0.40	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	34	0.51	24	0.31	15	0.33	28	0.55	17	0.38	17	0.36	24	0.46
STATE TOTALS	36	0.46	19	0.31	14	0.31	11	0.33	16	0.38	17	0.36	24	0.46

Table 16. Trends of spring pheasant breeding territory counts, 1993-98.

Region and County	Territorial Males per Square Mile						Average 1993-97
	Year						
	1993	1994	1995	1996	1997	1998	
Northern Region							
Spring Creek-1	2.00	6.00		8.00			5.33
Spring Creek-2		7.00		13.00			10.00
BudPhelps WMA	0.00	5.00		10.00			5.00
Mendon	3.00	3.00		4.00			3.33
Pertersboro	0.00	0.00		2.00			0.67
REGIONAL AVERAGE	1.25	4.20		7.40			4.87
Central Region							
North Utah County (Sections 26,27,30,31)			1.97	2.80	2.48	4.66	2.42
Central Utah County (Sections 4,18)			6.83	8.80	5.88	6.99	7.17
South Utah County (Sections 11,25)			0.83	0.00	0.67	2.17	0.50
REGIONAL AVERAGE			3.21	3.87	3.01	4.61	3.36
Southern Region							
Clear Lake WMA (Entire WMA)			7.00	16.00			11.50
Pahvant WMA (Entire WMA)			3.00	9.00			6.00
REGIONAL AVERAGE			5.00	12.50			8.75
Northeastern Region							
Daggett							
Duchesne							
Uintah							
REGIONAL AVERAGE							
Southeastern Region							
Carbon							
Emery							
Huntington						15.50	
Lawrence						24.50	
Castle Dale						7.00	
Moore						13.00	
Grand							
San Juan							
REGIONAL AVERAGE						15.00	
STATE AVERAGE	1.25	4.20	4.11	7.92	3.01	9.80	5.66

Migratory Upland Game Birds



Mourning Dove

The breeding density index decreased 52 percent in 1998, and was 46 percent below average.

Harvest statistics derived from the questionnaire indicated an increase in number of hunters and harvest compared to 1997.

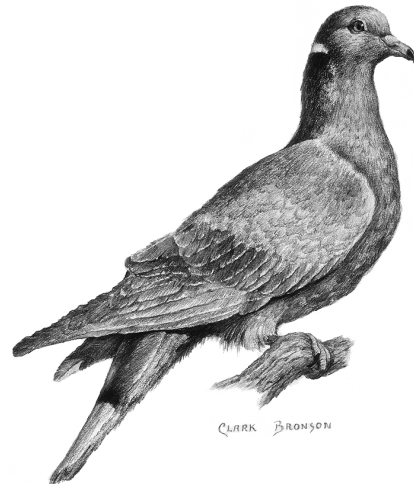
Beginning in 1998, Utah mourning dove and band-tailed pigeon hunters were required to register under the federally mandated, Migratory Game Bird Harvest Information Program (HIP). The purpose of HIP is to ensure standardized harvest data collection for migratory game birds. HIP is administered by the U.S. Fish and Wildlife Service.

Field bag checks indicated a decrease in hunter success on opening day. Hunters who participated hunted more hours per day than the previous year, and spent more time afield per dove harvested.

Aging of wings indicated the juvenile per 100 adult ratio increased to 120 compared to 116 in 1997. Juvenile per 100 adult ratio was 22 percent above the long-term average.

Band-tailed Pigeon

A free band-tailed pigeon hunting permit was required in 1998 to obtain mailing addresses for a harvest questionnaire. Pigeon hunters were also required to register in the HIP program. One hundred thirty-five hunters obtained permits and 68 went afield. Sixty-seven pigeons were harvested. The majority of the harvest occurred in Washington County.



MOURNING DOVE

Call Count Survey

Results of the 1998 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 U.S. Fish and Wildlife Service. However, indicated trends are similar (Figure 1). The following is a comparison of the results of the 1998 survey compared to 1997 and the 10-year(1988-97) average:

	<u>1998</u>	Percent change from 1997	Percent change from Average
Average doves heard per route	5.33	-52	-46
Average doves seen per route	3.33	-51	-66

Call count data (doves heard per route) indicated substantially decreased breeding activity in late May compared to 1997, and was 46 percent below the long-term average of doves heard per route.

Harvest

Hunter Questionnaire

Information obtained from the hunter questionnaire for 1998 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 1998 compared to 1997 and the previous 47-year average:

	<u>1998</u>	Percent change from 1997	Percent change from Average
Mourning dove hunters	18,030	-20	-18
Mourning doves harvested	160,014	-23	-22
Hunter-days afield	67,234	-21	-4
Mourning doves per hunter-day	2.38	-3	-26
Mourning doves per hunter	8.87	-5	-2

Hunter success decreased from 1997. Total harvest decreased 23 percent compared to 1997. Numbers of dove hunters decreased 20 percent and hunter-days afield decreased 21 percent. Doves per hunter decreased 5 percent from 1997.

Figure 1. Mourning dove breeding density index trend, 1964-98.

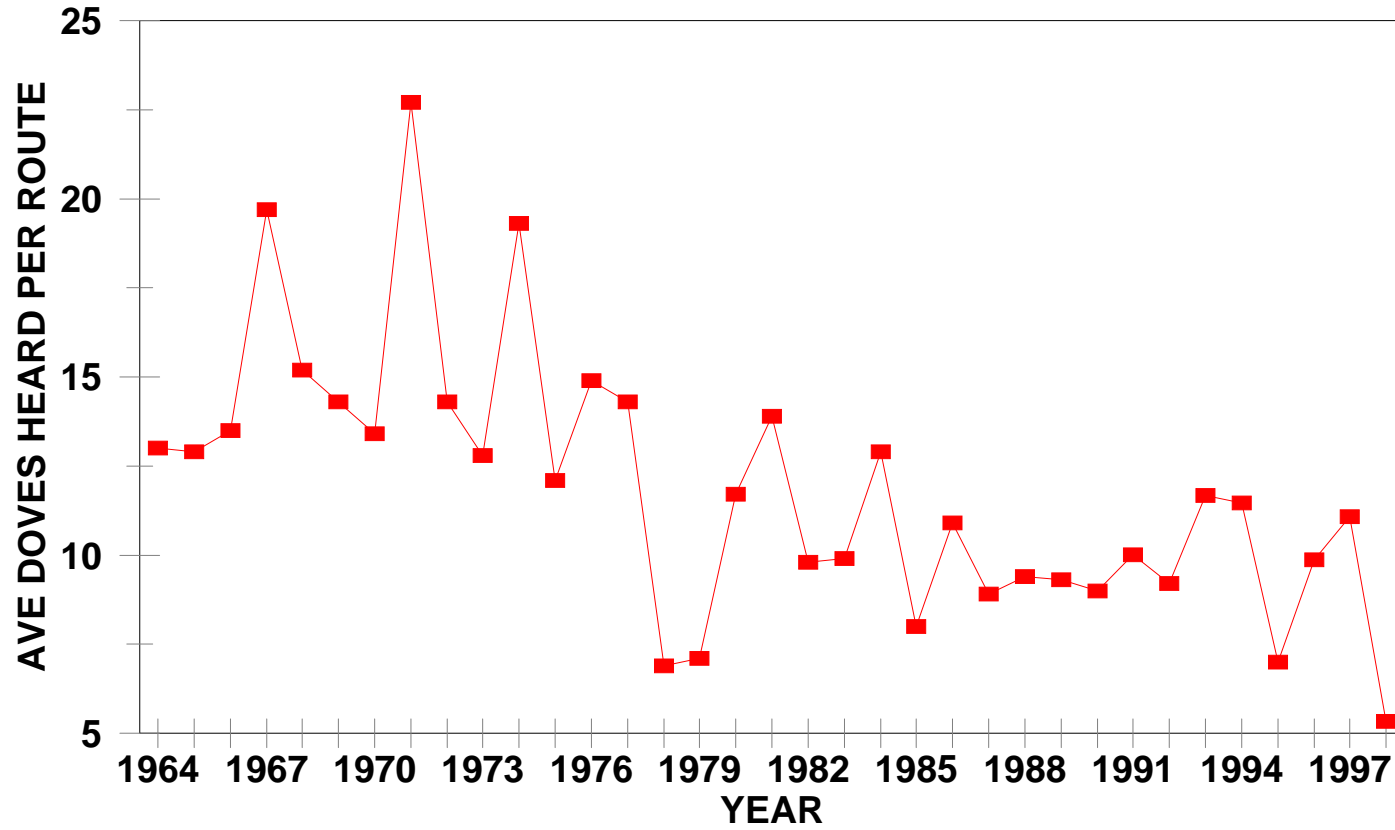


Figure 2. Statewide trends of mourning dove harvest statistics, 1951-98.

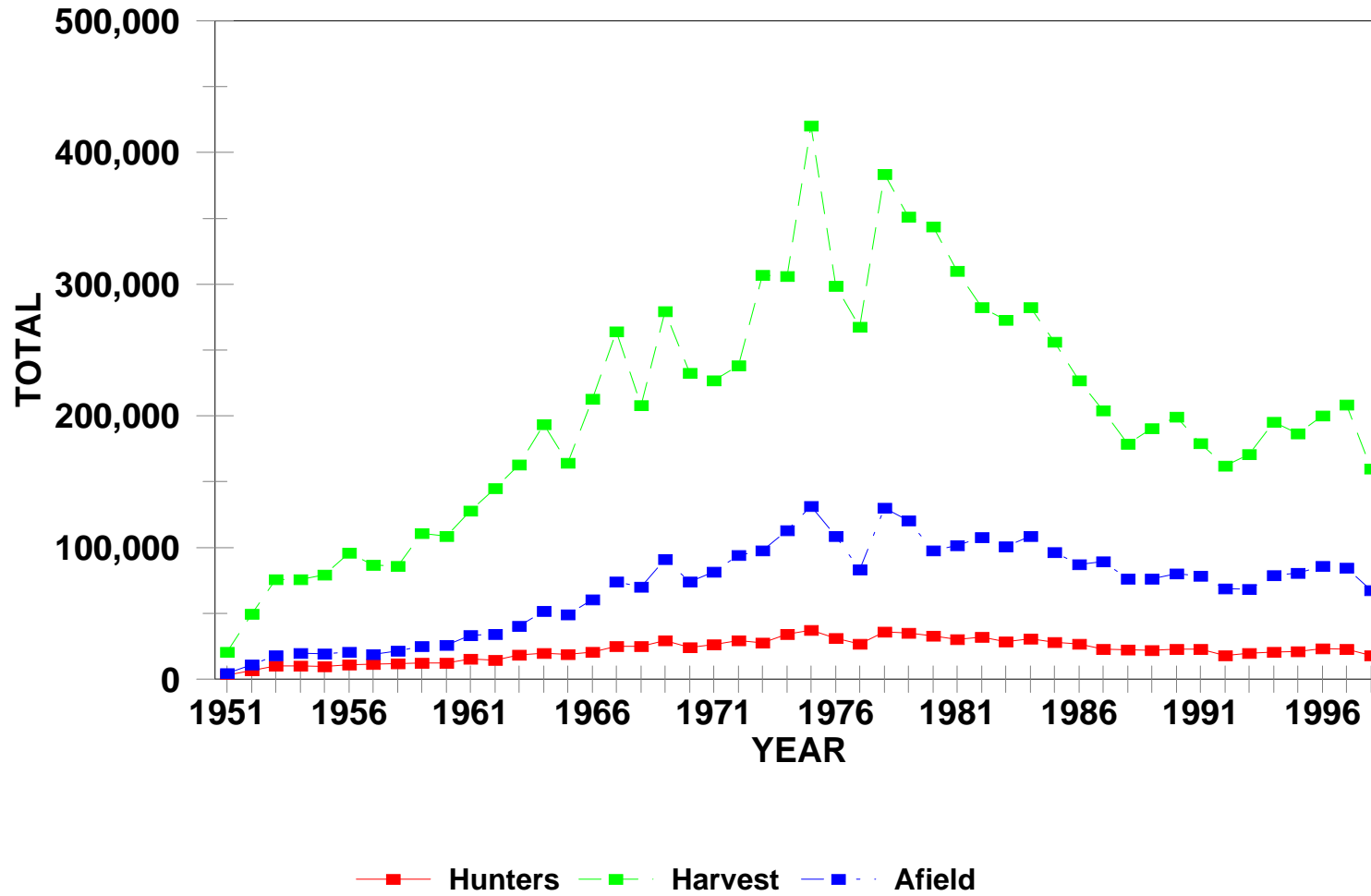
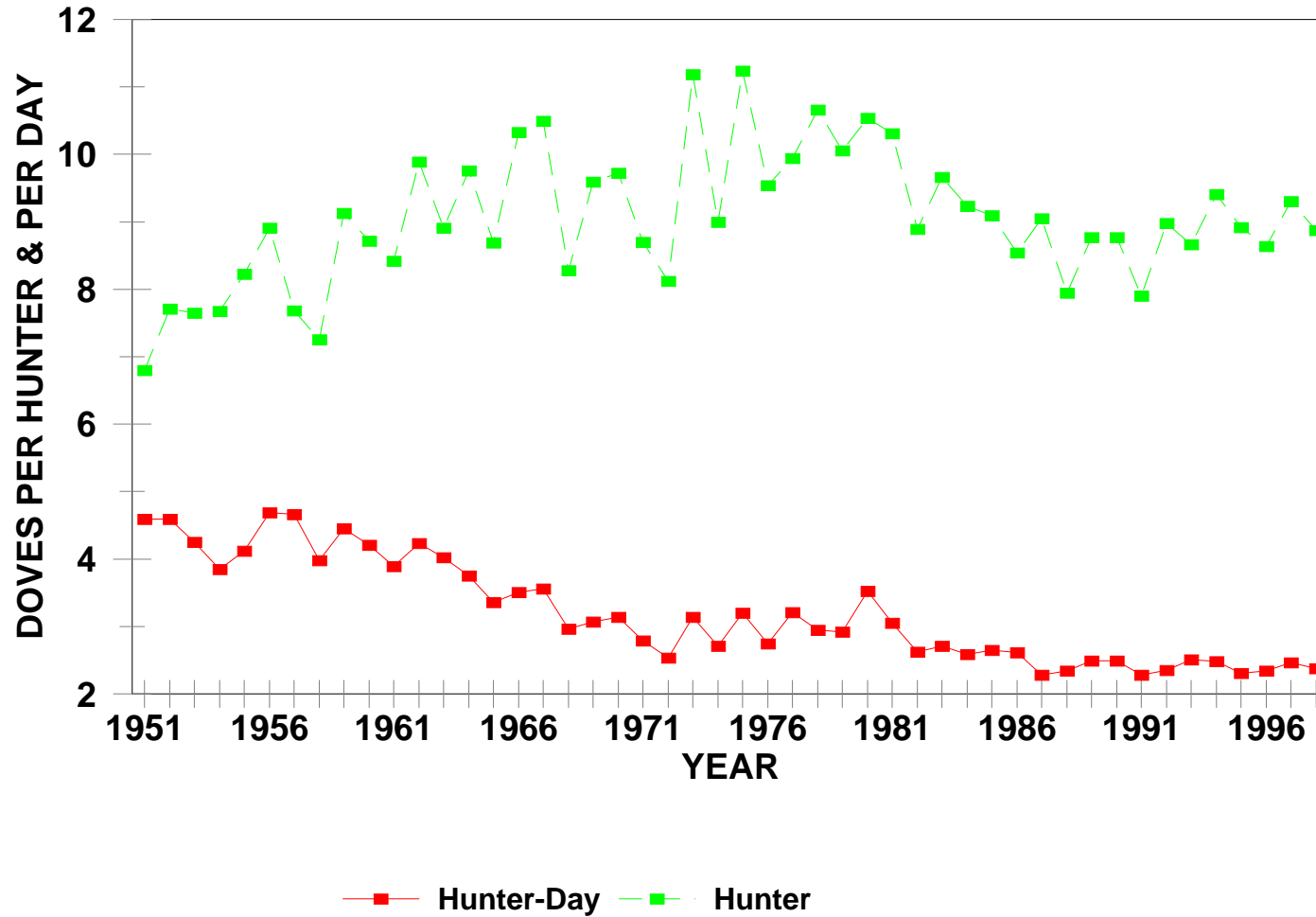


Figure 3. Statewide trends of mourning dove hunter success rates, 1951-98.



Field Bag Checks

A summary of field bag check data for 1998 is shown in Table 8. Hunter success trends determined via this method are shown in Table 9. Results of the 1998 survey compared to 1997 and the 10-year average (1988-97) follow:

	<u>1998</u>	Percent change from 1997	Percent change from Average
Total hunters checked	493	-7	-42
Total hours hunted	1,501	-13	-53
Doves per hunter (complete hunts)	1.75	-6	-38
Doves bagged per 100 hours (complete hunts)	44	-23	-41
Average hours per hunter-day (complete hunts)	3.96	+21	+4
Hours hunted per dove bagged (complete hunts)	2.26	+12	+61

Field bag checks indicated an opening day decrease in hunter success. The total number of hunters checked was down 7 percent from 1997. Dove hunters spent more time afield per hunter-day than in 1997, and more time was spent per dove bagged.

Age Composition of the Harvest

A summary of the age composition of harvested mourning doves from 1988 through 1998 is contained in Table 10. Hatching dates for immature doves harvested in Utah since 1989 are shown in Table 11.

Following is a comparison of data collected in 1998 compared to 1997 and the 10-year average (1988-97):

	<u>1998</u>	Percent change from 1997	Percent change from Average
Sample size	620	-62	-63
Immatures/100 adults	120	+20	+22
Percent hatched August 3+	55	+20	+22
Percent hatched July 25+	84	-3	+37
Percent hatched before July 25	16	+18	-22

Sample size decreased 62 percent in 1998. The 120 immatures per 100 adults in the harvest was up 20 percent from the previous year and is 22 percent above the long-term average.

Table 1. Summary of the mourning dove call-count survey for 1998.

Region and County	Route Number	Total Doves Heard / Route	Total Doves Seen / Route
Northern Region			
Box Elder	R1500	--	--
Summit	R1020	3	1
REGIONAL TOTALS		3	1
Central Region			
Juab	R2830	--	--
REGIONAL TOTALS		0	0
Southern Region			
Beaver	R3820	5	6
Garfield	R1090	0	0
Iron	R4001	26	0
Millard	R3640	8	10
Sevier-Sanpete	R0370	4	8
Washington	R4311	1	0
Wayne-Sevier	R0660	0	0
REGIONAL TOTALS		44	24
Northeastern Region			
Duchesne	R0080	4	1
Uintah	R0220	1	2
REGIONAL TOTALS		5	3
Southeastern Region			
Emery	R0540	17	3
San Juan	R1171	10	19
San Juan	R1451	1	0
REGIONAL TOTALS		28	22
STATE TOTALS		80	50
STATE AVERAGES		5.33	3.33
PERCENT CHANGE (from previous year)		-52	-51

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, 1982-98.

Region and County	Route Number	Number of Doves Heard Per Route																
		1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region																		
Box Elder	R1500	--	1	0	0	1	2	0	0	1	1	4	5	7	4	0	3	--
Summit	R1020	5	--	1	4	5	3	5	3	3	3	4	4	4	1	1	3	3
REGIONAL TOTALS		5	1	1	4	6	5	5	3	4	4	8	9	11	5	1	6	3
Central Region																		
Juab	R2830	9	25	19	20	19	16	23	13	36	38	15	42	41	23	41	22	--
REGIONAL TOTALS		9	25	19	20	19	16	23	13	36	38	15	42	41	23	41	22	--
Southern Region																		
Beaver	R3820	13	3	6	6	4	17	13	14	9	--	3	1	16	5	1	12	5
Garfield	R1090	2	3	15	3	1	1	0	16	0	0	3	2	0	0	0	0	0
Iron	R4001	21	19	31	41	26	23	20	10	12	15	26	49	40	9	4	37	26
Millard	R3640	9	5	14	2	2	3	5	4	5	8	7	7	10	5	16	7	8
Sevier-Sanpete	R0370	0	3	5	4	4	3	3	2	6	2	5	2	6	3	5	6	4
Washington	R4311	0	14	1	0	6	7	1	6	12	14	12	16	20	14	1	4	1
Wayne-Sevier	R0660	4	--	17	3	2	0	3	7	5	0	3	6	0	4	15	3	0
REGIONAL TOTALS		49	47	89	59	45	54	45	59	49	39	59	83	92	40	42	69	44
Northeastern Region																		
Duchesne	R0080	7	0	1	8	3	4	8	13	11	7	3	2	--	2	6	3	4
Uintah	R0220	1	9	10	5	20	12	6	0	2	3	2	3	7	5	6	3	1
REGIONAL TOTALS		8	9	11	13	23	16	14	13	13	10	5	5	7	7	12	6	5
Southeastern Region																		
Emery	R0540	7	11	10	3	10	11	15	8	2	5	8	14	13	18	7	30	17
San Juan	R1171	26	30	57	25	60	31	37	43	31	38	34	21	8	12	43	19	10
San Juan	R1451	24	5	7	2	0	1	2	1	0	3	9	1	0	0	2	14	1
REGIONAL TOTALS		57	46	74	30	70	43	54	52	33	46	51	36	21	30	52	63	28
STATE TOTALS		128	128	194	126	163	134	141	140	135	137	138	175	172	105	148	166	80
STATE AVERAGES		8.53	8.53	12.93	8.40	10.87	8.93	9.40	9.33	9.00	9.79	9.20	11.67	11.47	7.00	9.87	11.07	5.33
PERCENT CHANGE (from previous year)		-38	0	52	-35	29	-18	5	-1	-4	1	-8	27	-2	-39	41	12	-52

Table 3. Summary of mourning dove hunter success and distribution of harvest and hunting pressure by region and county, 1998.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	84	5,839	14,656	2.51	8.69	9.16
CACHE	43	3,838	5,281	1.38	5.71	3.30
DAVIS	12	1,233	1,791	1.45	1.83	1.12
MORGAN	9	697	1,977	2.83	1.04	1.24
RICH	4	279	372	1.33	0.42	0.23
SUMMIT	1	186	465	2.50	0.28	0.29
WEBER	41	3,861	5,211	1.35	5.74	3.26
REGIONAL TOTALS	194	15,936	29,755	1.87	23.70	18.60
CENTRAL REGION						
JUAB	76	3,722	14,912	4.01	5.54	9.32
SALT LAKE	20	1,535	4,652	3.03	2.28	2.91
SANPETE	28	1,954	4,001	2.05	2.91	2.50
TOOELE	88	5,792	13,563	2.34	8.62	8.48
UTAH	175	13,819	35,525	2.57	20.55	22.20
WASATCH	6	348	651	1.87	0.52	0.41
REGIONAL TOTALS	393	27,173	73,306	2.70	40.42	45.81
SOUTHERN REGION						
BEAVER	14	837	3,512	4.19	1.25	2.20
GARFIELD	3	442	442	1.00	0.66	0.28
IRON	27	2,884	7,863	2.73	4.29	4.91
KANE	0	0	0	0.00	0.00	0.00
MILLARD	87	7,561	16,704	2.21	11.25	10.44
PIUTE	4	162	977	6.00	0.24	0.61
SEVIER	40	4,536	9,049	1.99	6.75	5.66
WASHINGTON	31	2,256	5,909	2.62	3.36	3.69
WAYNE	3	139	162	1.17	0.21	0.10
REGIONAL TOTALS	209	18,821	44,621	2.37	27.99	27.89
NORTHEASTERN REGION						
DAGGETT	1	46	46	1.00	0.07	0.03
DUCHESNE	11	674	2,233	3.31	1.00	1.40
UINTAH	19	2,093	4,490	2.14	3.11	2.81
REGIONAL TOTALS	31	2,815	6,770	2.40	4.19	4.23
SOUTHEASTERN REGION						
CARBON	12	977	1,000	1.02	1.45	0.63
EMERY	19	1,000	2,163	2.16	1.49	1.35
GRAND	5	162	604	3.71	0.24	0.38
SAN JUAN	6	348	1,791	5.13	0.52	1.12
REGIONAL TOTALS	42	2,489	5,560	2.23	3.70	3.47
Unknown	0	0	0	0.00	0.00	0.00
STATE TOTALS	869	67,234	160,014	2.38	100.00	100.00

* Total hunter trips from questionnaire returns.

Table 4. Summary of mourning doves bagged per hunter-day by region and county, 1991-98.

Region and County	Year							
	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region								
Box Elder	2.27	2.56	2.49	2.63	2.91	2.69	2.79	2.51
Cache	1.97	2.16	1.88	2.54	1.78	1.94	1.76	1.38
Davis	1.77	1.19	1.39	1.26	2.09	1.37	1.65	1.45
Morgan	2.31	2.47	0.88	2.93	3.65	2.45	2.57	2.83
Rich	3.45	2.27	1.18	1.67	0.83	1.54	2.00	1.33
Summit	1.78	3.25	0.25	2.61	5.00	2.00	0.48	2.50
Weber	1.30	1.79	1.50	1.57	2.07	1.74	1.56	1.35
REGIONAL TOTALS	2.02	1.99	2.16	2.36	2.36	2.15	2.12	1.87
Central Region								
Juab	3.33	3.34	4.25	2.72	3.35	3.53	3.06	4.01
Salt Lake	2.02	2.14	1.88	2.79	1.95	2.36	1.67	3.03
Sanpete	2.69	2.06	3.21	1.78	2.27	2.68	2.15	2.05
Tooele	2.29	2.14	2.06	2.45	2.02	2.48	3.40	2.34
Utah	1.89	1.77	2.12	2.43	1.72	1.94	2.15	2.57
Wasatch	2.11	2.37	1.83	2.15	2.21	1.70	2.46	1.87
REGIONAL TOTALS	2.25	2.10	2.51	2.43	2.07	2.33	2.51	2.70
Southern Region								
Beaver	3.32	3.41	1.52	3.72	2.73	3.23	4.09	4.19
Garfield	2.40	1.67	3.50	1.47	3.18	1.00	1.22	1.00
Iron	2.80	3.96	2.42	3.60	3.91	3.20	4.70	2.73
Kane	3.03	4.05	4.09	3.00	10.00	2.87	2.32	0.00
Millard	3.13	3.30	4.40	3.20	3.44	3.25	3.44	2.21
Piute	2.50	1.33	2.83	4.50	2.59	3.30	5.00	6.00
Sevier	2.09	2.42	2.10	2.36	1.21	1.76	2.06	1.99
Washington	3.63	2.54	2.74	2.28	3.06	3.41	2.45	2.62
Wayne	0.75	2.86	1.00	2.11	1.44	2.00	2.53	1.17
REGIONAL TOTALS	2.87	3.09	2.98	2.94	2.84	2.79	2.93	2.37
Northeastern Region								
Daggett	1.00	3.25	7.00	0.00	0.00	1.00	9.00	1.00
Duchesne	2.21	2.24	2.52	3.06	2.62	2.41	2.52	3.31
Uintah	1.06	2.06	2.12	3.35	2.01	1.96	2.19	2.14
REGIONAL TOTAL	1.64	2.15	2.32	3.25	2.08	2.15	2.32	2.40
Southeastern Region								
Carbon	0.25	2.15	1.51	2.82	0.96	1.93	1.85	1.02
Emery	1.68	3.10	3.73	2.06	2.10	2.11	1.55	2.16
Grand	1.13	0.00	2.21	1.50	0.47	2.08	1.00	3.71
San Juan	3.56	2.61	3.46	4.42	4.48	4.17	0.73	5.13
REGIONAL TOTALS	2.14	2.46	3.27	2.19	2.15	2.09	1.95	2.23
Unknown counties	0.00	0.00	2.40	1.50	2.28	1.58	0.96	0.00
STATE TOTALS	2.28	2.35	2.51	2.48	2.31	2.34	2.46	2.38

Table 7. Statewide summary of mourning dove harvest statistics, 1951-98.

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
1991	22,632	178,853	78,405	2.28	7.90
1992	18,021	161,902	68,937	2.35	8.98
1993	19,725	170,834	68,143	2.51	8.66
1994	20,743	195,089	78,594	2.48	9.41
1995	20,896	186,336	80,688	2.31	8.92
1996	23,180	200,167	85,613	2.34	8.64
1997	22,594	208,331	84,638	2.46	9.3
1998	18,030	160,014	67,234	2.38	8.87
Totals (1951-98)	1,054,488	9,785,377	3,356,329	--	--
Averages (1951-97)	22,052	204,795	69,981	3.22	9.04

* Estimated.

**Bag limit increased to 15.

***Bag limit reduced to 10.

Table 8. Mourning dove field bag check summary, 1998.

Region and County	All Hunts					Complete Hunts					
	Total Parties	Total Hunters	Total Hours	Total Birds	Birds/100 Hr	Complete Hunts	Total Hunters	Total Hours	Total Birds	Birds/100 Hr	Birds/Hunter
Northern Region											
Box Elder	--	--	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
Central Region											
Juab	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
Southern Region											
Beaver	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
Northeastern Region											
Daggett	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
Southeastern Region											
Carbon	--	--	--	--	--	--	--	--	--	--	--
Emery	3	5	8	8	100	3	5	8	8	100	1.60
Grand	--	--	--	--	--	--	--	--	--	--	--
San Juan	4	9	19	37	195	3	6	13	31	238	5.17
REGIONAL TOTALS	7	14	27	45	167	6	11	21	39	186	3.55
LEHI CHECK STATION	--	--	--	--	--	--	--	--	--	--	--
NEPHI CHECK STATION	196	368	1,474	826	56	145	256	1,014	597	59	2.33
THIOKOL CHECK STATION	58	111	--	559	--	50	96	401	485	121	5.05
STATE TOTALS	261	493	1,501	1,430	95	201	363	1,436	636	44	1.75

Table 9. Mourning dove hunter success trend as determined by field bag checks, 1993-98.

Region and County	1993		1994		1995		1996		1997		1998	
	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter
Northern Region												
Box Elder	--	--	--	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
Central Region												
Juab	110	5.26	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	117	4.42	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	115	4.64	--	--	--	--	--	--	--	--	--	--
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
Southeastern Region												
Carbon	280	7.00	--	--	--	--	--	--	--	--	--	--
Emery	198	7.92	327	6.13	121	2.71	--	--	--	--	100	1.60
Grand	200	1.00	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	154	4.05	144	2.57	--	--	210	5.79	238	5.17
REGIONAL TOTALS	202	6.93	193	4.64	127	2.67	--	--	210	5.79	186	3.55
LEHI CHECK STATION	130	4.43	88	3.09	40	1.58	30	1.19	31	1.03	--	--
NEPHI CHECK STATION	110	5.26	127	3.79	114	4.13	66	2.48	115	3.61	59	2.33
THIOKOL CHECK STATION	141	5.21	--	--	95	4.66	56	2.70	95	3.24	121	5.05
STATE TOTALS	112	4.36	83	2.88	56	2.22	28	1.16	28	1.76	44	1.76

Table 10. Age composition (Immatures/100 Adults) of Mourning Doves Harvested, 1988-98.

Region and County	1988 I/ 100A(n)	1989 I/ 100A(n)	1990 I/ 100A(n)	1991 I/ 100A(n)	1992 I/ 100A(n)	1993 I/ 100A(n)	1994 I/ 100A(n)	1995 I/ 100A(n)	1996 I/ 100A(n)	1997 I/ 100A(n)	1998 I/ 100A(n)	1988-97 Average I/ 100A(n)	1998 I/ 100A(n)
Northern Region													
Box Elder	--	--	82	435	239	487	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	82	435	239	487	--	--	--	--	--	--	161
Central Region													
Juab	--	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	83	11	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	83	11	--	--	--	83
Southern Region													
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	141	41	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	141	41	--	--	--	141
Northeastern Region													
Daggett	--	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--
Southeastern Region													
Carbon	--	--	--	128	73	--	68	84	64	18	--	--	--
Emery	70	187	85	37	79	143	81	96	169	70	104	104	--
Grand	--	--	50	10	--	--	--	--	--	--	--	--	--
San Juan	31	42	56	39	93	137	36	30	63	150	--	132	95
REGIONAL TOTALS	61	229	56	86	93	353	68	126	81	304	97	122	132
LEHI CHECK STATION	114	741	92	978	116	144	109	587	--	--	95	1,048	151
NEPHI CHECK STATION	1,047	671	64	955	134	829	126	772	93	406	72	588	123
THIOKOL CHECK STATION	--	--	--	--	--	115	370	90	177	80	289	154	424
STATE TOTALS	100	1,641	77	2,454	127	1,813	114	1,855	92	887	86	2,047	73

Table 11. Percent of harvest by hatching date of immature mourning doves in Utah, 1989-98.

Date Hatched	Age (Days)	P	PERCENT OF HARVEST BY HATCH DATE										SAMPLE SIZE									
			1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Aug 3	29	none	41.3	52.2	--	37.8	--	53.7	56.1	--	45.9	55	81	254	--	118	--	22	37	--	17	48
Jul 31	32	1	30.1	26.7	--	32.1	--	19.5	21.2	--	21.6	18	59	130	--	100	--	8	14	--	8	16
Jul 25	38	2	18.4	13.1	--	10.9	--	9.8	10.6	--	18.9	11	36	64	--	34	--	4	7	--	7	10
Jul 18	45	3	6.6	4.3	--	9.3	--	7.3	6.1	--	5.4	9	13	21	--	29	--	3	4	--	2	8
Jul 9	54	4	2.6	2.3	--	4.5	--	7.3	4.5	--	8.1	5	5	11	--	14	--	3	3	--	3	4
Jun 30	63	5	0.5	0.6	--	4.2	--	0.0	1.5	--	0.0	2	1	3	--	13	--	0	1	--	0	2
Jun 21	72	6	0.0	0.4	--	1.0	--	2.4	0.0	--	0.0	0.0	0	2	--	3	--	1	0	--	0	0
Jun 8	85	7	0.5	--	--	0.3	--	0.0	0.0	--	0.0	0.0	1	--	--	1	--	0	0	--	0	0
May 22	102	8	0.0	--	--	--	--	0.0	0.0	--	0.0	0.0	0	--	--	--	--	0	0	--	0	0
Apr 27	127	9	0.0	0.4	--	--	--	0.0	0.0	--	0.0	0.0	0	2	--	--	--	0	0	--	0	0
Apr 21	133	10	0.0	0.0	--	--	--	0.0	0.0	--	0.0	0.0	0	--	--	--	--	0	0	--	0	0
			100	100	--	100	--	100	100.0	--	100	100	196	487	--	312	--	41	66	--	37	88

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 1998 band-tailed pigeon harvest is in Table 13. Free hunting permits were required in 1998 as well as registration in the HIP program. A harvest questionnaire was sent to participants. Only 68 hunters obtained the band-tailed pigeon permit in 1998. Harvest trends since 1970 are shown in Figures 4 & 5 and Table 14.

	<u>1998</u>	<u>Percent change from 1997</u>	<u>Percent change from Average</u>
Band-tailed pigeon hunters afield	68	+17	+57
Band-tailed pigeon harvest	67	-32	-41
Hunter-days afield	120	+40	+2
Pigeons per hunter-day	0.56	+19	-42
Pigeons per hunter	0.99	-41	-63

Band-tailed pigeon hunters afield increased from 1997, and was 57 percent above the long-term average.

Sixty-seven pigeons were reported harvested in 1998.

Figure 4. Band-tailed pigeon harvest statistics, 1970-98.

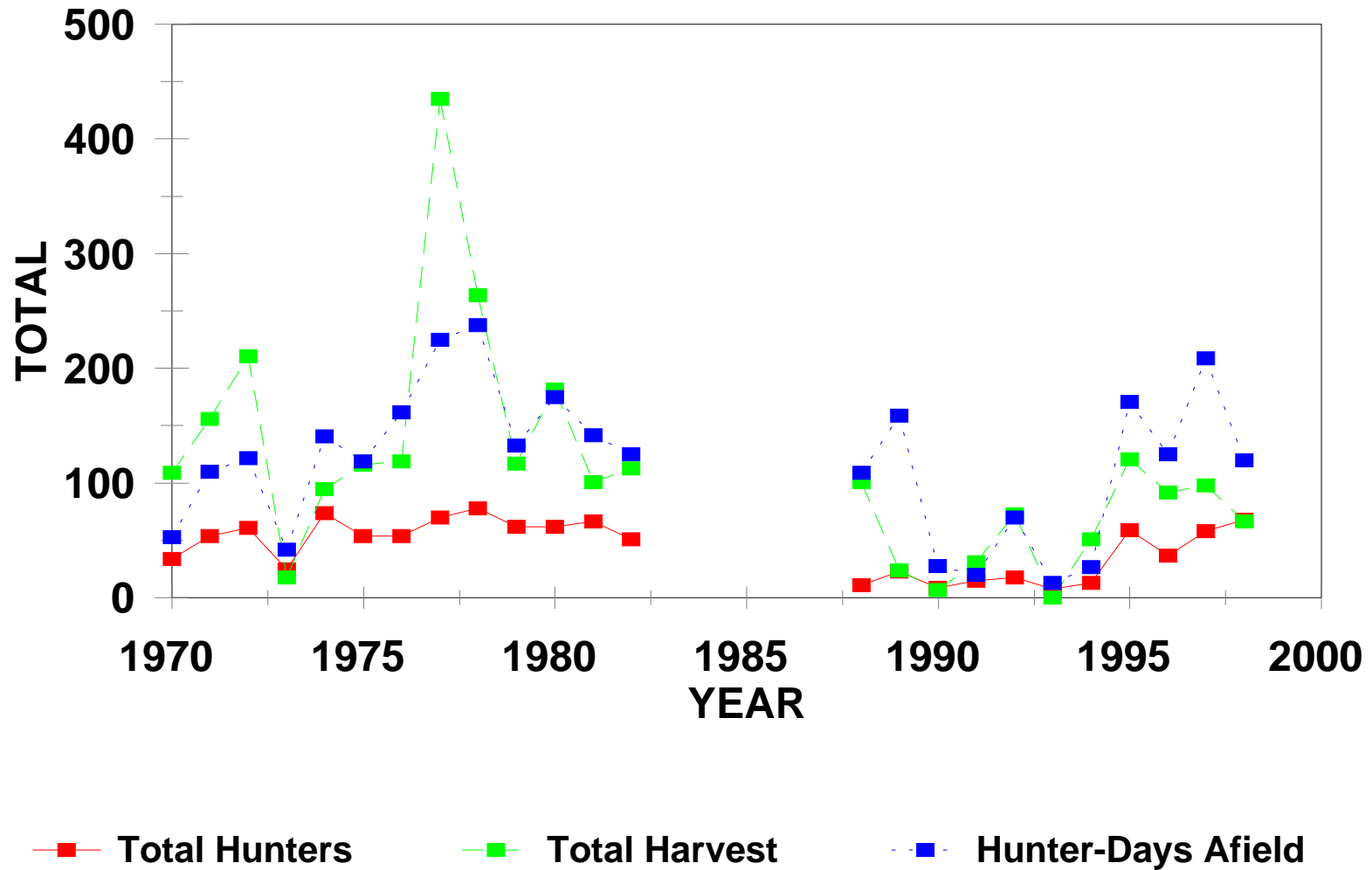


Figure 5. Trends of band-tailed pigeon hunter success rates, 1970-98.

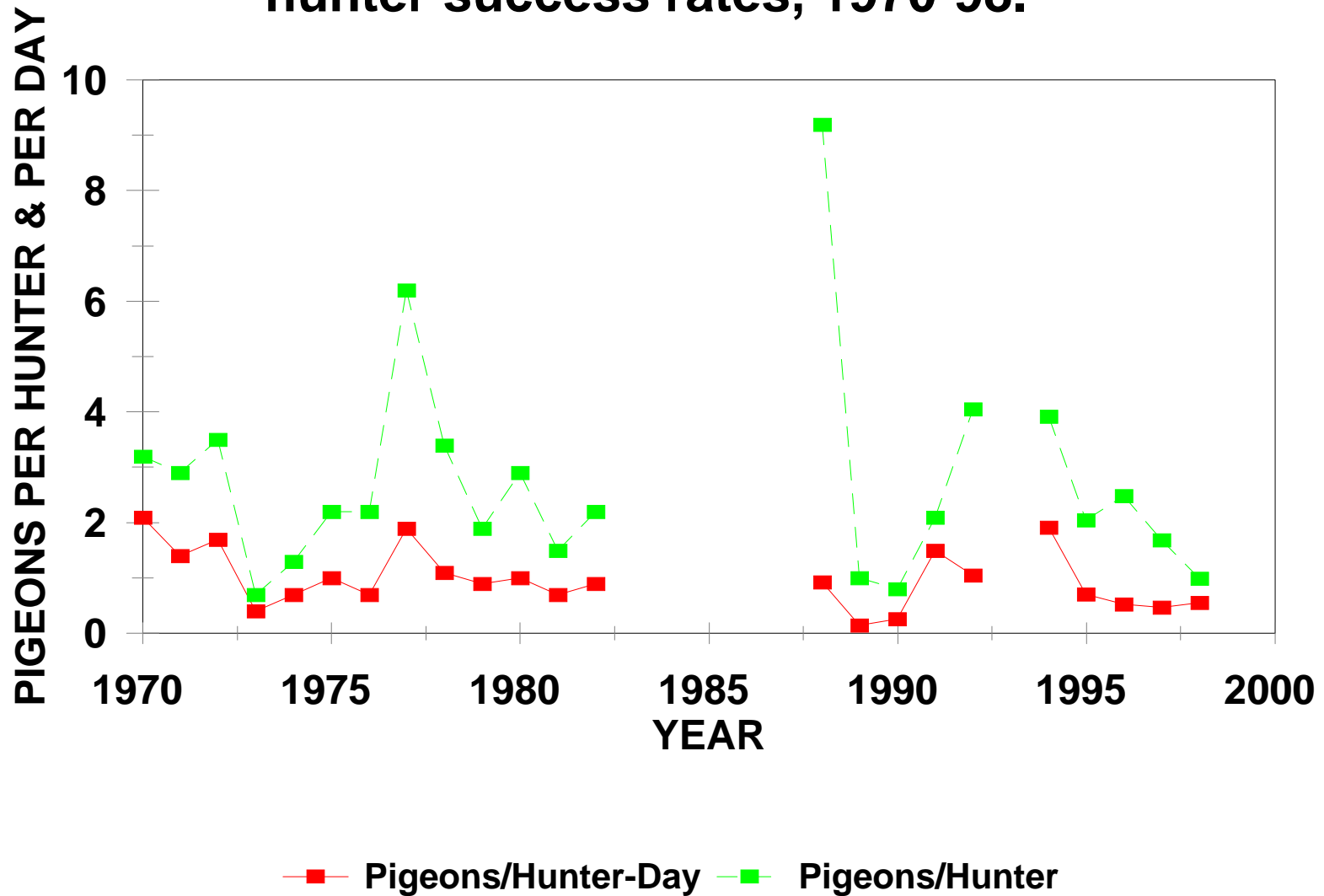


Table 13. Band-tailed pigeon harvest statistics, 1998.

Area Hunted	Hunters Afield	Hunter-Days Afield	Harvest	Pigeons/ Hunter-Day	Pigeons/ Hunter	Percent Pressure*	Percent Harvest	Pigeons Crippled	Pigeons Observed
Beaver County	--	--	--	ERR	ERR	0	0.00	0	
Blue Mountain-Elk Ridge	3	5	0	0.00	0.00	4	0.00	0	19
Iron County	13	20	3	0.15	0.23	17	4.48	0	52
Kane County	5	8	0	0.00	0.00	7	0.00	0	0
LaSal Mountain	15	23	10	0.43	0.67	19	14.93	0	19
Washington County	13	33	41	1.24	3.15	28	61.19	0	190
Other	19	31	13	0.42	0.68	26	19.40	4	101
Totals	68	120	67	0.56	0.99	100	100	4	381

*Based on hunter-days.

Projection Factor = 2.54716981132

135

PERMITS SOLD

53

QUESTIONNAIRES RETURNED

39

QUESTIONNAIRE RETURN RATE (PERCENT)

Table 14. Statewide summary of band-tailed pigeon harvest statistics, 1970-98.

Year	Total Hunters	Total Harvest	Hunter-Days Afield	Pigeons/Hunter-Day	Pigeons/Hunter
1970	34	109	53	2.10	3.20
1971	54	156	110	1.40	2.90
1972	61	211	122	1.70	3.50
1973	25	18	42	0.40	0.70
1974	74	95	141	0.70	1.30
1975	54	116	119	1.00	2.20
1976	54	119	162	0.70	2.20
1977	70	435	225	1.90	6.20
1978	78	264	238	1.10	3.40
1979	62	117	133	0.90	1.90
1980	62	182	175	1.00	2.90
1981	67	101	142	0.70	1.50
1982	51	113	125	0.90	2.20
1983	--	--	--	--	--
1984	--	--	--	--	--
1985	--	--	--	--	--
1986	--	--	--	--	--
1987	--	--	--	--	--
1988	11	101	109	0.93	9.20
1989	23	24	159	0.15	1.00
1990	9	7	28	0.26	0.80
1991	15	31	20	1.50	2.10
1992	18	73	70	1.05	4.06
1993	8	0	13	--	--
1994	13	51	27	1.92	3.92
1995	59	121	171	0.71	2.05
1996	37	92	125	0.53	2.49
1997	58	98	209	0.47	1.69
1998	68	67	120	0.56	0.99
Totals (1970-98)	1,065	2,701	2,838	--	--
Averages (1970-97)	43	115	118	0.96	2.67



Chukar Partridge

Late winter and early spring precipitation, critical to successful chukar production, was slightly above normal in 1998 (Figure 3).

Results of the aerial survey indicated that chukars per square mile was up 218 percent over 1997.

Harvest statistics from the general mail questionnaire reflected a 51 percent increase in harvest by 4 percent fewer hunters than in 1997. Hunter success (chukars per hunter-day) increased 58 percent from 1997 while time afield decreased 5 percent.

Aerial Survey

Results of the annual aerial survey for 1998 are shown in Table 1 of this section. Following are the survey results for 1998 compared to 1997 and the 1996-97 average.

	<u>1998</u>	Percent change from <u>1997</u>	Percent change from <u>Average</u>
Coveys flushed	52	+189	+247
Total chukars observed	939	+218	+372
Chukars per square mile	117.38	+218	+345
Chukars per survey hour	695.56	+176	+309

This population survey technique was implemented in 1996. The survey allows for rapid counting of localized chukar populations versus ground brood count surveys. Chukars observed per square mile increased 218 percent over 1997. Chukars observed per survey hour increased 176 percent over 1997.

Harvest

Hunter Questionnaire

Results of the hunter questionnaire survey for 1998 are shown in Table 2. Long-term trends of chukars bagged per hunter-day, percent of harvest and percent of pressure (hunter-days) by county are found in Tables 3-5 and total statewide harvest statistics in Table 6 and Figures 1 and 2. Following is a comparison of 1998 harvest statistics to 1997 and the previous 40-year average:

	<u>1998</u>	Percent change from <u>1997</u>	Percent change from <u>Average</u>
Chukar hunters	9,283	-4	-31
Chukars harvested	36,013	+51	-2
Hunter-days afield	33,082	-5	-19
Chukars per hunter-day	1.09	+58	+26
Chukars per hunter	3.88	+57	+45

Chukar hunters and hunter effort decreased from 1997. Chukars per hunter-day increased 58 percent from 1997 and was 26 percent above the long-term average. Total harvest increased 51 percent in 1998.

Field Bag Checks

A summary of field bag check data for 1998 is shown in Table 7. The hunter success trend determined via this method are shown in Table 8. Data for the 1998 season compared to 1997 and the 10-year (1988-97) average follow:

	<u>1998</u>	Percent change from 1997	Percent change from Average
Total hunters checked	87	+71	+91
Total hours hunted	326	+70	+89
Chukars per hunter (complete hunts)	0.96	+68	-42
Chukars bagged per 100 hours (complete hunts)	28	+87	-38
Average hours per hunter-day (complete hunts)	3.47	-7	-11
Hours hunted per chukar bagged (complete hunts)	3.61	-51	+11

Total hunters checked in 1998 increased over 1997. Chukars bagged per 100 hours increased 87 percent over 1997, but remained 38 percent below average.

Figure 1. Statewide trends of chukar partridge harvest statistics, 1958-98.

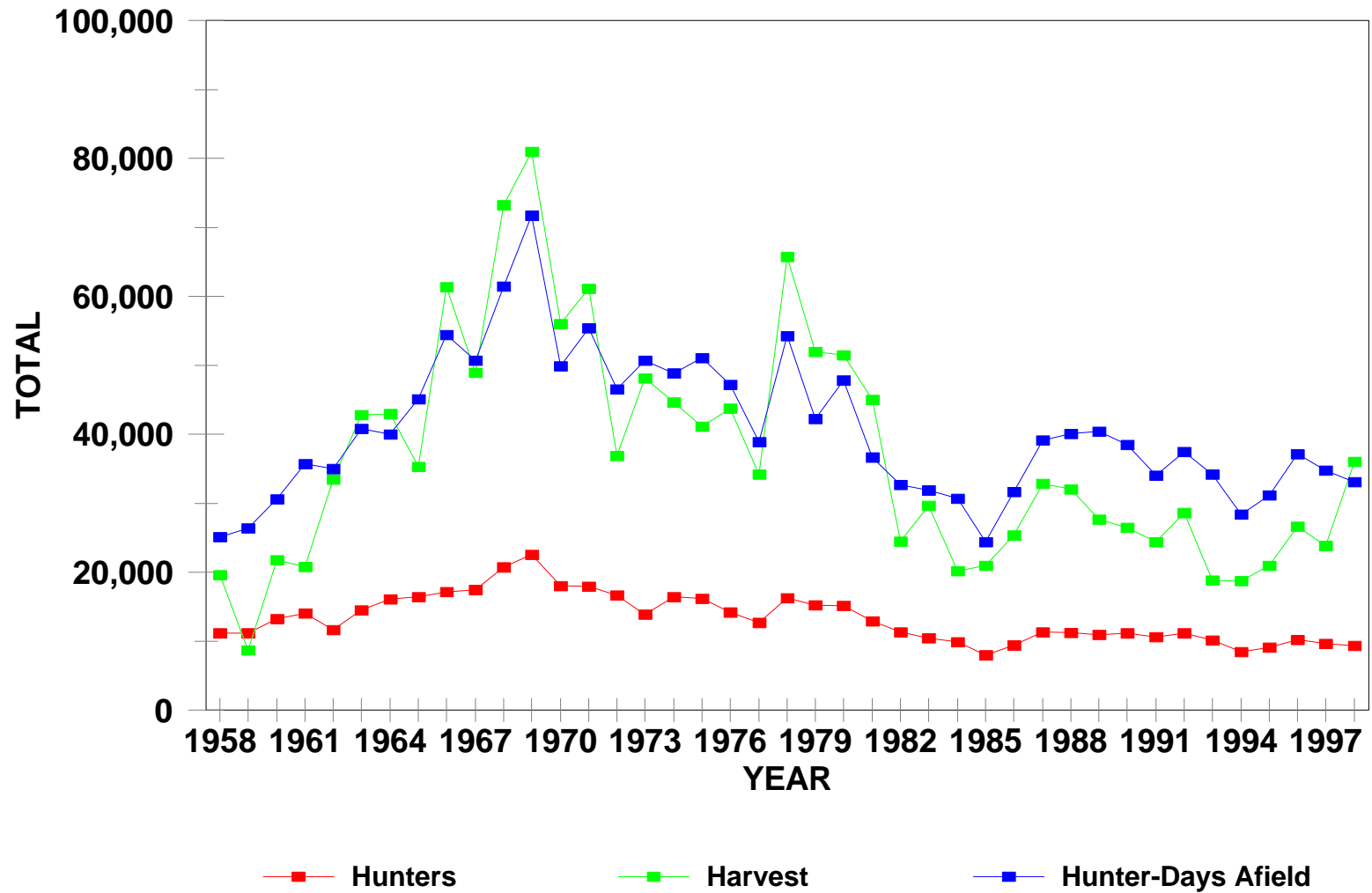
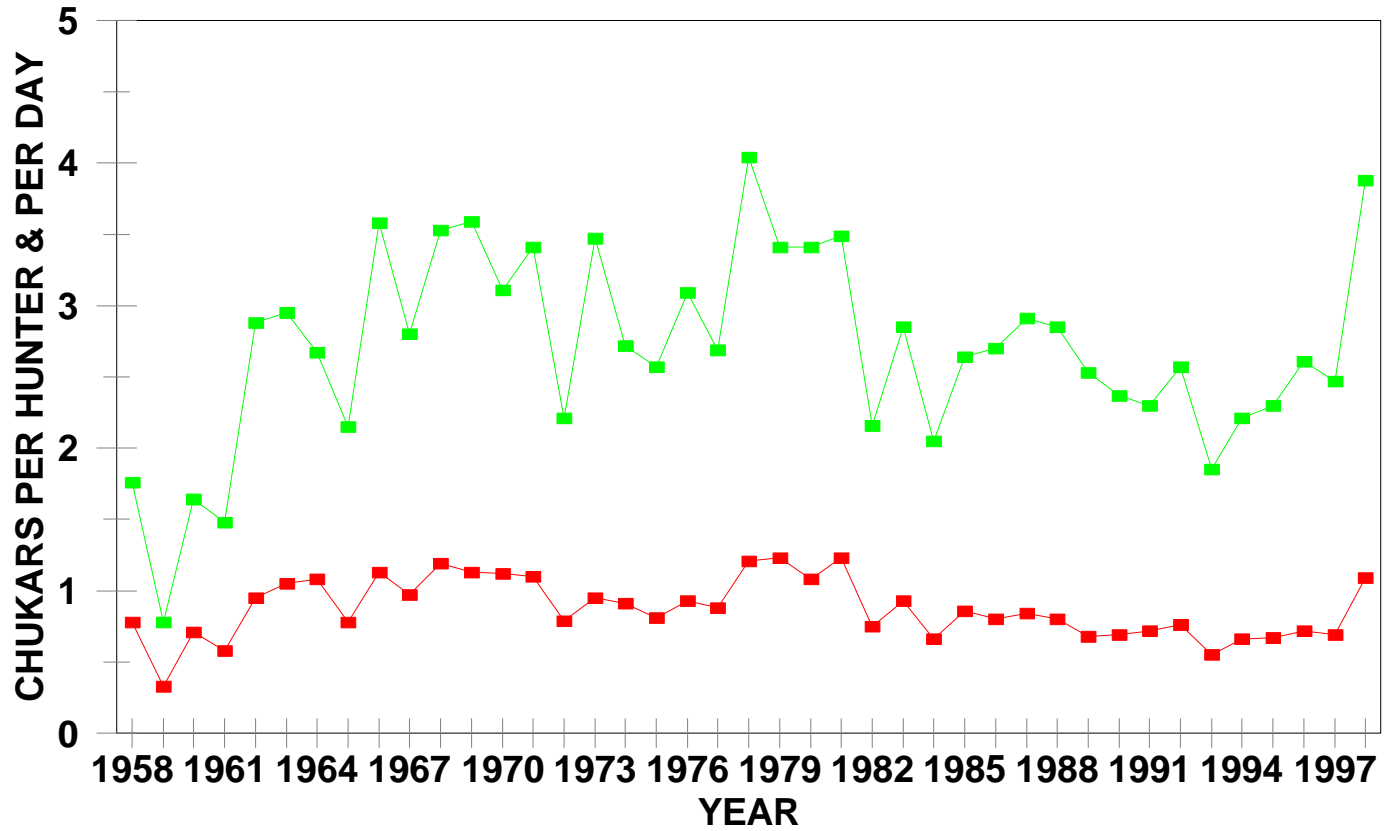
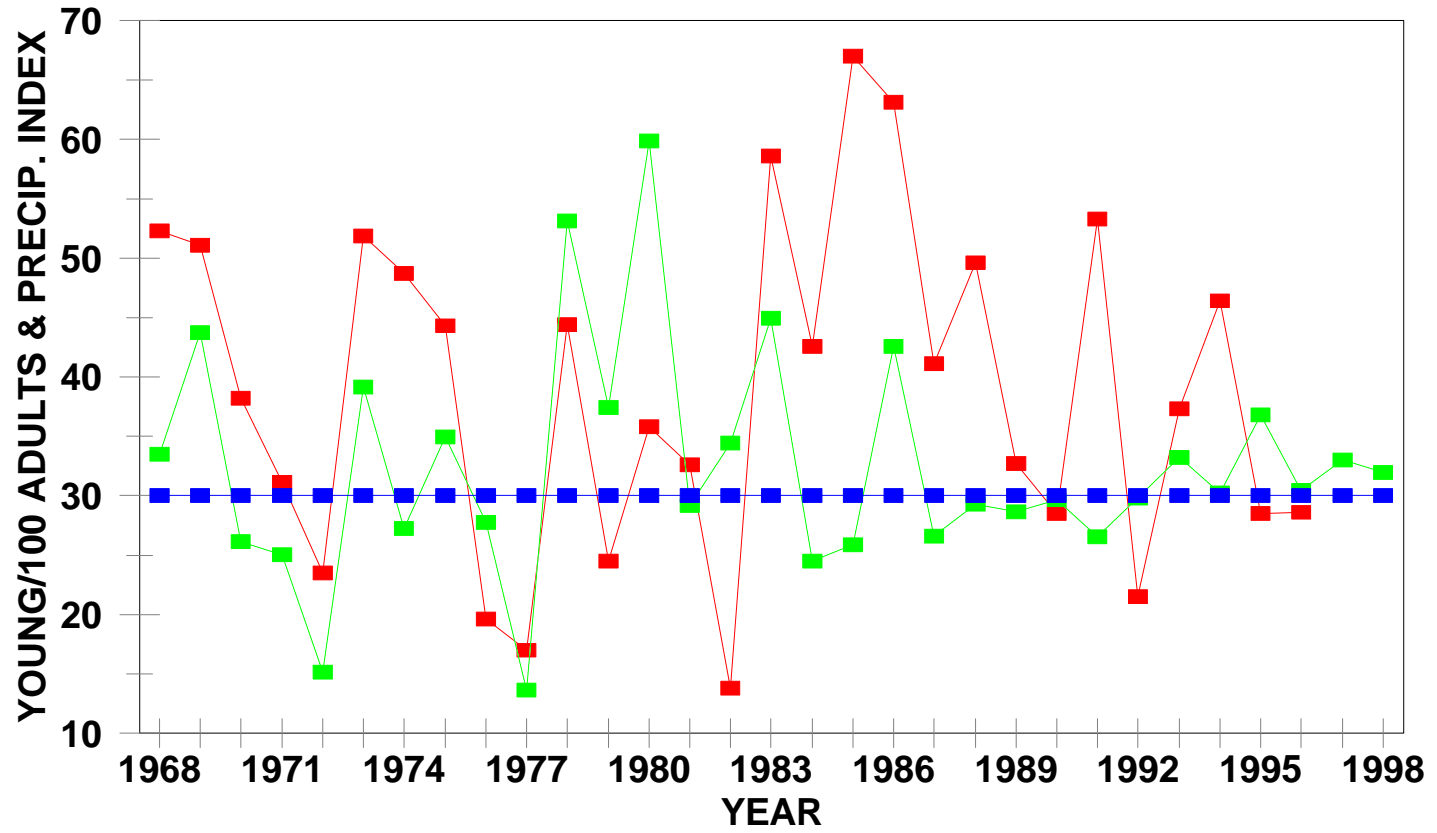


Figure 2. Statewide trends of chukar hunter success rates, 1958-98.



—■— Chukars Per Hunter-Day —■— Chukars Per Hunter

Figure 3. Jan-Apr precipitation vs. chukar production, 1968-98.



■ Young/100 Adults (/10)
 ■ Precipitation Index
 ■ Average Precipitation

Table 1. Chukar aerial survey, 1996-98.

Year	Area	Date	Coveys Flushed	Total Chukars Observed	Square Miles Surveyed	Chukars/Square Mile	Elasped Time (hours)	Chukars/Survey Hour
1996	Northeast Cedar Mountains (Tooele County)	08/21/96	12	103	6.49	15.87	1.17	88.03
1997	Northeast Cedar Mountains (Tooele County)	08/20/97	18	295	8.00	36.88	1.17	252.14
1998	Northeast Cedar Mountains (Tooele County)	09/03/98	52	939	8.00	117.38	1.35	695.56
Totals (1996-98)			82	1337	22.49	--	3.69	--
Averages (1996-97)			15	199	7.25	26.37	1.17	170.09

Table 2. Summary of chukar hunter success and distribution of harvest and hunting pressure by region and county, 1998.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	75	4,792	4,466	0.93	14.49	12.40
CACHE	14	1,093	348	0.32	3.31	0.97
DAVIS	5	279	232	0.83	0.84	0.65
MORGAN	12	1,046	1,163	1.11	3.16	3.23
RICH	2	46	93	2.00	0.14	0.26
SUMMIT	2	69	46	0.67	0.21	0.13
WEBER	7	442	558	1.26	1.34	1.55
REGIONAL TOTALS	117	7,770	6,909	0.89	23.49	19.19
CENTRAL REGION						
JUAB	18	814	1,279	1.57	2.46	3.55
SALT LAKE	2	232	348	0.50	0.70	0.97
SANPETE	9	511	279	0.55	1.55	0.78
TOOELE	99	8,235	10,050	1.22	24.89	27.91
UTAH	58	4,257	5,234	1.23	12.87	14.54
WASATCH	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	186	14,051	17,192	1.22	42.48	47.74
SOUTHERN REGION						
BEAVER	11	930	1,186	1.28	2.81	3.29
GARFIELD	3	186	69	0.38	0.56	0.19
IRON	2	93	0	0.00	0.28	0.00
KANE	0	0	0	0.00	0.00	0.00
MILLARD	37	2,233	3,163	1.42	6.75	8.79
PIUTE	6	302	442	1.46	0.91	1.23
SEVIER	27	2,838	3,047	1.07	8.58	8.46
WASHINGTON	1	23	23	1.00	0.07	0.06
WAYNE	1	93	0	0.00	0.28	0.00
REGIONAL TOTALS	88	6,700	7,933	1.18	20.25	22.03
NORTHEASTERN REGION						
DAGGETT	1	23	0	0.00	0.07	0.00
DUCHESNE	13	837	511	0.61	2.53	1.42
UINTAH	10	442	465	1.05	1.34	1.29
REGIONAL TOTALS	24	1,302	977	0.75	3.94	2.71
SOUTHEASTERN REGION						
CARBON	9	372	279	0.75	1.13	0.78
EMERY	17	1,326	535	0.40	4.01	1.49
GRAND	12	1,512	2,140	1.42	4.57	5.94
SAN JUAN	1	46	46	1.00	0.14	0.13
REGIONAL TOTALS	39	3,257	3,001	0.92	9.85	8.33
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	454	33,082	36,013	1.09	100.00	100.00

*Total hunter trips from questionnaire returns

Table 3. Summary of chukars bagged per hunter-day by region and county, 1991-98.

Region and County	Year							
	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region								
Box Elder	0.78	0.86	0.37	0.72	1.12	0.88	0.78	0.93
Cache	0.37	0.89	0.28	0.03	0.26	0.57	0.45	0.32
Davis	0.76	0.38	0.25	0.21	0.17	1.58	0.50	0.83
Morgan	0.54	0.41	0.20	1.19	0.00	2.80	1.39	1.11
Rich	0.32	0.33	0.17	0.00	0.00	1.33	0.00	2.00
Summit	0.14	0.33	0.36	0.67	0.00	1.00	0.11	0.67
Weber	0.84	0.66	0.62	0.14	0.48	0.43	0.30	1.26
REGIONAL TOTALS	0.69	0.76	0.36	0.61	0.89	0.92	0.74	0.89
Central Region								
Juab	0.87	0.77	0.50	0.94	0.58	0.54	1.11	1.57
Salt Lake	1.68	1.08	1.30	0.58	0.79	0.97	0.25	0.50
Sanpete	0.83	0.77	0.76	0.58	0.30	0.20	1.33	0.55
Tooele	0.70	0.76	0.41	0.65	0.58	0.83	0.67	1.22
Utah	0.79	0.65	0.53	0.84	0.62	0.64	0.68	1.23
Wasatch	0.50	0.32	1.64	0.43	0.33	0.02	0.78	0.00
REGIONAL TOTALS	0.79	0.73	0.54	0.72	0.55	0.65	0.74	1.22
Southern Region								
Beaver	0.67	0.28	0.48	0.04	0.33	2.00	1.60	1.28
Garfield	2.50	0.00	1.33	1.78	0.00	0.00	0.57	0.38
Iron	0.18	0.44	0.00	0.80	0.50	0.00	0.00	0.00
Kane	1.50	0.00	0.29	0.00	0.33	0.00	0.00	0.00
Millard	0.55	1.35	0.51	0.55	0.71	1.06	0.59	1.42
Piute	1.00	0.18	0.39	0.20	0.45	0.79	2.50	1.46
Sevier	0.72	0.67	0.48	0.38	0.27	0.51	0.43	1.07
Washington	0.00	0.00	1.82	0.00	1.00	0.00	0.00	1.00
Wayne	1.80	0.20	0.27	2.33	0.15	0.60	0.17	0.00
REGIONAL TOTALS	0.68	0.73	0.53	0.43	0.36	0.65	0.54	1.18
Northeastern Region								
Daggett	0.00	0.00	1.00	0.00	0.00	2.00	0.00	0.00
Duchesne	0.19	1.86	0.51	0.74	1.39	1.16	0.52	0.61
Uintah	0.79	0.75	0.38	0.00	1.47	0.83	0.56	1.05
REGIONAL TOTAL	0.38	0.95	0.52	0.43	1.43	1.07	0.53	0.75
Southeastern Region								
Carbon	0.46	1.25	0.56	0.80	0.71	0.80	0.29	0.75
Emery	0.43	0.88	0.41	0.63	0.96	0.36	0.60	0.40
Grand	0.38	3.40	1.61	1.83	1.29	0.00	0.08	1.42
San Juan	0.50	0.00	0.00	0.20	4.00	0.00	0.00	1.00
REGIONAL TOTALS	0.44	1.24	1.14	0.97	1.07	0.41	0.41	0.92
Unknown counties	0.00	0.20	1.06	0.00	0.87	0.63	0.00	0.00
STATE TOTALS	0.72	0.76	0.55	0.66	0.67	0.72	0.69	1.09

Table 6. Statewide summary of chukar partridge harvest statistics, 1958-98.

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
1991	10,577	24,355	34,010	0.72	2.30
1992	11,125	28,599	37,463	0.76	2.57
1993	10,128	18,774	34,147	0.55	1.85
1994	8,455	18,721	28,389	0.66	2.21
1995	9,097	20,954	31,140	0.67	2.30
1996	10,197	26,594	37,116	0.72	2.61
1997	9,665	23,840	34,711	0.69	2.47
1998	9,283	36,013	33,082	1.09	3.88
Totals					
(1958-98)	543,661	1,507,412	1,665,592	--	--
Averages					
(1958-97)	13,359	36,785	40,813	0.87	2.67

Table 7. Chukar field bag check summary, 1998.

Region and County	All Hunts					Complete Hunts					
	Total Parties	Total Hunters	Total Hours	Total Birds	Birds/ 100 Hr	Complete Hunts	Total Hunters	Total Hours	Total Birds	Birds/ 100 Hr	Birds/ Hunter
Northern Region											
Box Elder	--	--	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
Central Region											
Juab	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	12	25	49	9	18	8	16	36	7	19	0.44
Southern Region											
Beaver	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
Northeastern Region											
Daggett	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
Southeastern Region											
Carbon	--	--	--	--	--	--	--	--	--	--	--
Emery	12	41	154	31	20	7	25	94	23	24	0.92
Grand	9	21	123	28	23	6	10	47	19	40	1.90
San Juan	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	21	62	277	59	42.9	13	35	141	42	64.8	1.20
STATE TOTALS	33	87	326	68	21	21	51	177	49	28	0.96

Table 8. Chukar hunter success trend as determined by field bag check, 1993-98.

Region and County	1993		1994		1995		1996		1997		1998	
	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter
Northern Region												
Box Elder	--	--	--	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	15	0.57	--	--
Utah	--	--	--	--	18	0.75	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	18	0.75	--	--	15	0.57	19	0.44
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	66	2.73	--	--	--	--	24	0.92
Grand	41	2.36	102	3.14	33	1.79	--	--	--	--	40	1.90
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	41	2.36	102	3.14	52	2.38	--	--	--	--	--	--
STATE TOTALS	41	2.36	102	3.14	46	2.08	--	--	15	0.57	28	0.96



Sage Grouse

Strutting ground count surveys indicated a 41 percent increase in the average male grouse attendance from 1997.

Brood surveys showed increased production per 100 adults throughout the state. Birds observed per 100 hours increased 165 percent from 1997, and was 211 percent above average.

Harvest was 57 percent below the long-term average. Hunter numbers decreased 15 percent in 1998 and remained 51 percent below the long-term average.

Age ratios derived from wings indicated a 45 percent decrease in young per 100 adults and a 44 percent decrease in young per 100 adult hens.

Since 1959, numerous new strutting grounds have been discovered throughout Utah. However, average number of male grouse per ground has declined.

Recent DNA and physiological studies indicate that two distinct species of sage grouse exist in Utah. The smaller species is located south and east of the Colorado River and is known as the Gunnison sage grouse.

Declines in sage grouse populations are attributed to loss and changes in sage brush habitats throughout the West. Spraying, urban and industrial development, burning and overgrazing by domestic livestock have altered critical sage grouse habitat.

Based on studies conducted in Utah in the early 1970s, estimated harvest of the sage grouse population was 20 percent (within the harvestable surplus). The amount of pressure on sage grouse populations was more than double what it is currently. Hunting pressure at current levels is not affecting populations.

There is much discussion about the status and future of sage grouse at the "Western States" level. Utah should place high priority on collecting as much annual biological data as possible on sage grouse populations in order to make the best management decisions possible.

Strutting Ground Counts

The status of the sage grouse breeding population for 1998, as indicated by strutting ground counts, is shown in Table 1 and Figure 1 of this section. Results of this survey for 1998 compared to 1997 and the 1959-97 average follow:

	<u>1998</u>	Percent change from 1997	Percent change from Average
Number of grounds counted	137	-7	+50
Total male grouse counted	2,124	+29	+31
Average male grouse per ground	16	+41	-22
Percent change from previous year (comparable grounds)	--	--	--

Access for spring 1998 strutting ground counts was generally good in most regions of the state. The numbers of male grouse observed increased 29 percent statewide and average number of males per ground increased 41 percent over 1997.

Brood Counts

Results of the summer inventory survey for 1998 are found in Table 2. Long-term trends of young per adult ratios, mean brood size and sage grouse observed per 100 hours are shown in Tables 3-5. Indices for 1998 are compared to 1997 and the previous 10-year (1988-97) average as follows:

	<u>1998</u>	Percent change from 1997	Percent change from Average
Total sage grouse counted	709	-27	+8
Young per 100 adults	264	+60	+62
Mean brood size	4.51	+2	+3
Sage grouse observed per 100 hours	921	+165	+211
Total hours effort	77	-73	-66

The effort devoted to sage grouse brood counts was 66 percent below average, and the total number of grouse counted was 8 percent above average.

Total sage grouse counted decreased 27 percent in 1998, while production of young per 100 adults increased 60 percent. The average brood size was 3 percent above the 10-year average.

Figure 1. Statewide trends of average sage grouse males per lek, 1959-98

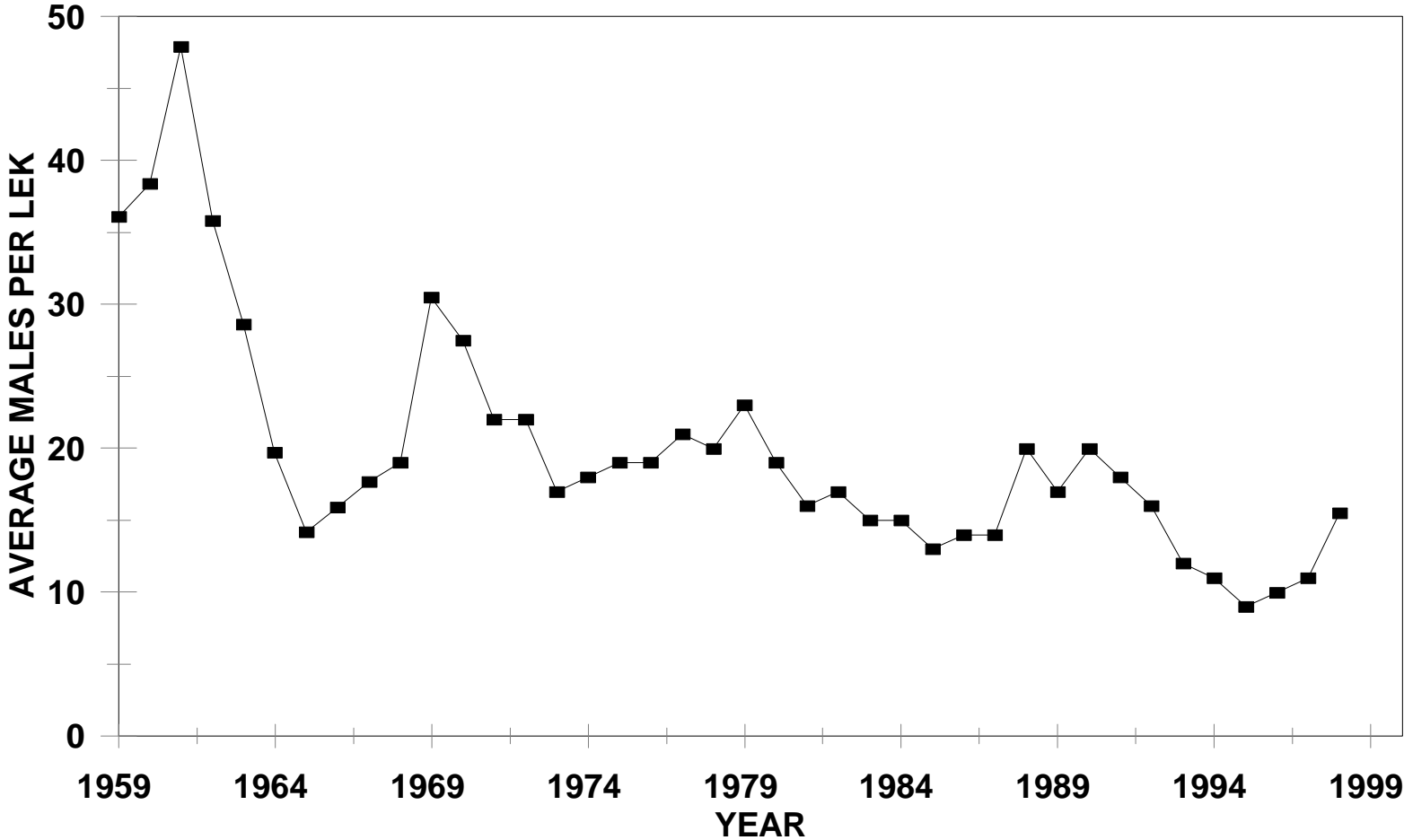


Figure 2. Statewide trends of sage grouse harvest statistics, 1963-98.

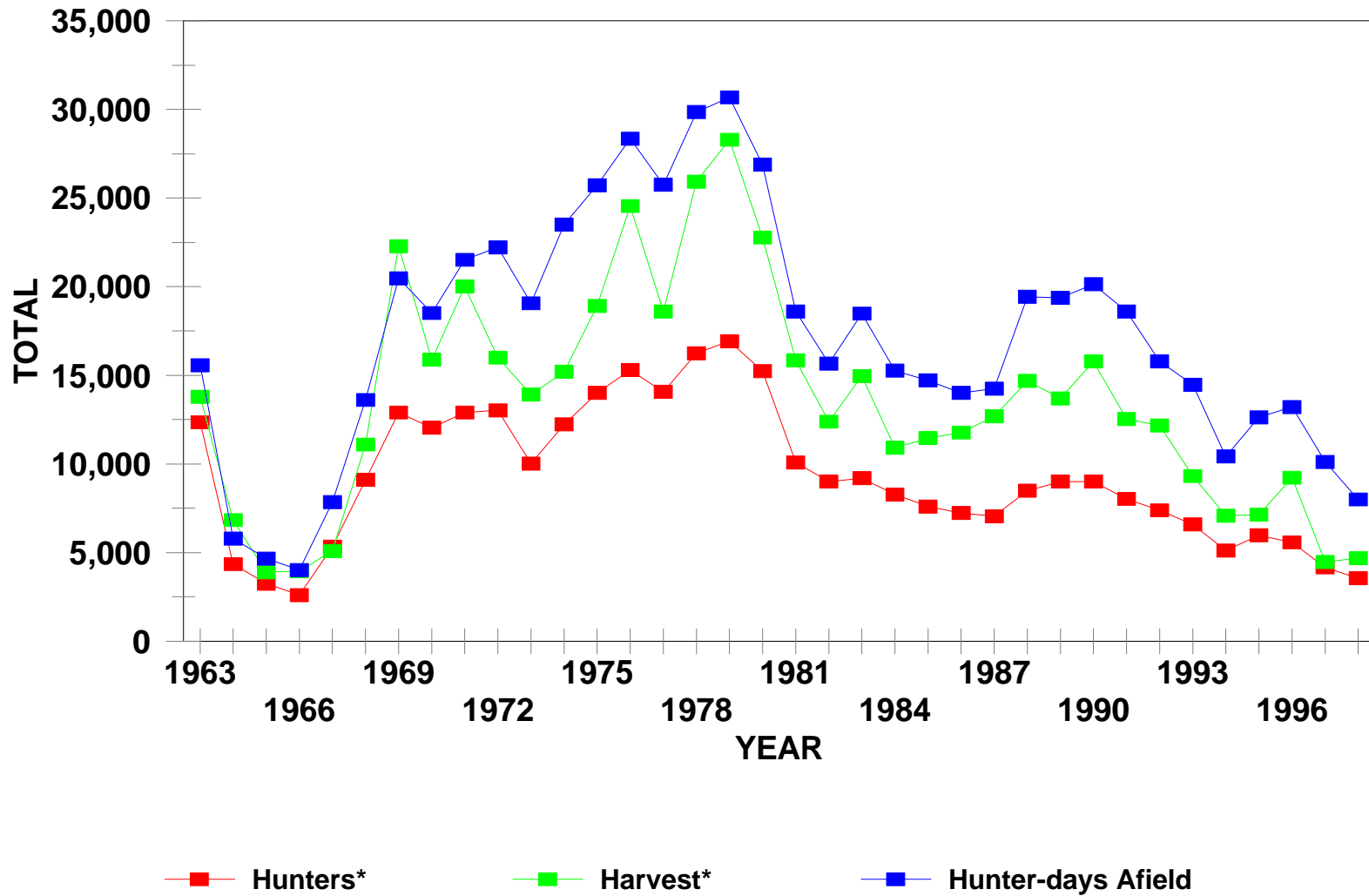
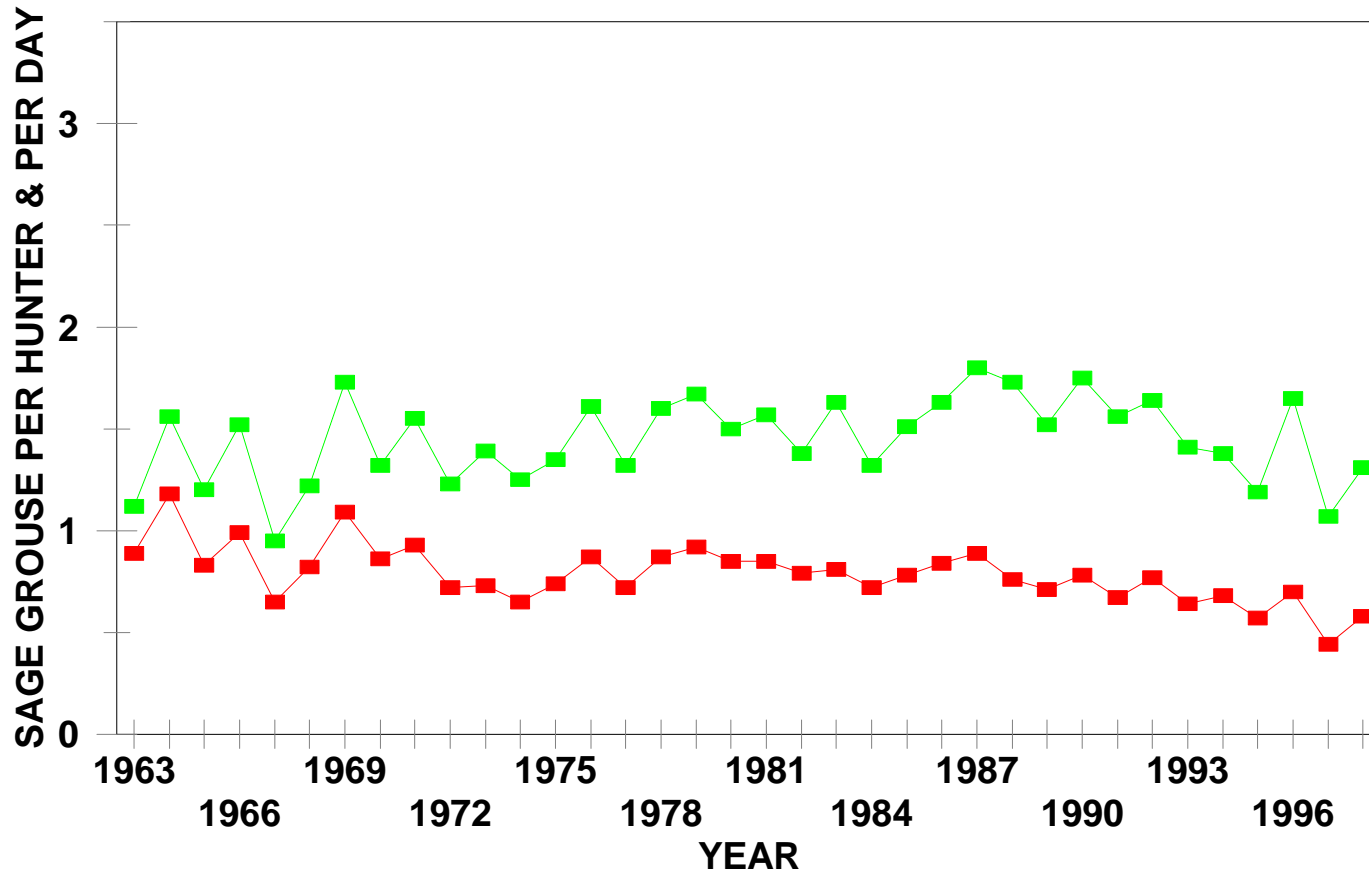


Figure 3. Statewide trends of sage grouse hunter success rates, 1963-98.



—■— Sage Grouse Per Hunter-Day —■— Sage Grouse Per Hunter

Harvest

Hunter Questionnaire

Results of the 1998 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 1998 hunting season compared to 1997 and the previous 48-year average follow:

	<u>1998</u>	Percent change from 1997	Percent change from Average
Sage grouse hunters	3,559	-15	-51
Sage grouse harvested	4,676	+4	-57
Hunter-days afield	8,003	-21	-39
Sage grouse per hunter-day	0.58	+32	-5
Sage grouse per hunter	1.31	+22	-27

Sage grouse per hunter-day success rate increased 32 percent in 1998. Total statewide harvest increased 4 percent, and there was a 15 percent decrease in total sage grouse hunters.

Long-term sage grouse harvest trends are shown in Figures 2 and 3.

Field Bag Checks

A summary of field bag check data for 1998 is shown in Table 11. Hunter success trends determined via this method are shown in Table 12. Results of the 1998 survey compared to 1997 and the 10-year (1988-97) average follow:

	<u>1998</u>	Percent change from 1997	Percent change from Average
Total hunters checked	156	-32	-70
Total hours hunted	572	-38	-79
Sage grouse per hunter (complete hunts)	0.71	+122	-12
Sage grouse bagged per 100 hours	19	+138	+8
Average hours per hunter-day (complete hunts)	3.67	-8	-23
Hours hunted per grouse bagged (complete hunts)	5.15	-59	-26

Hunter success rates from field bag checks showed increased success on the opening weekend of 1998. Sage grouse bagged per 100 hours increased 138 percent. Average hours per hunter-day decreased 8 percent from 1997. Average hours per grouse bagged decreased 59 percent.

Sex and Age Composition of the Harvest

A summary of the sex and age composition of harvested sage grouse in 1998 is found in Table 13 and the trend from 1994-98 in Table 14.

Following are data derived from wing surveys in 1998 compared to 1997 and the 10-year (1988-97) average:

	<u>1998</u>	<u>Percent change from 1997</u>	<u>Percent change from Average</u>
Sample size	427	+154	-40
Percent males	43	+10	+12
Percent females	57	-7	-7
Young per 100 adults	164	-45	+14
Young per 100 hens (adult)	235	-44	+27
Percent successfully nesting females			
Adults	59		
Yearlings	64		
All	61		

Analysis of wings collected at checking stations during the 1998 season indicates that statewide production was down 44 percent compared to 1997, but was 27 percent above the 10-year average.

Table 1. Summary of sage grouse strutting ground counts by region and county, 1988-98.

Region and County	Year										
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region											
Box Elder											
No. Strutting Grounds Counted	15	11	20	16	13	8	14	4	11	33	22
Total Male Grouse Counted	419	343	327	--	307	250	220	134	209	345	428
County Average (all strutting grounds)	28	31	23	21	24	17	16	34	19	10	19
% Change From Previous Year - Comparable Grounds	33	-3	-17	-11	8	-7	-23	-14	-24	2	--
Cache											
No. Strutting Grounds Counted	1	2	--	--	3	--	2	2	2	1	1
Total Male Grouse Counted	9	15	--	--	27	--	9	9	9	23	23
County Average (all strutting grounds)	9	8	--	--	9	--	5	5	5	23	23
% Change From Previous Year - Comparable Grounds	100	40	--	--	--	--	--	--	--	283	--
Morgan											
No. Strutting Grounds Counted	1	--	--	--	1	--	--	1	1	1	5
Total Male Grouse Counted	19	--	--	--	39	--	--	24	25	34	90
County Average (all strutting grounds)	19	--	--	--	39	--	--	24	25	34	18
% Change From Previous Year - Comparable Grounds	-21	--	--	--	--	--	--	60	5	36	--
Rich											
No. Strutting Grounds Counted	3	6	19	22	14	14	29	26	23	22	16
Total Male Grouse Counted	319	281	863	710	372	314	325	273	278	339	356
County Average (all strutting grounds)	53	47	41	32	27	19	11	11	12	15	22
% Change From Previous Year - Comparable Grounds	-10	5	-7	-18	-38	-51	-46	--	9	25	--
Summit											
No. Strutting Grounds Counted	10	--	--	--	3	--	1	8	--	--	--
Total Male Grouse Counted	17	--	--	--	0	--	15	--	--	--	--
County Average (all strutting grounds)	2	--	--	--	--	--	15	--	--	--	--
% Change From Previous Year - Comparable Grounds	-32	--	--	--	--	--	-29	--	--	--	--
REGIONAL TOTALS											
No. Strutting Grounds Counted	33	19	39	38	34	22	46	41	37	57	44
Total Male Grouse Counted	783	639	1,190	710	745	564	569	440	521	741	897
Average Grouse Per Ground (all strutting grounds)	24	34	31	27	26	18	14	18	15	21	21
% Change From Previous Year - Comparable Grounds	11	5	--	-15	-15	-29	-33	--	--	--	--

Table 1 (continued)

Region and County	Year										
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Central Region											
Juab											
No. Strutting Grounds Counted	1	1	1	1	3	3	1	1	--	1	1
Total Male Grouse Counted	14	11	4	15	5	0	0	1	--	0	0
County Average (all strutting grounds)	14	11	4	15	2	0	0	1	--	0	0
% Change From Previous Year - Comparable Grounds	56	-21	-63	--	-100	-100	0	100	--	--	--
Sanpete											
No. Strutting Grounds Counted	2	2	2	2	--	2	--	--	--	--	--
Total Male Grouse Counted	0	0	0	0	--	0	--	--	--	--	--
County Average (all strutting grounds)	0	0	0	--	--	0	--	--	--	--	--
% Change From Previous Year - Comparable Grounds	0	0	0	--	--	0	--	--	--	--	--
Tooele											
No. Strutting Grounds Counted	5	5	5	5	4	4	4	4	3	4	4
Total Male Grouse Counted	89	77	91	82	100	11	12	12	17	36	24
County Average (all strutting grounds)	18	15	18	16	25	5	3	3	6	9	6
% Change From Previous Year - Comparable Grounds	-5	-17	20	-15	32	-87	-40	0	100	6	--
Wasatch											
No. Strutting Grounds Counted	2	2	2	2	2	2	2	2	2	2	2
Total Male Grouse Counted	52	44	51	11	49	45	24	24	34	46	42
County Average (all strutting grounds)	26	22	26	6	24	37	12	12	17	23	21
% Change From Previous Year - Comparable Grounds	-4	-19	18	-75	300	-9	-12	0	42	35	--
REGIONAL TOTALS											
No. Strutting Grounds Counted	10	10	10	10	9	11	7	7	5	7	7
Total Male Grouse Counted	155	132	146	108	154	56	36	37	51	82	66
Average Grouse Per Ground (all strutting grounds)	16	13	15	12	17	14	5	5	8	11	9
% Change From Previous Year - Comparable Grounds	-3	-16	11	-45	77	-65	16	--	--	--	--

Table 1 (continued)

Region and County	Year										
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Southern Region											
Beaver											
No. Strutting Grounds Counted	3	5	2	--	3	1	4	7	7	4	4
Total Male Grouse Counted	46	71	33	--	68	49	57	57	79	32	22
County Average (all strutting grounds)	15	14	16	41	19	49	14	8	11	8	6
% Change From Previous Year - Comparable Grounds	--	-7	--	--	-54	47	--	-7	--	-53	--
Garfield											
No. Strutting Grounds Counted	8	8	10	--	9	6	11	11	11	12	13
Total Male Grouse Counted	251	126	244	--	211	77	145	139	89	126	254
County Average (all strutting grounds)	31	16	24	35	23	11	13	13	8	11	20
% Change From Previous Year - Comparable Grounds	24	-50	--	--	-23	-50	78	0	--	36	--
Iron											
No. Strutting Grounds Counted	6	6	3	--	2	1	3	2	3	3	5
Total Male Grouse Counted	111	127	50	--	43	41	39	26	17	34	48
County Average (all strutting grounds)	19	21	20	52	21	41	13	13	6	11	10
% Change From Previous Year - Comparable Grounds	-13	14	--	--	-36	24	0	-14	--	-10	--
Kane											
No. Strutting Grounds Counted	--	2	--	--	3	2	2	3	3	3	3
Total Male Grouse Counted	--	41	--	--	30	11	1	2	0	4	18
County Average (all strutting grounds)	--	21	--	14	10	6	1	1	0	1	6
% Change From Previous Year - Comparable Grounds	--	--	--	--	-28	-61	0	0	--	--	--
Millard											
No. Strutting Grounds Counted	--	--	--	--	--	--	--	--	--	--	--
Total Male Grouse Counted	--	--	--	--	--	--	--	--	--	--	--
County Average (all strutting grounds)	--	--	--	--	--	--	--	--	--	--	--
% Change From Previous Year - Comparable Grounds	--	--	--	--	--	--	--	--	--	--	--
Piute											
No. Strutting Grounds Counted	--	--	--	--	--	--	--	--	1	1	1
Total Male Grouse Counted	--	--	--	--	--	--	--	--	29	34	33
County Average (all strutting grounds)	--	--	--	--	--	--	--	--	29	34	33
% Change From Previous Year - Comparable Grounds	--	--	--	--	--	--	--	--	--	--	--
Sevier											
No. Strutting Grounds Counted	2	--	--	1	3	--	1	1	2	1	1
Total Male Grouse Counted	0	--	--	20	22	--	11	12	34	15	15
County Average (all strutting grounds)	--	--	--	20	7	--	11	12	17	15	15
% Change From Previous Year - Comparable Grounds	--	--	--	--	--	--	1,100	9	--	--	--
Wayne											
No. Strutting Grounds Counted	13	13	10	16	12	--	8	11	9	12	14
Total Male Grouse Counted	326	268	259	367	289	--	163	206	193	272	257
County Average (all strutting grounds)	25	21	26	23	22	--	20	19	21	23	18
% Change From Previous Year - Comparable Grounds	-18	--	--	--	--	--	-8	11	--	--	--
REGIONAL TOTALS											
No. Strutting Grounds Counted	32	34	25	17	32	10	29	35	36	36	41
Total Male Grouse Counted	734	633	596	387	663	178	416	442	441	517	647
Average Grouse Per Ground (all strutting grounds)	23	19	24	31	17	18	12	11	12	14	16
% Change From Previous Year - Comparable Grounds	48	-18	--	--	-35	-10	234	--	--	--	--

Table 1 (continued)

Region and County	Year										
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Northeastern Region											
Daggett											
No. Strutting Grounds Counted	6	7	6	--	6	3	3	5	6	6	5
Total Male Grouse Counted	46	25	42	--	17	14	11	25	32	23	25
County Average (all strutting grounds)	8	4	7	--	3	5	4	5	5	4	5
% Change From Previous Year - Comparable Grounds	77	-24	24	--	--	-7	-21	-18	28	-28	--
Duchesne											
No. Strutting Grounds Counted	7	11	15	--	16	15	9	5	5	7	8
Total Male Grouse Counted	9	76	173	--	129	87	37	40	22	32	26
County Average (all strutting grounds)	1	7	12	--	8	6	4	8	4	5	3
% Change From Previous Year - Comparable Grounds	-83	167	22	--	--	-10	-51	14	-27	5	--
Grand											
No. Strutting Grounds Counted	2	--	--	--	--	--	1	--	--	--	--
Total Male Grouse Counted	5	--	--	--	--	--	0	--	--	--	--
County Average (all strutting grounds)	3	--	--	--	--	--	--	--	--	--	--
% Change From Previous Year - Comparable Grounds	0	--	--	--	--	--	--	--	--	--	--
Uintah											
No. Strutting Grounds Counted	22	20	20	--	22	22	18	29	24	21	17
Total Male Grouse Counted	468	266	321	--	287	173	208	197	268	278	358
County Average (all strutting grounds)	21	13	16	--	13	8	12	7	11	13	21
% Change From Previous Year - Comparable Grounds	66	-45	0	--	--	-34	-4	-30	32	-3	--
Wasatch											
No. Strutting Grounds Counted	2	2	--	--	--	--	2	3	1	1	1
Total Male Grouse Counted	22	22	--	--	--	--	8	9	5	5	6
County Average (all strutting grounds)	11	11	--	--	--	--	4	3	5	5	6
% Change From Previous Year - Comparable Grounds	120	0	--	--	--	--	-11	13	-44	0	--
REGIONAL TOTALS											
No. Strutting Grounds Counted	39	40	41	0	44	40	33	42	36	35	31
Total Male Grouse Counted	550	389	536	0	433	274	264	271	327	338	415
Average Grouse Per Ground (all strutting grounds)	15	10	13	--	5	6	6	7	9	10	13
% Change From Previous Year - Comparable Grounds	37	-37	9	--	--	-27	-18	-22	22	--	--

Table 1 (continued)

Region and County	Year										
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Southeastern Region											
Carbon											
No. Strutting Grounds Counted	10	10	9	8	8	3	7	--	8	4	10
Total Male Grouse Counted	196	181	146	103	40	14	3	--	26	46	67
County Average (all strutting grounds)	20	18	16	13	5	5	0	--	3	12	7
% Change From Previous Year - Comparable Grounds	142	-8	-38	-11	-61	-46	-79	--	--	--	--
Emery											
No. Strutting Grounds Counted	2	2	2	2	2	3	2	2	2	2	--
Total Male Grouse Counted	12	28	5	7	7	3	5	0	0	0	--
County Average (all strutting grounds)	6	14	3	4	4	1	3	0	0	0	ERR
% Change From Previous Year - Comparable Grounds	20	167	-82	40	0	-57	67	-250	0	--	--
San Juan											
No. Strutting Grounds Counted	4	4	4	4	4	4	4	4	4	4	4
Total Male Grouse Counted	32	39	41	32	40	44	41	40	29	26	32
County Average (all strutting grounds)	8	10	10	8	10	11	10	10	7	7	8
% Change From Previous Year - Comparable Grounds	-9	22	5	-22	25	10	-7	-2	-27	--	--
REGIONAL TOTALS											
No. Strutting Grounds Counted	16	16	15	14	14	10	13	6	14	10	14
Total Male Grouse Counted	240	248	192	142	87	61	49	40	55	72	99
Average Grouse Per Ground (all strutting grounds)	15	16	13	10	6	6	4	7	4	7	7
% Change From Previous Year - Comparable Grounds	74	3	-35	2	-12	-31	-6	--	--	--	--
STATE TOTALS											
No. Strutting Grounds Counted	137	119	130	79	133	93	128	131	128	145	137
Total Male Grouse Counted	2,734	2,041	2,660	1,347	2,082	1,133	1,334	1,230	1,395	1,750	2,124
Average Grouse Per Ground (all strutting grounds)	20	17	20	17	16	12	10	9	11	12	16
% Change From Previous Year - Comparable Grounds	51	14	-2	-11	3	-32	39	--	--	--	--

Table 2. Sage grouse summer inventory, 1998.

Region and County	Distinct Broods			Mean Brood	Mixed Young & Adults		Adults w/o Young	Total Adults	Total Young	Total Grouse	Young/100 Adults	Vehicle Miles	Hours of Effort				Birds/100 Hr	
	#	Adults	Young		Adults	Young							Vehicle	Horse	Walk	Total		
Northern Region																		
Box Elder	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Central Region																		
Juab	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Southern Region																		
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	22	22	95	4.32	47	182	19	88	277	365	315	--	--	--	--	--	--	--
REGIONAL TOTALS	22	22	95	4.32	47	182	19	88	277	365	315	--	--	--	--	--	--	--
Northeastern Region																		
Daggett	3	3	15	5.00	0	0	0	3	15	18	500	10	2	0	0	2	900	
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	28	28	128	4.57	29	84	36	93	212	305	228	804	23	3	49	75	407	
REGIONAL TOTALS	31	31	143	4.61	29	84	36	96	227	323	236	814	25	3	49	77	419	
Southeastern Region																		
Carbon	2	2	10	5.00	0	0	9	11	10	21	91	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	2	2	10	5.00	0	0	9	11	10	21	91	--	--	--	--	--	--	--
STATE TOTALS	55	55	248	4.51	76	266	64	195	514	709	264	814	25	3	49	77	921	

Table 3. Trend of sage grouse young per 100 adults, 1988-98.

Region and County	Year											Average 1988-97
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Northern Region												
Box Elder	108	167	267	161	143	92	94	--	48	177	--	
Cache	--	--	500	--	--	--	--	--	--	--	--	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	--	117	--	--	--	--	--	--	--	--	--	
Rich	153	--	100	67	125	217	433	41	222	129	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	135	156	235	93	132	133	145	40	175	115	--	136
Central Region												
Juab	380	250	196	--	450	450	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	--	--	--	--	--	--	--	--	
Tooele	100	194	110	287	300	300	156	--	--	--	--	
Utah	150	--	--	1,200	--	--	--	--	--	--	--	
Wasatch	300	--	667	--	129	350	--	--	--	--	--	
REGIONAL TOTALS	135	177	166	344	148	357	156	--	--	--	--	212
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	
Garfield	144	40	91	129	--	--	--	--	--	--	--	
Iron	146	155	264	100	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	--	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	--	525	--	500	--	--	--	--	--	--	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	86	--	168	478	43	--	--	--	--	109	315	
REGIONAL TOTALS	127	135	154	128	40	--	--	--	129	109	315	117
Northeastern Region												
Daggett	181	433	533	650	190	--	600	263	244	200	500	
Duchesne	288	217	600	160	--	260	--	--	--	--	--	
Uintah	164	148	352	114	278	500	263	192	300	325	228	
REGIONAL TOTALS	172	155	374	161	246	380	532	418	332	444	236	321
Southeastern Region												
Carbon	--	56	33	200	33	200	--	--	--	--	91	
Emery	--	--	--	--	--	--	--	--	--	--	--	
Grand	--	--	--	--	31	--	50	--	--	--	--	
San Juan	200	50	50	200	50	--	--	--	--	--	--	
REGIONAL TOTALS	200	55	88	160	34	200	50	--	--	--	91	112
STATE TOTALS	145	147	183	122	95	209	244	122	196	165	264	163

Table 4. Trend of average brood size for sage grouse, 1988-98.

Region and County	Year											Average 1988-97
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Northern Region												
Box Elder	33.80	3.80	4.25	3.71	4.17	3.67	5.00	--	6.00	2.67	--	
Cache	--	--	5.00	--	--	--	--	--	--	--	--	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	--	7.00	--	--	--	--	--	--	--	--	--	
Rich	4.27	--	2.00	3.00	4.54	2.40	4.33	5.33	5.19	3.96	--	
Summit	4.00	--	--	--	--	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	4.17	4.30	3.67	3.36	4.36	3.09	4.50	5.33	5.26	3.64	--	4.17
Central Region												
Juab	6.33	4.00	4.75	--	--	--	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	--	--	--	--	--	--	--	--	
Tooele	3.50	3.00	3.13	3.83	3.00	3.00	4.00	--	--	--	--	
Utah	--	--	--	12.00	--	--	--	--	--	--	--	
Wasatch	6.00	--	6.67	--	5.50	7.00	--	--	--	--	--	
REGIONAL TOTALS	4.29	3.40	4.27	5.00	4.67	4.00	4.00	--	--	--	--	3.70
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	
Garfield	4.60	--	4.00	6.00	--	--	--	--	--	--	--	
Iron	3.67	4.66	6.00	5.00	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	--	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	7.00	--	--	--	--	--	--	--	--	--	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	6.29	--	4.30	5.00	3.82	--	--	--	--	4.64	4.32	
REGIONAL TOTALS	4.89	4.66	4.82	5.60	3.82	--	--	--	4.80	4.64	4.32	4.75
Northeastern Region												
Daggett	4.45	4.30	6.00	2.00	6.00	--	6.00	4.20	3.67	2.00	5.00	
Duchesne	3.60	2.17	6.00	4.00	--	2.00	--	--	--	--	--	
Uintah	4.05	5.15	5.60	2.00	4.75	5.00	5.25	4.17	5.86	5.48	4.57	
REGIONAL TOTALS	4.09	4.58	5.63	2.57	4.89	4.50	5.32	4.18	5.20	5.35	4.61	4.63
Southeastern Region												
Carbon	--	4.50	--	6.00	2.67	4.00	--	--	--	--	5.00	
Emery	--	--	--	--	--	--	--	--	--	--	--	
Grand	--	--	--	--	4.00	--	2.00	--	--	--	--	
San Juan	--	2.00	--	2.00	2.00	--	--	--	--	--	--	
REGIONAL TOTALS	--	3.67	--	4.00	2.80	4.00	2.00	--	--	--	5.00	3.29
STATE TOTALS	4.29	4.37	4.71	3.70	4.21	3.68	4.86	4.43	5.19	4.43	4.51	4.39

Table 5. Trend of sage grouse observed per 100 hours, 1988-98.

Region and County	Year											Average 1988-97
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Northern Region												
Box Elder	694	431	303	102	146	118	413	4	--	300	--	
Cache	3	--	126	--	--	--	--	--	--	--	--	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	--	100	--	--	--	--	--	--	--	--	--	
Rich	287	--	41	304	261	89	--	73	474	1,529	--	
Summit	300	--	--	--	--	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	271	64	78	155	197	103	613	57	554	753	--	284
Central Region												
Juab	150	311	323	--	367	367	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	--	--	--	--	--	--	--	--	
Tooele	150	252	150	414	100	133	263	--	--	--	--	
Utah	125	--	--	1,300	--	--	--	--	--	--	--	
Wasatch	27	19	209	--	254	45	--	--	--	--	--	
REGIONAL TOTALS	118	154	200	338	248	100	263	--	--	--	--	203
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	
Garfield	452	207	661	320	--	--	--	--	--	--	--	
Iron	1,517	1,000	589	400	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	--	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	417	--	--	150	829	--	--	--	--	--	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	542	--	900	511	411	--	--	--	--	252	--	
REGIONAL TOTALS	574	705	781	314	402	--	--	--	234	252	--	466
Northeastern Region												
Daggett	474	168	585	1,000	580	--	1,400	829	326	86	900	
Duchesne	141	123	350	81	--	900	--	--	--	--	--	
Uintah	830	1,191	566	1,500	523	3,000	636	388	224	316	407	
REGIONAL TOTALS	589	741	533	356	539	1,600	1,463	429	226	289	419	676
Southeastern Region												
Carbon	--	125	685	90	377	377	--	--	--	--	--	
Emery	--	--	--	--	--	--	--	--	--	--	--	
Grand	--	--	--	--	567	--	240	--	--	--	--	
San Juan	--	150	120	100	300	--	--	--	--	--	--	
REGIONAL TOTALS	--	129	386	100	239	26	80	--	--	--	--	160
STATE TOTALS	347	288	279	273	272	122	572	102	356	347	921	296

Table 6. Summary of sage grouse hunter success and distribution of harvest and hunter pressure by region and county, 1998.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	33	1,488	1,186	0.80	18.60	25.37
CACHE	17	953	302	0.32	11.92	6.47
DAVIS	2	93	69	0.75	1.16	1.49
MORGAN	6	279	116	0.42	3.49	2.49
RICH	20	767	325	0.42	9.59	6.97
SUMMIT	4	186	93	0.50	2.33	1.99
WEBER	10	442	116	0.26	5.52	2.49
REGIONAL TOTALS	92	4,210	2,210	0.52	52.62	47.27
CENTRAL REGION						
JUAB	2	93	93	1.00	1.16	1.99
SALT LAKE	0	0	0	0.00	0.00	0.00
SANPETE	2	139	69	0.50	1.74	1.49
TOOELE	0	0	0	0.00	0.00	0.00
UTAH	9	279	372	1.33	3.49	7.96
WASATCH	3	116	93	0.80	1.45	1.99
REGIONAL TOTALS	16	628	628	1.00	7.85	13.43
SOUTHERN REGION						
BEAVER	1	395	23	0.06	4.94	0.50
GARFIELD	1	69	0	0.00	0.87	0.00
IRON	1	23	0	0.00	0.29	0.00
KANE	0	0	0	0.00	0.00	0.00
MILLARD	3	69	186	2.67	0.87	3.98
PIUTE	2	46	23	0.50	0.58	0.50
SEVIER	4	116	93	0.80	1.45	1.99
WASHINGTON	0	0	0	0.00	0.00	0.00
WAYNE	7	302	232	0.77	3.78	4.98
REGIONAL TOTALS	19	1,023	558	0.55	12.79	11.94
NORTHEASTERN REGION						
DAGGETT	2	93	23	0.25	1.16	0.50
DUCHESNE	5	418	232	0.56	5.23	4.98
UINTAH	24	1,372	907	0.66	17.15	19.40
REGIONAL TOTALS	31	1,884	1,163	0.62	23.55	24.88
SOUTHEASTERN REGION						
CARBON	1	69	93	1.33	0.87	1.99
EMERY	2	116	23	0.20	1.45	0.50
GRAND	2	69	0	0.00	0.87	0.00
SAN JUAN	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	5	255	116	0.45	3.20	2.49
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	163	8,003	4,676	0.58	100.00	100.00

* Total hunter-trips from questionnaire returns.

Table 7. Summary of sage grouse bagged per hunter-day by region and county, 1991-98.

Region and County	Year							
	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region								
Box Elder	0.55	0.96	0.79	0.79	0.40	0.57	0.82	0.80
Cache	0.32*	0.55*	0.21*	0.50*	0.27*	0.57*	0.18*	0.32*
Davis	0.18*	0.60*	0.08*	0.00*	0.59*	2.33*	1.00*	0.75*
Morgan	0.93*	0.71*	0.00*	0.19*	0.00*	1.92*	0.33*	0.42*
Rich	1.01	0.82	0.79	0.53	0.47	0.56	0.25	0.42
Summit	0.67*	1.38*	0.56*	0.44*	0.13*	0.80*	0.12*	0.50*
Weber	0.34*	0.55*	0.50*	0.08*	0.15*	1.28*	0.67*	0.26*
REGIONAL TOTALS	0.66	0.80	0.59	0.54	0.37	0.84	0.45	0.52
Central Region								
Juab	0.54*	0.17*	0.22*	2.71*	1.89*	4.00*	0.00*	1.00*
Salt Lake	0.70*	0.00*	0.20*	0.00*	0.00*	0.00*	0.04*	0.00*
Sanpete	0.44*	0.22*	0.33*	0.45*	0.20*	0.69*	0.60*	0.50*
Tooele	0.35*	0.65*	1.07*	1.83*	1.00*	0.50*	0.50*	0.00*
Utah	0.86*	0.96*	0.27*	0.56*	0.73*	0.77*	0.47*	1.33*
Wasatch	0.47*	0.70*	0.46*	0.80*	0.57*	0.64*	0.21*	0.80*
REGIONAL TOTALS	0.53	0.68	0.59	1.16	0.69	0.84	0.29	1.00
Southern Region								
Beaver	0.29	0.83	1.00	0.47	1.13	0.00	0.00	0.06*
Garfield	0.52	0.96	0.90	1.11	0.36	0.50	0.00	0.00*
Iron	0.93	0.64	0.53	1.29	0.30	0.00	0.00	0.00*
Kane	0.67	0.71	0.00	1.25	1.00*	1.00*	0.00*	0.00*
Millard	1.27*	0.80*	4.00*	0.67*	1.58*	1.25*	2.00*	2.67*
Piute	1.00	1.71	1.13	0.78	0.14	0.50	0.00	0.50*
Sevier	0.39	0.49	0.36	0.54	0.04	0.93	0.76	0.80*
Washington	2.00*	1.00*	0.00*	0.00*	0.00*	2.00*	0.00*	0.00*
Wayne	1.03	0.92	0.66	0.79	0.76	0.46	0.48	0.77
REGIONAL TOTALS	0.78	0.79	0.70	0.81	0.56	0.56	0.58	0.55
Northeastern Region								
Daggett	0.48	0.60	0.67	0.25	0.94	0.43	0.67	0.25
Duchesne	0.67	0.36	1.29	0.00	0.75	0.24	0.23	0.56
Uintah	0.71	0.87	0.73	0.83	0.85	0.62	0.56	0.66
REGIONAL TOTALS	0.68	0.76	0.79	0.72	0.86	0.52	0.47	0.62
Southeastern Region								
Carbon	0.50	0.64	0.36	0.00*	1.71*	0.50*	0.00*	1.33*
Emery	0.88*	0.60*	1.00*	0.80*	0.00*	1.50*	1.25*	0.20*
Grand	0.00	1.33	4.00	1.00*	0.60*	0.03*	0.57	0.00
San Juan	0.57*	0.00*	0.00*	0.00*	0.00*	1.00*	0.33*	0.00*
REGIONAL TOTALS	0.59	0.77	0.71	0.50	0.56	0.25	0.71	0.45
Unknown counties	0.00	0.00	0.47	0.00	1.00	0.00	0.00	0.00
STATE TOTALS	0.67	0.77	0.64	0.68	0.57	0.70	0.44	0.58

*Closed season.

() Percent of bag per hunter-day in closed areas.

Table 8. Percentage distribution of sage grouse harvest by region and county, 1991-98.

Region and County	Year							
	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region								
Box Elder	12.34	15.50	11.22	20.10	9.81	11.59	25.93	25.37
Cache	2.64*	5.12*	2.45*	3.23*	3.00*	7.31*	2.78*	6.47*
Davis	0.28*	1.75*	0.20*	0.00*	3.54*	1.76*	0.46*	1.49*
Morgan	1.80*	1.75*	0.00*	0.74*	0.00*	11.59*	0.93*	2.49*
Rich	24.55	15.79	18.57	13.15	8.99	7.31	5.09	6.97
Summit	2.22*	1.61*	4.08*	1.99*	0.27*	2.02*	2.78*	1.99*
Weber	2.91*	1.75*	2.24*	0.50*	0.82*	15.11*	13.43*	2.49*
REGIONAL TOTAL	46.74	43.27	38.78	39.70	26.43	56.68	26.43	47.27
Central Region								
Juab	0.97*	0.15*	0.41*	4.71*	4.63*	3.02*	0.00*	1.99*
Salt Lake	0.97*	0.00*	0.20*	0.00*	0.00*	0.00*	0.46*	0.00*
Sanpete	0.97*	0.73*	0.61*	1.24*	1.36*	2.27*	1.39*	1.49*
Tooele	0.97*	1.90*	5.92*	5.46*	2.73*	1.01*	2.78*	0.00*
Utah	1.66*	7.75*	0.61*	2.23*	5.18*	6.80*	4.17*	7.96*
Wasatch	1.25*	1.02*	1.22*	0.99*	2.18*	1.76*	2.32*	1.99*
REGIONAL TOTALS	6.80	11.55	8.98	14.64	16.08	14.86	11.11	13.43
Southern Region								
Beaver	0.28	2.19	2.24	2.23	4.63	0.00	0.00	0.50*
Garfield	2.36	3.51	3.88	5.21	2.18	1.26	0.00	0.00*
Iron	1.94	3.65	4.29	5.46	2.18	0.00	0.00	0.00*
Kane	0.28	0.73	0.00	1.24	0.55*	0.50*	0.00*	0.00*
Millard	2.64*	0.58*	4.08*	1.99*	5.18*	1.26*	0.93*	3.98*
Piute	2.77	1.75	1.84	3.47	0.27	0.50	0.00	0.50*
Sevier	3.05	2.92	4.08	3.23	0.27	3.35	6.02	1.99*
Washington	0.55*	0.29*	0.00*	0.00*	0.00*	1.51*	0.00*	0.00*
Wayne	10.13	7.02	6.33	4.71	6.00	4.03	4.63	4.98
REGIONAL TOTALS	24.00	22.66	26.74	27.54	21.26	12.60	11.58	11.94
Northeastern Region								
Daggett	1.39	1.32	1.63	0.50	4.36	0.76	0.93	0.50
Duchesne	2.77	1.46	3.67	0.00	1.64	1.26	2.78	4.98
Uintah	14.98	16.37	13.67	14.64	22.35	11.34	17.60	19.40
REGIONAL TOTALS	19.14	19.15	18.98	15.14	28.34	13.35	21.30	24.88
Southeastern Region								
Carbon	1.80	1.32	0.82	0.00*	3.27*	0.50*	0.00*	1.99*
Emery	0.97*	0.88*	0.41*	1.99*	0.00*	0.76*	2.32*	0.50*
Grand	0.00	1.17	0.82	0.99*	1.64*	0.25*	1.85*	0.00
San Juan	0.55*	0.00*	0.00*	0.00*	0.00*	1.01*	1.46*	0.00*
REGIONAL TOTALS	3.33	3.36	2.04	2.98	4.91	2.52	4.63	2.49
Unknown counties	0.00	0.00	4.49	0.00	3.00	0.00	0.00	0.00
Closed areas	(21.36)	(25.28)	(22.43)	(26.07)	(34.35)	(58.44)	(38.06)	(37.82)
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, 1991-98.

Region and County	Year							
	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region								
Box Elder	15.16	12.39	9.19	17.40	14.02	14.24	13.99	18.60
Cache	5.61*	7.21*	7.35*	4.39*	6.32*	8.96*	7.00*	11.92*
Davis	1.03*	2.25*	1.71*	1.01*	3.39*	0.53*	0.21*	1.16*
Morgan	1.31*	1.91*	1.18*	2.70*	1.23*	4.22*	1.23*	3.49*
Rich	16.46	14.75	15.09	16.89	10.79	9.14	9.05	9.59
Summit	2.25*	0.90*	4.72*	3.04*	1.23*	1.76*	10.29*	2.33*
Weber	5.80*	2.48*	2.89*	4.39*	3.08*	8.26*	8.85*	5.52*
REGIONAL TOTALS	47.62	41.89	42.13	49.83	40.06	47.10	50.62	52.62
Central Region								
Juab	1.22*	0.68*	1.18*	1.18*	1.39*	0.53*	0.00*	1.16*
Salt Lake	0.94*	0.34*	0.66*	0.00*	0.15*	0.00*	4.73*	0.00*
Sanpete	1.50*	2.59*	1.18*	1.86*	3.85*	2.28*	1.03*	1.74*
Tooele	1.87*	2.25*	3.54*	2.03*	1.54*	1.41*	2.47*	0.00*
Utah	1.31*	6.19*	1.44*	2.70*	4.01*	6.15*	3.91*	3.49*
Wasatch	1.78*	1.13*	1.71*	0.84*	2.16*	1.93*	4.94*	1.45*
REGIONAL TOTALS	8.61	13.18	9.71	8.62	13.10	12.30	17.08	7.85
Southern Region								
Beaver	0.65	2.03	1.44	3.21	2.31	0.53	0.41	4.94*
Garfield	3.09	2.82	2.76	3.21	3.39	1.76	0.21	0.87*
Iron	1.40	4.39	5.25	2.87	4.16	2.46	0.21	0.29*
Kane	0.28	0.79	0.00	0.68	0.31*	0.35*	0.00*	0.00*
Millard	1.40*	0.56*	0.66*	2.03*	1.85*	0.70*	0.21*	0.87*
Piute	1.87	0.79	1.05	3.04	1.08	0.70	0.00	0.58*
Sevier	5.33	4.62	7.35	4.05	4.01	2.64	3.50	1.45*
Washington	0.19*	0.23*	0.00*	0.00*	0.00*	0.53*	0.00*	0.00*
Wayne	6.64	5.86	6.17	4.05	4.47	6.15	4.32	3.78
REGIONAL TOTALS	20.86	22.07	24.67	23.14	21.57	15.82	8.85	12.79
Northeastern Region								
Daggett	1.96	1.69	1.57	1.35	2.62	1.23	0.62	1.16
Duchesne	2.81	3.15	1.84	1.01	1.23	3.69	5.35	5.23
Uintah	14.31	14.53	12.07	1.99	14.79	12.83	13.99	17.15
REGIONAL TOTALS	14.31	14.53	12.07	1.99	14.79	12.83	19.96	23.55
Southeastern Region								
Carbon	2.43	1.58	1.44	1.69	1.08*	0.70*	0.00*	0.87*
Emery	0.75*	1.13*	0.26*	1.69*	0.31*	0.35*	0.82*	1.45*
Grand	0.00	0.68	0.13	0.68	1.54*	5.27*	1.44*	0.87
San Juan	0.65*	0.00*	0.00*	0.00*	2.00*	0.70*	0.62*	0.00*
REGIONAL TOTALS	3.84	3.38	1.84	4.05	4.93	7.03	2.88	3.20
Unknown counties	0.00	0.11	6.17	0.00	1.69	0.00	0.62	0.00
Closed areas	(26.29)	(29.85)	(28.48)	(25.16)	(35.44)	(44.63)	(47.75)	(43.58)
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, 1951-98.

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	13,793	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
1991	8,018	12,542	18,596	0.67	1.56
1992	7,393	12,156	15,781	0.77	1.64
1993	6,594	9,311	14,480	0.64	1.41
1994	5,133	7,084	10,406	0.68	1.38
1995	5,987	7,133	12,615	0.57	1.19
1996	5,574	9,220	13,215	0.70	1.65
1997	4,178	4,489	10,101	0.44	1.07
1998	3,559	4,676	8,003	0.58	1.31
Totals (1951-98)	343,602	515,216	622,227	--	--
Average (1951-97)	7,235	10,863	13,069	0.61	1.79

* 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, 1998.

Region and County	All Hunts					Complete Hunts					
	Total Parties	Total Hunters	Total Hours	Total Birds	Birds/100 Hr	Complete Hunts	Total Hunters	Total Hours	Total Birds	Birds/100 Hr	Birds/Hunter
Northern Region											
Box Elder	--	--	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
Central Region											
Juab	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
Southern Region											
Beaver	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	156	572	111	19	--	156	572	111	19	0.71
REGIONAL TOTALS	--	156	572	111	19	--	156	572	111	19	0.71
Northeastern Region											
Daggett	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
Southeastern Region											
Carbon	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
STATE TOTALS	0	156	572	111	19	0	156	572	111	19	0.71

Table 12. Sage grouse hunter success trend as determined by field bag check, 1993-98.

Region and County	1993		1994		1995		1996		1997		1998	
	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter
Northern Region												
Box Elder	18	0.99	21	0.98	23	0.58	14	0.63	9	0.34	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	3	0.28	8	0.51	17	0.33	14	0.48	6	0.17	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	10	0.73	15	0.80	21	0.48	14	0.53	8	0.27	--	--
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	7	0.43	7	0.30	6	0.42	11	0.49	8	0.43	19	0.71
REGIONAL TOTALS	7	0.43	7	0.30	6	0.42	11	0.49	8	0.43	19	0.71
Northeastern Region												
Daggett	--	--	--	--	0	0.00	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	50	0.50	23	0.78	27	0.94	--	--	--	--	--	--
REGIONAL TOTALS	50	0.50	23	0.78	16	0.50	--	--	--	--	--	--
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--
Grand	17	0.43	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	17	0.43	--	--	--	--	--	--	--	--	--	--
STATE TOTALS	10	0.66	14	0.70	15	0.47	13	0.53	8	0.32	19	0.71

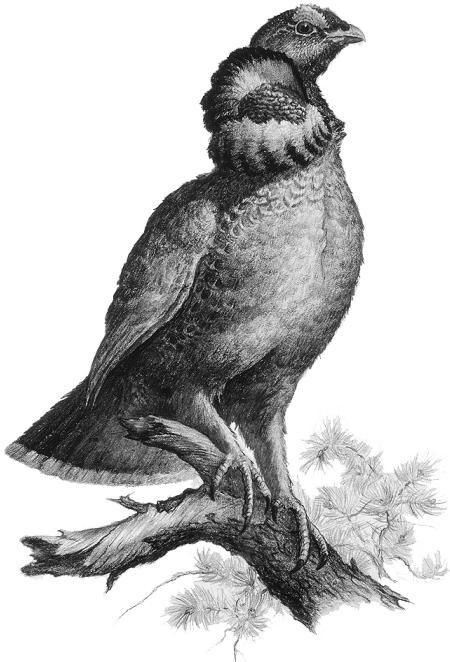
Table 13. Sex and age composition of harvested sage grouse, 1998.

Region and County	Adults			Yearlings			Immaturess			Sample Size	Young/ 100 Hens	Young/ 100 Adults
	M	F	Total	M	F	Total	M	F	Total			
Northern Region												
Box Elder	2	8	10	0	3	3	23	38	61	74	555	469
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	7	10	17	4	9	13	17	15	32	62	235	107
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	9	18	27	4	12	16	40	53	93	136	310	216
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	9	21	30	6	21	27	69	58	127	184	302	223
REGIONAL TOTALS	9	21	30	6	21	27	69	58	127	184	302	223
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	7	14	21	14	27	41	26	19	45	107	110	73
REGIONAL TOTALS	7	14	21	14	27	41	26	19	45	107	110	73
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
STATE TOTALS	25	53	78	24	60	84	135	130	265	427	235	164

Table 14. Sex and age composition of harvested sage grouse from 1994-98.

Region and County	1994					1995					1996					1997					1998				
	Sex Ratio %		Young/	Young/	n	Sex Ratio %		Young/	Young/	n	Sex Ratio %		Young/	Young/	n	Sex Ratio %		Young/	Young/	n	Sex Ratio %		Young/	Young/	n
	M	F	100H	100A		M	F	100H	100A		M	F	100H	100A		M	F	100H	100A		M	F	100H	100A	
Northern Region																									
Box Elder	183	45	55	292	135	62	52	48	167	68	49	35	65	156	133	30	47	53	1,300	650	74	34	66	555	469
Cache	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Rich	310	38	62	235	163	310	38	62	235	163	75	39	61	235	226	38	32	68	235	217	62	45	55	235	107
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	493	41	59	243	152	372	40	60	215	140	124	37	63	216	182	68	38	62	520	325	136	39	61	310	216
Central Region																									
Juab	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Southern Region																									
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	161	32	68	156	115	101	50	50	141	80	109	38	62	233	179	100	40	60	370	285	184	46	54	302	223
REGIONAL TOTALS	161	32	68	156	115	101	50	50	141	80	109	38	62	233	179	100	40	60	370	285	184	46	54	302	223
Northeastern Region																									
Daggett	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	72	50	50	126	89	--	--	--	--	--	--	--	--	--	--	107	44	56	110	73
REGIONAL TOTALS	--	--	--	--	--	72	50	50	126	89	--	--	--	--	--	--	--	--	--	--	107	44	56	110	73
Southeastern Region																									
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
STATE TOTALS	654	38	62	216	141	545	43	57	185	119	233	37	63	224	181	168	39	61	420	300	427	43	57	235	164

Forest Grouse



Blue Grouse

Brood count data for forest grouse provided small sample sizes, but is collected opportunistically. No meaningful information could be derived for ruffed grouse. Total blue grouse and blue grouse observed per 100 hours increased from 1997.

Total harvest increased 74 percent from 1997. Total hunters and days afield also increased.

As pheasant populations in Utah decline, interest in forest grouse hunting seems to be increasing.

Ruffed Grouse



Brood Counts

Ruffed Grouse

Results of the annual random brood survey for 1998 are shown in Table 1 of this section. Long-term trends of young per 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 1998 compared to 1997 and the previous 10-year average (1988-1997) follow:

	<u>1998</u>	<u>Percent change from 1997</u>	<u>Percent change from Average</u>
Total ruffed grouse observed	--	--	--
Young per 100 adults	--	--	--
Mean brood size	--	--	--
Ruffed grouse observed per 100 hours	--	--	--
Total hours effort	--	--	--

No effort was expended to collect ruffed grouse brood count data in 1998. This data is collected opportunistically.

Blue Grouse

Results of the annual random brood survey for 1998 are shown in Table 5 of this section. Long-term trends of young per adult ratios, mean brood size and blue grouse observed per 100 hours are found in Tables 6-8. Survey results for 1998 compared to 1997 and the 10-year average (1988-97) follow:

	<u>1998</u>	<u>Percent change from 1997</u>	<u>Percent change from Average</u>
Total blue grouse observed	176	+66	-3
Young per 100 adults	232	-8	-8
Mean brood size	3.48	-9	-5
Blue grouse observed per 100 hours	11,733	+1670	+3767
Total hours effort (forest grouse)	1.5	-91	-99

The 1998 brood count surveys on blue grouse indicated that production decreased 8 percent from 1997 and was 8 percent below average. Efforts to collect blue grouse brood information decreased 91 percent in 1998. This data is collected opportunistically.

Harvest

Hunter Questionnaire

Results of the 1998 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, 1963-98 are listed in Table 17. Harvest statistics for 1998 compared to 1997 and the 35-year average follow:

	<u>1998</u>	Percent change from 1997	Percent change from Average
Forest grouse hunters	20,310	+99	+43
Forest grouse harvested	54,439	+74	+54
Hunter-days afield	66,256	+69	+77
Forest grouse per hunter-day	0.82	+6	+99
Forest grouse per hunter	2.68	-12	+13
Percent ruffed grouse	23.12	-51	-41
Percent blue grouse	27.14	-48	-51
Percent unidentified	49.74	--	--

Total harvest increased 74 percent from 1997 and was 54 percent above average. Overall, hunter success (grouse per hunter-day) increased 6 percent in 1998, and remains 99 percent above average. The number of grouse harvested per hunter was 13 percent above average.

Figure 1. Statewide trends of forest grouse harvest statistics, 1963-98.

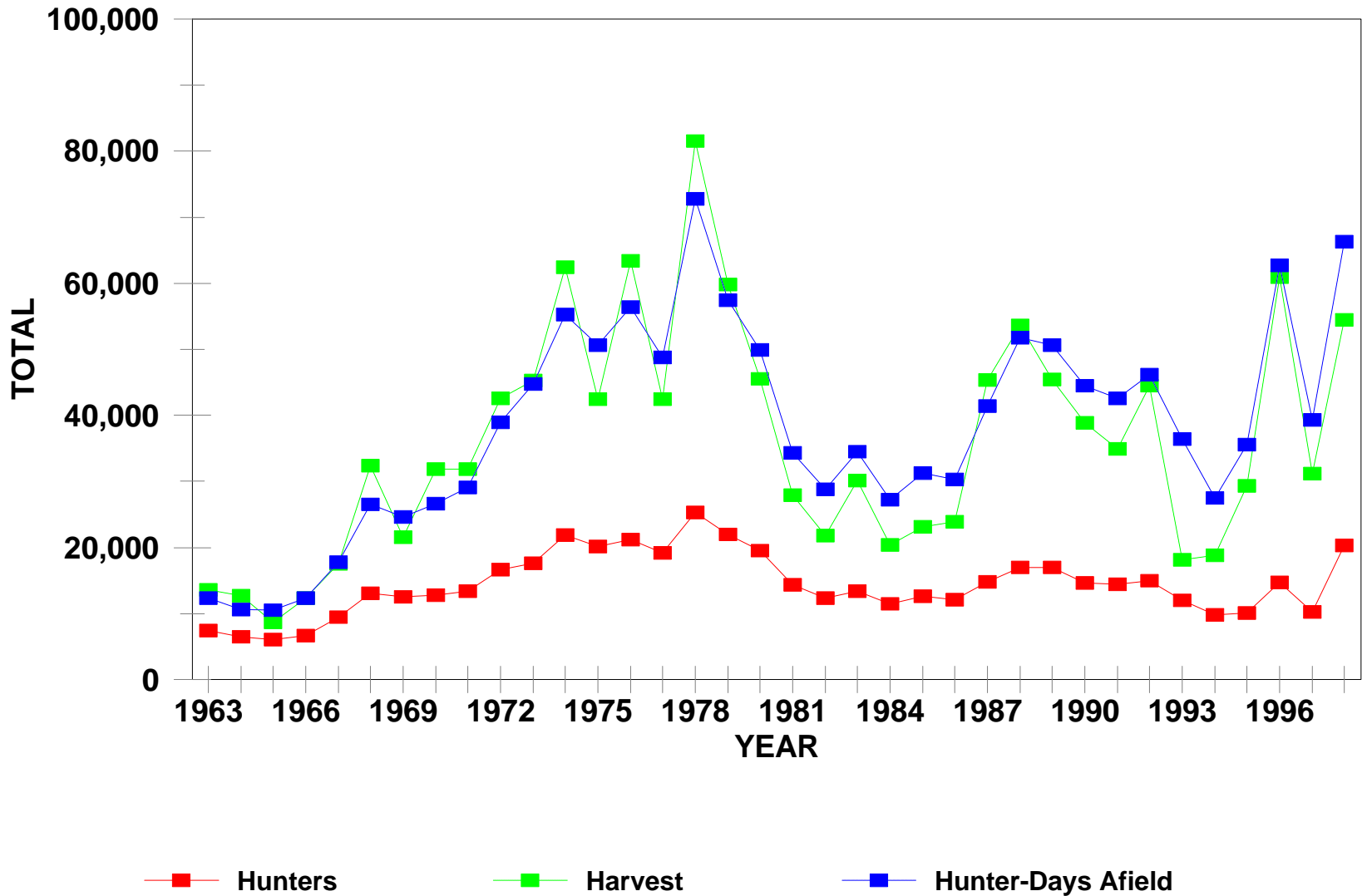
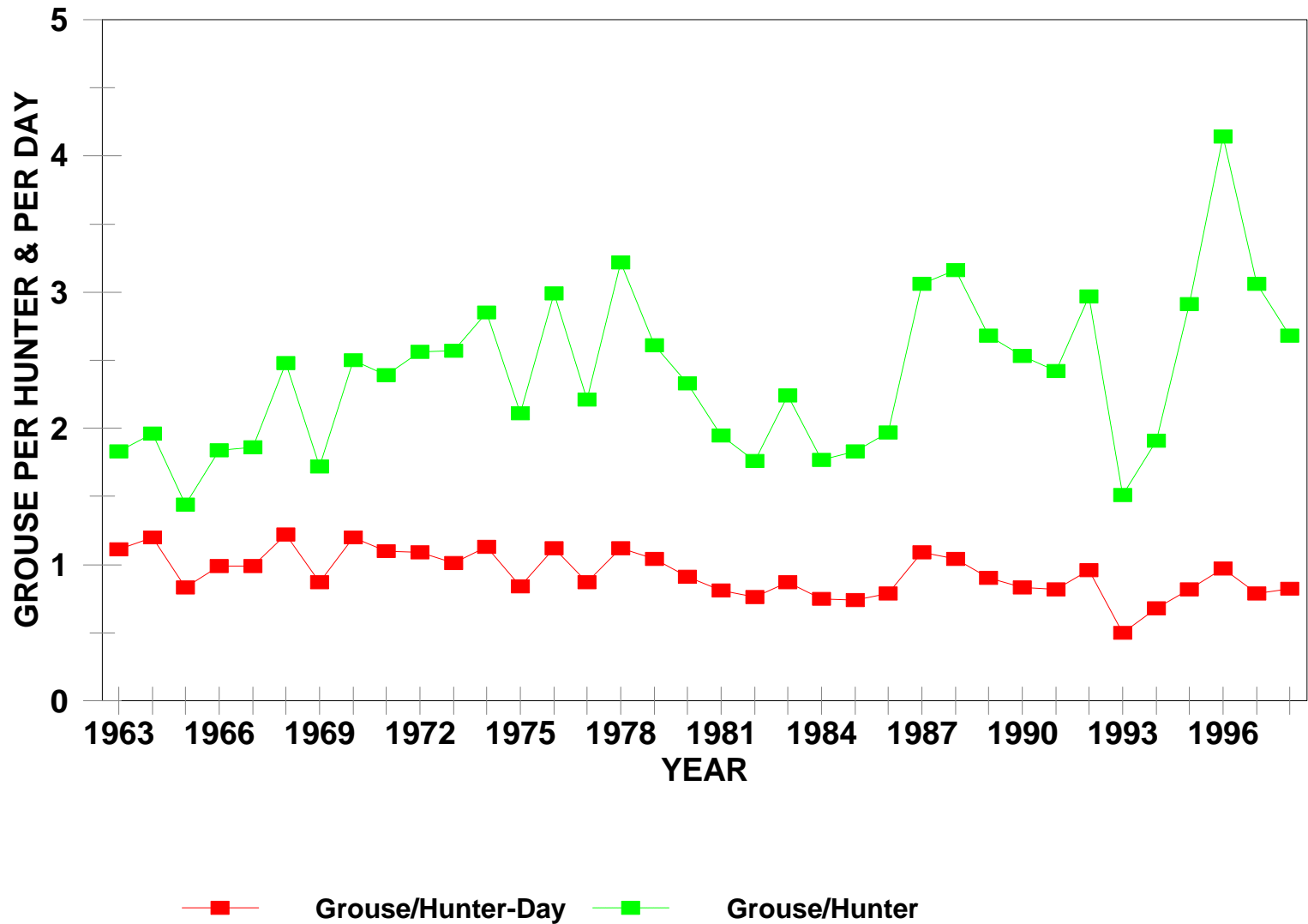


Figure 2. Statewide trends of forest grouse hunter success rates, 1963-98.



Field Bag Checks

A summary of field bag check data for 1998 is shown in Table 18. Hunter success trends determined via this method are shown in Table 19.

Results of the 1998 survey compared to 1997 and the 10-year (1988-97) average follow:

	<u>1998</u>	Percent change from 1997	Percent change from Average
Total hunters checked	25	-89	-94
Total hours hunted	49	-88	-96
Forest grouse per hunter (complete hunts)	0.44	+63	-38
Forest grouse bagged per 100 hours	19	+27	-35
Average hours per hunter-day (complete hunts)	2.25	+9	-37
Hours hunted per grouse bagged (complete hunts)	5.14	-97	-96

Forest grouse per hunter increased 63 percent from 1997, but remained 38 percent below the long-term average.

Sex and Age Composition of the Harvest

Sex and age composition of the harvest as determined from wings is shown in Tables 20 and 21.

Following are data derived from ruffed grouse wing surveys in 1998 compared to 1997 and the 10-year (1988-97) average:

	<u>1998</u>	Percent change from 1997	Percent change from Average
Sample Size	111	+158	-27
Percent Males	--	--	--
Percent Females	--	--	--
Young per 100 adults	208	+23	-6
Young per 100 hens (adult)	--	--	--

Following are data derived from blue grouse wing surveys in 1998 compared to 1997 and the 10-year (1988-97) average:

	<u>1998</u>	Percent change from 1997	Percent change from Average
Sample Size	146	+248	+145
Percent Males	46	-23	-26
Percent Females	54	+35	+20
Young per 100 adults	147	-60	+4
Young per 100 hens (adult)	264	-76	-21

Table 2. Trend of ruffed grouse young per 100 adults, 1988-98.

Region and County	Year											Average 1988-97
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Northern Region												
Box Elder	50	--	300	250	400	--	--	--	--	--	--	
Cache	267	300	150	225	167	--	--	--	233	--	--	
Davis	136	--	--	--	217	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	267	--	--	--	--	--	--	--	--	471	--	
Summit	--	300	450	400	--	--	--	--	--	--	--	
Weber	220	--	--	700	467	--	--	--	--	--	--	
REGIONAL TOTALS	141	300	300	355	277	--	--	--	233	471	--	297
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	300	400	--	--	--	--	--	--	
Tooele	--	--	--	--	--	--	--	--	--	--	--	
Utah	300	300	--	--	100	100	--	--	--	--	--	
Wasatch	--	--	280	--	--	--	--	--	400	--	--	
REGIONAL TOTALS	300	300	280	300	250	100	--	--	400	--	--	276
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	--	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	450	--	--	--	--	--	--	--	--	--	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	--	--	333	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	450	--	333	--	--	--	--	--	--	--	--	392
Northeastern Region												
Daggett	--	150	--	--	--	--	400	--	--	100	--	
Duchesne	--	400	600	--	--	--	--	--	--	--	--	
Uintah	--	267	600	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	--	250	600	--	--	--	400	--	--	100	--	338
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	
Emery	--	--	--	--	--	--	--	--	--	--	--	
Grand	--	--	--	--	--	--	--	--	--	--	--	
San Juan	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	0
STATE TOTALS	160	277	356	350	273	100	400	--	285	425	--	278

Table 3. Trend of average brood size for ruffed grouse, 1988-98.

Region and County	Year											Average 1988-97
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Northern Region												
Box Elder	3.00	--	3.00	5.00	4.00	--	--	--	--	--	--	--
Cache	4.00	3.00	3.00	3.00	5.00	--	--	--	2.33	--	--	--
Davis	4.00	--	--	--	4.33	--	--	--	--	--	--	--
Morgan	--	--	--	3.33	--	--	--	--	--	--	--	--
Rich	--	3.00	--	--	--	--	--	--	--	8.67	--	--
Summit	--	3.00	4.50	4.00	--	--	--	--	--	--	--	--
Weber	3.67	--	--	7.00	4.67	--	--	--	--	--	--	--
REGIONAL TOTALS	3.64	3.00	3.75	4.13	4.50	--	--	--	2.33	8.67	--	4.29
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	3.00	4.00	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	3.00	3.00	--	--	1.00	1.00	--	--	--	--	--	--
Wasatch	--	--	4.70	--	--	--	--	--	4.00	--	--	--
REGIONAL TOTALS	3.00	3.00	4.70	3.00	2.50	1.00	--	--	4.00	--	--	3.03
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	4.50	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	5.00	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	4.50	--	5.00	--	--	--	--	--	--	--	--	4.75
Northeastern Region												
Daggett	--	3.00	--	--	--	--	4.00	--	--	1.00	--	--
Duchesne	--	4.00	6.00	--	--	--	--	--	--	--	--	--
Uintah	--	4.00	6.00	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	3.75	6.00	--	--	--	4.00	--	--	1.00	--	3.69
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	0.00
STATE TOTALS	3.71	3.30	4.75	4.00	4.10	1.00	4.00	--	3.00	6.75	--	3.85

Table 4. Trend of ruffed grouse observed per 100 hours, 1988-98.

Region and County	Year											Average 1988-97
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Northern Region												
Box Elder	100	--	64	29	45	--	--	--	--	0	--	
Cache	17	46	5	76	40	--	--	--	--	--	--	
Davis	114	--	--	--	76	--	--	--	--	--	--	
Morgan	--	--	--	50	--	--	--	--	--	--	--	
Rich	50	--	--	--	--	--	--	--	--	--	--	
Summit	--	9	40	20	--	--	--	--	--	--	--	
Weber	178	--	--	26	170	--	--	--	--	--	--	
REGIONAL TOTALS	62	22	13	32	47	--	--	--	--	400	--	96
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	12	38	--	--	--	--	--	--	
Tooele	--	--	--	--	--	--	--	--	--	--	--	
Utah	133	133	--	--	13	14	--	--	--	--	--	
Wasatch	--	--	46	--	--	--	--	--	1,000	--	--	
REGIONAL TOTALS	133	133	28	6	13	7	--	--	1,000	--	--	189
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	
Kane	--	--	--	--	--	--	--	--	--	--	--	
Millard	--	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	138	--	--	--	--	--	--	--	--	--	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	138	--	433	--	--	--	--	--	--	--	--	286
Northeastern Region												
Daggett	--	109	--	--	--	--	50	--	--	80	--	
Duchesne	--	33	175	--	--	--	--	--	--	--	--	
Uintah	--	28	180	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	--	28	105	--	--	--	50	--	--	80	--	66
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	
Emery	--	--	--	--	--	--	--	--	--	--	--	
Grand	--	--	--	--	--	--	--	--	--	--	--	
San Juan	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	0
STATE TOTALS	46	26	30	23	31	2	31	--	2,500	336	--	336

Table 5. Blue grouse summer inventory, 1998.

Region and County	Distinct Broods			Mean Brood	Mixed Young & Adults		Adults w/o Young	Total Adults	Total Young	Young/100 Adults	Vehicle Miles	Hours of Effort			Birds/100 Hr	
	#	Adults	Young		Adults	Young						Vehicle	Horse	Walk		Total
Northern Region																
Box Elder	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
Cache	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
Davis	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
Morgan	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
Rich	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
Summit	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
Weber	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
REGIONAL TOTALS	0	0	0	ERR	0	0	0	0	0	ERR	0	0	0	0	0	ERR
Central Region																
Juab	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
Salt Lake	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
Sanpete	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
Tooele	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
Utah	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
Wasatch	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
REGIONAL TOTALS	0	0	0	ERR	0	0	0	0	0	ERR	0	0	0	0	0	ERR
Southern Region																
Beaver	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
Garfield	0	0	0	ERR	2	6	2	4	6	150	--	--	--	--	0	ERR
Iron	8	8	17	2.13	0	0	0	8	17	213	--	--	--	--	0	ERR
Kane	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
Millard	2	2	8	4.00	0	0	2	4	8	200	--	--	--	--	0	ERR
Piute	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
Sevier	3	3	15	5.00	0	0	3	6	15	250	--	--	--	--	0	ERR
Washington	1	1	4	4.00	0	0	6	7	4	57	--	--	--	--	0	ERR
Wayne	3	3	12	4.00	9	30	0	12	42	350	--	--	--	--	0	ERR
REGIONAL TOTALS	17	17	56	3.29	11	36	13	41	92	224	0	0	0	0	0	ERR
Northeastern Region																
Daggett	3	3	11	3.67	0	0	2	5	11	220	15	1.5	0	0	1.5	1,067
Duchesne	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
Uintah	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
REGIONAL TOTALS	3	3	11	3.67	0	0	2	5	11	220	15	1.5	0	0	1.5	1,067
Southeastern Region																
Carbon	5	5	20	4.00	0	0	2	7	20	286	--	--	--	--	0	ERR
Emery	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
Grand	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
San Juan	--	--	--	ERR	--	--	--	0	0	ERR	--	--	--	--	0	ERR
REGIONAL TOTALS	5	5	20	4.00	0	0	2	7	20	286	0	0	0	0	0	ERR
STATE TOTALS	25	25	87	3.48	11	36	17	53	123	232	15	1.5	0	0	1.5	11,733

Table 6. Trend of blue grouse young per 100 adults, 1988-98.

Region and County	Year											Average 1988-97
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Northern Region												
Box Elder	--	700	144	400	200	--	173	--	--	--	--	
Cache	363	257	300	600	80	--	--	--	400	--	--	
Davis	248	200	480	260	180	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	600	400	--	--	--	--	220	--	
Summit	--	200	178	155	--	--	--	--	--	--	--	
Weber	400	--	--	186	100	--	--	--	--	300	--	
REGIONAL TOTALS	279	244	292	277	207	--	173	--	400	248	--	265
Central Region												
Juab	--	--	700	--	--	--	140	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	80	--	--	--	--	--	--	--	--	--	
Tooele	650	650	276	231	300	--	40	--	--	--	--	
Utah	267	267	286	170	--	--	75	--	--	--	--	
Wasatch	--	--	--	--	100	100	--	--	--	--	--	
REGIONAL TOTALS	486	317	286	194	80	60	75	--	--	--	--	214
Southern Region												
Beaver	109	--	--	--	--	--	--	--	--	--	--	
Garfield	--	23	--	--	--	--	--	--	--	--	150	
Iron	--	--	--	--	--	--	--	--	--	--	213	
Kane	250	--	--	--	--	--	--	--	--	--	--	
Millard	60	--	--	--	--	--	--	--	--	--	200	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	90	--	--	--	--	--	--	--	--	--	250	
Washington	--	--	--	--	--	--	--	--	--	--	57	
Wayne	375	--	--	246	--	--	--	--	--	--	350	
REGIONAL TOTALS	118	23	--	246	--	--	--	--	--	--	224	129
Northeastern Region												
Daggett	318	364	233	--	600	--	--	100	450	175	220	
Duchesne	190	--	600	--	800	200	--	--	--	--	--	
Uintah	233	138	60	--	--	600	--	350	300	--	--	
REGIONAL TOTALS	254	268	223	--	400	--	--	267	330	175	220	274
Southeastern Region												
Carbon	--	--	--	--	500	--	--	--	--	--	286	
Emery	100	--	--	--	--	--	--	--	--	--	--	
Grand	227	300	--	200	286	289	200	--	--	400	--	
San Juan	213	300	--	500	233	167	--	--	--	--	--	
REGIONAL TOTALS	200	75	--	350	284	240	200	--	--	400	286	250
STATE TOTALS	207	225	274	238	243	291	167	267	336	253	232	250

Table 7. Trend of average brood size for blue grouse, 1988-98.

Region and County	Year											Average 1988-97
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Northern Region												
Box Elder	--	7.00	3.20	4.00	5.00	--	3.80	--	--	--	--	
Cache	3.63	3.60	3.70	4.50	4.00	--	--	--	4.00	--	--	
Davis	4.00	4.50	6.50	4.33	3.00	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	6.00	6.00	--	--	--	--	4.29	--	
Summit	--	3.00	4.00	3.40	--	--	--	--	--	--	--	
Weber	4.00	--	--	3.25	--	--	--	--	--	5.33	--	
REGIONAL TOTALS	3.84	3.86	4.30	4.05	4.31	--	3.80	--	4.00	4.60	--	4.10
Central Region												
Juab	--	--	7.00	--	--	--	3.50	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	2.00	--	--	--	--	--	--	--	--	--	
Tooele	6.00	6.00	3.13	3.60	3.00	--	2.00	--	--	--	--	
Utah	5.00	5.00	5.00	3.22	--	--	3.00	--	--	--	--	
Wasatch	--	--	--	--	1.00	3.00	--	--	--	--	--	
REGIONAL TOTALS	4.67	4.20	4.00	3.36	2.00	3.00	3.00	--	--	--	--	3.46
Southern Region												
Beaver	4.00	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	2.13	
Kane	4.00	--	--	--	--	--	--	--	--	--	--	
Millard	1.50	--	3.00	--	--	--	--	--	--	--	4.00	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	2.33	--	--	--	--	--	--	--	--	--	5.00	
Washington	--	--	--	--	--	--	--	--	--	--	4.00	
Wayne	3.75	--	--	4.57	--	--	--	--	--	--	4.00	
REGIONAL TOTALS	2.71	--	3.00	4.57	--	--	--	--	--	--	3.29	3.43
Northeastern Region												
Daggett	3.20	3.89	3.50	--	6.00	--	--	1.00	4.50	1.75	3.67	
Duchesne	2.50	--	6.00	--	8.00	2.00	--	--	--	--	--	
Uintah	3.50	2.20	--	--	--	6.00	--	3.50	4.00	--	--	
REGIONAL TOTALS	3.00	3.29	4.33	--	6.67	4.00	--	2.67	4.14	1.75	3.67	3.73
Southeastern Region												
Carbon	--	--	--	--	5.00	--	--	--	--	--	4.00	
Emery	4.00	--	--	--	--	--	--	--	--	--	--	
Grand	2.78	3.00	--	2.00	4.38	3.17	4.00	--	--	4.00	--	
San Juan	3.00	3.00	--	5.00	3.50	2.50	--	--	--	--	--	
REGIONAL TOTALS	2.93	3.00	--	3.50	4.13	2.90	4.00	--	--	4.00	4.00	3.49
STATE TOTALS	3.22	3.61	4.19	3.88	4.29	2.91	3.69	2.67	4.13	3.82	3.48	3.64

Table 8. Trend of blue grouse observed per 100 hours, 1988-98.

Region and County	Year											Average 1988-97
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Northern Region												
Box Elder	--	--	200	21	136	--	750	--	--	0	--	
Cache	56	114	108	165	45	--	--	--	--	--	--	
Davis	300	120	426	86	112	--	--	--	--	--	--	
Morgan	--	17	--	--	--	--	--	--	--	--	--	
Rich	0	--	--	175	79	--	--	--	--	--	--	
Summit	--	21	100	55	--	--	--	--	--	--	--	
Weber	56	--	--	65	40	--	--	--	--	--	--	
REGIONAL TOTALS	90	79	133	63	83	--	750	--	--	800	--	285
Central Region												
Juab	--	--	800	--	--	--	600	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	14	4	--	23	25	--	--	--	--	--	
Tooele	1,000	1,000	233	--	200	--	350	--	--	--	--	
Utah	367	367	113	318	--	--	350	--	--	--	--	
Wasatch	--	--	--	--	9	150	--	--	--	--	--	
REGIONAL TOTALS	683	72	75	180	24	29	433	--	--	--	--	214
Southern Region												
Beaver	164	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	100	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	--	
Kane	127	--	--	--	--	--	--	--	--	--	--	
Millard	100	--	--	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	738	--	--	--	--	--	--	--	--	--	--	
Washington	--	--	--	--	--	--	--	--	--	--	--	
Wayne	475	--	--	2,250	--	--	--	--	--	--	--	
REGIONAL TOTALS	247	--	200	2,250	--	--	--	--	--	--	--	899
Northeastern Region												
Daggett	230	265	286	--	1,400	--	--	200	248	183	1,067	
Duchesne	121	--	175	--	225	120	--	--	--	--	--	
Uintah	37	48	320	--	--	3,500	50	150	57	--	--	
REGIONAL TOTALS	120	95	46	--	500	370	8	157	137	183	1,067	180
Southeastern Region												
Carbon	--	--	--	--	240	--	--	--	--	--	--	
Emery	--	--	--	--	--	--	--	--	--	--	--	
Grand	--	89	--	300	540	875	467	--	--	--	--	
San Juan	--	400	--	600	600	457	--	--	--	--	--	
REGIONAL TOTALS	--	85	--	450	480	113	467	--	--	--	--	319
STATE TOTALS	166	81	93	112	130	48	384	157	157	663	1,067	199

Table 9. Summary of effort expended on forest grouse brood counts, 1998.

Region and County	Vehicle Miles	Hours of Effort			Total
		Vehicle	Horse	Walk	
Northern Region					
Box Elder	--	--	--	--	0
Cache	--	--	--	--	0
Davis	--	--	--	--	0
Morgan	--	--	--	--	0
Rich	--	--	--	--	0
Summit	--	--	--	--	0
Weber	--	--	--	--	0
REGIONAL TOTALS	0	0	0	0	0
Central Region					
Juab	--	--	--	--	0
Salt Lake	--	--	--	--	0
Sanpete	--	--	--	--	0
Tooele	--	--	--	--	0
Utah	--	--	--	--	0
Wasatch	--	--	--	--	0
REGIONAL TOTALS	0	0	0	0	0
Southern Region					
Beaver	--	--	--	--	0
Garfield	--	--	--	--	0
Iron	--	--	--	--	0
Kane	--	--	--	--	0
Millard	--	--	--	--	0
Piute	--	--	--	--	0
Sevier	--	--	--	--	0
Washington	--	--	--	--	0
Wayne	--	--	--	--	0
REGIONAL TOTALS	--	--	--	--	--
Northeastern Region					
Daggett	15	1.5	0	0	1.5
Duchesne	--	--	--	--	0
Uintah	--	--	--	--	0
REGIONAL TOTALS	15	1.5	0	0	1.5
Southeastern Region					
Carbon	--	--	--	--	0
Emery	--	--	--	--	0
Grand	--	--	--	--	0
San Juan	--	--	--	--	0
REGIONAL TOTALS	--	--	--	--	--
STATE TOTALS	15	1.5	0	0	1.5

Table 10. Summary of blue grouse hunter success and distribution of harvest and hunting pressure by region and county, 1998.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	9	465	721	1.55	2.71	4.88
CACHE	28	1,768	1,512	0.86	10.28	10.24
DAVIS	4	255	348	1.36	1.49	2.36
MORGAN	3	255	186	0.73	1.49	1.26
RICH	6	348	302	0.87	2.03	2.05
SUMMIT	9	442	348	0.79	2.57	2.36
WEBER	10	977	511	0.52	5.68	3.46
REGIONAL TOTALS	69	4,513	3,931	0.87	26.25	26.61
CENTRAL REGION						
JUAB	4	325	209	0.64	1.89	1.42
SALT LAKE	4	279	139	0.50	1.62	0.94
SANPETE	13	1,256	721	0.57	7.31	4.88
TOOELE	5	255	535	2.09	1.49	3.62
UTAH	33	2,884	2,279	0.79	16.78	15.43
WASATCH	10	1,023	465	0.45	5.95	3.15
REGIONAL TOTALS	69	6,025	4,350	0.72	35.05	29.45
SOUTHERN REGION						
BEAVER	7	279	535	1.92	1.62	3.62
GARFIELD	2	116	46	0.40	0.68	0.31
IRON	6	418	535	1.28	2.44	3.62
KANE	1	69	23	0.33	0.41	0.16
MILLARD	11	511	721	1.41	2.98	4.88
PIUTE	5	372	372	1.00	2.17	2.52
SEVIER	20	1,837	1,233	0.67	10.69	8.35
WASHINGTON	4	93	116	1.25	0.54	0.79
WAYNE	1	46	69	1.50	0.27	0.47
REGIONAL TOTALS	57	3,745	3,652	0.98	21.79	24.72
NORTHEASTERN REGION						
DAGGETT	4	279	186	0.67	1.62	1.26
DUCHESNE	7	721	581	0.81	4.19	3.94
UINTAH	20	1,326	1,465	1.11	7.71	9.92
REGIONAL TOTALS	31	2,326	2,233	0.96	13.53	15.12
SOUTHEASTERN REGION						
CARBON	5	372	209	0.56	2.17	1.42
EMERY	0	0	0	0.00	0.00	0.00
GRAND	0	0	0	0.00	0.00	0.00
SAN JUAN	5	209	395	1.89	1.22	2.68
REGIONAL TOTALS	10	581	604	1.04	3.38	4.09
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	236	17,192	14,773	0.86	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, 1998.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	6	465	279	0.60	3.03	2.22
CACHE	39	2,652	1,954	0.74	17.30	15.53
DAVIS	1	93	46	0.50	0.61	0.37
MORGAN	6	325	372	1.14	2.12	2.96
RICH	11	790	721	0.91	5.16	5.73
SUMMIT	19	1,349	1,070	0.79	8.80	8.50
WEBER	11	1,256	1,116	0.89	8.19	8.87
REGIONAL TOTALS	93	6,932	5,560	0.80	45.22	44.18
CENTRAL REGION						
JUAB	4	255	186	0.73	1.67	1.48
SALT LAKE	3	299	162	0.78	1.37	1.29
SANPETE	6	767	348	0.45	5.01	2.77
TOOELE	0	0	0	0.00	0.00	0.00
UTAH	21	1,837	1,488	0.81	11.99	11.83
WASATCH	12	1,372	1,023	0.75	8.95	8.13
REGIONAL TOTALS	46	4,443	3,210	0.72	28.98	25.51
SOUTHERN REGION						
BEAVER	0	0	0	0.00	0.00	0.00
GARFIELD	2	46	69	1.50	0.30	0.55
IRON	4	255	302	1.18	1.67	2.40
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	14	1,256	1,488	1.19	8.19	11.83
WASHINGTON	0	0	0	0.00	0.00	0.00
WAYNE	1	139	162	1.17	0.91	1.29
REGIONAL TOTALS	21	1,698	2,024	1.19	11.08	16.08
NORTHEASTERN REGION						
DAGGETT	3	255	302	1.18	1.67	2.40
DUCHESNE	11	1,046	790	0.76	6.83	6.28
UINTAH	6	418	279	0.67	2.73	2.22
REGIONAL TOTALS	20	1,721	1,372	0.80	11.23	10.91
SOUTHEASTERN REGION						
CARBON	6	348	255	0.73	2.28	2.03
EMERY	2	186	162	0.88	1.21	1.29
GRAND	0	0	0	0.00	0.00	0.00
SAN JUAN	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	8	535	418	0.78	3.49	3.33
Unknown	0	0	0	0.00	0.00	0.00
STATE TOTALS	188	15,331	12,586	0.82	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, 1998.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	17	1,000	907	0.91	2.97	3.35
CACHE	87	5,281	3,350	0.63	15.66	12.37
DAVIS	14	604	395	0.65	1.79	1.46
MORGAN	14	651	558	0.86	1.93	2.06
RICH	21	1,209	1,023	0.85	3.59	3.78
SUMMIT	37	2,233	1,419	0.64	6.62	5.24
WEBER	32	2,093	1,581	0.76	6.21	5.84
REGIONAL TOTALS	222	13,074	9,236	0.71	38.76	34.11
CENTRAL REGION						
JUAB	8	465	372	0.80	1.38	1.37
SALT LAKE	10	558	325	0.58	1.66	1.20
SANPETE	20	1,535	1,070	0.70	4.55	3.95
TOOELE	12	442	535	1.21	1.31	1.98
UTAH	57	4,187	3,745	0.89	12.41	13.83
WASATCH	36	2,372	1,535	0.65	7.03	5.67
REGIONAL TOTALS	143	9,561	7,584	0.79	28.35	28.01
SOUTHERN REGION						
BEAVER	9	442	535	1.21	1.31	1.98
GARFIELD	7	325	116	0.36	0.97	0.43
IRON	16	884	837	0.95	2.62	3.09
KANE	1	69	23	0.33	0.21	0.09
MILLARD	15	628	721	1.15	1.86	2.66
PIUTE	8	488	372	0.76	1.45	1.37
SEVIER	40	3,094	2,768	0.89	9.17	10.22
WASHINGTON	4	93	116	1.25	0.28	0.43
WAYNE	3	302	232	0.77	0.90	0.86
REGIONAL TOTALS	103	6,327	5,723	0.90	18.76	21.13
NORTHEASTERN REGION						
DAGGETT	7	372	488	1.31	1.10	1.80
DUCHESNE	21	1,419	1,372	0.97	4.21	5.07
UINTAH	29	1,698	1,698	1.00	5.03	6.27
REGIONAL TOTALS	57	3,489	3,559	1.02	10.35	13.14
SOUTHEASTERN REGION						
CARBON	9	442	418	0.95	1.31	1.55
EMERY	4	255	162	0.64	0.76	0.60
GRAND	2	93	0	0.00	0.28	0.00
SAN JUAN	8	488	395	0.81	1.45	1.46
REGIONAL TOTALS	23	1,279	977	0.76	3.79	3.61
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	548	33,733	27,080	0.80	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 13. Summary of forest grouse bagged per hunter-day by region and county, 1991-98.

Region and County	Year							
	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region								
Box Elder	0.69	1.15	0.18	0.80	0.92	1.03	0.85	0.91
Cache	0.92	0.94	0.41	0.88	0.71	1.38	0.83	0.63
Davis	0.84	0.59	0.18	0.45	0.64	1.51	0.71	0.65
Morgan	0.94	1.06	0.16	0.66	1.14	1.66	1.25	0.86
Rich	0.62	0.76	0.34	0.59	0.62	1.10	0.96	0.85
Summit	0.72	0.77	0.40	0.82	0.97	1.21	0.70	0.64
Weber	0.51	1.01	0.51	0.51	0.83	1.23	1.01	0.76
REGIONAL TOTALS	0.76	0.92	0.37	0.72	0.80	1.33	0.88	0.71
Central Region								
Juab	0.65	0.79	0.84	0.56	0.78	0.23	0.60	0.80
Salt Lake	0.55	1.00	0.41	0.87	0.52	0.48	0.33	0.58
Sanpete	0.98	0.78	0.65	0.86	0.48	0.67	0.66	0.70
Tooele	1.03	1.19	0.37	1.02	0.96	1.00	0.08	1.21
Utah	0.97	0.84	0.77	0.59	0.45	0.74	0.65	0.89
Wasatch	0.76	1.25	0.26	0.52	0.74	0.91	0.97	0.65
REGIONAL TOTALS	0.89	0.92	0.52	0.70	0.61	0.76	0.63	0.79
Southern Region								
Beaver	0.95	1.44	1.17	0.64	0.60	0.79	1.09	1.21
Garfield	0.83	0.48	0.27	0.29	0.40	0.83	0.27	0.36
Iron	0.57	0.78	0.93	0.78	0.78	0.38	1.00	0.95
Kane	0.61	1.45	1.25	0.80	1.75	0.50	1.29	0.33
Millard	0.98	1.59	0.86	0.77	0.60	0.75	0.53	1.15
Piute	1.00	1.25	1.00	0.75	1.32	0.20	1.25	0.76
Sevier	1.00	0.75	1.32	0.20	0.80	1.52	0.65	0.89
Washington	1.83	2.00	0.00	0.60	1.25	0.33	0.33	1.25
Wayne	0.59	1.29	0.71	0.45	0.50	0.13	0.22	0.77
REGIONAL TOTALS	0.87	1.19	0.71	0.64	0.62	0.77	0.70	0.90
Northeastern Region								
Daggett	0.97	1.03	0.85	0.58	0.56	1.56	0.36	1.31
Duchesne	0.78	0.68	0.31	0.57	0.86	0.90	0.45	0.97
Uintah	1.00	1.01	0.66	0.53	1.30	1.01	1.01	1.00
REGIONAL TOTALS	0.93	0.94	0.59	0.55	1.00	1.08	0.78	1.02
Southeastern Region								
Carbon	0.64	0.83	0.73	0.78	1.60	0.38	0.67	0.95
Emery	0.78	0.88	0.18	0.48	0.17	0.47	0.50	0.64
Grand	2.14	0.52	1.12	0.00	0.50	0.31	0.75	0.00
San Juan	0.45	1.57	1.50	1.20	0.43	0.71	1.27	0.81
REGIONAL TOTALS	0.77	0.79	0.54	0.67	0.56	0.41	0.80	0.76
Unknown counties	0.00	0.00	0.44	0.00	0.41	1.00	0.00	0.00
STATE TOTALS	0.82	0.96	0.50	0.69	0.73	1.06	0.77	0.80

Table 16. Statewide summary of forest grouse harvest statistics, 1963-98.

Year	Total			Total Harvest				Harvest	Hunter-Days Afield	Grouse/Hunter-Day			Grouse/Hunter		
	Hunters	Ruffed	Percent	Blue	Percent	Unknown	Percent			Ruffed	Blue	Total	Ruffed	Blue	Total
1963	7,425	5,470	40.20	7,372	54.17	766	5.63	13,608	12,313	0.44	0.66	1.11	0.74	0.99	1.83
1964	6,487	5,354	42.19	6,685	52.68	652	5.14	12,691	10,566	0.51	0.63	1.20	0.82	1.03	1.96
1965	6,005	3,225	37.20	4,924	56.80	520	6.00	8,669	10,504	0.31	0.47	0.83	0.54	0.82	1.44
1966	6,683	6,966	56.54	4,659	37.81	696	5.65	12,321	12,387	0.56	0.38	0.99	1.04	0.68	1.84
1967	9,420	8,476	48.36	6,773	38.65	2,277	12.99	17,526	17,773	0.48	0.38	0.99	0.87	0.69	1.86
1968	13,061	17,048	52.59	12,604	38.88	2,762	8.52	32,414	26,537	0.64	0.47	1.22	1.30	0.96	2.48
1969	12,523	9,490	44.14	10,419	48.46	1,589	7.39	21,498	24,572	0.38	0.42	0.87	0.76	0.83	1.72
1970	12,775	15,590	48.87	13,515	42.37	2,793	8.76	31,898	26,619	0.59	0.51	1.20	1.22	1.06	2.50
1971	13,363	15,759	49.40	13,749	43.10	2,393	7.50	31,901	29,100	0.54	0.47	1.10	1.18	1.03	2.39
1972	16,640	20,648	48.56	19,221	45.21	2,649	6.23	42,518	38,940	0.53	0.49	1.09	1.24	1.16	2.56
1973	17,588	7,153	15.81	36,846	81.46	1,233	2.73	45,232	44,738	0.16	0.82	1.01	0.41	2.09	2.57
1974	21,920	24,561	39.34	32,236	51.63	5,642	9.04	62,439	55,258	0.44	0.58	1.13	1.12	1.47	2.85
1975	20,102	15,750	37.09	23,138	54.49	3,573	8.41	42,461	50,579	0.31	0.45	0.84	0.78	1.15	2.11
1976	21,186	23,551	37.13	35,660	56.21	4,225	6.66	63,436	56,422	0.42	0.63	1.12	1.11	1.68	2.99
1977	19,188	15,766	37.12	23,455	55.22	3,256	7.67	42,477	48,746	0.37	0.48	0.87	0.82	1.22	2.21
1978	25,318	30,340	37.20	46,651	57.20	4,567	5.60	81,558	72,732	0.42	0.64	1.12	1.20	1.84	3.22
1979	21,993	23,156	38.69	33,070	55.25	3,625	6.06	59,851	57,404	0.40	0.58	1.04	1.05	1.50	2.61
1980	19,511	15,457	33.96	27,588	60.60	2,477	5.44	45,522	49,899	0.31	0.55	0.91	0.79	1.41	2.33
1981	14,329	8,557	30.68	17,852	64.00	1,485	5.32	27,894	34,305	0.25	0.52	0.81	0.60	1.25	1.95
1982	12,384	7,509	34.48	12,138	55.74	2,131	9.79	21,778	28,767	0.26	0.42	0.76	0.60	0.98	1.76
1983	13,414	11,366	37.78	16,955	56.35	1,767	5.87	30,088	34,530	0.33	0.49	0.87	0.84	1.26	2.24
1984	11,511	6,780	33.24	12,647	62.01	969	4.75	20,396	27,244	0.25	0.46	0.75	0.59	1.10	1.77
1985	12,646	8,701	37.67	13,416	58.09	980	4.24	23,097	31,290	0.28	0.43	0.74	0.69	1.06	1.83
1986	12,117	8,819	36.95	14,156	59.31	894	3.75	23,869	30,312	0.29	0.47	0.79	0.73	1.17	1.97
1987	14,831	15,811	34.88	28,068	61.92	1,447	3.19	45,326	41,428	0.38	0.68	1.09	1.07	1.89	3.06
1988	16,947	19,100	35.66	31,556	58.91	2,906	5.43	53,562	51,726	0.37	0.61	1.04	1.13	1.86	3.16
1989	16,987	16,323	35.88	27,794	61.10	1,370	3.01	45,487	50,631	0.32	0.55	0.90	0.96	1.64	2.68
1990	14,591	11,010	28.29	26,115	67.10	1,797	4.62	38,922	44,452	0.25	0.59	0.83	0.75	1.79	2.53
1991	14,421	12,073	34.60	21,310	61.07	1,514	4.34	34,897	42,517	0.35	0.50	0.82	0.84	1.48	2.42
1992	15,000	15,017	33.73	29,146	65.47	355	0.80	44,518	46,136	0.33	0.63	0.96	1.00	1.94	2.97
1993	12,029	6,650	36.65	11,040	60.84	457	2.52	18,147	36,390	0.18	0.30	0.50	0.55	0.92	1.51
1994	9,827	6,908	36.62	11,865	62.90	89	0.47	18,862	27,510	0.25	0.43	0.68	0.70	1.21	1.91
1995	10,088	13,140	44.83	16,172	55.17	0*	0.00	29,312	35,591	0.77	0.87	0.82	2.79	3.00	2.91
1996	14,702	29,567	48.53	31,355	51.47	0*	0.00	60,922	62,711	0.97	0.97	0.97	4.16	4.13	4.14
1997	10,206	14,861	47.63	16,337	52.37	0*	0.00	31,198	39,304	0.77	0.81	0.79	3.11	3.01	3.06
1998	20,310	12,586	23.12	14,773	27.14	27,080	49.74	54,439	66,256	0.82	0.86	0.82	3.13	2.87	2.68
Totals (1963-98)	517,528	488,538	--	711,260	--	90,936	--	1,290,734	1,376,189	--	--	--	--	--	--
Averages (1963-97)	14,206	13,599	39.21	19,900	55.54	1,996	5.73	35,323	37,427	0.41	0.55	0.94	1.09	1.47	2.38

*Not Calculated

Table 17. Blue and ruffed grouse harvest statistics and hunt regulations, 1963-1998.

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	
						Open	Close	Days	Daily	Possession
1963	5,470	7,372	13,608	7,425	12,313	?	?	?**	4	8
1964	5,354	6,685	12,691	6,487	10,566	9/26	10/16	21	4	8
1965	3,225	4,924	8,669	6,005	105,074	9/25	10/22	28	4	8
1966	6,966	4,659	12,321	6,683	12,387	9/24	10/21	28	4	8
1967	8,476	6,773	17,526	9,420	17,773	9/23	10/31	39	4	8
1968	17,048	12,604	32,414	13,061	26,537	9/28	10/29	32	4	8
1969	9,490	10,419	21,498	12,523	24,572	9/27	11/02	37	4	8
1970	15,590	13,515	31,898	12,775	26,619	9/26	11/06	42	4	8
1971	15,759	13,749	31,901	13,363	29,100	9/25	11/30	67	4	8
1972	20,648	19,221	42,518	16,640	38,940	9/23	11/30	69	4	8
1973	7,153	36,846	45,232	17,588	44,738	9/22	11/30	70	4	8
1974	24,561	32,236	62,439	21,920	55,258	9/28	11/30	64	4	8
1975	15,750	23,138	42,461	20,102	50,579	9/20	11/30	72	4	8
1976	23,551	35,660	63,436	21,186	56,422	9/18	11/30	74	4	8
1977	15,766	23,455	42,477	19,188	48,746	9/17	11/30	75	4	8
1978	30,340	46,651	81,558	25,318	72,732	9/16	11/30	76	4	8
1979	23,156	33,070	59,851	21,993	57,404	9/15	11/30	77	4	8
1980	15,457	27,588	45,522	19,511	49,899	9/20	11/30	72	4	8
1981	8,557	17,852	27,894	14,329	34,305	9/19	11/30	73	4	8
1982	7,509	12,138	21,778	12,384	28,767	9/18	11/30	74	4	8
1983	11,366	16,955	30,088	13,414	34,530	9/17	11/30	75	4	8
1984	6,780	12,647	20,396	11,511	27,244	9/15	11/30	77	4	8
1985	8,701	13,416	23,097	12,646	31,290	9/14	11/30	78	4	8
1986	8,819	14,156	23,869	12,117	30,312	9/13	11/30	79	4	8
1987	15,811	28,068	45,326	14,831	41,428	9/12	11/30	80	4	8
1988	19,100	31,556	53,562	16,947	51,726	9/11	11/30	82	4	8
1989	16,323	27,794	45,487	16,987	50,631	9/09	11/30	82	4	8
1990	11,010	26,115	38,922	14,591	44,452	9/08	11/30	82	4	8
1991	12,073	21,310	34,897	14,421	42,517	9/14	11/30	77	4	8
1992	15,017	29,146	44,518	15,000	46,136	9/12	11/30	79	4	8
1993	6,650	11,040	18,147	12,029	36,390	9/11	11/30	82	4	8
1994	6,908	11,865	18,862	9,827	27,510	9/10	11/30	81	4	8
1995	13,140	16,172	29,312	10,088	35,591	9/9	11/30	82	4	8
1996	29,567	31,355	60,922	14,702	62,711	9/7	11/30	84	4	8
1997	14,861	16,337	31,198	10,206	39,304	9/12	11/30	80	4	8
1998	12,586	14,773	54,439	20,310	66,256	9/12	11/30	80	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.

Table 18. Forest grouse field bag check summary, 1998.

Region and County	ALL HUNTS					COMPLETE HUNTS					
	Total Parties	Total Hunters	Total Hours	Total Birds	Birds/ 100 Hr	Complete Hunts	Total Hunters	Total Hours	Total Birds	Birds/ Hunter	Birds/ 100 Hr
Northern Region											
Box Elder	--	--	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--
Central Region											
Juab	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	12	25	49.0	9	18	8	16	36.0	7	0.44	19
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	12	25	49.0	9	18	8	16	36.0	7	0.44	19

Table 19. Forest grouse hunter success trend as determined by field bag checks, 1993-98.

Region and County	1993		1994		1995		1996		1997		1998	
	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr	Birds/ Hunter	Birds/ 100 Hr
Northern Region												
Box Elder	--	--	--	--	0.27	4	0.17	4	--	--	--	--
Cache	--	--	0.59	14	0.43	8	1.28	35	0.28	19	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	0.59	15	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	1.23	31	0.23	11	--	--
REGIONAL TOTALS	--	--	0.59	14	0.42	8	1.19	31	0.25	14	--	--
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	0.44	19
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
Northeastern Region												
Daggett	--	--	--	--	0.13	5	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	0.25	7	0.00	0	--	--	--	--	--	--
REGIONAL TOTALS	--	--	0.25	7	0.12	4	--	--	--	--	--	--
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	1.00	120	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	1.00	120	--	--
STATE TOTALS	--	--	0.53	13	0.40	8	1.19	31	0.27	15	0.44	19

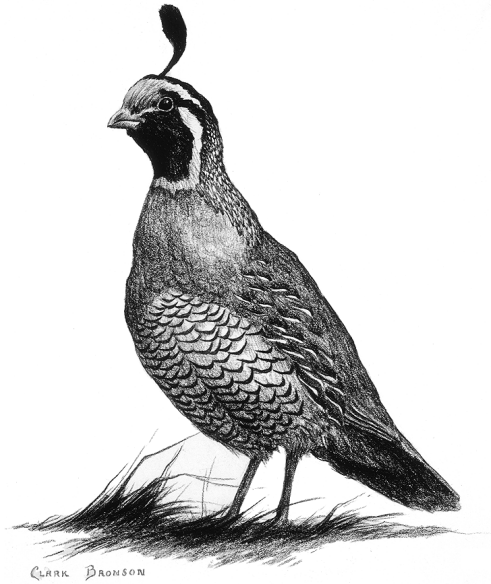
Table 20. Sex and age composition of harvested ruffed grouse, 1998.

Region and County	Sample Size	Adults			Young			Young/ 100 Adults	Young/ 100 Hens
		M	F	Total	M	F	Total		
Northern Region									
Box Elder	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	79	0	0	30	0	0	49	163	--
Central Region									
Juab	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	32	0	0	6	0	0	26	433	--
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	111	0	0	36	0	0	75	208	--

Table 21. Sex and age composition of harvested blue grouse, 1998.

Region and County	Sample Size	Adults			Young			Young/ 100 Adults	Young/ 100 Hens
		M	F	Total	M	F	Total		
Northern Region									
Box Elder	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	90	18	23	41	21	28	49	120	213
Central Region									
Juab	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	56	8	10	18	20	18	38	211	380
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	146	26	33	59	41	46	87	147	264

Quail



California Quail

Statewide harvest statistics, when compared to 1997, showed an increase in total harvest. Hunter success (birds per hunter-day) increased 23 percent and was 2 percent above average. Hunter-days afield increased 5 percent from 1997.

California quail are found primarily in urban areas of Utah. Hunter access to these birds is limited.

Gambel's Quail



Figure 1. Statewide trends of quail harvest statistics, 1959-98.

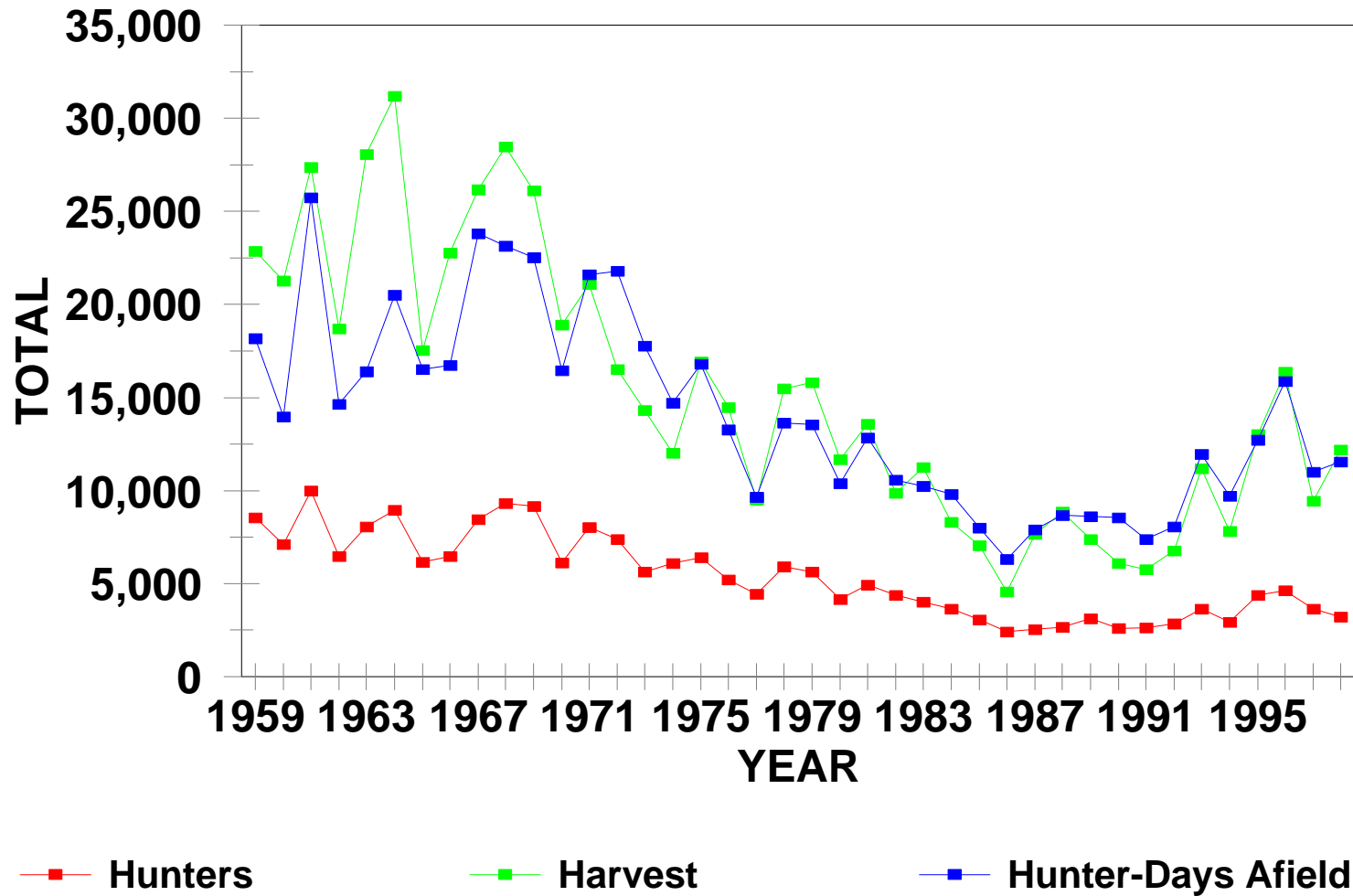
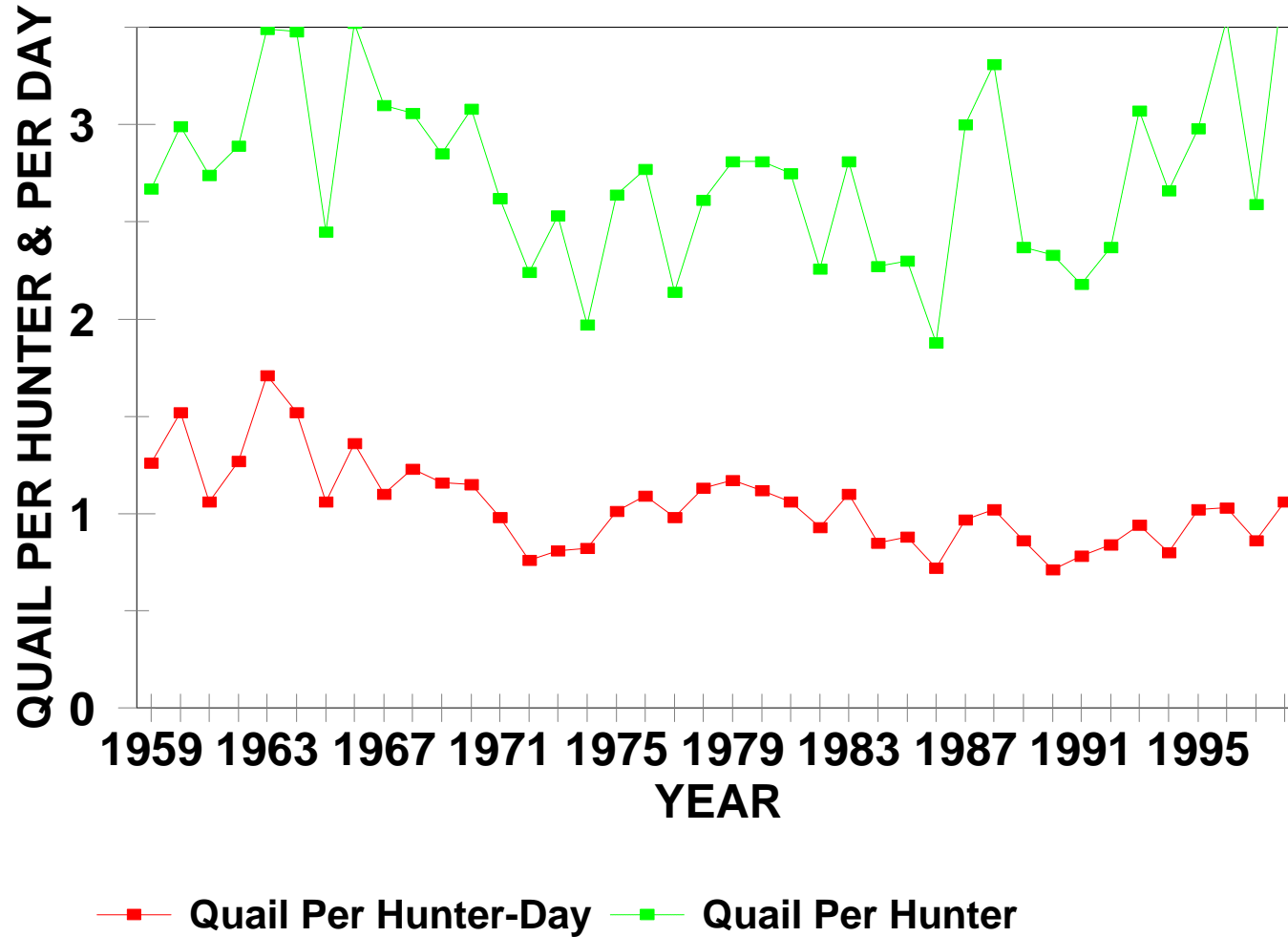


Figure 2. Statewide trends of quail hunter success rates, 1959-98.



Brood Counts

Results of the annual random brood counts for quail for 1998 are shown in Table 1 of this section. Long-term trends of young per adult ratios, mean brood size and quail observed per 100 hours are shown in Tables 2-4. Gambel's quail long period waterhole count trends are shown in Table 10. Survey results for 1998 compared to 1997 and the 10-year (1988-97) average follow:

	<u>1998</u>	Percent change from 1997	Percent change from Average
Total quail observed	285	+248	+30
Young per 100 adults	482	+66	+66
Mean brood size	10.26	+54	+44
Quail observed per 100 hours	8,143	+248	+308
Total hours effort	3.5	0	-75

Total quail observed increased 248 percent over 1997. Young per 100 adults increased 66 percent over 1997.

Harvest

Results of the annual hunter questionnaire for 1998 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 1998 season to 1997 and the 39-year average follow:

	<u>1998</u>	Percent change from 1997	Percent change from Average
Quail hunters	3,211	-12	-39
Quail harvested	12,213	+29	-15
Hunter-days afield	11,562	+5	-14
Quail per hunter-day	1.06	+23	+2
Quail per hunter	3.80	+47	+43

Quail hunters decreased 12 percent from 1997, and remain 39 percent below the long-term average. Quail harvest increased 29 percent from 1997.

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

Field Bag Checks

A summary of field bag check data for 1998 is shown in Table 11.

Table 1. Quail summer inventory, 1998.

Region and County	Distinct Broods		Mean Brood	Mixed Young & Adults		Adults w/c Young	Total Adults	Total Young	Young/100 Adults	Vehicle Miles	Hours of Effort		Birds/100 Hr			
	#	Adults		Young	Adults						Young	Vehicle		Horse	Walk	Total
Northern Region																
Box Elder	--	--	--	--	--	--	--	--	--	--	--	--	--			
Cache	--	--	--	--	--	--	--	--	--	--	--	--	--			
Davis	--	--	--	--	--	--	--	--	--	--	--	--	--			
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--			
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--			
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--			
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--			
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--			
Central Region																
Juab	--	--	--	--	--	--	--	--	--	--	--	--	--			
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--			
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	--			
Tooele	--	--	--	--	--	--	--	--	--	--	--	--	--			
Utah	--	--	--	--	--	--	--	--	--	--	--	--	--			
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--			
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--			
Southern Region																
Beaver	--	--	--	--	--	--	--	--	--	--	--	--	--			
Garfield	--	--	--	--	--	--	--	--	--	--	--	--	--			
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--			
Kane*	--	--	--	--	--	--	--	--	--	--	--	--	--			
Millard	--	--	--	--	--	--	--	--	--	--	--	--	--			
Piute	--	--	--	--	--	--	--	--	--	--	--	--	--			
Sevier	--	--	--	--	--	--	--	--	--	--	--	--	--			
Washington*	23	30	236	10.26	--	--	19	49	236	482	--	3.5	--	3.5	8,143	
Wayne*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	23	30	236	10.26	0	0	19	49	236	482	0	3.5	0	0	3.5	8,143
Northeastern Region																
Daggett	--	--	--	--	--	--	--	--	--	--	--	--	--			
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--	--			
Uintah	--	--	--	--	--	--	--	--	--	--	--	--	--			
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--			
Southeastern Region																
Carbon	--	--	--	--	--	--	--	--	--	--	--	--	--			
Emery	--	--	--	--	--	--	--	--	--	--	--	--	--			
Grand	--	--	--	--	--	--	--	--	--	--	--	--	--			
San Juan	--	--	--	--	--	--	--	--	--	--	--	--	--			
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--			
STATE TOTALS	23	30	236	10.26	0	0	19	49	236	482	0	3.5	0	0	3.5	8,143

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

Table 2. Trend of quail young per 100 adults, 1988-98.

Region and County	Year											Average
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1988-1997
Northern Region												
Box Elder	--	--	--	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	224	--	656	--	--	--	--	--	--	--	--	440
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	900	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	900	--	--	--	--	--	--	--	900
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane*	--	--	--	--	--	--	--	--	--	--	--	--
Millard	790	--	179	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--
Washington*	126	194	367	--	--	294	132	194	--	290	482	--
Wayne*	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	242	194	252	--	--	294	132	194	--	290	482	228
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	300	--	--	375	--	400	--	--	--	--	--	--
Uintah	126	420	667	--	370	333	--	145	--	--	--	--
REGIONAL TOTALS	177	420	667	375	370	336	--	145	--	--	--	386
Southeastern Region												
Carbon	--	--	--	--	767	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	767	--	--	--	--	--	--	767
STATE TOTALS	276	220	391	480	462	299	132	163	--	290	482	301

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

Table 3. Trend of average brood size for quail, 1988-98.

Region and County	Year											Average 1988-97
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Northern Region												
Box Elder	--	--	--	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	6.33	--	11.80	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	14.00	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	5.33	--	11.80	--	--	--	--	--	--	--	--	8.57
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	9.00	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	9.00	--	--	--	--	--	--	--	9.00
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane*	--	--	--	--	--	--	--	--	--	--	--	--
Millard	11.28	--	12.50	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--
Washington*	4.64	--	11.00	--	--	6.05	6.00	6.60	--	6.67	10.26	--
Wayne*	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	7.22	--	11.00	--	--	6.05	6.00	6.60	--	6.67	10.26	7.26
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	9.00	--	--	--	--	4.00	--	--	--	--	--	--
Uintah	8.50	4.50	6.70	--	7.40	7.00	--	7.50	--	--	--	--
REGIONAL TOTALS	8.15	4.50	6.70	--	7.40	6.25	--	7.50	--	--	--	6.75
Southeastern Region												
Carbon	--	--	--	--	7.67	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	7.67	--	--	--	--	--	--	7.67
STATE TOTALS	7.25	4.50	10.45	9.00	7.50	6.07	6.00	6.86	--	6.67	10.26	7.14

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

Table 4. Trend of quail observed per 100 hours, 1988-98.

Region and County	Year											Average 1988-97
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Northern Region												
Box Elder	--	--	--	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	1,100	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	1,100	--	--	--	--	--	--	--	--	--	--	1,100
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	1,000	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	1,000	--	--	--	--	--	--	--	1,000
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane*	--	--	--	--	--	--	--	--	--	--	--	--
Millard	1,271	--	975	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--
Washington*	530	53	1,050	--	--	7,788	2,963	1,250	--	2,343	8,143	--
Wayne*	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	527	53	1,013	--	--	7,788	2,963	1,250	--	2,343	8,143	2,277
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	356	--	--	475	--	250	--	--	--	--	--	--
Uintah	1,800	371	767	--	4,700	3,033	--	1,520	--	--	--	--
REGIONAL TOTALS	717	371	767	475	4,700	1,920	--	1,520	--	--	--	1,626
Southeastern Region												
Carbon	--	--	--	--	1,300	--	--	--	--	--	--	--
Emery	--	--	--	--	--	--	--	--	--	--	--	--
Grand	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	1,300	--	--	--	--	--	--	1,300
STATE TOTALS	622	524	1,564	580	2,433	5,531	2,963	1,400	--	2,343	8,143	1,995

*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, 1998.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	1	116	0	0.00	1.01	0.00
CACHE	0	0	0	0.00	0.00	0.00
DAVIS	2	93	93	1.00	0.80	0.76
MORGAN	1	23	0	0.00	0.20	0.00
RICH	0	0	0	0.00	0.00	0.00
SUMMIT	0	0	0	0.00	0.00	0.00
WEBER	6	255	465	1.82	2.21	3.81
REGIONAL TOTALS	10	488	558	1.14	4.23	4.57
CENTRAL REGION						
JUAB	1	23	116	5.00	0.20	0.95
SALT LAKE	1	46	93	2.00	0.40	0.76
SANPETE	1	23	23	1.00	0.20	0.19
TOOELE	2	232	69	0.30	2.01	0.57
UTAH	16	977	418	0.43	8.45	3.43
WASATCH	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	21	1,302	721	0.55	11.27	5.91
SOUTHERN REGION						
BEAVER	0	0	0	0.00	0.00	0.00
GARFIELD	0	0	0	0.00	0.00	0.00
IRON	1	23	0	0.00	0.20	0.00
KANE	0	0	0	0.00	0.00	0.00
MILLARD	8	721	116	0.16	6.24	0.95
PIUTE	0	0	0	0.00	0.00	0.00
SEVIER	4	186	186	1.00	1.61	1.52
WASHINGTON	41	4,815	6,607	1.37	41.65	54.10
WAYNE	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	54	5,746	6,909	1.20	49.70	56.58
NORTHEASTERN REGION						
DAGGETT	0	0	0	0.00	0.00	0.00
DUCHESNE	17	814	953	1.17	7.04	7.81
UINTAH	29	2,163	2,396	1.11	18.71	19.62
REGIONAL TOTALS	46	2,977	3,350	1.13	25.76	27.43
SOUTHEASTERN REGION						
CARBON	1	23	46	2.00	0.20	0.38
EMERY	10	790	581	0.74	6.84	4.76
GRAND	1	232	46	0.20	2.01	0.38
SAN JUAN	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	12	1,046	674	0.64	9.05	5.52
UNKNOWN	0	0	0	0.00	0.00	0.00
STATE TOTALS	143	11,562	12,213	1.06	100.00	100.00

*Total hunter-trips from questionnaire returns.

Table 6. Summary of quail bagged per hunter-day by region and county, 1991-98.

Region and County	Year							
	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region								
Box Elder	0.38	1.21	0.36	0.75	1.21	1.18	0.00	0.00
Cache	0.00*	1.00*	0.00*	1.86*	0.25*	1.00*	0.40	0.00
Davis	0.83	0.60	1.25	0.64	0.33	0.78	0.76	1.00
Morgan	0.00*	0.00*	0.14*	0.00*	0.00*	0.00*	0.00	0.00
Rich	0.00*	0.00*	0.00*	4.00*	0.00*	0.00*	0.00	0.00
Summit	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
Weber	0.54	0.56	0.73	0.22	1.43	0.64	0.40	1.82
REGIONAL TOTALS	0.41	0.63	0.55	0.57	0.72	0.92	0.52	1.14
Central Region								
Juab	7.25	0.00	1.50	1.67	0.00	1.00	0.25	5.00
Salt Lake	2.17	1.89	0.00	1.40	0.00	3.00	1.33	2.00
Sanpete	0.00*	0.00*	1.00*	1.00*	0.00*	1.67*	1.50	1.00
Tooele	0.29*	0.00*	0.00*	1.43*	0.00	0.00	0.00	0.30
Utah	0.61	0.54	0.48	0.63	1.18	0.74	0.63	0.43
Wasatch	0.00*	0.00*	0.00*	2.00*	1.63*	0.33*	0.00	0.00
REGIONAL TOTALS	0.88	0.61	0.47	0.85	1.15	0.75	0.53	0.55
Southern Region								
Beaver	0.00	0.00	0.00	0.40*	0.00*	0.00*	0.00	0.00
Garfield	0.00	0.00	0.00	0.00*	0.00*	0.00*	0.00	0.00
Iron	0.00	0.00	1.63	1.00*	0.67*	0.97*	0.00	0.00
Kane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Millard	0.08	1.50	0.58	0.73	0.75	0.73	0.95	0.16
Piute	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sevier	1.80	0.47	0.43	0.50	0.15	1.29	0.33	1.00
Washington	0.84	1.04	1.57	0.93	1.08	1.15	0.54	1.37
Wayne	0.00	0.00	0.00	5.00*	0.00*	3.00*	1.00	0.00
REGIONAL TOTALS	0.71	1.01	1.25	0.90	1.00	1.07	0.81	1.20
Northeastern Region								
Daggett	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Duchesne	1.16	1.01	1.04	1.10	1.27	1.22	0.97	1.17
Uintah	0.47	0.90	0.63	0.76	0.75	1.41	1.28	1.11
REGIONAL TOTALS	0.65	0.95	0.82	0.88	1.00	1.33	1.12	1.13
Southeastern Region								
Carbon	4.50	1.12	1.33	0.00	3.67	0.00	0.00	2.00
Emery	2.11	0.97	0.92	0.57	1.19	0.29	0.67	0.74
Grand	0.00	0.00	0.00	0.00	2.80	0.85	0.00	0.20
San Juan	0.00	0.00	0.00	0.00	1.50	0.00	0.00	0.00
REGIONAL TOTALS	2.85	1.02	0.91	0.49	1.57	0.38	0.57	0.64
Unknown counties	0.00	0.00	1.50	0.00	6.00	0.00	0.00	0.00
STATE TOTALS	0.78	0.84	0.94	0.80	1.02	1.03	0.86	1.06

*Closed Season

Table 7. Percentage distribution of quail harvest by region and county, 1991-98.

Region and County	Year							
	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region								
Box Elder	1.51	4.45	0.68	1.35	2.54	5.68	0.00	0.00
Cache	0.00*	1.31*	0.00*	2.92*	0.45*	1.56*	0.44	0.00
Davis	1.51	2.36	1.70	1.57	2.24	0.99	4.19	0.76
Morgan	0.00*	0.00*	0.17*	0.00*	0.00*	0.00*	0.00	0.00
Rich	0.00*	0.00*	0.00*	0.90*	0.00*	0.00*	0.00	0.00
Summit	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
Weber	2.11	3.67	3.74	1.80	4.93	2.56	1.76	3.81
REGIONAL TOTALS	5.12	11.78	6.28	8.54	10.15	10.80	6.39	4.57
Central Region								
Juab	8.74	0.00	0.51	1.12	0.00	0.14	0.22	0.95
Salt Lake	3.92	4.45	0.00	3.15	0.00	1.28	0.88	0.76
Sanpete	0.00*	0.00*	0.17*	0.22*	0.00*	1.71*	0.66	0.19
Tooele	0.60*	0.00*	0.00*	2.25	0.00	0.00	0.00	0.57
Utah	17.17	12.31	8.49	10.56	11.79	9.23	8.81	3.43
Wasatch	0.00	0.00*	0.00*	1.80*	3.88*	0.85*	0.00	0.00
REGIONAL TOTALS	30.43	16.76	9.17	19.10	15.67	12.22	10.57	5.91
Southern Region								
Beaver	0.00	0.00	0.00	0.90*	0.00*	0.00*	0.00	0.00
Garfield	0.00	0.00	0.00	0.00*	0.00*	0.00*	0.00	0.00
Iron	0.00	0.00	2.21	2.70*	1.19*	4.26*	0.00	0.00
Kane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Millard	0.90	6.28	4.41	4.94	0.45	2.27	4.63	0.95
Piute	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sevier	2.71	1.83	2.55	0.22	0.30	3.13	0.88	1.52
Washington	34.64	13.88	48.05	39.33	28.81	9.94	16.74	54.10
Wayne	0.00	0.00	0.00	1.12*	0.00*	0.43*	0.22	0.00
REGIONAL TOTALS	38.26	21.99	57.22	49.22	30.75	20.03	22.47	56.58
Northeastern Region								
Daggett	0.30	0.00	0.00	0.00	0.00	0.85	0.00	0.00
Duchesne	6.63	18.33	9.00	7.64	19.85	26.56	25.99	7.81
Uintah	8.13	18.85	6.11	9.44	12.84	24.43	32.82	19.62
REGIONAL TOTALS	15.06	37.18	15.11	17.08	32.69	51.85	58.81	27.43
Southeastern Region								
Carbon	5.42	4.97	0.68	0.00	1.64	0.00	0.00	0.38
Emery	5.72	7.33	7.98	6.07	5.67	2.70	1.76	4.76
Grand	0.00	0.00	0.00	0.00	2.09	1.56	0.00	0.38
San Juan	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00
REGIONAL TOTALS	11.15	12.31	8.66	6.07	9.85	4.26	1.76	5.52
Unknown counties	0.00	0.00	3.57	0.00	0.90	0.85	0.00	0.00
STATE TOTALS	100.00	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, 1991-98.

Region and County	Year							
	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region								
Box Elder	3.06	3.08	1.75	1.45	2.14	4.98	1.13	1.01
Cache	1.41*	1.10*	1.75*	1.27*	1.83*	1.61*	0.94	0.00
Davis	1.41	3.30	1.27	1.99	6.88	1.32	4.72	0.80
Morgan	0.00*	2.64*	1.11*	0.72*	0.00*	0.15*	0.00	0.20
Rich	0.00*	0.00*	0.00*	0.18*	0.00*	0.00*	0.00	0.00
Summit	0.71*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
Weber	3.06	5.51	4.77	6.51	3.52	4.10	3.77	2.21
REGIONAL TOTALS	9.65	15.64	10.65	12.12	14.37	12.15	10.57	4.23
Central Region								
Juab	0.94	0.22	0.32	0.54	0.31	0.15	0.75	0.20
Salt Lake	1.41	1.98	0.64	1.81	0.00	0.44	0.57	0.40
Sanpete	0.94*	0.00*	0.16*	0.18*	0.61*	0.44*	0.38	0.20
Tooele	1.65*	1.54*	0.48*	1.27*	0.31	0.15	2.26	2.01
Utah	22.12	19.16	16.54	13.56	10.25	12.88	12.08	8.45
Wasatch	0.00*	0.22*	0.00*	0.72*	2.45*	2.64*	0.94	0.00
REGIONAL TOTALS	27.06	23.13	18.13	18.08	13.92	16.69	16.98	11.27
Southern Region								
Beaver	0.00	0.00	0.16	1.81	0.00*	0.00*	0.00	0.00
Garfield	0.00	0.00	0.00	0.00	0.00*	0.00*	0.19	0.00
Iron	0.00	0.22	1.27	2.17	1.83*	4.54*	0.00	0.20
Kane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Millard	8.47	3.52	7.15	5.43	0.61	3.22	4.15	6.24
Piute	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sevier	1.18	3.30	5.56	0.36	1.99	2.49	2.26	1.61
Washington	34.24	11.23	28.62	34.18	27.22	8.93	16.98	41.65
Wayne	0.00	0.00	0.16	0.18	0.00*	0.15*	0.19	0.00
REGIONAL TOTALS	41.89	18.28	42.93	44.12	31.65	19.33	23.77	49.70
Northeastern Region								
Daggett	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Duchesne	4.47	15.20	8.11	5.61	16.06	22.40	23.02	7.04
Uintah	13.41	17.62	9.06	9.95	17.43	17.86	21.89	18.71
REGIONAL TOTALS	18.12	32.82	17.17	15.55	33.49	40.27	44.91	25.76
Southeastern Region								
Carbon	0.94	3.74	0.48	0.54	0.46	0.00	0.00	0.20
Emery	2.12	6.39	8.11	8.50	4.89	9.66	2.26	6.84
Grand	0.00	0.00	0.32	0.90	0.76	1.90	0.38	2.01
San Juan	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00
REGIONAL TOTALS	3.06	10.13	8.90	9.95	6.42	11.57	2.64	9.05
Unknown counties	0.00	0.00	0.24	0.00	2.23	0.18	1.13	0.00
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

*Closed Season

Table 9. Statewide summary of quail harvest statistics, 1951-98.

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
1991	2,644	5,775	7,393	0.78	2.18
1992	2,861	6,788	8,068	0.84	2.37
1993	3,649	11,192	11,952	0.94	3.07
1994	2,936	7,822	9,721	0.80	2.66
1995	4,374	13,023	12,712	1.02	2.98
1996	4,622	16,351	15,862	1.03	3.54
1997	3,637	9,436	11,016	0.86	2.59
1998	3,211	12,213	11,562	1.06	3.80
Totals (1951-98)	228,186	630,122	587,363	--	--
Averages (1951-97)	5,232	14,370	13,391	1.04	2.65

Table 10. Gambel's quail long period waterhole count trend on the west slope of the Beaver Dam Mountains, Washington County, 1979-98. These counts have been conducted since 1962.

Index	Year																			Average 1979-97	
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997		1998
Total Young	253	72	37	85	114	166	47	163	348	59	35	33	208	415	465	135	33	--	61	236	152
Total Adults	77	52	25	33	14	86	11	48	139	47	18	9	35	128	158	102	17	--	21	30	57
Total Quail	330	124	62	118	128	252	58	211	487	106	53	42	243	543	623	237	50	--	82	266	208
Young per 100 Adults	329	138	148	258	814	193	427	340	250	126	194	367	594	324	294	132	194	--	290	787	301

Table 11. Quail field bag check summary, 1998.

Region and County	ALL HUNTS					COMPLETE HUNTS						
	Total Parties	Total Hunters	Total Hours	Total Birds	Birds/ 100 Hr	Complete Hunts	Total Hunters	Total Hours	Total Birds	Birds/ Hunter	Birds/ 100 Hr	
Northern Region												
Box Elder	--	--	--	--	--	--	--	--	--	--	--	--
Cache	--	--	--	--	--	--	--	--	--	--	--	--
Davis	--	--	--	--	--	--	--	--	--	--	--	--
Morgan	--	--	--	--	--	--	--	--	--	--	--	--
Rich	--	--	--	--	--	--	--	--	--	--	--	--
Summit	--	--	--	--	--	--	--	--	--	--	--	--
Weber	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
Central Region												
Juab	--	--	--	--	--	--	--	--	--	--	--	--
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--
Tooele	--	--	--	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--	--	--	--
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Kane	--	--	--	--	--	--	--	--	--	--	--	--
Millard	--	--	--	--	--	--	--	--	--	--	--	--
Piute	--	--	--	--	--	--	--	--	--	--	--	--
Sevier	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	--
Duchesne	--	--	--	--	--	--	--	--	--	--	--	--
Uintah	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--
Southeastern Region												
Carbon	--	--	--	--	--	--	--	--	--	--	--	--
Emery	8	15	35	19	54	--	4	7	19	14	2.00	74
Grand	--	--	--	--	--	--	--	--	--	--	--	--
San Juan	--	--	--	--	--	--	--	--	--	--	--	--
REGIONAL TOTALS	8	15	35	19	54	--	4	7	19	14	2.00	74
STATE TOTALS	8	15	35	19	54	--	4	7	19	14	2.00	74



Hungarian Partridge

The 1998 hunt data indicated slightly increased hunting pressure on Huns when compared to 1997. The number of Huns harvested increased 88 percent in 1998. Total hunters and days afield remain 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. In 1993, the dramatic decrease in number of Huns harvested probably resulted because of poor over-winter survival during 1992-93.

Brood Counts

Results of the annual random brood counts for 1998 are shown in Table 1 of this section. Long-term trends of young per adult ratios, mean brood size and Huns observed per 100 hours are shown in Tables 2-4. Results of the survey for 1998 compared to 1997 and the 10-year (1988-97) average follow:

	<u>1998</u>	<u>Percent change from 1997</u>	<u>Percent change from Average</u>
Total Huns observed	--	--	--
Young per 100 adults	--	--	--
Mean brood size	--	--	--
Huns observed per 100 hours	--	--	--
Total hours effort	--	--	--

No brood count data was collected in 1998. This data is only collected opportunistically.

Harvest

Hunter Questionnaire

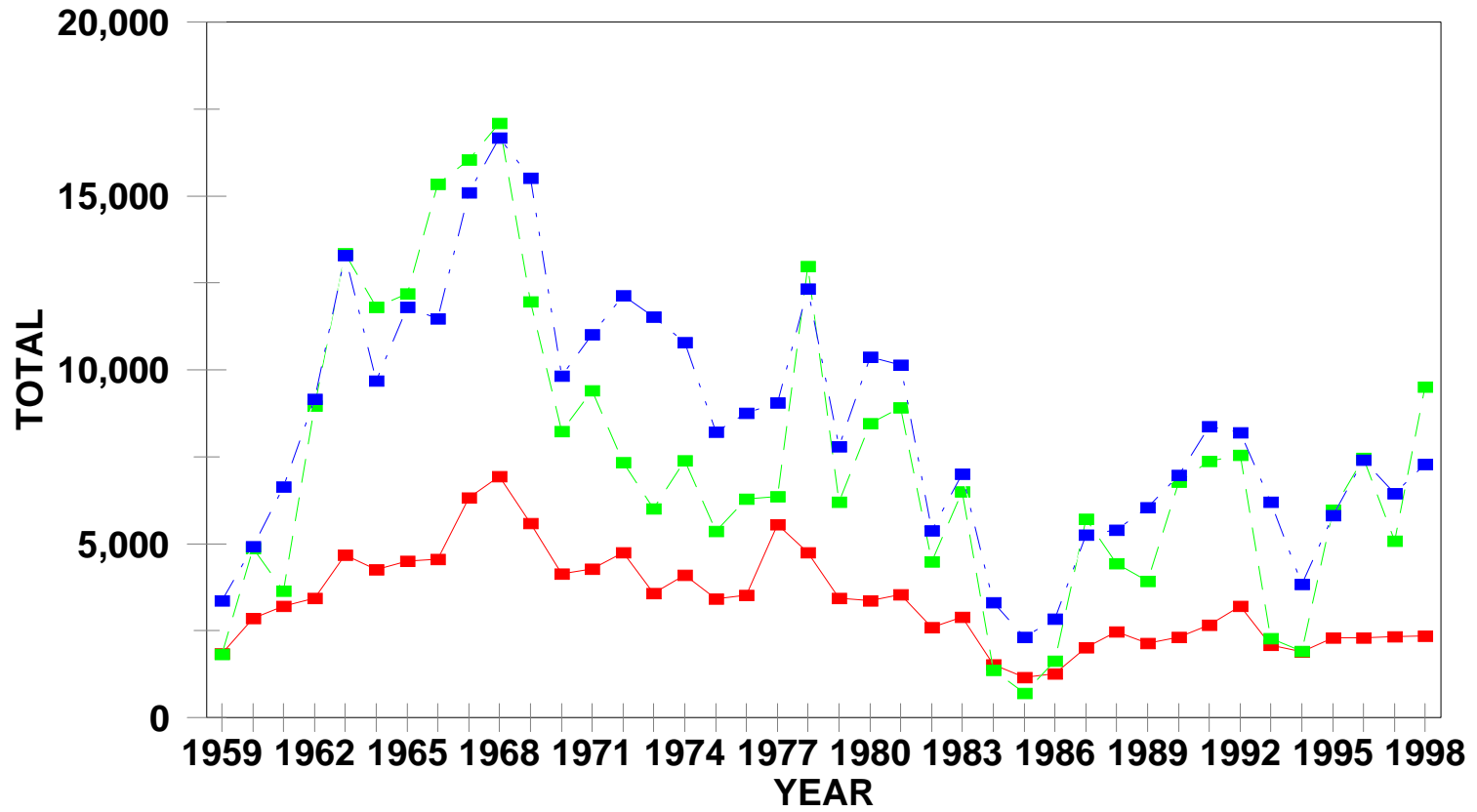
Results of the annual hunter questionnaire for 1998 are shown in Table 5. Long-term trends of Huns bagged per hunter-day, percent of harvest and percent of pressure (hunter-days) by county are found in Tables 6-8 and total statewide harvest statistics in Table 9. The 1998 season compared to 1997 and the previous 39-year average follow:

	<u>1998</u>	<u>Percent change from 1997</u>	<u>Percent change from Average</u>
Hungarian partridge hunters	2,350	+1	-30
Hungarian partridge harvest	9,515	+88	+31
Hunter-days afield	7,281	+13	-14
Huns per hunter-day	1.31	+66	+61
Huns per hunter	4.05	+86	+97

Hungarian partridge hunters and hunting pressure increased in 1998. Overall success increased 86 percent from 1997. Harvest was 31 percent above the long-term average.

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

**Figure 1. Statewide trends of Hun
harvest statistics, 1959-98.**

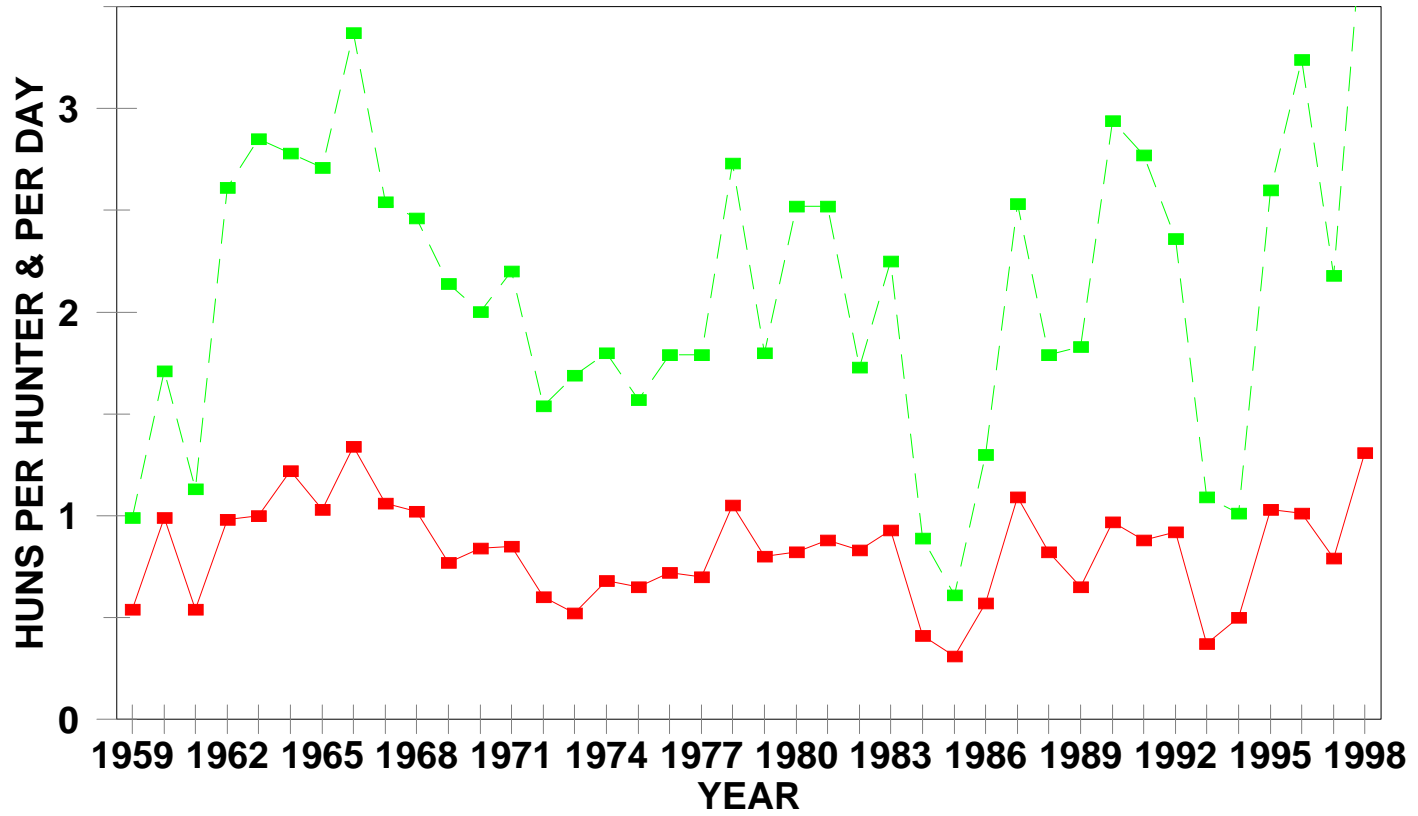


—■— Hunters

- - ■ - - Harvest

- - ■ - - Hunter-Days Afield

**Figure 2. Statewide trends of Hun
hunter success rates, 1959-98.**



—■— Huns Per Hunter-Day -■- Huns Per Hunter

Table 1. Hungarian partridge summer inventory, 1998.

Region and County	Distinct Broods		Mean Brood	Mixed Young & Adults		Adults w/ Young	Total Adults	Total Young	Young/100 Adult Miles	Vehicle Hours of Effort			Birds/100 Hr			
	#	Adults		Young	Adults					Young	Miles	Vehicle		Horse	Walk	Total
Northern Region																
Box Elder	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Cache	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Davis	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Morgan	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Rich	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Summit	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Weber	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Central Region																
Juab	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Sanpete	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Tooele	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Utah	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Wasatch	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
REGIONAL TOTALS	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Southern Region																
Beaver																
Garfield																
Iron																
Kane																
Millard																
Piute																
Sevier																
Washington																
Wayne																
REGIONAL TOTALS																
Northeastern Region																
Daggett																
Duchesne																
Uintah																
REGIONAL TOTALS																
Southeastern Region																
Carbon																
Emery																
Grand																
San Juan																
REGIONAL TOTALS																
STATE TOTALS	0	0	0	ERR	0	0	0	0	0	ERR	--	--	0	--	0	ERR

Table 2. Trend of Hungarian partridge young per 100 adults, 1988-98.

Region and County	Year											Average 1988-97
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Northern Region												
Box Elder	307	--	396	793	711	--	--	2,000	--	--	--	
Cache	400	--	433	--	260	--	--	--	--	--	--	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	324	425	400	793	550	--	--	2,000	--	--	--	749
Central Region												
Juab	--	--	--	--	800	--	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	--	--	--	--	--	--	--	--	
Tooele	--	--	--	--	--	--	--	--	--	--	--	
Utah	--	--	--	--	--	--	--	--	--	--	--	
Wasatch	400	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	400	--	--	--	800	--	--	--	--	--	--	600
Southern Region												
Beaver												
Garfield												
Iron												
Kane												
Millard												
Piute												
Sevier												
Washington												
Wayne												
REGIONAL TOTALS												
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	--	--	--	--	--	--	--	--	--	--	--	
Uintah	--	--	--	--	--	750	--	--	--	--	--	
REGIONAL TOTALS	--	--	--	--	--	750	--	--	--	--	--	750
Southeastern Region												
Carbon												
Emery												
Grand												
San Juan												
REGIONAL TOTALS												
STATE TOTALS	328	425	400	793	567	750	--	2,000	--	--	--	752

Table 3. Trend of average brood size for Hungarian partridge, 1988-98.

Region and County	Year											Average 1988-97
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Northern Region												
Box Elder	8.60	8.50	8.25	12.50	9.00	--	--	20.00	--	--	--	
Cache	--	--	6.00	--	--	--	--	--	--	--	--	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	8.60	8.50	8.90	12.50	9.00	--	--	20.00	--	--	--	11.25
Central Region												
Juab	--	--	--	--	8.00	--	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	--	--	--	--	--	--	--	--	
Tooele	--	--	--	--	--	--	--	--	--	--	--	
Utah	--	--	--	--	--	--	--	--	--	--	--	
Wasatch	4.00	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	4.00	--	--	--	8.00	--	--	--	--	--	--	6.00
Southern Region												
Beaver												
Garfield												
Iron												
Kane												
Millard												
Piute												
Sevier												
Washington												
Wayne												
REGIONAL TOTALS												
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	--	--	--	--	--	--	--	--	--	--	--	
Uintah	--	--	--	--	--	15.00	--	--	--	--	--	
REGIONAL TOTALS	--	--	--	--	--	15.00	--	--	--	--	--	15.00
Southeastern Region												
Carbon												
Emery												
Grand												
San Juan												
REGIONAL TOTALS												
STATE TOTALS	7.83	8.50	8.90	12.50	8.83	15.00	--	20.00	--	--	--	11.65

Table 4. Trend of Hungarian partridge observed per 100 hours, 1988-98.

Region and County	Year											Average 1988-97
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Northern Region												
Box Elder	438	--	529	327	96	--	--	175	--	--	--	
Cache	--	88	538	--	257	--	--	--	--	--	--	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	--	
Summit	--	--	--	--	--	--	--	--	--	--	--	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	240	88	517	327	110	--	--	175	--	--	--	243
Central Region												
Juab	--	--	--	--	450	--	--	--	--	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	--	--	--	--	--	--	--	--	--	--	--	
Tooele	--	--	--	--	--	--	--	--	--	--	--	
Utah	--	--	--	--	--	--	--	--	--	--	--	
Wasatch	500	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	500	--	--	--	450	--	--	--	--	--	--	475
Southern Region												
Beaver												
Garfield												
Iron												
Kane												
Millard												
Piute												
Sevier												
Washington												
Wayne												
REGIONAL TOTALS												
Northeastern Region												
Daggett	--	--	--	--	--	--	--	--	--	--	--	
Duchesne	--	--	--	--	--	--	--	--	--	--	--	
Uintah	--	--	--	--	--	8,500	--	--	--	--	--	
REGIONAL TOTALS	--	--	--	--	--	8,500	--	--	--	--	--	8,500
Southeastern Region												
Carbon												
Emery												
Grand												
San Juan												
REGIONAL TOTALS												
STATE TOTALS	248	88	517	327	118	40	--	175	--	--	--	216

Table 5. Summary of Hungarian partridge hunter success and distribution of harvest and hunting pressure by region and county, 1998.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	BIRDS BAGGED	BIRDS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	69	5,141	6,467	1.26	70.62	67.97
CACHE	25	1,558	2,000	1.28	21.41	21.03
DAVIS	0	0	0	0.00	0.00	0.00
MORGAN	2	46	46	1.00	0.64	0.49
RICH	5	232	488	2.10	3.20	5.13
SUMMIT	0	0	0	0.00	0.00	0.00
WEBER	1	232	465	2.00	3.20	4.89
REGIONAL TOTALS	102	7,212	9,468	1.31	99.05	99.51
CENTRAL REGION						
JUAB	0	0	0	0.00	0.00	0.00
SALT LAKE	0	0	0	0.00	0.00	0.00
SANPETE	0	0	0	0.00	0.00	0.00
TOOELE	1	46	23	0.50	0.64	0.24
UTAH	1	0	0	0.00	0.00	0.00
WASATCH	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	2	46	23	0.50	0.64	0.24
SOUTHERN REGION						
BEAVER	1	23	23	1.00	0.32	0.24
GARFIELD	0	0	0	0.00	0.00	0.00
IRON	0	0	0	0.00	0.00	0.00
KANE	0	0	0	0.00	0.00	0.00
MILLARD	0	0	0	0.00	0.00	0.00
PIUTE	0	0	0	0.00	0.00	0.00
SEVIER	0	0	0	0.00	0.00	0.00
WASHINGTON	0	0	0	0.00	0.00	0.00
WAYNE	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	1	23	23	1.00	0.32	0.24
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	0	0	0	0.00	0.00	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	0	0	0	0.00	0.00	0.00
Unknown	0	0	0	0.00	0.00	0.00
STATE TOTALS	105	7,281	9,515	1.31	100.00	100.00

* Total hunter-trips from questionnaire returns.

Table 6. Summary of Hungarian partridge bagged per hunter-day by region and county, 1991-98.

Region and County	Year							
	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region								
Box Elder	1.02	1.00	0.24	0.47	1.26	0.99	0.86	1.26
Cache	0.86	1.07	0.56	0.80	0.95	1.15	0.63	1.28
Davis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Morgan	0.00	0.04	0.57	0.00	0.00	2.00	0.55	1.00
Rich	1.35	0.76	0.53	0.80	0.00	0.00	0.00	2.10
Summit	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Weber	0.40	0.00	0.00	0.00	0.45	0.25	0.00	2.00
REGIONAL TOTALS	0.97	0.95	0.35	0.52	1.11	1.05	0.77	1.31
Central Region								
Juab	0.00*	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Salt Lake	0.00*	1.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
Sanpete	0.00*	0.00*	1.00*	0.00*	1.25*	1.00*	0.00	0.00
Tooele	0.02	0.25	0.50	1.50	0.00	0.00	1.00	0.50
Utah	0.00*	0.67*	0.13*	0.00*	0.00*	0.25*	4.00	0.00
Wasatch	0.00*	0.00*	0.00*	0.00*	0.50*	0.00*	0.00	0.00
REGIONAL TOTALS	0.02	0.40	0.23	0.50	0.40	0.43	1.29	0.50
Southern Region								
Beaver	0.00*	2.00*	0.00*	0.00*	0.00*	0.78*	0.00	1.00
Garfield	0.00*	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*	1.00	0.00
Kane	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
Millard	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
Piute	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
Sevier	0.00*	1.67*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
Washington	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
Wasatch	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
REGIONAL TOTALS	0.00	1.40	0.50	0.00	0.00	0.78	1.00	1.00
Northeastern Region								
Daggett	1.25*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
Duchesne	1.00*	0.00*	0.00*	0.00*	0.17*	0.00*	1.00	0.00
Uintah	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	2.00	0.00
REGIONAL TOTALS	1.20	0.00	0.00	0.00	0.13	0.00	1.33	0.00
Southeastern Region								
Carbon	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
Emery	0.00*	0.00*	0.00*	0.00*	0.17*	0.00*	0.00	0.00
Grand	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
San Juan	0.00*	0.00*	0.00*	0.00*	6.00*	0.00*	0.00	0.00
REGIONAL TOTALS	0.00	0.00	2.00	0.00	1.00	0.00	0.00	0.00
Unknown counties	0.00	10.00	0.00	0.00	0.00	0.83	0.00	0.00
STATE TOTALS	0.88	0.92	0.37	0.50	1.03	1.01	0.79	1.31
*Closed Season								

Table 7. Percentage distribution of Hungarian partridge harvest by region and county, 1991-98.

Region and County	Year							
	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region								
Box Elder	73.82	61.41	33.34	55.97	62.87	52.96	67.63	67.97
Cache	16.75	30.59	37.51	33.95	29.97	39.88	24.18	21.03
Davis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Morgan	0.00	0.24	3.33	0.00	0.00	0.61	2.46	0.49
Rich	6.37	3.76	7.50	7.34	0.00	0.00	0.00	5.13
Summit	0.00	0.00	0.00	0.00	0.98	0.00	0.00	0.00
Weber	1.42	0.00	0.00	0.00	1.63	0.31	0.00	4.89
REGIONAL TOTALS	98.35	96.00	81.68	97.25	95.45	93.78	94.27	99.51
Central Region								
Juab	0.00*	0.47	0.00	0.00	0.00	0.00	0.00	0.00
Salt Lake	0.00*	0.24*	0.00	0.00*	0.00*	0.00*	0.00	0.00
Sanpete	0.00*	0.00*	1.67	0.00*	1.63*	0.62*	0.00	0.00
Tooele	0.24	1.18	2.50	2.75	0.00	0.00	2.05	0.24
Utah	0.00*	0.47*	3.33	0.00*	0.00*	0.31*	1.64	0.00
Wasatch	0.00*	0.00*	0.00	0.00*	0.33*	0.00*	0.00	0.00
REGIONAL TOTALS	1.82	0.24	2.35	7.50	2.75	0.93	3.69	0.24
Southern Region								
Beaver	0.00*	0.47*	0.00	0.00*	0.00*	2.18*	0.00	0.24
Garfield	0.00*	0.00*	0.83	0.00*	0.00*	0.00*	0.00	0.00
Iron	0.00*	0.00*	0.00*	0.00*	0.00	0.00*	0.41	0.00
Kane	0.00*	0.00*	0.00*	0.00*	0.00	0.00*	0.00	0.00
Millard	0.00*	0.00*	0.00*	0.00*	0.00	0.00*	0.00	0.00
Piute	0.00*	0.00*	0.00*	0.00*	0.00	0.00*	0.00	0.00
Sevier	0.00*	1.18*	0.00	0.00*	0.00*	0.00*	0.00	0.00
Washington	0.00*	0.00*	0.00*	0.00*	0.00	0.00*	0.00	0.00
Wayne	0.00*	0.00*	0.00*	0.00	0.00	0.00*	0.00	0.00
REGIONAL TOTALS	0.00*	1.65*	0.83	0.00	0.00	2.18	0.41	0.24
Northeastern Region								
Daggett	1.18*	0.00*	0.00	0.00*	0.00*	0.00*	0.00	0.00
Duchesne	0.24*	0.00*	0.00	0.00*	0.33*	0.00*	0.82	0.00
Uintah	0.00*	0.00*	0.00	0.00*	0.00*	0.00*	0.82	0.00
REGIONAL TOTALS	0.00	0.00	0.00	0.00	0.33	0.00	1.64	0.00
Southeastern Region								
Carbon	0.00*	0.00*	0.00	0.00*	0.00*	0.00*	0.00	0.00
Emery	0.00*	0.00*	1.67	0.00*	0.33*	0.00*	0.00	0.00
Grand	0.00*	0.00*	0.00	0.00*	0.00*	0.00*	0.00	0.00
San Juan	0.00*	0.00*	0.00	0.00*	1.95*	0.00*	0.00	0.00
REGIONAL TOTALS	0.00	0.00*	0.00	1.67	0.00	0.00	0.00	0.00
Unknown counties	0.00	0.00	8.33	0.00	0.00	3.12	0.00	0.00
STATE TOTALS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

*Closed Season

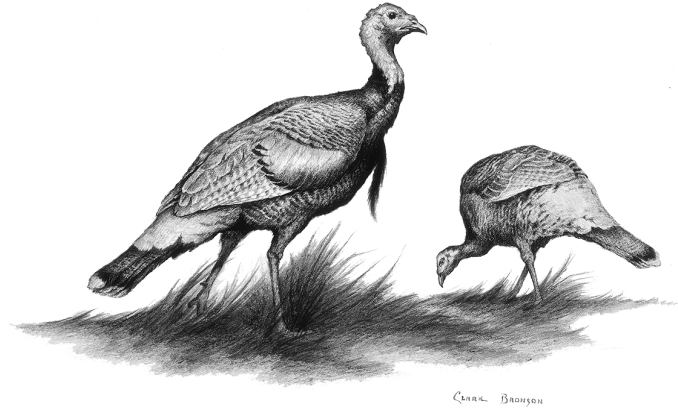
Table 8. Percentage distribution of Hungarian partridge hunting pressure by region and county, 1991-98.

Region and County	Year							
	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region								
Box Elder	64.04	56.41	51.23	60.09	51.17	53.61	61.94	70.62
Cache	17.26	26.25	24.85	21.10	32.44	64.80	30.00	21.41
Davis	0.42	0.87	0.00	1.83	0.00	0.00	0.32	0.00
Morgan	0.42	5.21	2.15	1.83	0.00	0.31	3.55	0.64
Rich	4.16	4.56	5.22	4.59	0.00	0.00	0.32	3.20
Summit	0.00	0.00	0.92	0.92	1.00	0.00	0.00	0.00
Weber	3.12	0.00	2.15	2.29	3.68	1.25	0.32	3.20
REGIONAL TOTALS	89.40	93.29	86.52	92.67	88.30	89.97	96.46	99.05
Central Region								
Juab	0.00*	0.22	0.31	0.46	0.33	0.00	0.32	0.00
Salt Lake	0.00*	0.22*	0.31*	0.00*	0.00*	0.00*	0.00	0.00
Sanpete	0.00*	0.00*	0.61*	0.92*	1.34*	0.63*	0.00	0.00
Tooele	9.15*	4.34	1.84	0.92	0.67	0.00	1.61	0.64
Utah	0.21*	0.65*	9.20*	0.46*	2.01*	1.25*	0.32	0.00
Wasatch	0.00*	0.00*	0.00*	0.00*	0.67*	0.31*	0.00	0.00
REGIONAL TOTALS	9.36	5.42	12.27	2.75	5.02	2.19	2.26	0.64
Southern Region								
Beaver	0.21*	0.22*	0.00*	0.46*	0.33*	2.82*	0.00	0.32
Garfield	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
Iron	0.00*	0.22*	0.00*	0.00*	0.00*	0.00*	0.32	0.00
Kane	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
Millard	0.00*	0.00*	0.61*	0.00*	0.00*	0.31*	0.00	0.00
Piute	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
Sevier	0.00*	0.65*	0.00*	0.46*	0.00*	0.00*	0.00	0.00
Washington	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
Wayne	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
REGIONAL TOTALS	0.21	1.08	0.61	0.92	0.33	3.13	0.32	0.32
Northeastern Region								
Daggett	0.83*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
Duchesne	0.21*	0.00*	0.00*	1.38*	2.01*	0.94*	0.65	0.00
Uintah	0.00*	0.22*	0.00*	1.46*	0.67*	0.00*	0.32	0.00
REGIONAL TOTALS	1.04	0.22	0.00	1.83*	2.68*	0.94	0.97	0.00
Southeastern Region								
Carbon	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00	0.00
Emery	0.00*	0.00*	0.00*	1.83*	2.01*	0.00*	0.00	0.00
Grand	0.00*	0.00*	0.31*	0.00*	0.00*	0.00*	0.00	0.00
San Juan	0.00*	0.00*	0.00*	0.00*	0.33*	0.00*	0.00	0.00
REGIONAL TOTALS	0.00	0.00	0.31	1.83	2.34	0.00	0.00	0.00
Unknown counties	0.00	0.00	0.31	0.00	1.34	3.76	0.00	0.00
STATE TOTALS	100.00	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, 1955-98.

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
1991	2,662	7,376	8,367	0.88	2.77
1992	3,198	7,553	8,192	0.92	2.36
1993	2,090	2,280	6,194	0.37	1.09
1994	1,899	1,916	3,832	0.50	1.01
1995	2,294	5,967	5,812	1.03	2.60
1996	2,299	7,455	7,409	1.01	3.24
1997	2,328	5,071	6,443	0.79	2.18
1998	2,350	9,515	7,281	1.31	4.05
Totals (1959-98)	134,007	292,675	337,571	--	--
Averages (1959-97)	3,376	7,261	8,469	0.81	2.06



In 1994, the entire state went to limited entry turkey hunting for both the Merriam's and Rio Grande sub-species. Drawing odds for each of the 1998 hunts is shown in Table 6.

Merriam's Turkeys

Merriam's turkey populations remain stable. Limited entry hunting was allowed on 4 units, during a total of 7 seasons. Three units were open for early and late seasons. A total of 358 permits were sold. A fall turkey hunting season was not held in Utah in 1998. A total of 95 Merriam's turkeys were harvested in 1998. Merriam's turkey hunters experienced a 31 percent success rate.

Rio Grande Turkeys

Two hundred sixty-three permits were sold in 1998. A total of 161 Rio Grande turkeys were harvested in 1998 for a success rate of 63 percent.

Conservation Permits

Beginning in 1997, Sealed-bid and Auction Turkey Permits were replaced by Conservation Permits. Under the new Conservation Permits Rule (R657-41), wildlife conservation organizations obtain permits, authorized by the Utah Wildlife Board, and use them in fund-raising activities to generate management funds for each species. Qualified wildlife conservation organizations typically keep 10 percent of funds generated for marketing, etc. Organizations, in some cases, can keep more than 10 percent of funds generated from permits if they propose habitat or management projects to benefit the species.

In 1998, the statewide turkey conservation permit was issued to the Utah Chapter National Wild Turkey Federation. The statewide turkey conservation permit allows the holder to hunt over an extended season (from the first date that any Utah turkey unit opens through the last date that any Utah turkey unit closes) on any open turkey unit in the state. In 1998, the statewide turkey conservation permit sold for \$900.00.

In 1998, fourteen area turkey conservation permits were issued to the Utah Chapter National Wild Turkey Federation and the Mule Deer Foundation. An area turkey conservation permit allows the holder to hunt over an extended season on one or a combination of open turkey units. In 1998, the fourteen area turkey conservation permits generated \$7,305.00.

Total turkey conservation permits funds generated in 1998 was \$8,205.00.

Harvest

Spring Merriam's Gobbler Season

Results of the 1998 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. Statewide summary of fall hunt statistics is in Table 3. The 1998 spring season survey compared to 1997 and the previous 30-year average follow:

	<u>1998</u>	<u>Percent change from 1997</u>	<u>Percent change from Average</u>
Permits sold	358	-1	+29
Hunters afield	309	-9	+23
Turkeys harvested	95	+17	+170
Hunter-days afield	1,218	+1	+55
Percent hunter success	31	+29	+145
Turkeys bagged per hunter-day	0.08	+14	+77
Percent of hunters who observed turkeys	18	-79	-58

Beginning in 1994, a limited entry turkey hunting program was implemented in Utah. Total harvest increased from 81 in 1997 to 95 in 1998. Hunter success rates increased 29 percent from 1997 and were 145 percent above the long-term average.

Spring Rio Grande Gobbler Season

Results of the 1998 spring season are shown in Table 4 of this section. The trend of these data since 1991 is shown in Table 5. The 1998 spring season compared to 1997 and the previous 7-year average follows:

	<u>1998</u>	<u>Percent change from 1997</u>	<u>Percent change from Average</u>
Permits sold	263	+10	+150
Hunters afield	254	+11	+153
Turkeys harvested	161	+27	+154
Hunter-days afield	919	0	+106
Percent hunter success	63	+15	-3
Turkeys bagged per hunter-day	0.18	+29	+16
Percent of hunters who observed turkeys	57	-30	-33

Two hundred fifty-four hunters averaged 3.62 days-afield each to harvest a total of 161 turkeys. Sixty three percent of the hunters afield harvested a bird.

As other Rio Grande populations continue to grow throughout the state, more hunting opportunities will be provided.

Figure 1. Spring Merriam's wild turkey harvest statistics, 1968-98.

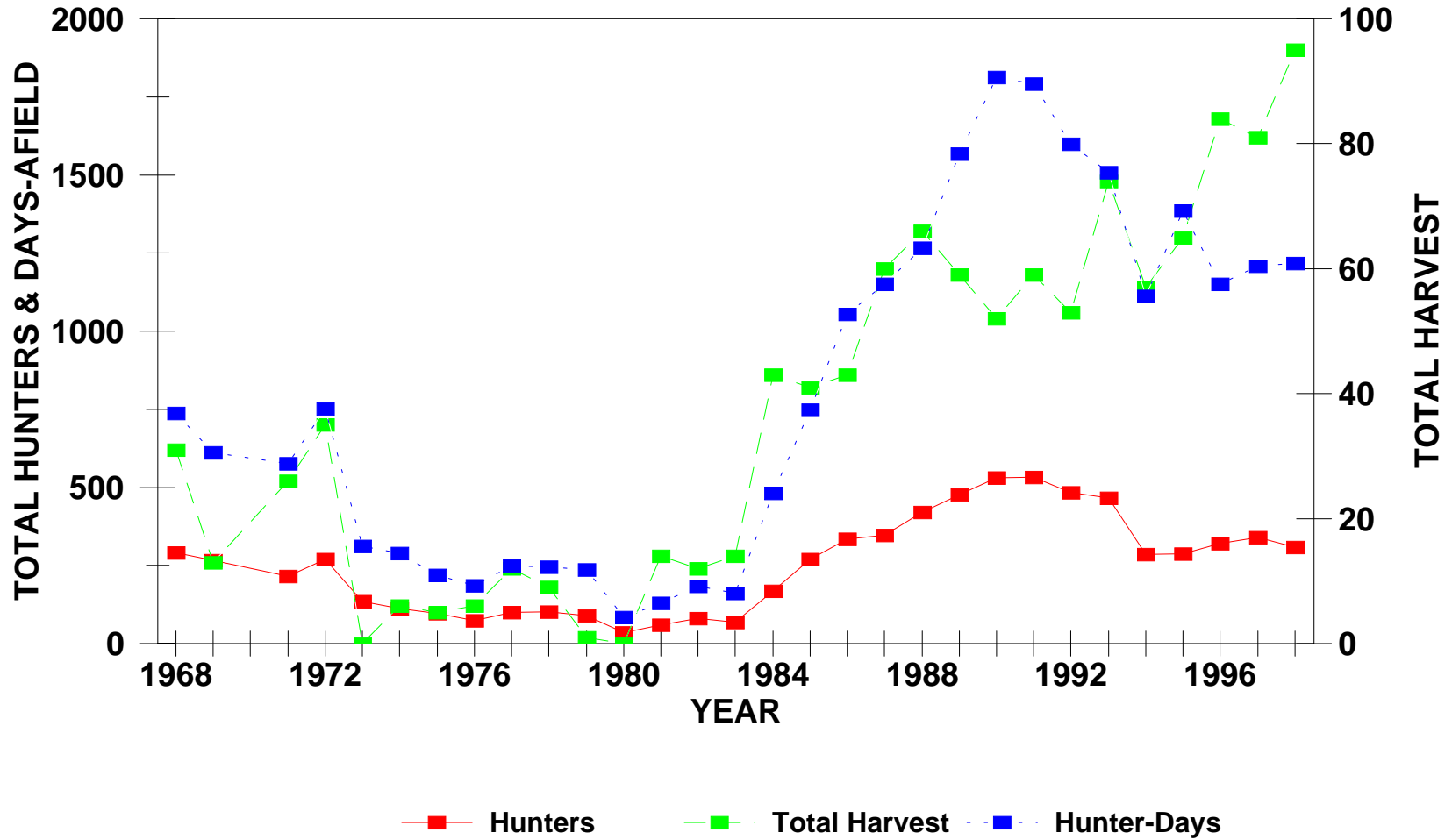


Figure 2. Spring Merriam's wild turkey hunting success, 1968-98.

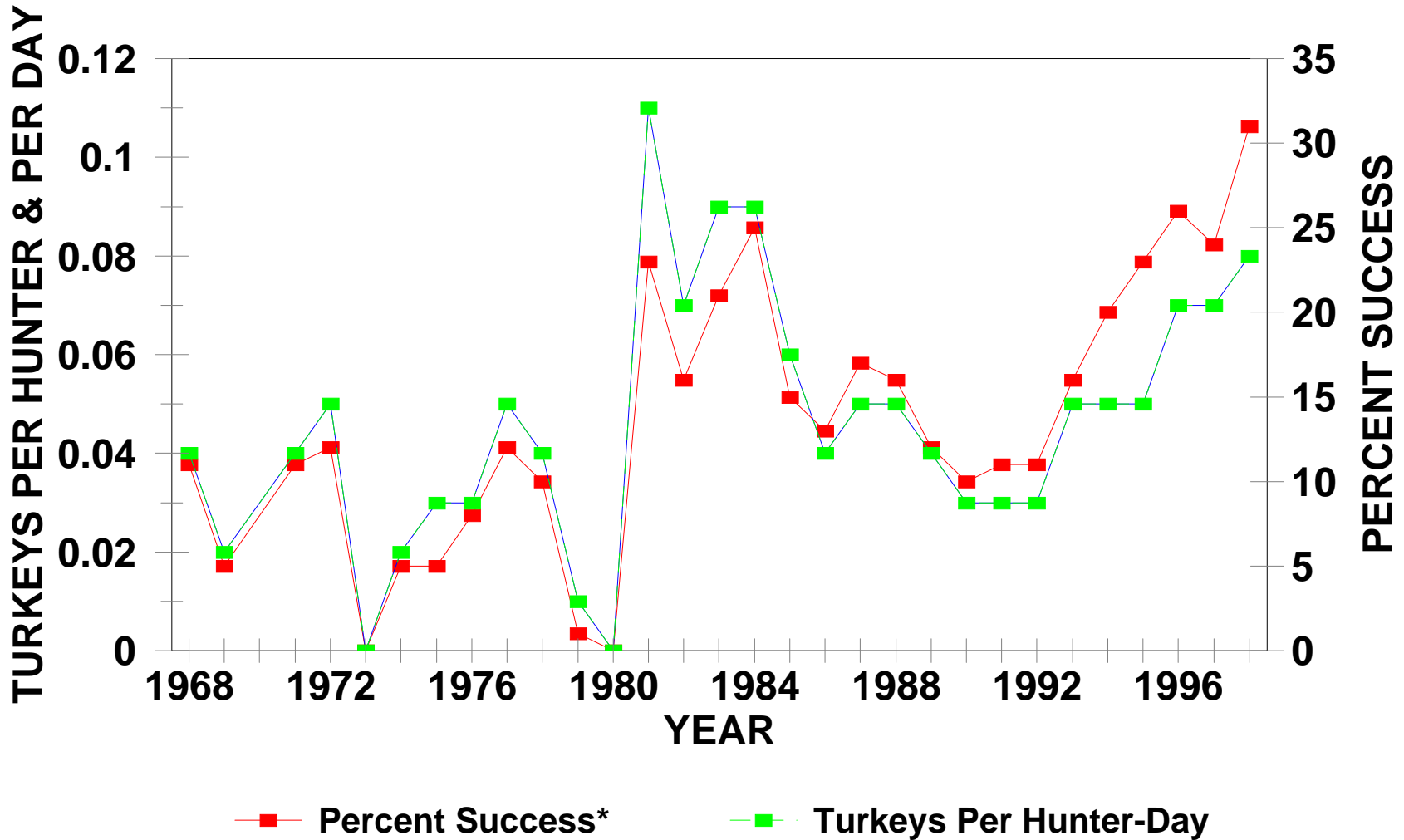


Table 2. Summary of Merrriam's turkey harvest statistics for spring gobbler seasons, 1968-98.

Hunting Unit	Year	Hunters Afield	Total Harvest	Hunter-Days Afield	Percent Success*	Turkeys Per Hunter-Day	Percent of Hunters Observing Turkeys	Total Permits**
STATE TOTALS	1968	290	31	738	11	0.04	41	310
	1969	267	13	612	5	0.02	22	276
	1970				NO SEASON			
	1971	215	26	576	11	0.04	38	223
	1972	269	35	751	12	0.05	39	285
	1973	135	0	311	0	0.00	10	150
	1974	112	6	289	5	0.02	22	121
	1975	97	5	219	5	0.03	29	103
	1976	74	6	185	8	0.03	32	81
	1977	99	12	248	12	0.05	39	108
	1978	101	9	246	10	0.04	42	116
	1979	90	1	237	1	0.01	8	113
	1980	35	0	84	0	0.00	17	40
	1981	60	14	129	23	0.11	53	83
	1982	80	12	184	16	0.07	62	91
	1983	69	14	161	21	0.09	55	92
	1984	169	43	482	25	0.09	72	190
	1985	270	41	747	15	0.06	52	314
	1986	335	43	1,054	13	0.04	57	362
	1987	347	60	1,150	17	0.05	57	384
	1988	421	66	1,267	16	0.05	50	490
	1989	477	59	1,568	12	0.04	55	527
	1990	531	52	1,812	10	0.03	51	579
	1991	532	59	1,792	11	0.03	49	587
1992	484	53	1,599	11	0.03	45	538	
1993	466	74	1,508	16	0.05	54	500	
1994***	285	57	1,112	20	0.05	--	335	
1995	287	65	1,386	23	0.05	40	335	
1996	320	84	1,151	26	0.07	78	355	
1997	339	81	1,208	24	0.07	87	362	
1998	309	95	1,218	31	0.08	18	358	
STATE TOTALS (1968-98)		7,565	1,116	24,024				8,408
STATE AVERAGES (1968-97)		250	35	786	13	0.05	43	278

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

**Total permits are sold on a statewide basis and not by unit, 1968-93. In 1994, permits were sold by unit.

***Beginning in 1994, a limited entry turkey hunting program was initiated.

Table 3. Statewide summary of fall Merriam's wild turkey harvest statistics, 1964-98.

Year	Permits Sold	Hunters Afield	Hunter-Days Afield	Turkeys Bagged	Percent Success**	Turkeys per Hunter-Day	Crippling Loss/100 Bagged	Turkeys Observed	Percent of 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***	--	--	--	--	--	--	--	--	--
1991***	--	--	--	--	--	--	--	--	--
1992***	--	--	--	--	--	--	--	--	--
1993***	--	--	--	--	--	--	--	--	--
1994***	--	--	--	--	--	--	--	--	--
1995***	--	--	--	--	--	--	--	--	--
1996***	--	--	--	--	--	--	--	--	--
1997***	--	--	--	--	--	--	--	--	--
1998***	--	--	--	--	--	--	--	--	--
TOTALS									
(1964-84)	2,560	2,340	5,622	682	--	--	--	9,269	--
AVERAGES									
(1964-84)	122	111	268	32	21	0.10	14	441	34

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

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

*** No fall season.

Figure 3. Spring Rio Grande turkey harvest statistics, 1991-98.

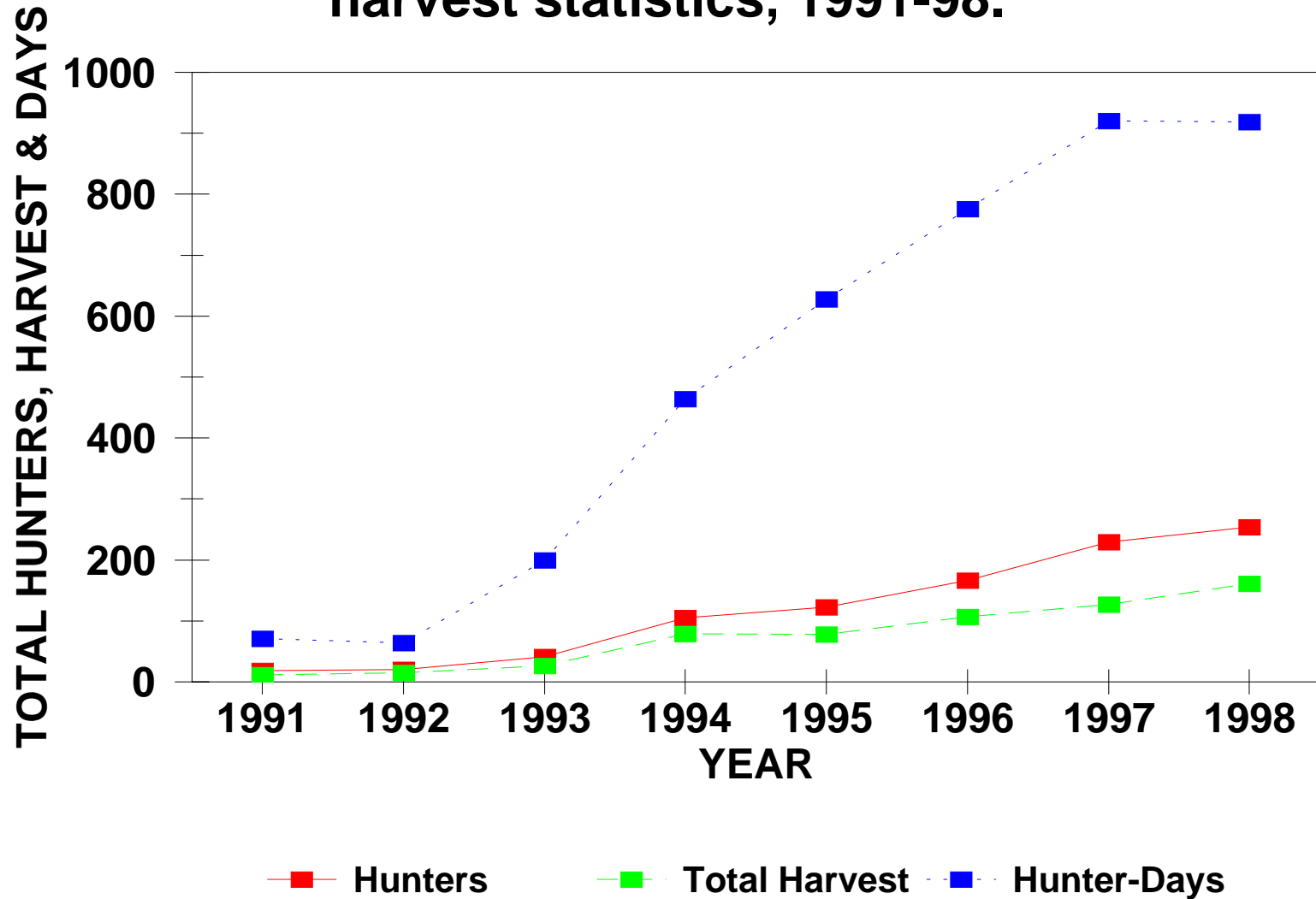


Figure 4. Spring Rio Grande turkey hunting success, 1991-98.

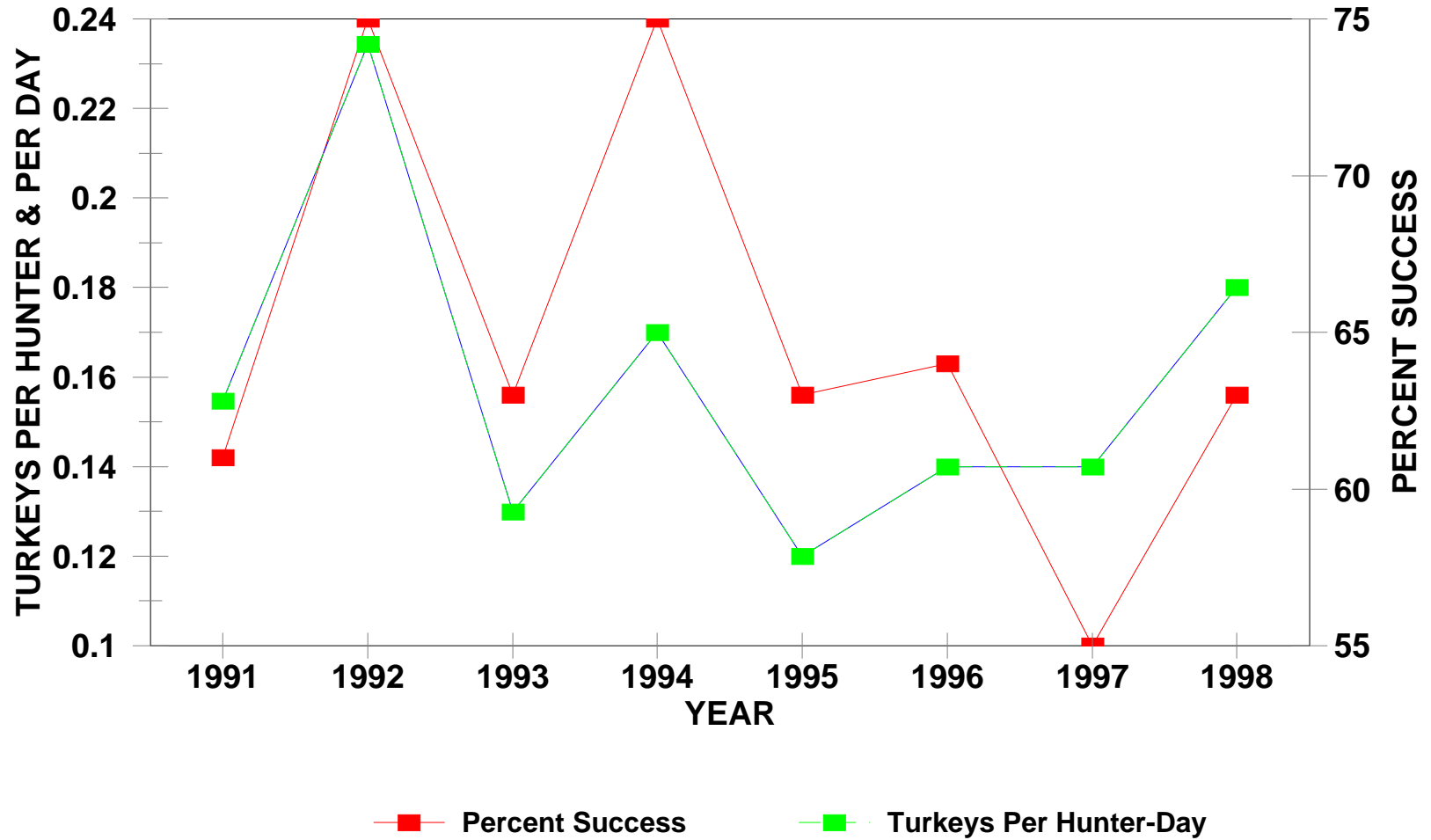


Table 4. Summary of the 1998 spring limited entry Rio Grande turkey season.

Hunt Number	Beaver (early) 101a	Beaver (late) 101b	Unit Totals	Duchesne County (early) 102a	Duchesne County (late) 102b	Unit Totals	West Emery County 103	Fillmore (early) 104a	Fillmore (late) 104b	Unit Totals
Permits Sold	24	25	49	8	8	16	5	10	10	20
No Hunts	0	1	1	2	0	2	1	0	0	0
Hunters Afield	24	24	48	6	8	14	4	10	10	20
Hunter-Days	91	106	197	18	20	38	18	23	27	50
Turkeys Bagged	21	11	32	4	5	9	1	10	10	20
Percent Success	88	46	67	67	63	64	25	100	100	100
Turkeys Bagged Per Hunter-Day	0.23	0.10	0.17	0.22	0.25	0.24	0.06	0.43	0.37	0.40
Reported Crippling Loss (Loss/100 Bagged)	0	0	0	0	0	0	0	0	0	0
Turkeys Observed										
Gobblers			0	13	14	27	14			0
Hens			0	6	11	17	55			0
Unidentified			0	0	1	1	26			0
Percent of Hunters Who Saw Turkeys			0.00	100.00	83.00	91.50	100.00			0.00
Percent of Hunters Who Saw Gobblers			0.00	100.00	83.00	91.50	100.00			0.00
Beard Length 0"-<4" (% of Harvest)			0.00	0.00	25.00	12.50	0.00			0.00
Beard Length 4"-7" (% of Harvest)			0.00	0.00	25.00	12.50	0.00			0.00
Beard Length >7" (% of Harvest)			0.00	100.00	50.00	75.00	100.00			0.00
Blunt Spur (% of Harvest)	20.00	38.00	29.00	0.00	0.00	0.00	0.00	14.00	0.00	7.00
Rounded Spur (% of Harvest)	40.00	38.00	39.00	0.00	75.00	37.50	0.00	29.00	50.00	39.50
Sharp Spur (% of Harvest)	40.00	24.00	32.00	100.00	25.00	62.50	100.00	57.00	50.00	53.50

*Closed Unit

Table 4. Summary of the 1998 spring limited entry Rio Grande turkey season (continued).

Hunt Number	Colorado River	Colorado River	Unit	Green River	Green River	Unit	Milford*	Monroe	Morgan-
	(early) 105a	(late) 105b	Totals	(early) 106a	(late) 106b	Totals	107	Mountain 108	South Rich 109
Permits Sold	5	5	10	5	5	10	C	4	5
No Hunts	0	0	0	0	0	0	L	0	1
Hunters Afield	5	5	10	5	5	10	O	4	4
Hunter-Days	7	12	19	8	17	25	S	14	15
Turkeys Bagged	5	5	10	0	4	4	E	2	2
Percent Success	100	100	100	0	80	40	D	50	50
Turkeys Bagged Per									
Hunter-Day	0.71	0.42	0.57	0.00	0.24	0.12		0.14	0.13
Reported Crippling Loss	2	2	4	0	1	1			0
(Loss/100 Bagged)	40	40	40		25	25		0	0
Turkeys Observed									
Gobblers	25	99	124	25	48	73			5
Hens	200	105	305	35	81	116			0
Unidentified	10	0	10	15	40	55			0
Percent of Hunters									
Who Saw Turkeys	100.00	100.00	100.00	100.00	100.00	100.00			50.00
Who Saw Gobblers	100.00	100.00	100.00	100.00	100.00	100.00			50.00
Beard Length 0"-<4" (% of Harvest)	20.00	0.00	10.00		25.00	12.50			0.00
Beard Length 4"-7" (% of Harvest)	20.00	20.00	20.00		0.00	0.00			0.00
Beard Length >7" (% of Harvest)	60.00	80.00	70.00		75.00	37.50			100.00
Blunt Spur (% of Harvest)	0.00	0.00	0.00		25.00	12.50			0.00
Rounded Spur (% of Harvest)	50.00	80.00	65.00		0.00	0.00			100.00
Sharp Spur (% of Harvest)	50.00	20.00	35.00		75.00	37.50			0.00

*Closed Unit

Table 4. Summary of the 1998 spring limited entry Rio Grande turkey season (continued).

	Ogden	Pine Valley (early)	Pine Valley (late)	Unit Totals	San Juan (early)	San Juan (late)	Unit Totals	Uintah County (early)	Uintah County (late)	Unit Totals
Hunt Number	110	111a	111b		112a	112b		113a	113b	
Permits Sold	15	24	25	49	10	10	20	4	5	9
No Hunts	3	1	0	1	0	0	0	0	2	2
Hunters Afield	12	23	25	48	10	10	20	4	3	7
Hunter-Days	41	62	103	165	23	21	44	4	18	22
Turkeys Bagged	8	14	5	19	10	7	17	4	3	7
Percent Success	67	61	20	40	100	70	85	100	100	100
Turkeys Bagged Per										
Hunter-Day	0.20	0.23	0.05	0.14	0.43	0.33	0.38	1.00	0.17	0.58
Reported Crippling Loss	0			0	0	0	0	0	0	0
(Loss/100 Bagged)	0	0	0	0	0	0	0	0	0	0
Turkeys Observed										
Gobblers	33			0	87	83	170	10	11	21
Hens	86			0	316	213	529	4	19	23
Unidentified	7			0	110	130	240	0	4	4
Percent of Hunters										
Who Saw Turkeys	100.00			0.00	100.00	100.00	100.00	100.00	100.00	100.00
Who Saw Gobblers	100.00			0.00	100.00	100.00	100.00	100.00	100.00	100.00
Beard Length 0"-<4" (% of Harvest)	0.00			0.00	22.20	0.00	11.10	0.00	0.00	0.00
Beard Length 4"-7" (% of Harvest)	40.00			0.00	11.10	100.00	55.55	100.00	0.00	50.00
Beard Length >7" (% of Harvest)	60.00			0.00	66.70	0.00	33.35	0.00	100.00	50.00
Blunt Spur (% of Harvest)	0.00	40.00		20.00	33.30	0.00	16.65	0.00	0.00	0.00
Rounded Spur (% of Harvest)	66.70	20.00		10.00	55.60	100.00	77.80	100.00	0.00	50.00
Sharp Spur (% of Harvest)	33.30	40.00		20.00	11.10	0.00	5.55	0.00	100.00	50.00

*Closed Unit

Table 4. Summary of the 1998 spring limited entry Rio Grande turkey season (continued).

Hunt Number	No. Utah County (early) 114a	No. Utah County (late) 114b	Unit Totals	So. Utah County 115	Wasatch County 116	West Pine Valley 117	Paunsaugunt 118	STATE TOTALS
Permits Sold	14	15	29	8	5	4	5	263
No Hunts	1	-3	-2	-1	0	0	1	9
Hunters Afield	13	18	31	9	5	4	4	254
Hunter-Days	72	92	164	51	21	24	11	919
Turkeys Bagged	9	8	17	7	5	0	1	161
Percent Success	69	44	55	78	100	0	25	63
Turkeys Bagged Per Hunter-Day	0.13	0.09	0.10	0.14	0.24	0.00	0.09	0.18
Reported Crippling Loss (Loss/100 Bagged)			0				0	5
			0					3
Turkeys Observed								
Gobblers			0					467
Hens			0					1,131
Unidentified			0					343
Percent of Hunters Who Saw Turkeys	100.00	72.00	86.00	100.00	100.00			57
Percent of Hunters Who Saw Gobblers			0.00					41
Beard Length 0"-<4" (% of Harvest)	0.00	14.00	7.00	29.00	20.00			5.67
Beard Length 4"-7" (% of Harvest)	11.00	43.00	27.00	14.00	20.00			13.28
Beard Length >7" (% of Harvest)	89.00	43.00	66.00	57.00	60.00			39.38
Blunt Spur (% of Harvest)	0.00	0.00	0.00	14.00	20.00			6.62
Rounded Spur (% of Harvest)	67.00	63.00	65.00	29.00	40.00			34.42
Sharp Spur (% of Harvest)	33.00	37.00	35.00	57.00	40.00			31.19

*Closed Unit

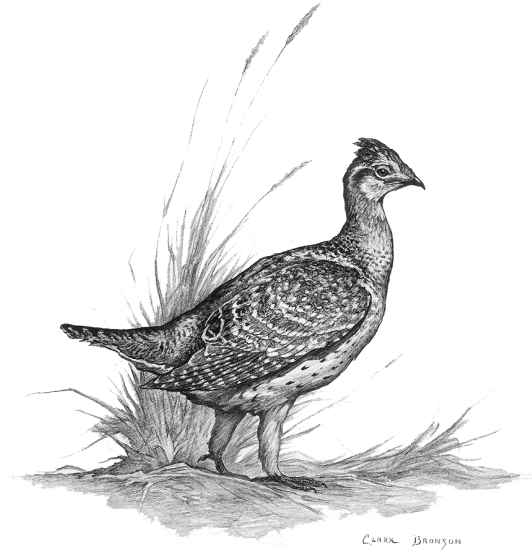
Table 5. Summary of Rio Grande turkey harvest statistics for spring gobbler seasons, 1991-98.

Hunting Unit	Year	Hunters Afield	Total Harvest	Hunter-Days Afield	Percent Success	Turkeys Per Hunter-Day	Percent of Hunters Observing Turkeys	Total Permits
STATE TOTALS	1991	18	11	71	61	0.15	--	20
	1992	20	15	64	75	0.23	--	21
	1993	41	26	200	63	0.13	--	42
	1994	105	79	464	75	0.17	--	105
	1995	123	78	628	63	0.12	--	135
	1996	166	107	776	64	0.14	88	174
	1997	229	127	920	55	0.14	81.53	240
	1998	254	161	919	63	0.18	57	263
STATE TOTALS (1991-98)		956	604	4,042	--	--	--	1,000
STATE AVERAGES (1991-97)		100	63	446	65	0.16	84.77	105

Table 6. Summary of wild turkey limited entry hunting unit drawing odds for 1998.

HUNT NAME	HUNT NUMBER	PERMITS AVAILABLE	RESIDENT APPLICANTS	NONRESIDENT APPLICANTS	TOTAL APPLICANTS	ODDS
BEAVER (EARLY)	T101A	24	144	2	146	6.08
BEAVER (LATE)	T101B	25	81	3	84	3.36
DUCHESNE (EARLY)*	T102A	8	27	0	27	3.38
DUCHESNE (LATE)*	T102B	8	22	0	22	2.75
WEST EMERY COUNTY*	T103	5	43	3	46	9.20
FILLMORE (EARLY)	T104A	10	189	0	189	18.90
FILLMORE (LATE)	T104B	10	118	0	118	11.80
COLORADO RIVER (EARLY)*	T105A	5	34	2	36	7.20
COLORADO RIVER (LATE)*	T105B	5	10	1	11	2.20
GREEN RIVER (EARLY)*	T106A	5	29	0	29	5.80
GREEN RIVER (LATE)*	T106B	5	19	1	20	4.00
MONROE MOUNTAIN	T108	4	24	0	24	6.00
MORGAN-SOUTH RICH*	T109	5	9	0	9	1.80
OGDEN	T110	15	168	0	168	11.20
PINE VALLEY (EARLY)*	T111A	24	82	2	84	3.50
PINE VALLEY (LATE)*	T111B	25	65	3	68	2.72
SAN JUAN (EARLY)	T112A	10	44	1	45	4.50
SAN JUAN (LATE)	T112B	10	24	2	26	2.60
UINTAH COUNTY (EARLY)*	T113A	4	29	0	29	7.25
UINTAH COUNTY (LATE)*	T113B	5	20	0	20	4.00
UTAH COUNTY (NORTH) (EARLY)	T114A	14	236	0	236	16.86
UTAH COUNTY (NORTH) (LATE)	T114B	15	134	0	134	8.93
UTAH COUNTY SOUTH	T115	8	142	0	142	17.75
WASATCH COUNTY	T116	5	59	0	59	11.80
WEST PINE VALLEY	T117	4	5	1	6	1.50
PAUNSAUGUNT	T118	5	6	2	8	1.60
BOULDER MOUNTAIN (EARLY)	T201A	73	180	2	182	2.49
BOULDER MOUNTAIN (LATE)	T201B	73	138	2	140	1.92
KOLOB*	T202	35	67	4	71	2.03
LASAL (EARLY)	T203A	15	40	0	40	2.67
LASAL (LATE)	T203B	15	56	2	58	3.87
ZION (EARLY)	T204A	73	92	2	94	1.29
ZION (LATE)	T204B	74	61	3	64	0.86
TOTAL		621	2,397	38	2435	3.92

Undersubscribed



Sharp-tailed Grouse

The Columbian sharp-tailed grouse is one of four species of grouse native to Utah. Sharptails 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, sharptail habitat was directly converted to farmland or was seriously impacted by heavy grazing.

Annual lek count survey data from 1979-98 is found in Table 1.

There was no legal harvest of sharp-tailed grouse from 1980 through 1997.

In 1998, as a result of intensive lek location surveys conducted in 1997 and 1998, a conservative, limited entry hunting season was offered. The hunt occurred in eastern Box Elder County in Northern Utah. The hunt strategy was designed to allow for the take of no more than 10-15 percent of the total fall population of sharptails. A total of 663 two-bird permits were offered through a drawing and first come-first served after the drawing. A total of 378 permits were sold. Two hundred and thirty-five hunters went afield and harvested 172 sharptails. Harvest statistics for 1998 are found in Table 3.

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 been entered into the Conservation Reserve Program (CRP). This may be benefitting sharp-tailed grouse populations by providing undisturbed nesting and brood-rearing cover.

Sharp-tailed grouse brood count information for Box Elder County in 1998 is shown in Table 2. However, no specific brood count data was collected.

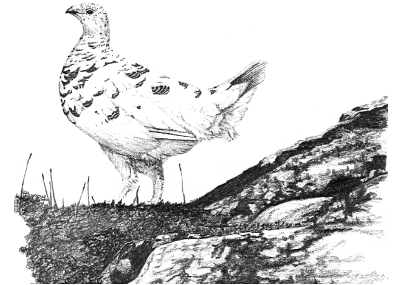
Table 1. Lek counts of Columbian Sharp-tailed Grouse in Utah 1979-1998. (continued)

Cache County																					
1 Bankhead Well	2	2																		2.0	
2 Baxter Ridge		3	5	3																3.7	
3 Crow Mountain	13	4	11	3								27	18	9	8					11.6	
4 High Creek			7									22			13		30			18.0	
5 Clarkston (Old)												20	5	Active	12					9.3	
6 Four Mile Complex													9	27			13			16.3	
7 Clarkston #1																				--	
8 Clarkston #2																				--	
Weber County																					
1 Monastery	3																			3.0	
Morgan County																					
1 Cottonwood #1	3																			3.0	
2 Cottonwood #2	25																			25.0	
3 Deep Creek		4																		4.0	
4 Bohman Hollow												11					0			5.5	
State Total:	71	24	54	31	28	5	31	72	90	77	77	113	227	178	53	60	37	82	42	342	
Leks Counted	8	7	5	5	2	2	4	4	5	5	5	5	16	14	7	10	6	8	5	18	
State Average:	8.9	3.4	10.8	6.2	14.0	2.5	7.8	18.0	18.0	15.4	15.4	22.6	14.2	12.7	7.6	6.0	6.2	10.3	8.4	19.0	12.4

Table 3. Summary of Sharp-tailed Grouse harvest statistics, 1998. Estimates are calculated based upon projection factors.

Year	Permits Sold	Hunters Afield	Hunter-Days Afield	Total Harvest	Birds Per Hunter	Birds Per Hunter-Day	Crippling Loss/100 Bagged	Grouse Observed	% Hunters Observing Grouse
1998	378	235	373	172	0.73	0.46	13	3,549	93.71
STATE TOTALS (1998)	378	235	373	172				3,549	
STATE AVERAGES (1998)	378	235	373	172	0.73	0.46	13	3,549	93.71

White-tailed Ptarmigan



The white-tailed ptarmigan (*Lagopus leucurus*) was introduced into the Uinta Mountains of northeastern 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.

Since introduction in 1976, ptarmigan have dispersed into available habitat from the west, 100 miles to the east in the Uinta Mountains.

Breeding Territory and Brood Surveys

Surveys on the ptarmigan population continue, but only as time and manpower constraints allow. 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 found in Tables 1 and 2.

These surveys have not been conducted over the past several years due to the remoteness of ptarmigan habitat and other constraints on biologist's time.

Harvest

Seventy-five hunters obtained free permits to hunt ptarmigan in Utah in 1998 (Table 3). An estimated 45 hunters actually pursued ptarmigan and 14 birds were killed.

Many permits are obtained by sportsmen who think they might hunt during a fishing or big game hunting trip, but don't seriously plan on the ptarmigan hunt.

Results of the 1998 season are shown in Table 3 of this section. The trend of these data since 1982 is shown in Table 3 and Figures 1 and 2. The 1998 season compared to 1997 and the previous 16 year average follows:

	<u>1998</u>	Percent change from 1997	Percent change from Average
Permits sold	75	+60	+143
Ptarmigan hunters	45	+150	+253
Hunter-days afield	84	+127	+312
Ptarmigan Harvest	14	+250	+15
Ptarmigan per hunter	0.31	+41	-72
Ptarmigan per hunter-day	0.17	+52	-75

Figure 1. Ptarmigan harvest statistics, 1982-98.

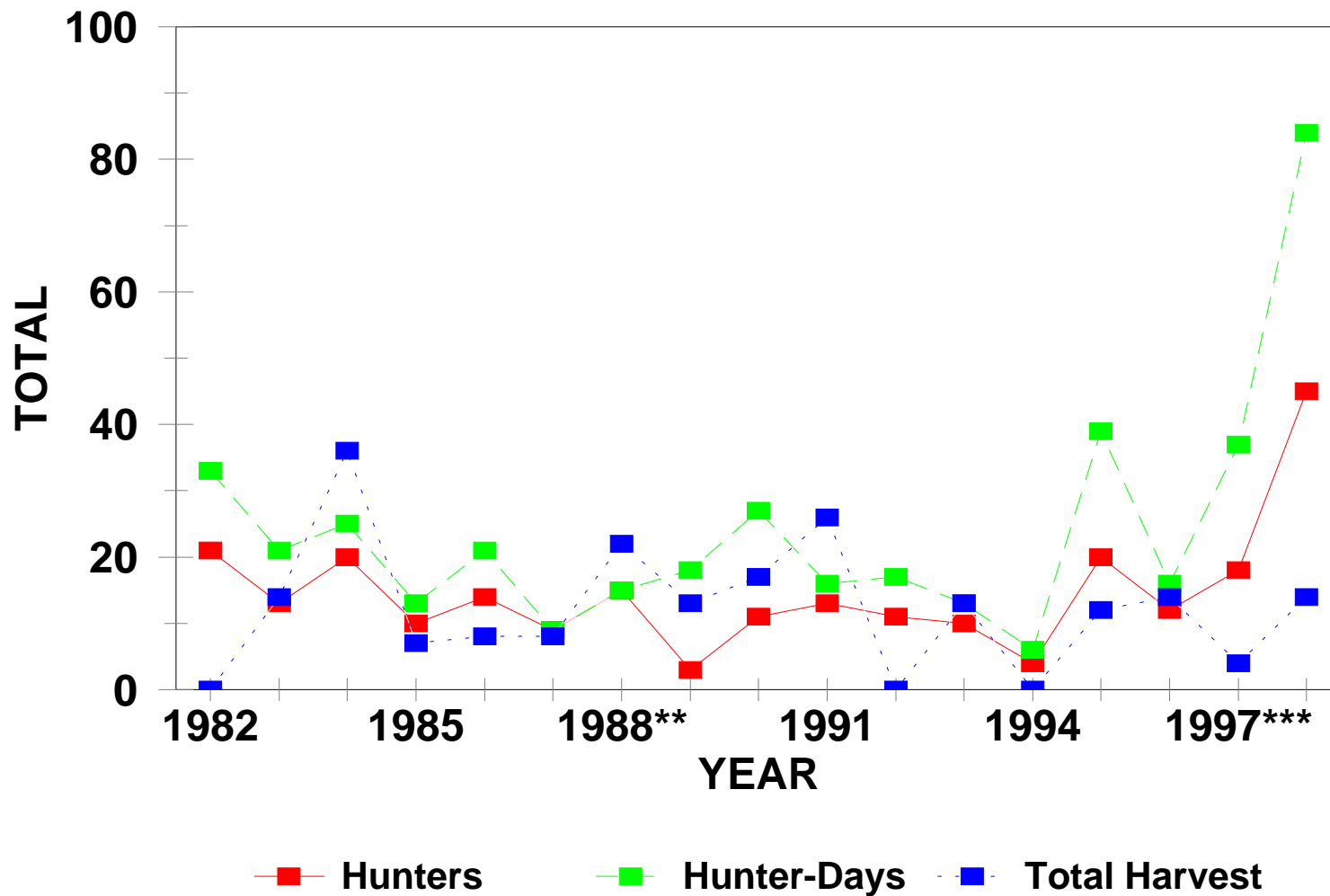


Figure 2. Ptarmigan hunting success, 1982-98.

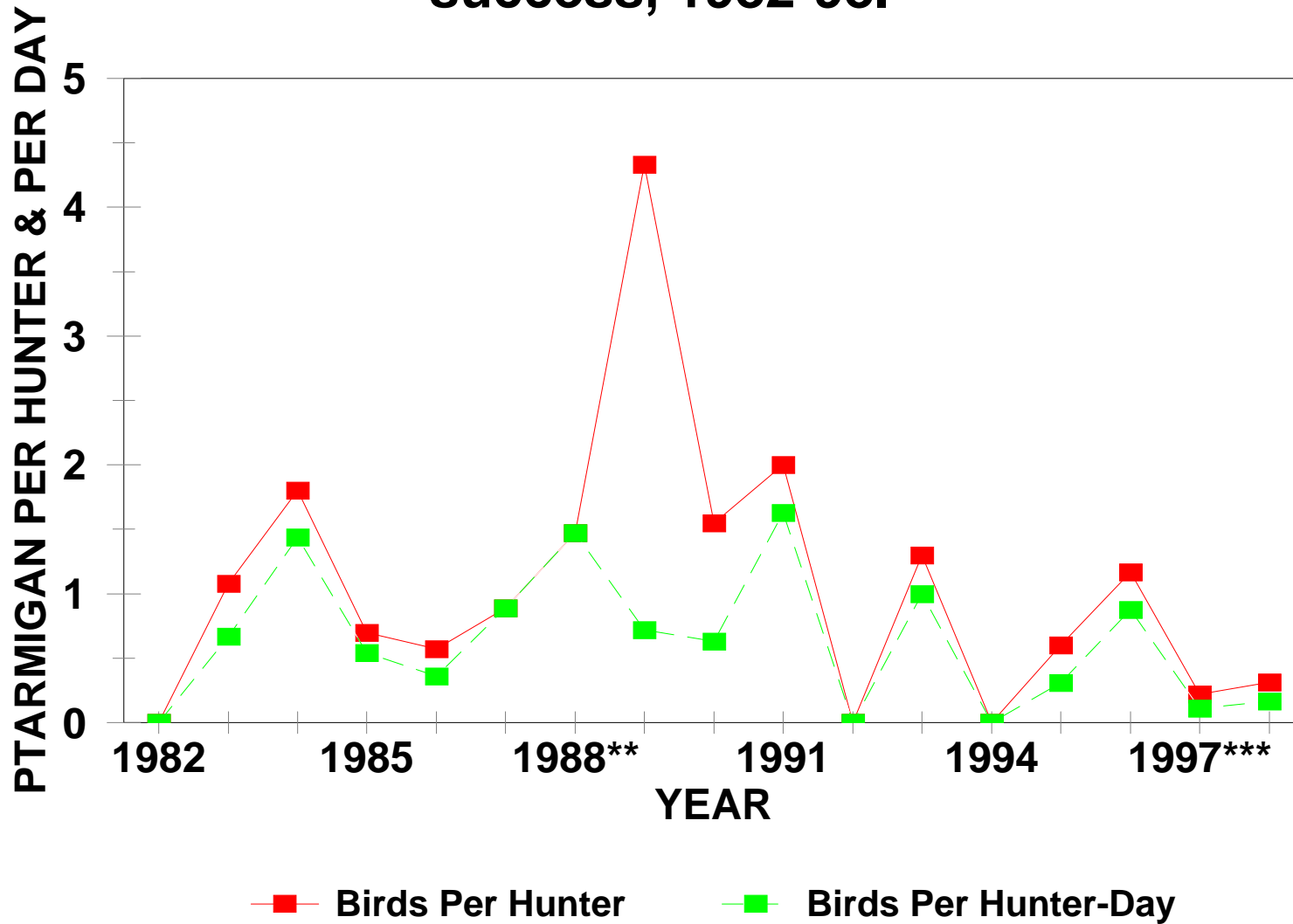


Table 1. Summary of white-tailed ptarmigan breeding territories (pairs), 1988-98.

County	Location	1988	1989(1)	1990	1991	1992	1993	1994	1995	1996	1997	1998
Duchesne	Painter Basin											
Duchesne	Gilbert Basin	N O	N O	N O	N O	N O	N O	N O		N O	N O	N O
Duchesne	Atwood Basin											
Duchesne	Yellowstone River	S U R	S U R	S U R	S U R	S U R	S U R	S U R		S U R	S U R	S U R
Summit	Henry's Fork	V E	V E	V E	V E	V E	V E	V E		V E	V E	V E
Summit	Flat Top Mountain	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y
Summit	Lake Blanchard											
Summit	Beaver Creek											
Summit	Smith's Fork											
Summit	Burnt Fork Drainage								0			
Uintah	Leidy Peak											

(1) Investigator was incapacitated.

Table 2. White-tailed ptarmigan brood inventory, 1988-98.

Area: Statistics	DATE										
	8/25-31/88	8/89	8/90	8/91	8/92	8/93	8/94	8/95	8/96	8/97	8/98
Painter Basin											
n	--	--	--	--	--	--	--	--	--	--	--
Mean Brood	--	--	--	--	--	--	--	--	--	--	--
Young/100 Adult Hens	--	--	--	--	--	--	--	--	--	--	--
Hens w/o Broods	--	--	--	--	--	--	--	--	--	--	--
Adult Males	--	--	--	--	--	--	--	--	--	--	--
Henry's Fork											
n	(e) 3	--	--	--	--	--	--	--	--	--	--
Mean Brood	2.33	--	--	--	--	--	--	--	--	--	--
Young/100 Adult Hens	233	--	--	--	--	--	--	--	--	--	--
Hens w/o Broods	6	--	--	--	--	--	--	--	--	--	--
Adult Males	--	--	--	--	--	--	--	--	--	--	--
Yellowstone											
n	--	2	1	--	--	--	--	--	--	--	--
Mean Brood	--	4.00	4.00	--	--	--	--	--	--	--	--
Young/100 Adult Hens	--	366	400	--	--	--	--	--	--	--	--
Hens w/o Broods	--	4	0	--	--	--	--	--	--	--	--
Adult Males	--	18	0	--	--	--	--	--	--	--	--
Smith's Fork											
n	--	--	--	--	--	--	--	--	--	--	--
Mean Brood	--	--	--	--	--	--	--	--	--	--	--
Young/100 Adult Hens	--	--	--	--	--	--	--	--	--	--	--
Hens w/o Broods	--	--	--	--	--	--	--	--	--	--	--
Adult Males	--	--	--	--	--	--	--	--	--	--	--
Atwood Basin											
n	--	--	--	1	--	--	--	--	--	--	--
Mean Brood	--	--	--	2.00	--	--	--	--	--	--	--
Young/100 Adult Hens	--	--	--	200	--	--	--	--	--	--	--
Hens w/o Broods	--	--	--	0	--	--	--	--	--	--	--
Adult Males	--	--	--	0	--	--	--	--	--	--	--

Table 3. Summary of white-tailed ptarmigan harvest statistics, 1982-98. Estimates are calculated based upon 100 percent samples or projection factors.

Year	Permits Sold	Hunters Afield	Hunter-Days Afield	Total Harvest	Birds Per Hunter	Birds Per Hunter-Day	Crippling Loss/ 100 Bagged	Ptarmigan Observed	% Hunters	
									Observing Ptarmigan	Immatures per 100 Adults
1982	48	21	33	0	0.00	0.00	0	0	--	--
1983	31	13	21	14	1.08	0.67	0	25	30	--
1984	28	20	25	36	1.80	1.44	0	--	--	--
1985	55	10	13	7	0.70	0.54	14	9	14	--
1986	49	14	21	8	0.57	0.36	0	8	22	--
1987	45	9	9	8	0.89	0.89	--	--	--	--
1988**	28	15	15	22	1.47	1.47	--	59	--	4.50(11)
1989	20	3	18	13	4.33	0.72	--	35	--	--
1990	17	11	27	17	1.55	0.63	0	28	35	--
1991	15	13	16	26	2.00	1.63	0	95	50	--
1992	17	11	17	0	0.00	0.00	0	56	36	--
1993	10	10	13	13	1.30	1.00	0	140	38	--
1994	14	4	6	0	0.00	0.00	0	3	100	--
1995***	39	20	39	12	0.60	0.31	0	31	11	--
1996***	30	12	16	14	1.17	0.88	0	106	29	--
1997***	47	18	37	4	0.22	0.11	0	17	--	--
1998***	75	45	84	14	0.31	0.17	0	14	--	--
STATE TOTALS (1982-98)	568	249	410	208				626		
STATE AVERAGES (1982-97)	31	13	20	12	1.10	0.67		38	23	

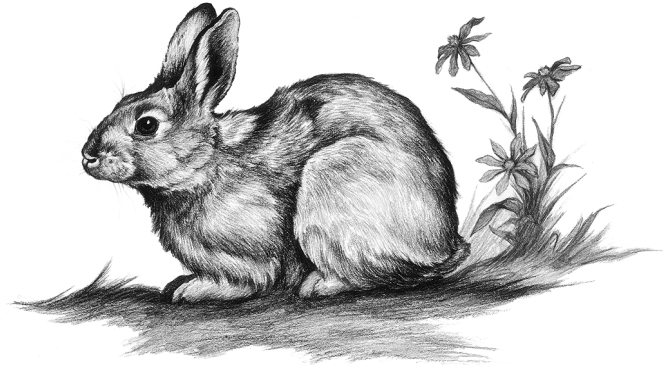
**For the first time a handling fee of \$2.00 per permit was charged.

***Permit still required, but at no charge

Projection Factor = $\frac{2.88461538462 \text{ (number of permits sold/number of questionnaires returned)}}{75 \text{ permits sold} / 26 \text{ questionnaires returned}}$

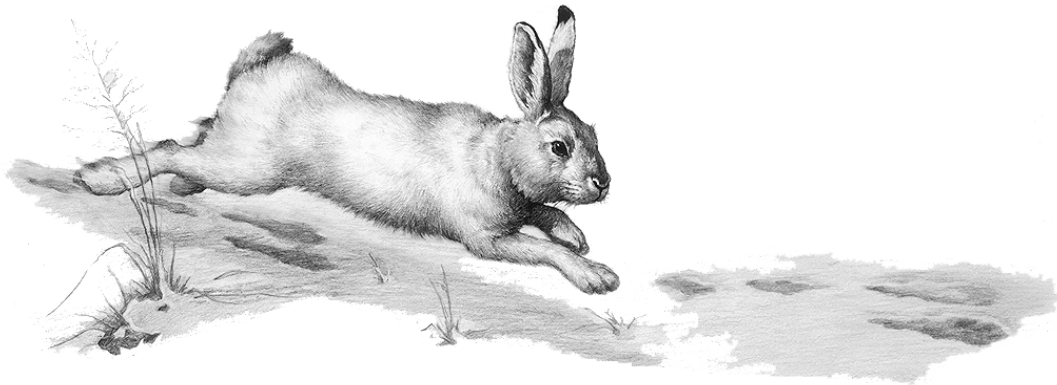
Rabbits and Hares

Cottontail Rabbit



Summer roadside counts indicated a slightly increased population density statewide, but reproduction was below 1997. Harvest statistics indicated increased hunter success, but is still 13 percent below average.

Snowshoe Hare



Hunter numbers decreased 43 percent from the previous year and remained below average. Total hares harvested decreased 56 percent from 1997.

COTTONTAIL RABBIT

Roadside Counts

Results of the annual roadside counts for 1998 are shown in Table 1 and Figure 1. The long-term trend of cottontails observed per mile and young per 100 adults is shown in Tables 2 and 3. Indices for 1998 compared to 1997 and the 10-year (1988-97) average follow:

	<u>1998</u>	Percent change from 1997	Percent change from Average
Total miles driven	1401	+169	+100
Total cottontails counted	351	+176	+40
Cottontails observed per mile	0.25	+4	-24
Young observed per 100 adults	88	-10	+15

Production data from roadside counts indicated an increase in the statewide cottontail population. Cottontails observed per mile increased 4 percent from 1997. The cottontail young per 100 adults index decreased 10 percent from 1997, but was 15 percent above the long-term average.

Harvest

Hunter Questionnaire

Results of the 1998 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 1998 season compared to 1997 and the previous 31-year average follow:

	<u>1998</u>	Percent change from 1997	Percent change from Average
Cottontail hunters	10,585	-14	-54
Cottontail harvest	57,137	-6	-60
Hunter-days afield	45,947	-13	-51
Cottontails per hunter-day	1.24	+7	-13
Cottontails per hunter	5.40	+8	-8

Total hunters decreased 14 percent from 1997. Total harvest decreased 6 percent. Total harvest was 60 percent below average. Hunter success was 13 percent below average.

Figure 1. Cottontail rabbit population indices trends, 1967-98.

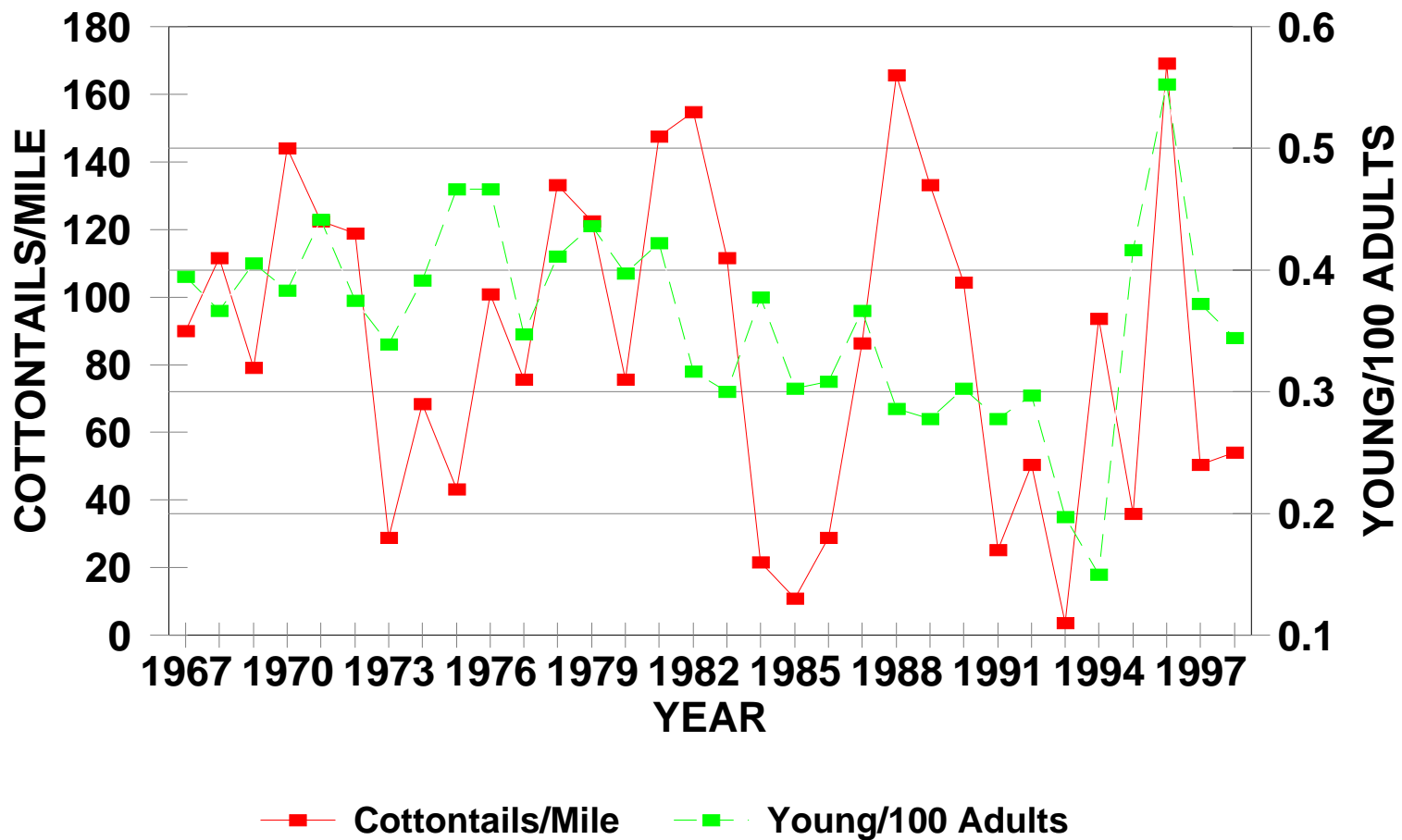
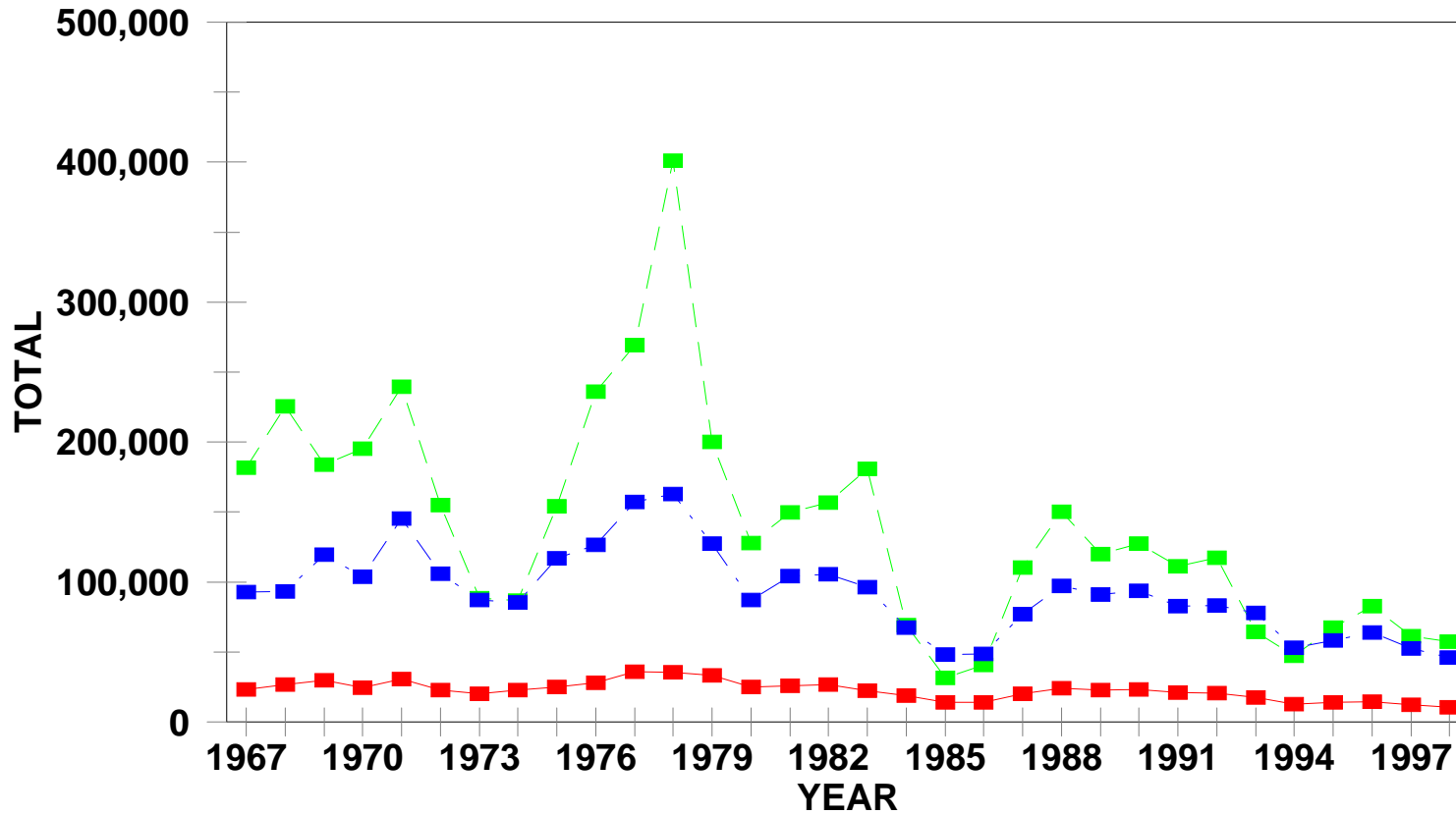


Figure 2. Statewide trends of c/t rabbit harvest statistics, 1967-98.

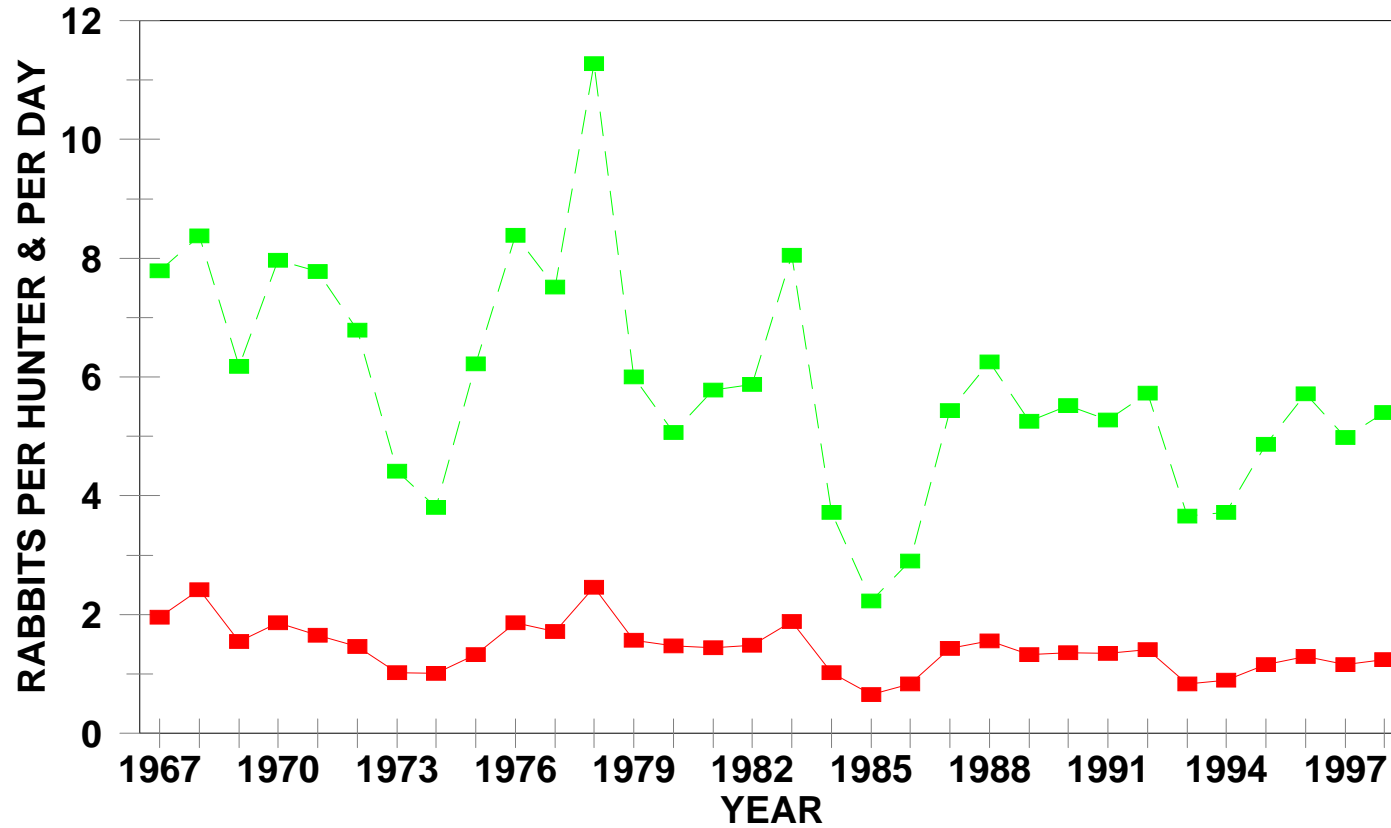


—■— Hunters

—■— Harvest

—■— Hunter-Days Afield

**Figure 3. Statewide trends of c/t
rabbit hunter success rates, 1967-98.**



■ Cottontails Per Hunter-Day ■ Cottontails Per Hunter

Table 1. Cottontail rabbit summer inventory summary, 1998.

Region and County	Miles Driven	Rabbits Observed				Total	Young/100 Adults	Rabbits/Mile
		Adults	Young	Unclassified				
Northern Region								
Box Elder	284	6	2	3	11	33	0.04	
Cache	--	--	--	--	--	--	--	
Davis	--	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	
Rich	180	16	7	0	23	44	0.13	
Summit	90	3	1	0	4	33	0.04	
Weber	--	--	--	--	--	--	--	
REGIONAL TOTALS	554	25	10	3	38	40	0.07	
Central Region								
Juab	90	0	0	0	0	ERR	0.00	
Salt Lake	--	--	--	--	--	--	--	
Sanpete	90	5	11	0	16	220	0.18	
Tooele	90	0	0	0	0	ERR	0.00	
Utah	--	--	--	--	--	--	--	
Wasatch	--	--	--	--	--	--	--	
REGIONAL TOTALS	270	5	11	0	16	220	0.06	
Southern Region								
Beaver	90	8	1	0	9	13	--	
Garfield	--	--	--	--	--	--	--	
Iron	90	14	20	0	34	143	0.38	
Kane	--	--	--	--	--	--	--	
Millard	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	
Sevier	90	4	0	0	4	0	0.04	
Washington	--	--	--	--	--	--	--	
Wayne	90	10	26	0	36	260	0.40	
REGIONAL TOTALS	360	36	47	0	83	131	0.23	
Northeastern Region								
Daggett	35	16	20	4	40	125	1.14	
Duchesne	92	51	12	24	87	24	0.95	
Uintah	--	--	--	--	--	--	--	
REGIONAL TOTALS	127	67	32	28	127	48	1.00	
Southeastern Region								
Carbon	90	28	42	17	87	150	0.97	
Emery	--	--	--	--	--	--	--	
Grand	--	--	--	--	--	--	--	
San Juan	--	--	--	--	--	--	--	
REGIONAL TOTALS	90	28	42	17	87	150	0.97	
STATE TOTALS	1401	161	142	48	351	88	0.25	

Table 2. Summary of cottontail rabbits observed per mile during summer inventory, 1988-98.

Region and County	Year											Average
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1988-97
Northern Region												
Box Elder	--	0.03	0.39	0.10	0.08	--	--	--	--	--	0.04	
Cache	--	--	--	--	--	--	--	--	--	--	--	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	0.13	
Summit	--	--	--	--	--	--	--	--	--	--	0.04	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	--	0.03	0.39	0.10	0.08	--	--	--	--	--	0.07	0.15
Central Region												
Juab	0.54	0.30	0.23	--	--	--	--	0.01	0.02	0.00	0.00	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	0.47	0.22	0.65	0.09	0.15	0.01	--	0.07	0.14	0.00	0.18	
Tooele	0.18	--	--	--	0.03	--	--	0.02	0.00	0.02	0.00	
Utah	--	--	--	--	--	--	--	--	--	--	--	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	0.36	0.26	0.45	0.09	0.08	0.01	--	0.04	0.06	0.01	0.06	0.15
Southern Region												
Beaver	0.06	--	--	--	--	--	--	--	--	--	--	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	0.38	
Kane	1.09	--	--	--	--	--	--	--	--	--	--	
Millard	0.09	--	0.08	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	--	--	--	--	--	--	--	--	--	--	0.04	
Washington	0.36	0.33	--	--	--	--	--	--	--	--	--	
Wayne	0.34	--	--	0.83	0.21	--	--	--	--	--	--	
REGIONAL TOTALS	0.33	0.33	0.08	0.83	0.21	--	--	--	--	--	0.23	0.36
Northeastern Region												
Daggett	0.85	0.50	0.55	--	0.28	0.07	0.07	0.50	0.94	0.80	1.14	
Duchesne	1.49	1.04	0.23	0.03	0.60	0.23	0.56	0.39	1.69	0.33	0.95	
Uintah	1.26	1.40	1.00	--	0.18	0.17	0.24	0.23	0.82	0.43	--	
REGIONAL TOTALS	1.18	0.91	0.57	0.03	0.38	0.16	0.36	0.39	1.21	0.50	1.00	0.57
Southeastern Region												
Carbon	0.41	0.34	0.02	0.20	0.21	0.13	--	--	--	--	0.97	
Emery	0.34	0.33	0.40	0.37	0.34	0.06	--	--	--	--	--	
Grand	0.10	0.06	0.01	0.05	0.13	0.20	--	--	--	--	--	
San Juan	0.59	0.55	0.80	0.28	0.34	0.16	--	--	--	--	--	
REGIONAL TOTALS	0.36	0.32	0.36	0.24	0.26	0.14	--	--	--	--	0.97	0.28
STATE TOTALS	0.56	0.47	0.39	0.17	0.24	0.11	0.36	0.20	0.57	0.24	0.25	0.33

Table 3. Summary of cottontail rabbit young per 100 adults, 1988-98.

Region and County	Year											Average 1988-97
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Northern Region												
Box Elder	--	200	200	13	67	--	--	--	--	--	33	
Cache	--	--	--	--	--	--	--	--	--	--	--	
Davis	--	--	--	--	--	--	--	--	--	--	--	
Morgan	--	--	--	--	--	--	--	--	--	--	--	
Rich	--	--	--	--	--	--	--	--	--	--	44	
Summit	--	--	--	--	--	--	--	--	--	--	33	
Weber	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	--	200	200	13	67	--	--	--	--	--	40	120
Central Region												
Juab	20	13	--	--	--	--	--	0	100	--	--	
Salt Lake	--	--	--	--	--	--	--	--	--	--	--	
Sanpete	88	40	40	50	50	--	--	133	100	--	220	
Tooele	120	--	--	--	100	--	--	--	--	--	--	
Utah	--	--	--	--	--	--	--	--	--	--	--	
Wasatch	--	--	--	--	--	--	--	--	--	--	--	
REGIONAL TOTALS	57	23	27	50	57	--	--	125	100	--	220	63
Southern Region												
Beaver	--	--	--	--	--	--	--	--	--	--	13	
Garfield	--	--	--	--	--	--	--	--	--	--	--	
Iron	--	--	--	--	--	--	--	--	--	--	143	
Kane	149	--	--	--	--	--	--	--	--	--	--	
Millard	110	--	100	--	--	--	--	--	--	--	--	
Piute	--	--	--	--	--	--	--	--	--	--	--	
Sevier	--	--	--	--	--	--	--	--	--	--	0	
Washington	100	131	--	--	--	--	--	--	--	--	--	
Wayne	244	--	--	369	138	--	--	--	--	--	260	
REGIONAL TOTALS	136	131	100	369	138	--	--	--	--	--	131	175
Northeastern Region												
Daggett	30	59	55	--	89	33	--	100	177	89	125	
Duchesne	39	29	--	50	138	36	17	183	172	110	24	
Uintah	170	239	95	--	10	80	50	50	156	94	--	
REGIONAL TOTALS	46	82	58	50	95	47	18	113	170	95	48	77
Southeastern Region												
Carbon	500	400	400	--	25	--	--	--	--	--	150	
Emery	50	--	--	--	--	--	--	--	--	--	--	
Grand	--	--	--	--	40	--	--	--	--	--	--	
San Juan	49	80	60	54	37	18	--	--	--	--	--	
REGIONAL TOTALS	64	110	67	100	33	18	--	--	--	--	150	65
STATE TOTALS	67	64	73	64	71	35	18	114	163	98	88	77

Table 4. Summary of cottontail rabbit hunter success and distribution of harvest and hunting pressure by region and county, 1998.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	RABBITS BAGGED	RABBITS PER HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	41	3,001	2,117	0.71	6.53	3.71
CACHE	4	790	139	0.18	1.72	0.24
DAVIS	0	0	0	0.00	0.00	0.00
MORGAN	2	46	23	0.50	0.10	0.04
RICH	8	255	186	0.73	0.56	0.33
SUMMIT	9	418	418	1.00	0.91	0.73
WEBER	2	139	279	2.00	0.30	0.49
REGIONAL TOTALS	66	4,652	3,163	0.68	10.13	5.54
CENTRAL REGION						
JUAB	30	1,628	2,582	1.59	3.54	4.52
SALT LAKE	2	46	232	5.00	0.10	0.41
SANPETE	16	1,070	814	0.76	2.33	1.43
TOOELE	57	4,117	2,791	0.68	8.96	4.89
UTAH	36	2,884	2,372	0.82	6.28	4.15
WASATCH	4	511	46	0.09	1.11	0.08
REGIONAL TOTALS	145	10,259	8,840	0.86	22.33	15.47
SOUTHERN REGION						
BEAVER	3	69	69	1.00	0.15	0.12
GARFIELD	4	581	232	0.40	1.27	0.41
IRON	11	1,977	1,605	0.81	4.30	2.81
KANE	2	46	93	2.00	0.10	0.16
MILLARD	26	2,210	2,675	1.21	4.81	4.68
PIUTE	5	348	907	2.60	0.76	1.59
SEVIER	19	2,559	2,954	1.15	5.57	5.17
WASHINGTON	20	3,187	3,303	1.04	6.94	5.78
WAYNE	7	442	790	1.79	0.96	1.38
REGIONAL TOTALS	97	11,422	12,632	1.11	24.86	22.11
NORTHEASTERN REGION						
DAGGETT	13	604	1,419	2.35	1.32	2.48
DUCHESNE	66	5,676	9,840	1.73	12.35	17.22
UINTAH	52	4,629	9,398	2.03	10.08	16.45
REGIONAL TOTALS	131	10,911	20,658	1.89	23.75	36.16
SOUTHEASTERN REGION						
CARBON	37	4,164	5,746	1.38	9.06	10.06
EMERY	23	2,815	2,698	0.96	6.13	4.72
GRAND	5	325	790	2.43	0.71	1.38
SAN JUAN	12	1,395	2,605	1.87	3.04	4.56
REGIONAL TOTALS	77	8,700	11,841	1.36	18.94	20.73
Unknown	0	0	0	0.00	0.00	0.00
STATE TOTALS	516	45,947	57,137	1.24	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 5. Summary of cottontail rabbits bagged per hunter-day by region and county, 1991-98.

Region and County	Year							
	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region								
Box Elder	1.31	1.46	0.71	0.82	1.00	0.78	6.16	0.71
Cache	1.41	1.50	0.76	1.30	0.76	0.56	0.14	0.18
Davis	1.50	0.00	0.08	0.00	0.50	2.67	0.00	0.00
Morgan	1.53	1.08	0.33	0.47	4.00	2.00	0.20	0.50
Rich	2.62	2.50	0.56	1.21	1.34	1.72	0.58	0.73
Summit	1.24	0.81	1.22	1.39	0.73	1.00	0.95	1.00
Weber	0.88	0.89	0.64	0.28	0.88	1.27	0.20	2.00
REGIONAL TOTALS	1.47	1.50	0.71	0.77	0.97	0.96	8.23	0.68
Central Region								
Juab	1.68	1.54	0.83	0.64	0.49	1.08	2.65	1.59
Salt Lake	0.72	0.97	0.57	2.00	0.57	2.16	1.43	5.00
Sanpete	1.26	0.86	0.40	1.02	0.75	0.85	1.43	0.76
Tooele	1.23	1.26	0.48	0.70	0.53	0.69	4.35	0.68
Utah	0.99	1.00	0.56	0.46	0.64	1.08	2.45	0.82
Wasatch	1.06	1.70	0.83	1.57	0.21	0.18	0.07	0.09
REGIONAL TOTALS	1.24	1.19	0.57	0.67	0.56	0.98	12.38	0.86
Southern Region								
Beaver	0.69	2.44	0.67	1.50	0.39	1.00	0.58	1.00
Garfield	0.46	0.52	1.53	1.04	1.36	0.38	0.71	0.40
Iron	1.06	0.94	0.80	1.05	0.68	0.96	0.27	0.81
Kane	0.93	0.97	1.62	0.91	3.50	0.10	1.09	2.00
Millard	1.15	1.35	1.56	0.69	0.88	0.83	3.40	1.21
Piute	0.57	0.00	0.63	0.33	0.80	1.25	0.00	2.60
Sevier	0.65	1.27	0.69	0.67	0.39	1.04	1.63	1.15
Washington	0.68	1.03	1.02	1.01	1.13	1.40	1.70	1.04
Wayne	1.20	2.26	0.73	1.06	1.38	2.05	2.24	1.79
REGIONAL TOTALS	0.89	1.32	1.11	0.93	0.89	1.04	11.63	1.11
Northeastern Region								
Daggett	1.83	2.00	1.47	1.52	3.55	2.87	5.54	2.35
Duchesne	2.15	1.97	1.16	1.43	2.40	1.99	13.67	1.73
Uintah	1.61	1.74	0.82	1.55	2.77	2.66	31.73	2.03
REGIONAL TOTALS	1.86	1.87	1.04	1.51	2.61	2.34	50.95	1.89
Southeastern Region								
Carbon	1.75	1.51	0.69	0.89	1.19	1.17	5.24	1.38
Emery	1.03	1.43	0.88	0.90	1.24	1.36	6.12	0.96
Grand	1.75	1.66	1.86	1.21	1.21	0.40	1.09	2.43
San Juan	1.87	2.34	0.81	0.97	1.14	0.53	4.15	1.87
REGIONAL TOTALS	1.50	1.63	0.88	0.94	1.19	0.95	16.60	1.36
Unknown counties	0.00	0.00	1.40	0.00	1.07	3.00	0.20	0.00
STATE TOTALS	1.36	1.35	1.41	0.83	1.16	1.29	0.00	1.24

Table 8. Statewide summary of cottontail rabbit harvest statistics, 1967-98.

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
1991	21,137	111,407	82,772	1.35	5.27
1992	20,509	117,454	83,154	1.41	5.73
1993	17,578	64,400	77,968	0.83	3.66
1994	12,709	47,322	53,175	0.89	3.72
1995	13,840	67,295	58,042	1.16	4.86
1996	14,470	82,803	63,943	1.29	5.72
1997	12,263	61,109	52,587	1.16	4.98
1998	10,585	57,137	45,947	1.24	5.40
Totals					
(1967-98)	719,084	4,490,244	2,958,449	--	--
Averages					
(1967-97)	22,855	143,003	93,952	1.43	5.89

SNOWSHOE HARE

Harvest

Results of the 1998 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 1998 season compared to 1997 and the previous 23-year average follow:

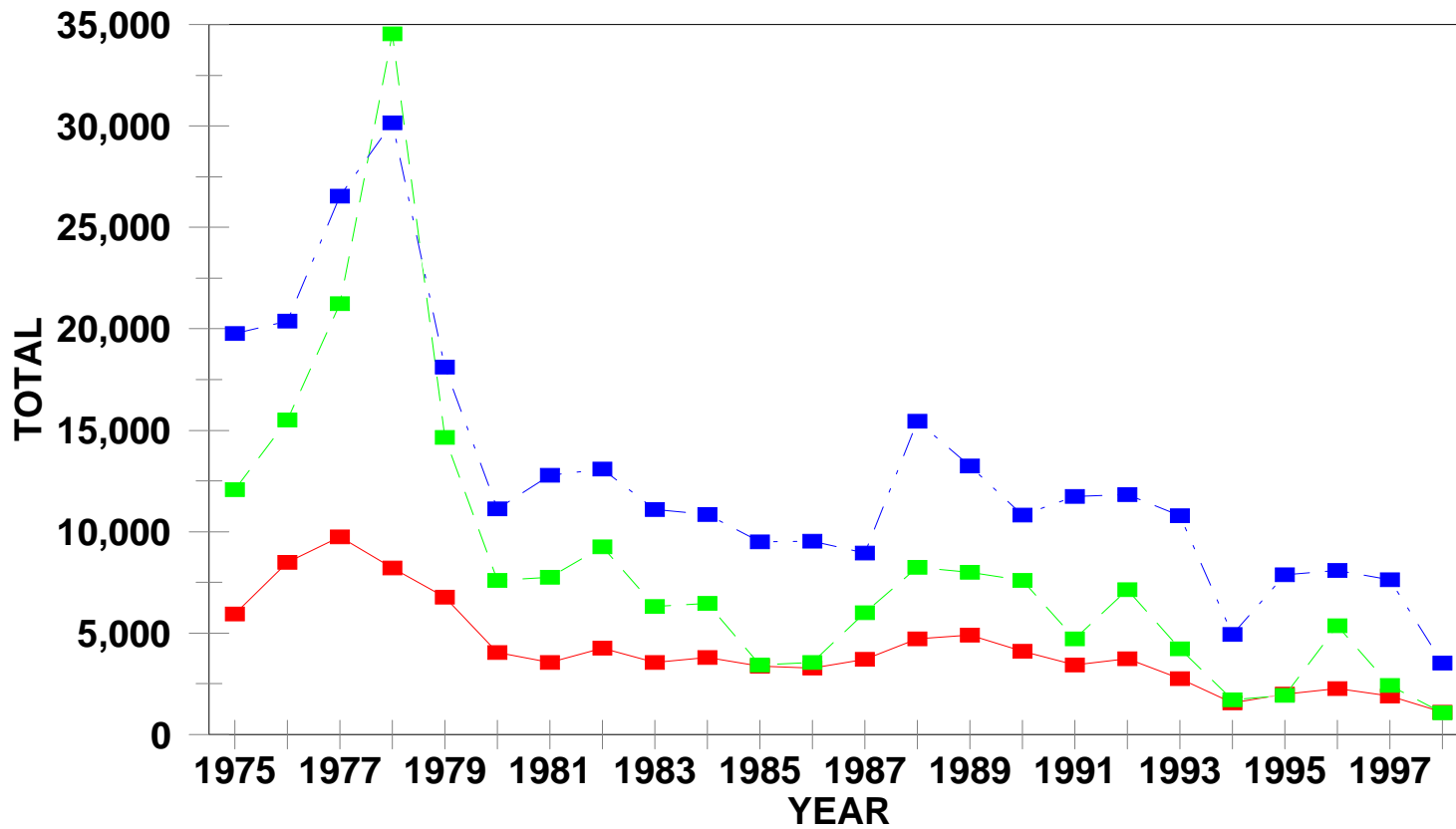
	<u>1998</u>	<u>Percent change from 1997</u>	<u>Percent change from Average</u>
Snowshoe hare hunters	1,093	-43	-75
Snowshoe hares harvested	1,070	-56	-88
Hunter-days afield	3,536	-54	-73
Snowshoes per hunter-day	0.30	-6	-49
Snowshoes per hunter	0.98	-23	-46

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 1970s to reduce misidentification through pictures and descriptions in leaflets and questionnaires.

Beginning in 1988, harvest questionnaires, and in 1989 the Upland Game Proclamation had drawings and descriptions of the various rabbits and hares in an attempt to reduce misidentification. We believe this has been successful.

Results of the 1998 harvest questionnaire indicates a 6 percent decrease in hunter success compared to 1997. Success was 49 percent below the long-term average.

Figure 1. Statewide trends of snowshoe hare harvest statistics, 1975-98.



—■— Hunters

-■- Harvest

-■- Hunter-Days Afield

Figure 2. Statewide trends of snowshoe hare hunter success rates, 1975-98.

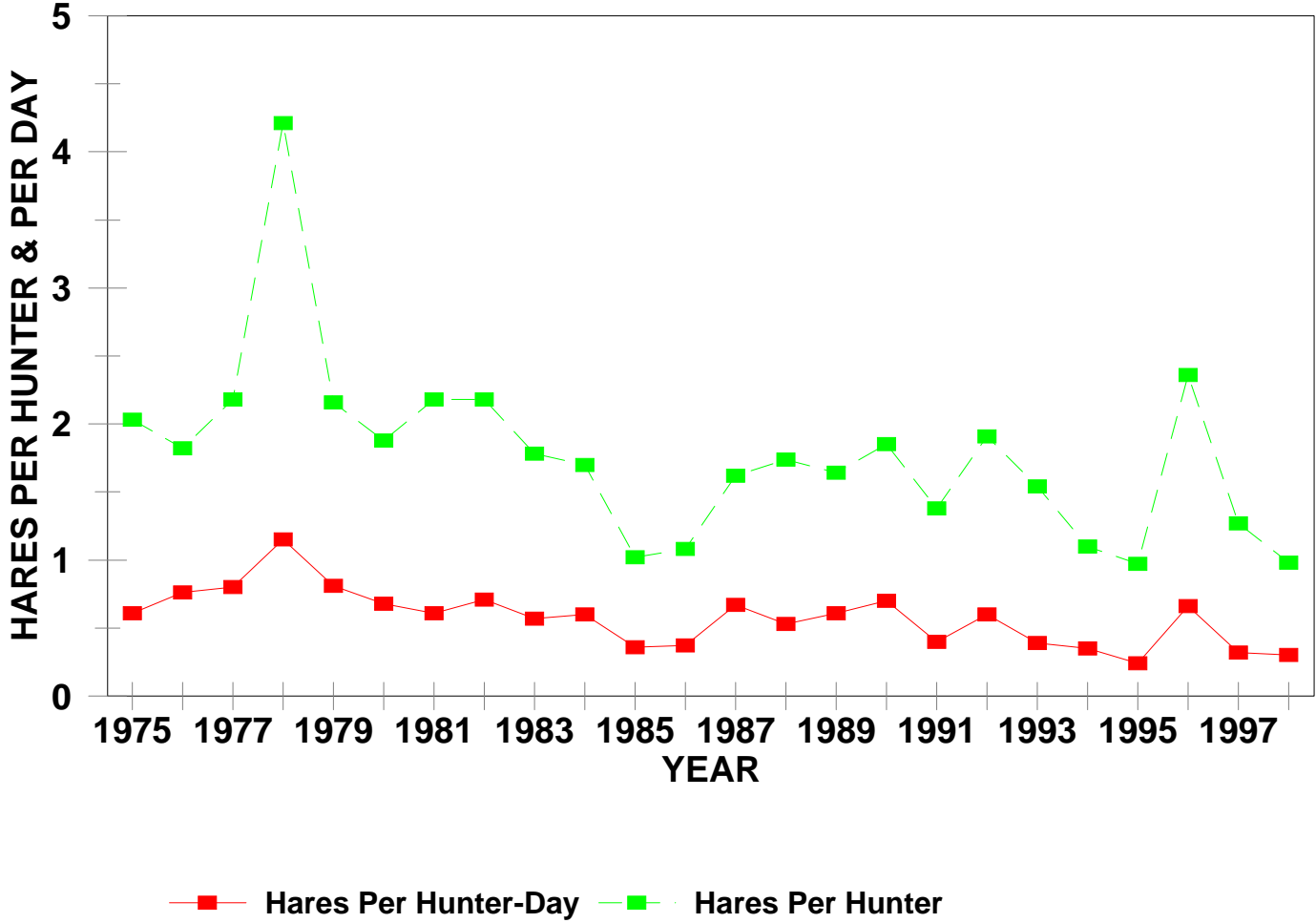


Table 11. Summary of snowshoe hare hunter success and distribution of harvest and hunting pressure by region and county, 1998.

REGION AND COUNTY	SAMPLE SIZE*	HUNTER-DAYS AFIELD	SNOWSHOE BAGGED	SNOWSHOE HUNTER-DAY	% OF PRESSURE	% OF HARVEST
NORTHERN REGION						
BOX ELDER	4	232	23	0.10	6.58	2.17
CACHE	2	46	23	0.50	1.32	2.17
DAVIS	0	0	0	0.00	0.00	0.00
MORGAN	2	46	0	0.00	1.32	0.00
RICH	2	139	46	0.33	3.95	4.35
SUMMIT	2	116	162	1.40	3.29	15.22
WEBER	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	12	581	255	0.44	16.45	23.92
CENTRAL REGION						
JUAB	0	0	0	0.00	0.00	0.00
SALT LAKE	0	0	0	0.00	0.00	0.00
SANPETE	3	395	139	0.35	11.18	13.05
TOOELE	3	93	46	0.50	2.63	4.35
UTAH	5	395	348	0.88	11.18	32.61
WASATCH	3	69	23	0.33	1.97	2.17
REGIONAL TOTALS	14	953	558	0.59	26.98	52.18
SOUTHERN REGION						
BEAVER	1	23	0	0.00	0.66	0.00
GARFIELD	0	0	0	0.00	0.00	0.00
IRON	1	23	0	0.00	0.66	0.00
KANE	0	0	0	0.00	0.00	0.00
MILLARD	0	0	0	0.00	0.00	0.00
PIUTE	1	46	23	0.50	1.32	2.17
SEVIER	1	69	0	0.00	1.97	0.00
WASHINGTON	0	0	0	0.00	0.00	0.00
WAYNE	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	4	162	23	0.14	4.61	2.17
NORTHEASTERN REGION						
DAGGETT	0	0	0	0.00	0.00	0.00
DUCHESNE	10	1,163	93	0.08	32.90	8.70
UINTAH	2	255	46	0.18	7.24	4.35
REGIONAL TOTALS	12	1,419	139	0.10	40.13	13.05
SOUTHEASTERN REGION						
CARBON	6	418	69	0.17	11.84	6.52
EMERY	1	0	23	0.00	0.00	2.17
GRAND	0	0	0	0.00	0.00	0.00
SAN JUAN	0	0	0	0.00	0.00	0.00
REGIONAL TOTALS	7	418	93	0.22	11.84	8.70
Unknown	0	0	0	0.00	0.00	0.00
STATE TOTALS	49	3,536	1,070	0.30	100.00	100.00

*Total hunter trips from questionnaire returns.

Table 12. Summary of snowshoe hare bagged per hunter-day by region and county, 1991-98.

Region and County	Year							
	1991	1992	1993	1994	1995	1996	1997	1998
Northern Region								
Box Elder	0.38	0.52	0.45	0.82	0.14	0.21	0.85	0.10
Cache	0.30	0.26	0.42	1.30	0.11	0.09	0.07	0.50
Davis	0.03	0.00	0.00	0.00	0.60	0.75	0.00	0.00
Morgan	2.17	0.15	0.00	0.47	0.00	1.88	1.50	0.00
Rich	1.31	1.15	0.38	1.21	0.21	1.00	1.82	0.33
Summit	0.24	0.62	0.18	0.39	0.23	0.75	0.17	1.40
Weber	0.25	1.00	1.12	0.28	0.91	0.00	0.57	0.00
REGIONAL TOTALS	0.49	0.54	0.48	0.77	0.38	0.38	0.68	0.44
Central Region								
Juab	0.50	0.38	0.00	0.64	0.15	1.14	3.00	0.00
Salt Lake	0.22	0.08	0.00	2.00	0.00	2.00	0.00	0.00
Sanpete	0.78	0.43	0.67	1.02	0.50	0.63	1.00	0.35
Tooele	0.35	0.58	0.25	0.70	0.38	0.05	0.13	0.50
Utah	0.71	0.79	0.08	0.46	0.10	0.35	0.11	0.88
Wasatch	0.22	0.48	8.67	1.57	0.04	0.11	0.27	0.33
REGIONAL TOTALS	0.45	0.55	0.44	0.67	0.21	0.35	0.16	0.59
Southern Region								
Beaver	0.00	0.00	0.00	1.50	0.05	0.00	6.50	0.00
Garfield	1.00	0.00	0.00	1.04	0.00	0.00	0.00	0.00
Iron	0.00	0.67	0.00	1.05	0.00	0.00	0.00	0.00
Kane	0.00	0.20	0.00	0.91	0.00	0.00	0.00	0.00
Millard	0.00	0.15	0.32	0.69	0.00	0.00	0.12	0.00
Piute	0.00	1.50	0.00	0.33	0.00	3.21	0.00	0.50
Sevier	0.61	0.78	0.44	0.67	0.00	0.00	0.20	0.00
Washington	0.00	0.00	0.00	1.01	0.00	0.00	0.00	0.00
Wayne	0.44	1.25	0.25	1.06	0.00	0.00	0.00	0.00
REGIONAL TOTALS	0.56	0.70	0.30	0.93	0.02	3.03	0.78	0.14
Northeastern Region								
Daggett	0.14	1.00	0.43	1.52	0.00	3.00	0.06	0.00
Duchesne	0.18	0.23	0.22	1.43	0.12	0.35	0.16	0.08
Uintah	0.14	1.62	0.15	1.55	0.33	0.41	0.13	0.18
REGIONAL TOTALS	0.17	0.79	0.23	1.51	0.24	0.44	0.12	0.10
Southeastern Region								
Carbon	0.21	0.63	0.29	0.89	0.00	1.67	0.10	0.17
Emery	0.45	0.33	0.60	0.90	0.33	0.70	0.13	0.00
Grand	0.00	0.00	0.00	1.21	0.00	0.00	0.00	0.00
San Juan	0.00	1.00	0.00	0.97	0.00	0.00	0.20	0.00
REGIONAL TOTALS	0.30	0.46	0.37	0.94	0.20	0.92	0.11	0.22
Unknown counties	0.00	0.00	3.60	0.00	0.00	0.00	0.00	0.00
STATE TOTALS	0.40	0.60	0.39	0.35	0.24	0.66	0.32	0.30

Table 15. Statewide summary of snowshoe hare harvest statistics, 1975-98.

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
1991	3,427	4,731	11,742	0.40	1.38
1992	3,732	7,144	11,836	0.60	1.91
1993	2,755	4,237	10,774	0.39	1.54
1994	1,565	1,722	4,922	0.35	1.10
1995	1,983	1,924	7,891	0.24	0.97
1996	2,276	5,365	8,106	0.66	2.36
1997	1,912	2,431	7,628	0.32	1.27
1998	1,093	1,070	3,536	0.30	0.98
Totals (1975-98)	101,196	200,779	307,784	--	--
Averages (1975-97)	4,352	8,683	13,228	0.59	1.81

A P P E N D I C E S

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 1997-98 winter weather was fairly mild in terms of temperature. During November, January-March temperatures statewide were above normal. Below average precipitation fell in October through December 1997. Above average precipitation occurred January through March.

In the spring of 1998, temperatures were below normal April through June. Precipitation was above normal April through July.

Table 1. Comparison of 1998 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	Annual
No.1 Western													
Normal	26.0	32.5	39.6	47.3	56.5	66.0	74.3	72.1	62.0	50.1	37.6	27.4	49.3
1998	34.7	34.8	40.7	45.7	55.2	61.4	75.8	74.0	64.6	48.5	39.7	26.2	50.1
Departure (degrees)	8.7	2.3	1.1	-1.6	-1.3	-4.6	1.5	1.9	2.6	-1.6	2.1	-1.2	0.8
No.2 Dixie													
Normal	38.8	44.1	49.2	56.6	65.7	75.6	81.7	79.4	71.9	60.9	48.0	39.5	59.3
1998	43.5	43.1	50.7	54.3	63.5	71.6	82.9	83.2	72.2	59.3	48.0	40.9	59.4
Departure (degrees)	4.7	-1.0	1.5	-2.3	-2.2	-4.0	1.2	3.8	0.3	-1.6	0.0	1.4	0.1
No.3 North Central													
Normal	25.8	31.3	39.3	47.7	56.9	66.2	74.4	72.3	62.4	50.9	38.3	27.8	49.5
1998	34.9	35.7	40.3	47.0	56.9	61.4	76.7	74.6	66.6	50.5	41.5	27.8	51.2
Departure (degrees)	9.1	4.4	1.0	-0.7	0.0	-4.8	2.3	2.3	4.2	-0.4	3.2	0.0	1.7
No.4 South Central													
Normal	26.5	31.6	37.6	45.1	54.0	63.4	70.4	68.2	59.9	49.3	37.3	28.1	47.6
1998	32.2	30.9	37.5	42.1	51.9	58.4	71.3	69.5	60.8	47.1	38.1	27.8	47.3
Departure (degrees)	5.7	-0.7	-0.1	-3.0	-2.1	-5.0	0.9	1.3	0.9	-2.2	0.8	-0.3	-0.3
No.5 Northern Mountains													
Normal	20.9	24.7	31.7	40.6	49.6	58.2	65.6	63.6	54.9	44.7	32.5	22.8	42.5
1998	27.6	28.2	31.5	40.1	50.0	54.3	68.3	66.1	58.9	44.5	34.8	23.8	44
Departure (degrees)	6.7	3.5	-0.2	-0.5	0.4	-3.9	2.7	2.5	4.0	-0.2	2.3	1.0	1.5
No.6 Uintah Basin													
Normal	16.7	24.0	36.3	46.8	56.2	65.3	72.2	69.8	60.2	48.3	34.0	20.5	45.8
1998	28.3	32.4	38.3	45.2	56.8	60.8	74.3	71.0	64.7	49.0	37.0	19.2	48.1
Departure (degrees)	11.6	8.4	2.0	-1.6	0.6	-4.5	2.1	1.2	4.5	0.7	3.0	-1.3	2.3
No.7 Southeast													
Normal	26.9	34.2	41.9	50.5	60.0	70.1	76.7	74.2	65.2	53.4	40.2	29.5	51.9
1998	34.2	35.7	43.0	48.7	60.6	67.8	79.8	77.3	69.0	53.3	41.5	30.9	53.5
Departure (degrees)	7.3	1.5	1.1	-1.8	0.6	-2.3	3.1	3.1	3.8	-0.1	1.3	1.4	1.6
STATE AVERAGES													
Normal	25.9	31.8	39.4	47.8	57.0	66.4	73.6	71.4	62.4	51.1	38.3	27.9	49.4
1998	33.6	34.4	40.3	46.2	56.4	62.2	75.6	73.7	65.3	50.3	40.1	28.1	50.5
Departure (degrees)	7.7	2.6	0.9	-1.6	-0.6	-4.2	2.0	2.3	2.9	-0.8	1.8	0.1	1.1

**Figure 1. Temperature Departure
from Normal, (degrees F), 1998**

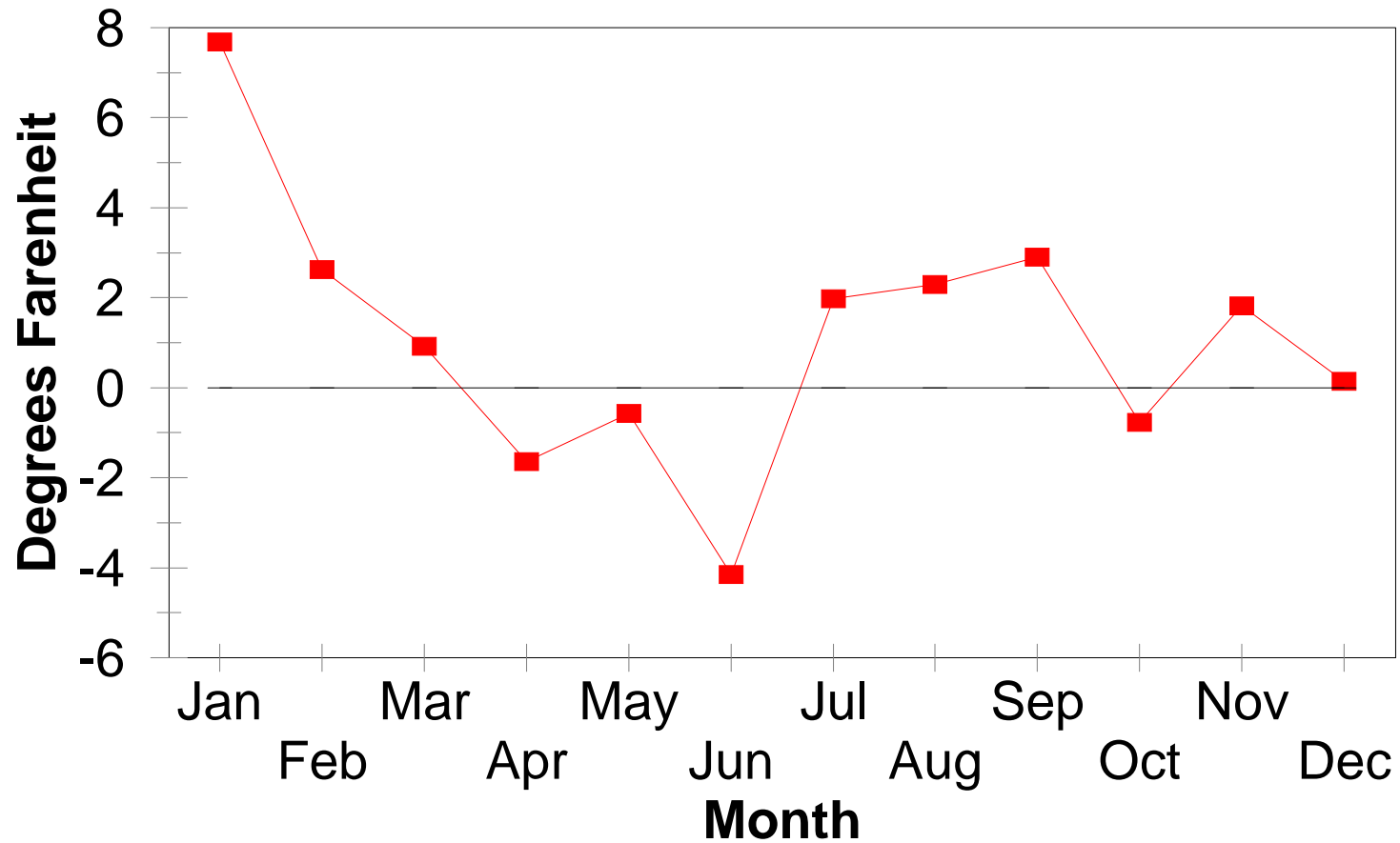
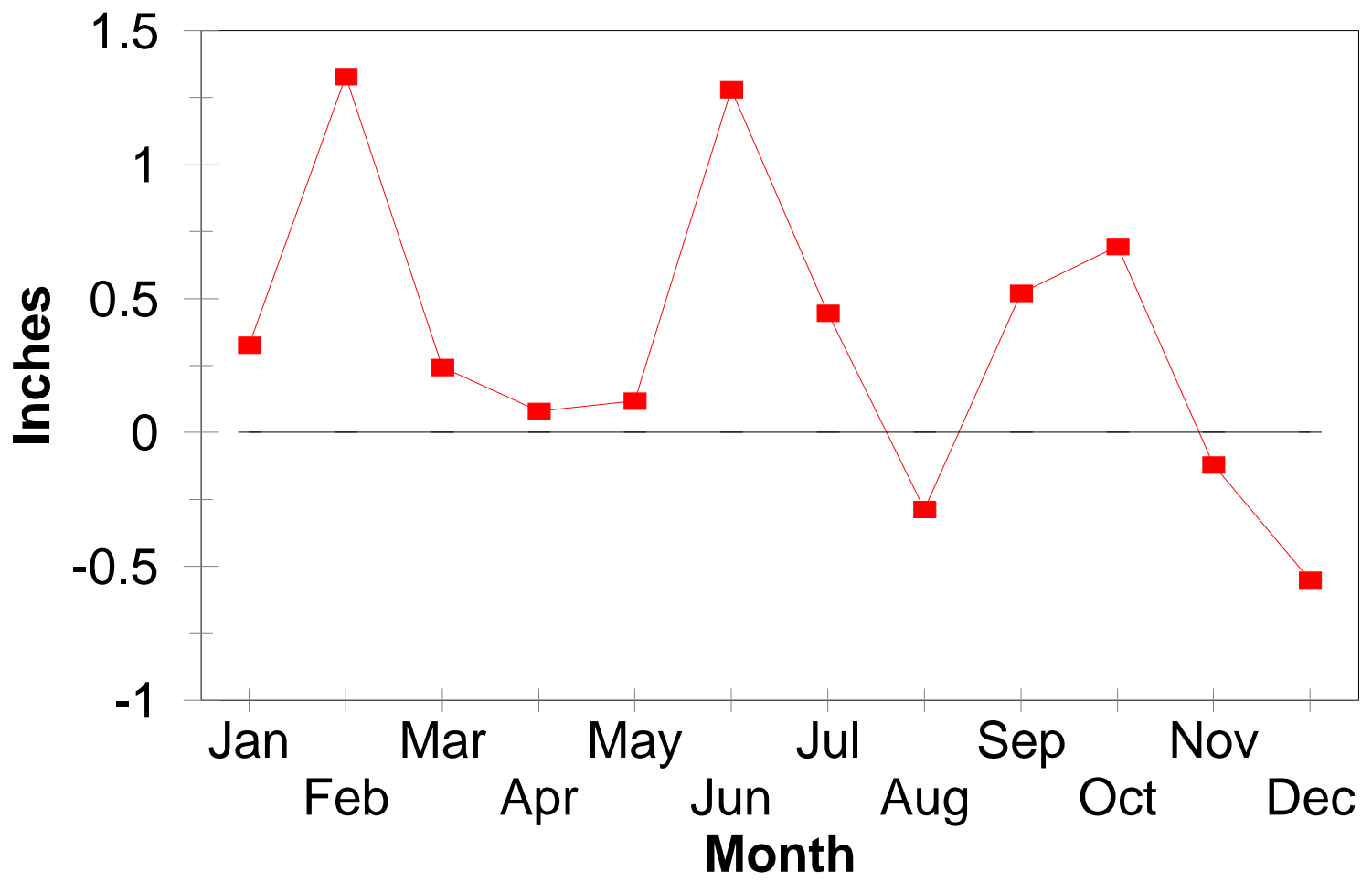


Table 2. Comparison of 1998 monthly average precipitation to the normal for each weather division and statewide.

Weather Division	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
No.1 Western													
Normal	0.53	0.58	0.85	0.89	0.98	0.71	0.73	0.83	0.79	0.81	0.68	0.58	8.96
1998	0.43	1.67	1.27	0.93	1.10	1.62	1.28	0.50	1.39	1.37	0.53	0.26	12.35
Departure (inches)	-0.10	1.09	0.42	0.04	0.12	0.91	0.55	-0.33	0.60	0.56	-0.15	-0.32	3.39
No.2 Dixie													
Normal	1.32	1.29	1.67	0.90	0.63	0.31	0.90	1.19	0.86	0.78	1.19	1.01	12.05
1998	1.27	3.87	1.76	1.67	0.70	0.75	1.75	0.51	3.00	1.78	1.04	0.01	18.11
Departure (inches)	-0.05	2.58	0.09	0.77	0.07	0.44	0.85	-0.68	2.14	1.00	-0.15	-1.00	6.06
No.3 North Central													
Normal	1.34	1.39	1.77	1.94	1.84	1.21	0.85	0.99	1.43	1.64	1.53	1.49	17.42
1998	2.34	3.82	2.23	2.29	2.81	3.87	1.05	0.93	1.11	1.83	1.14	0.94	24.36
Departure (inches)	1.00	2.43	0.46	0.35	0.97	2.66	0.20	-0.06	-0.32	0.19	-0.39	-0.55	6.94
No.4 South Central													
Normal	0.98	1.01	1.37	1.07	0.98	0.60	1.07	1.38	1.18	1.05	1.07	1.02	12.78
1998	1.19	2.50	1.74	1.29	0.66	1.58	1.78	0.90	2.69	2.18	1.07	0.61	18.19
Departure (inches)	0.21	1.49	0.37	0.22	-0.32	0.98	0.71	-0.48	1.51	1.13	0.00	-0.41	5.41
No.5 Northern Mountains													
Normal	1.83	1.78	1.93	1.95	1.68	1.19	1.04	1.19	1.52	1.69	1.83	1.92	19.55
1998	3.40	2.69	2.25	1.59	2.38	4.04	1.31	1.20	1.29	2.17	1.53	1.05	24.90
Departure (inches)	1.57	0.91	0.32	-0.36	0.70	2.85	0.27	0.01	-0.23	0.48	-0.30	-0.87	5.35
No.6 Uintah Basin													
Normal	0.48	0.46	0.63	0.73	0.86	0.71	0.71	0.73	0.88	0.96	0.56	0.60	8.31
1998	0.36	0.79	0.63	0.35	0.43	1.89	1.15	0.88	0.64	1.23	0.63	0.36	9.34
Departure (inches)	-0.12	0.33	0.00	-0.38	-0.43	1.18	0.44	0.15	-0.24	0.27	0.07	-0.24	1.03
No.7 Southeast													
Normal	0.68	0.59	0.81	0.66	0.67	0.46	0.97	1.05	0.98	1.13	0.80	0.73	9.53
1998	0.46	1.07	0.85	0.58	0.38	0.40	1.07	0.44	1.16	2.36	0.88	0.27	9.92
Departure (inches)	-0.22	0.48	0.04	-0.08	-0.29	-0.06	0.10	-0.61	0.18	1.23	0.08	-0.46	0.39
STATE AVERAGES													
Normal	1.02	1.01	1.29	1.16	1.09	0.74	0.90	1.05	1.09	1.15	1.09	1.05	12.66
1998	1.35	2.34	1.53	1.24	1.21	2.02	1.34	0.77	1.61	1.85	0.97	0.50	16.74
Departure (inches)	0.33	1.33	0.24	0.08	0.12	1.28	0.45	-0.29	0.52	0.69	-0.12	-0.55	4.08

Figure 2. Precipitation Departure
from Normal, (inches), 1998



APPENDIX B

LICENSE SALES

Small game and Combination license sales by type and cost are listed in Table 1. The number of licenses sold for all types, except juvenile resident small game license, increased slightly in 1998.

The proportion of Utah's population hunting small game is declining (Table 2). In the early 1970s about 9 percent of Utah's population was hunting small game. In 1998, only 2.9 percent of Utah's population hunted small game.

Table 3 identifies revenue generated to the 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 public services.

Table 1. Statewide small game license sales information, 1954-98.

Year	Adult Res.		Juv. Res.		Non Res.		Combination License	
	Small Game Issued	Small Game Cost	Small Game Issued	Small Game Cost	Small Game Issued	Small Game Cost	Issued	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	155,436	\$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
1991	23,276	\$12.00	5,626	\$6.00	1,212	\$40.00	79,165	\$35.00
1992	21,852	\$12.00	5,431	\$6.00	1,195	\$40.00	78,940	\$35.00
1993	20,899	\$12.00	4,887	\$6.00	1,150	\$40.00	78,030	\$25.00
1994	25,792	\$12.00	4,551	\$6.00	1,223	\$40.00	59,854	\$25.00
1995	24,219	\$12.00	4,403	\$6.00	1,379	\$40.00	66,607	\$25.00
1996	23,908	\$12.00	3,584	\$6.00	1,503	\$40.00	65,003	\$25.00
1997	22,335	\$12.00	3,546	\$6.00	1,476	\$40.00	62,936	\$25.00
1998	22,671	\$12.00	3,529	\$6.00	1,618	\$40.00	63,648	\$25.00

Table 2. Actual (1971-1998) proportion of Utah population hunting small game.

Year	Utah Population	Resident Small Game Hunters 1	Proportion Hunting Small Game
1971	1,101,000	93,399	8.5
1972	1,135,000	102,430	9.0
1973	1,169,000	106,868	9.1
1974	1,197,000	104,796	8.8
1975	1,234,000	100,702	8.2
1976	1,272,000	77,138	6.1
1977	1,316,000	78,652	6.0
1978	1,364,000	87,928	6.4
1979	1,416,000	93,016	6.6
1980	1,461,037	103,018	7.1
1981	1,524,830	96,104	6.3
1982	1,588,622	92,724	5.8
1983	1,652,415	86,396	5.2
1984	1,716,207	81,499	4.7
1985	1,780,000	88,498	5.0
1986a	1,665,000	87,442	5.3
1987a	1,678,000	79,485	4.7
1988	1,695,000	87,928	5.2
1989a	1,715,000	89,147	5.2
1990a	1,722,850	87,691	5.1
1991a	1,774,241	86,484	4.9
1992a	1,820,453	88,707	4.9
1993a	1,866,000	86,150	4.6
1994a	1,916,000	72,383	3.8
1995a	1,959,000	75,251	3.8
1996a	2,002,359	70,142	3.5
1997a	2,048,753	61,945	3.0
1998a	2,082,502	60,416	2.9

1 Resident Small Game Hunters = Number of Combination Licenses sold - number of Federal Duck Stamps sold, plus number of Resident Small Game Licenses sold, plus half of number of Juvenile Resident Small Game Licenses sold.

**a Utah Population Estimate Committee Report for July 1
(Governor's Office Planning and Budget)**

Table 3. Small game license sales and income, 1971-98 (JSG=juvenile small game, RSG=adult resident small game, CMB=combination license, NRSG=nonresident small game).

Year	License Fees				Number of Licenses Sold				No. Federal	Total Gross Revenues Attributed to Small Game (\$)				
	JSG	RSG	CMB	NRSG	JSG	RSG	CMB	NRSG	Duck Stamps Sold(3)	JSG(4)	RSG	CMB(2)	NRSG	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	4,075	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	39,567	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
1991	6.00	12.00	35.00	40.00	5,626	23,276	79,165	1,212	18,770	16,878	279,312	563,485	48,480	859,675
1992	6.00	12.00	35.00	40.00	5,431	21,852	78,940	1,195	14,801	16,293	262,224	598,417	47,800	924,734
1993	6.00	12.00	25.00	40.00	4,887	20,899	78,030	1,150	15,223	14,661	250,788	585,989	46,000	897,438
1994	6.00	12.00	25.00	40.00	4,551	25,792	59,854	1,223	15,539	13,653	309,504	413,459	48,920	785,536
1995	6.00	12.00	25.00	40.00	4,403	24,219	66,607	1,379	19,428	13,209	290,628	440,180	55,160	799,177
1996	6.00	12.00	25.00	40.00	3,584	23,908	65,003	1,503	21,403	10,752	286,896	552,412	60,120	910,180
1997	6.00	12.00	25.00	40.00	3,674	22,980	63,513	1,563	25,099	11,022	275,760	486,705	62,520	836,007
1998	6.00	12.00	25.00	40.00	3,529	22,671	63,648	1,618	27,668	10,587	272,052	455,867	64,720	803,226

1 Value does not include cougar, bear, limited entry and conservation wild turkey permits, habitat authorization and cooperative wildlife management unit fees or commercial hunting area licenses.

It does not include NRSG revenue--this is assumed to be primarily non-resident bear and cougar hunters.

2 Combination 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 sales 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 small game license fee or \$12.67 for 1997.

3 Total 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.

4 Half 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

Surveys

Regional and statewide summary of effort expended on upland game summer surveys, 1972-98 is found in Table 1.

Generally hours spent and miles driven on upland game surveys in Utah have declined dramatically since 1972. This is the result of competing uses of time for biologists and conservation officers. In addition, the restriction to a 40 hour work week by the Federal Fair Labor and Standards Act has further eroded survey effort. When effort and results have reached a lower critical sample size, surveys have not been conducted or little effort expended.

Table 1. Regional and statewide summary of effort expended on upland game summer inventory, 1972-98.

Species	REGION										STATE TOTALS		
	Northern		Central		Southern		Northeastern		Southeastern		Miles	Hours	
	Miles	Hours	Miles	Hours	Miles	Hours	Miles	Hours	Miles	Hours			
Pheasant	1972	469	--	963	--	752	--	535	--	297	--	3,016	--
	1973	322	--	691	--	740	--	488	--	230	--	2,471	--
	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	--
	1991	485	--	496	--	120	--	375	--	90	--	1,566	--
	1992	413	--	455	--	0	--	657	--	90	--	1,615	--
	1993	249	--	547	--	80	--	340	--	90	--	1,306	--
	1994	180	--	468	--	--	--	297	--	--	--	945	--
	1995	150	--	454	--	--	--	285	--	--	--	889	--
	1996	141	--	471.6	--	--	--	261.8	--	--	--	874.4	--
	1997	60	--	419.8	--	--	--	279.5	--	--	--	759.3	--
	1998	--	--	405.9	--	452	--	208.5	--	--	--	1,066.4	--
Chukar	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	412
	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	189
	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	2	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	863	121
	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
	1991	0	0	311	18	0	0	0	0	225	11	536	29
	1992	178	27	270	12	0	0	0	0	216	24	664	63
	1993	--	--	--	--	--	--	--	--	300	22	300	22
	1994	--	--	--	--	--	--	--	--	70	6	70	6
	1995	--	--	--	--	--	--	--	--	--	--	--	--
	1996	54	16.5	--	--	--	--	--	--	--	--	16.5	--
	1997	Aerial Survey in Central Region Only											
	1998	Aerial Survey in Central Region Only											

Table 1 (continued)

Species	REGION										STATE TOTALS		
	Northern		Central		Southern		Northeastern		Southeastern		Miles	Hours	
	Miles	Hours	Miles	Hours	Miles	Hours	Miles	Hours	Miles	Hours			
Sage Grouse													
1972	1,628	323	1,187	143	751	144	2,125	170	1,280	141	6,971	921	
1973	3,146	353	927	147	1,171	116	1,952	238	496	41	7,692	895	
1974	2,026	321	1,551	115	1,881	193	2,964	248	887	124	9,309	1,001	
1975	1,254	249	963	123	714	226	1,868	236	1,098	131	5,897	965	
1976	1,965	281	426	121	379	183	1,881	227	1,222	161	5,873	973	
1977	1,966	305	1,370	133	465	157	1,995	215	928	116	6,724	926	
1978	1,408	267	541	124	490	152	1,616	226	879	97	4,934	866	
1979	1,051	150	700	132	563	143	1,719	203	279	20	4,312	648	
1980	1,003	218	806	150	518	94	1,471	184	278	60	4,076	706	
1981	619	194	691	99	285	57	771	163	377	39	2,743	552	
1982	1,669	169	762	92	454	83	862	116	--	--	3,747	460	
1983	610	158	720	164	284	51	992	125	108	10	2,714	508	
1984	1,411	278	283	82	289	54	530	95	151	17	2,664	526	
1985	2,164	169	481	74	410	45	666	84	106	9	3,827	381	
1986	1,024	197	281	39	169	43	948	94	146	14	2,568	387	
1987	1,939	205	172	37	286	50	1,114	124	195	18	3,706	434	
1988	2,092	177	678	108	315	66	690	91	--	--	3,775	442	
1989	465	108	360	56	46	19	557	61	167	24	1,595	268	
1990	175	73	444	89	90	42	244	30	70	7	1,023	241	
1991	554	210	270	21	30	21	60	21	86	13	1,000	286	
1992	--	126	96	44	265	50	193	18	204	23	758	261	
1993	--	82	36	32	--	--	65	3	130	23	231	140	
1994	58	16	155	18	--	--	135	10	65	8	413	51	
1995	117	98	--	--	--	--	157	13	--	--	274	111	
1996	41	46	--	--	475	90	664	113	--	--	1,180	203	
1997	162	38	--	--	180	146	946	111	--	--	1,288	281	
1998	--	--	--	--	--	--	814	77	--	--	814	25	
Forest Grouse													
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	347	
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	357	
1991	--	178	536	54	30	2	0	0	--	2	566	236	
1992	362	104	167	52	0	0	10	5	105	20	644	181	
1993	290	34	--	28	--	--	41	3	243	45	574	110	
1994	--	--	--	--	--	--	--	10	--	--	35	16	
1995	--	--	--	--	--	--	25	7	--	--	25	7	
1996	--	--	30	2	--	--	20	4	--	--	50	6	
1997	46	10	--	--	--	--	12	8.5	--	--	58	18.5	
1998	--	--	--	--	--	--	15	1.5	--	--	15	1.5	

Table 1 (continued)

Species	REGION										STATE TOTALS		
	Northern		Central		Southern		Northeastern		Southeastern		Miles	Hours	
	Miles	Hours	Miles	Hours	Miles	Hours	Miles	Hours	Miles	Hours			
Wild Turkey													
1972	--	--	--	--	73	62	--	--	290	54	363	116	
1973	--	--	--	--	143	11	--	--	--	--	143	11	
1974	--	--	--	--	0	0	--	--	799	64	799	64	
1975	--	--	--	--	215	18	--	--	792	100	1,007	118	
1976	--	--	--	--	125	16	--	--	362	45	487	61	
1977	--	--	--	--	193	29	--	--	421	58	614	87	
1978	--	--	--	--	--	--	--	--	204	55	204	55	
1979	--	--	--	--	--	--	--	--	190	14	190	14	
1980	--	--	--	--	--	--	--	--	--	--	--	--	
1981	--	--	--	--	--	--	--	--	--	--	--	--	
1982	--	--	--	--	--	--	--	--	--	--	--	--	
1983	--	--	--	--	--	--	--	--	--	--	--	--	
1984	--	--	--	--	--	--	--	--	--	--	--	--	
1985	--	--	--	--	--	--	--	--	--	--	--	--	
1986	--	--	--	--	--	--	--	--	41	15	41	15	
1987	--	--	--	--	--	--	--	--	--	--	--	--	
1988	--	--	--	--	--	--	--	--	--	--	--	--	
1989	--	--	--	--	--	--	--	--	--	--	--	--	
1990	--	--	--	--	--	--	--	--	--	--	--	--	
1991	--	--	155	68	--	--	--	--	150	15	305	83	
1992	--	--	100	16	--	--	--	--	35	6	135	22	
1993	--	--	--	--	--	--	57	3	117	9	174	12	
1994	--	--	--	--	--	--	--	--	--	--	--	--	
1995	--	--	--	--	--	--	--	--	--	--	--	--	
1996	--	--	433	84	--	--	--	--	--	--	433	84	
1997	--	--	65	16	--	--	--	--	--	--	65	16	
1998	--	--	--	--	--	--	--	--	--	--	--	--	
Cottontail Rabbit													
1972	510	--	279	--	939	--	360	--	555	--	2,643	--	
1973	337	--	242	--	879	--	270	--	270	--	1,998	--	
1974	270	--	180	--	1,040	--	370	--	542	--	2,402	--	
1975	330	--	231	--	1,237	--	340	--	712	--	2,850	--	
1976	510	--	260	--	1,382	--	300	--	636	--	3,088	--	
1977	360	--	262	--	1,329	--	400	--	556	--	2,907	--	
1978	382	--	264	--	1,038	--	300	--	761	--	2,745	--	
1979	270	--	270	--	903	--	400	--	580	--	2,423	--	
1980	90	--	265	--	655	--	359	--	540	--	1,909	--	
1981	270	--	270	--	903	--	400	--	580	--	2,423	--	
1982	240	--	240	--	722	--	298	--	602	--	2,102	--	
1983	90	--	90	--	822	--	340	--	590	--	1,932	--	
1984	--	--	--	--	177	--	356	--	340	--	196	--	
1985	--	--	--	--	175	--	631	--	400	--	450	--	
1986	240	--	148	--	534	--	358	--	330	--	1,610	--	
1987	150	--	120	--	669	--	373	--	240	--	1,552	--	
1988	--	--	--	--	129	--	604	--	379	--	360	--	
1989	90	--	66	--	90	--	266	--	360	--	872	--	
1990	150	--	62	--	97	--	210	--	360	--	879	--	
1991	90	--	33	--	--	--	105	--	330	--	558	--	
1992	60	--	143	--	90	--	204	--	360	--	857	--	
1993	--	--	183	--	--	--	207	--	360	--	750	--	
1994	--	--	--	--	--	--	148	--	--	--	148	--	
1995	--	--	242	--	--	--	203	--	--	--	445	--	
1996	--	--	278	--	--	--	220	--	--	--	498	--	
1997	--	--	270	--	--	--	251	--	--	--	521	--	
1998	554	--	270	--	360	--	127	--	90	--	1,401	--	

APPENDIX D

Season dates, bag limits and areas open by upland game species, 1998.

SPECIES	SEASON DATES	AREAS OPEN	BAG LIMIT	POSSESSION LIMIT	FOOTNOTES
Pheasant	Oct. 31- Nov. 15, 1998	<p>g Statewide, except closed areas.</p> <p>g In Tooele County, the James Walter Fitzgerald WMA closes on November 15th. In Tooele County, the James Walter Fitzgerald WMA closes on Nov. 15.</p> <p>g In Tooele County, the James Walter Fitzgerald WMA will be closed on Saturday, Nov. 7 to general public hunting. A special youth upland game hunt will be conducted on the WMA on Nov. 7. The area will reopen to general public hunting on Nov. 8.</p> <p>g In Weber County, the Willard Bay WMA will be closed on Saturday, Nov. 7 to general public hunting. A special youth upland game hunt will be conducted on the WMA on Nov. 7. The area will reopen to general public hunting on Nov. 8.</p>	2	2	<p>g Males only may be harvested</p> <p>g Shooting begins at 8:00 a.m. on opening day.</p> <p>g Only in certain counties are state and federal lands open to 30 days of pheasant hunting. Check the proclamation carefully!</p> <p>*Please call Reggie Petersen at (435) 854-3978 for more information about the Box Elder County Cooperative Wildlife Management Unit.</p>
	Oct. 31- Nov. 6, 1998	<p>g In all of Utah County, except the Powell Slough and Goshen Warm Springs Wildlife Management Areas, the pheasant hunt closes on November 6.</p>	2	2	
	Oct. 31- Nov. 29, 1998	<p>g CAUTION: Not all counties are open for 30 day pheasant hunting. Only the following areas are open: All state and federal land in Carbon, Duchesne, Emery, Grand, Juab, Millard, San Juan, Sanpete, Sevier, Tooele and Uintah counties (including private land leased by the Division subject to restrictions and closures imposed by administering agencies).</p> <p>g The Box Elder County Cooperative Wildlife Management Unit as posted and marked.</p> <p>g The Powell Slough and Goshen Warm Springs Wildlife Management areas as posted and marked in Utah County.</p>	2	4	
Mourning Dove	Sept 1-Sept 30, 1998	<p>g Statewide, except closed areas.</p>	10	2	
Band-tailed Pigeon	Sept 1-Sept 30, 1998	<p>g Beaver, Garfield, Grand, Iron, Kane, Millard, Piute, San Juan, Sanpete, Sevier, Utah, Washington and Wayne counties.</p>	5	2	<p>g Band-tailed pigeon permit required.</p> <p>g Permits are available at all Division offices at no charge.</p>

Chukar Partridge	Sept 19-Nov 30, 1998	<ul style="list-style-type: none"> g Cache, Daggett, Davis, Iron, Millard, Morgan, Rich, Sanpete, Summit, Wasatch and Weber counties; g Those parts of Beaver, Iron, Juab, Millard, Salt Lake and Utah counties east of I-15; g That part of Box Elder County east of I-15; g That part of Sevier County north of I-70. 	5	2	<ul style="list-style-type: none"> g Antelope Island is closed to upland game hunting. <p>*Please call Reggie Petersen at (435) 854-3978 for more information about the Box Elder County Cooperative Wildlife Management Unit.</p>
	Sept 19-Dec 31, 1998	<ul style="list-style-type: none"> g That part of Box Elder County east of the Locomotive Springs-Snowville-Stone, Idaho Road and west of I-15. 	5	2	
	Sept 19 1998- Jan 31, 1999	<ul style="list-style-type: none"> g Carbon, Duchesne, Emery, Garfield, Grand, Kane, Piute, San Juan, Tooele, Uintah, Washington and Wayne counties; g Those parts of Beaver, Iron, Juab, Millard, Salt Lake and Utah counties west of I-15; g That part of Box Elder County west of the Locomotive Spring-Snowville-Stone, Idaho Road; g That part of Sevier County south of I-70; g The Box Elder County Cooperative Wildlife Management Unit as posted and marked. 	5	2	
Sage Grouse	Sept 19-Sept 27, 1998	<ul style="list-style-type: none"> g All of Grand County north of I-70. g That part of Box Elder County west of the Locomotive Springs-Snowville-Stone, Idaho Road; g All of Daggett County except the area beginning on the east shore of Flaming Gorge Reservoir and the Utah/Wyoming state line; then east on this state line to the Utah/Colorado state line; south on this state line to the Green River; northwest on the Green River and the east shore of Flaming Gorge Reservoir to the Utah/Wyoming state line; g All of Duchesne County north and east of the Duchesne River; g All of Uintah County Except the area beginning at US-40 and the Green River in Jensen; then east on this highway to the Utah/Colorado state line; south on this state line to the White River; west on this river to the Green River; northeast on this river to US-40. 	1	2	
	Sept 19-Sept 25, 1998	<ul style="list-style-type: none"> g Rich County; g Parker Mountain - beginning at the junction of Highway US-89 and I-70 near Sigurd; south on US-89 to SR-24; south on this highway to SR-62; south on this highway to SR-22; south on this highway to Antimony; south on the John's Valley Road through Widstoe to Bryce Junction and SR-12; east and north on this highway to SR-24; west on this highway to SR-72 at Loa; north on this highway to I-70; west on this highway to US-89. 	1	2	
Forest Grouse (blue and ruffed)	Sept 12-Nov 30, 1998	<ul style="list-style-type: none"> g Statewide except closed areas. 	4	2	<ul style="list-style-type: none"> g Limits singly or in aggregate.
Quail (California & Gambel's)	Oct. 31- Nov. 15, 1998	<ul style="list-style-type: none"> g Box Elder, Carbon, Davis, Grand, Juab, Kane, Millard, Piute, Salt Lake, San Juan, Sevier, Tooele, Utah and Weber counties; g Daggett County is closed. 	5	2	<ul style="list-style-type: none"> g Hunting begins at 8:00 a.m. on opening day.
	Oct. 31-Dec. 15, 1998	<ul style="list-style-type: none"> g Duchesne, Uintah and Washington counties 	5	2	

Hungarian Partridge	Sept 19-Nov 30, 1998	<ul style="list-style-type: none"> g Cache, Davis, Morgan, Rich, Summit and Weber counties; g That part of Box Elder County east of I-15; g That part of Juab County east of I-15. 	5	2	
	Sept 19-Dec 31, 1998	<ul style="list-style-type: none"> g That part of Box Elder County east of the Locomotive Springs-Snowville-Stone, Idaho Road and west of I-15. 	5	2	
	Sept 19, 1998-Jan 31, 1999	<ul style="list-style-type: none"> g Tooele County; g That part of Box Elder County west of the Locomotive Springs-Snowville-Stone, Idaho Road; g That part of Juab County west of I-15. g The Box Elder County Cooperative Wildlife Management Unit as posted and marked. 	5	2	
Sharp-tailed Grouse	Oct. 31-Nov. 6, 1998	<ul style="list-style-type: none"> g That part of Box elder County beginning at the junction of I-15 and SR-83; then west on SR-83 to Lampo Junction; west along the Union Pacific/Central Pacific Railroad Grade to Locomotive Springs; north on the Locomotive Springs-Snowville-Stone, Idaho Road to the Utah-Idaho border; east along this border to I-15; south on I-15 to SR-83. 	<u>Only 2 birds of either sex may be taken during the entire season.</u>		<ul style="list-style-type: none"> g Sharp-tailed grouse permit required. g 663 two-bird permits will be available.
White-tailed Ptarmigan	Sept. 5-Oct. 18, 1998	<ul style="list-style-type: none"> g Daggett, Duchesne, Summit and Uintah counties. 	4	2	<ul style="list-style-type: none"> g Ptarmigan permit required. g Permits are available at all Division offices at no charge.
Cottontail Rabbit	Sept 20, 1997-Feb 28, 1998	<ul style="list-style-type: none"> g Statewide, except closed areas. 	10	2	
Snowshoe Hare	Sept 20, 1997-Feb 28, 1998	<ul style="list-style-type: none"> g Statewide, except closed areas. 	5	2	
Jackrabbit (white-tailed & black-tailed) g Jackrabbits are not protected in Utah. They are not under Wildlife Board authority and may be hunted without a license, year-round.					

1998 WILD TURKEY SEASON DATES, AREAS OPEN & SEASON LIMITS

RIO GRANDE

HUNT NAME	HUNT NUMBER	SEASON DATES	SEASON LIMIT	AREAS OPEN
BEAVER (early) BEAVER (late)	101a 101b	Apr 11-Apr 24, 1998 Apr 25-May 17, 1998	One Male One Male	Boundary begins at the junction of I-70 and SR-89 to the Garfield-Piute county line; west along this county line to the Beaver-Iron county line; west along this county line to I-15; north on I-15 to I-70; east on I-70 to SR-89.
DUCHESNE COUNTY (early)* DUCHESNE COUNTY (late)*	102a 102b	Apr 11-Apr 24, 1998 Apr 25-May 17, 1998	One Male One Male	All of Duchesne County, except the Strawberry River drainage above Starvation Reservoir, which is closed.
WEST EMERY COUNTY*	103	Apr 11-May 17, 1998	One Male	All of Emery County west of US-6 and north of I-70.
FILLMORE	104	Apr 11-May 17, 1998	One Male	Boundary begins at the junction of I-15 and I-70 at Cover Fort; then north on I-15 to US-50 north and west on this highway to SR-125; east and north on this highway to SR-132 at Leamington; east along this highway to I-15 at Nephi; south on this highway to US-50 at Scipio; south and east on this highway to I-70 at Salina; south and west on this highway to I-15 at Cove Fort.
COLORADO RIVER (early)* COLORADO RIVER (late)*	105a 105b	Apr 11-Apr 24, 1998 Apr 25-May 17, 1998	One male One male	Grand County - one mile either side of the Colorado and Dolores rivers from the Colorado state line to Dewey bridge.
GREEN RIVER*	106	Apr 11-May 17, 1998	One Male	Emery and Grand counties - two miles either side of the Green River from the confluence of the Price River to Ten Mile Canyon.
MILFORD <u>THIS HUNTING UNIT IS</u> <u>CLOSED DUE TO SIGNIFICANT</u> <u>WILDFIRES IN SUMMER 1996</u>	107		One Male	Boundary begins at Milford; then north on SR-257 to Negro Mag Wash; east on Negro Mag Wash to Cunningham Wash; south on Cunningham Wash to Wildcat Creek; south on Wildcat Creek to Indian Creek; south on Indian Creek to SR-21; west and north on SR-21 to Milford.
MONROE MOUNTAIN	108	Apr 11-May 17, 1998	One Male	Piute and Sevier counties - boundary begins at Junction and US-89; north on US-89 to Sigurd; south on SR-24 to SR-62; south on SR-62 to the junction of SR-62 and SR-22; west on SR-62 to Junction.
MORGAN-SOUTH RICH*	109	Apr 18-May 17, 1998	One Male	Morgan, Rich, Summit and Weber counties - boundary begins at the junction of I-84 and I-80 near Echo; then northeasterly on I-80 to the Utah-Wyoming state line; north along this state line to SR-16; north on SR-16 to SR-39 near Woodruff; west on SR-39 to SR-167 (Trappers Loop Road); south on SR-167 to SR-30 at Mountain Green; west on SR-30 to I-84; east on I-84 to I-80.
OGDEN	110	Apr 18-May 17, 1998	One Male	Weber, Box Elder Cache, and Morgan counties - beginning at Hyrum; then east on SR-101 to the Ant Flat Road (at Hardware Ranch); south on this road to SR-39; west and south on SR-39 to SR-167 (the new Trappers Loop Road); south on this highway to I-84; west on I-84 to I-15; north on I-15 to exit 364 and US-91; east and north on US-91 to SR-101; east on this highway to Hyrum.
PINE VALLEY* (early) PINE VALLEY* (late)	111a 111b	Apr 11-Apr 24, 1998 Apr 25-May 17, 1998	One Male One Male	Boundary begins at the junction of I-15 and SR-56; then west on SR-56 to SR-18; then south on SR-18 to I-15; then north on I-15 to SR-56.

SAN JUAN (early) SAN JUAN (late)	112a 112b	Apr 25-May 5, 1998 May 9-May 31, 1998	One Male One Male	Boundary begins at Monticello; then east on US-666 to the Utah-Colorado state line; south on this line to the Navajo Indian Reservation boundary; west on this boundary to South Cottonwood creek; north along this creek and through Allen, Chippean, Deep and Mule canyons to the causeway; north from the causeway through Trough Canyon to North Cottonwood Creek; north on this creek to SR-211; east on this highway to US-191 south on this highway to Monticello.
UINTAH COUNTY (early)* UINTAH COUNTY (late)*	113a 113b	Apr 11-Apr 24, 1998 Apr 25-May 17, 1998	One Male One Male	All of Uintah County except that portion south of the White River and east of the Green River below the White River confluence.
UTAH COUNTY (NORTH) (early) UTAH COUNTY (NORTH) (late)	114a 114b	Apr 4-Apr 17, 1998 Apr 18-May 10, 1998	One Male One Male	That part of Utah County east of I-15 and north of US-6.
UTAH COUNTY (SOUTH)	115	Apr 25-May 10, 1998	One Male	That part of Utah County east of I-15 and south of US-6.
WASATCH COUNTY	116	Apr 25-May 10, 1998	One Male	All of Wasatch County
WEST PINE VALLEY	117	Apr 11-May 17, 1998	One Male	Iron and Washington counties - boundary begins at St. George and I-15; south on I-15 to the Arizona border; west on the Arizona border to the Nevada border; north on the Nevada border to SR-56; east on SR-56 to Beryl Junction and SR-18; south on SR-18 to St. George.

***HUNTS COMPRISED OF ALL OR LARGELY PRIVATE PROPERTY. BEFORE APPLYING FOR THE HUNT, HUNTERS SHOULD OBTAIN WRITTEN PERMISSION FROM THE LANDOWNER TO ACCESS PRIVATE PROPERTY.**

MERRIAM'S

HUNT NAME	HUNT NUMBER	SEASON DATES	SEASON LIMIT	AREAS OPEN
BOULDER MOUNTAIN (early)	201a 201b	Apr 25-May 5, 1998 May 9-May 31,1998	One Male One Male	Boundary begins at the junction of SR-62, SR-69 and SR-89 near Kingston; then south on SR-89 to the Pink Cliffs Road between Glendale and Cannonville; then east on the Pink Cliffs Road to SR-12; then east and northeast on SR-12 to the Burr Trail Road; then east on the Burr Trail Road to the Capitol Reef National Park boundary; then north along the park boundary to SR-24; then west on SR-24 to SR-62; then south on SR-62 to SR-89.
KOLOB*	202	Apr 25-May 31, 1998	One Male	Area includes everything within the following description except for Zion National Park land; boundary beings at Kannarville; east on the Kannara Mountain road to the summit and the head of Crystal Creek; south on Crystal Creek to Deep Creek; south on Deep Creek to SR-9; west on SR-9 to SR-17; west on SR-17 to I-15; north on I-15 to the Kannarville exit; north on SR-91 to Kannarville.
LASAL (early) LASAL (late)	203a 203b	Apr 25-May 5, 1998 May 9-May 31, 1998	One Male One Male	Boundary begins at the junction of SR-128 and US-191; south on this highway to SR-46; east on this highway to the Lisbon Valley Road; southeast on this road to the Island Mesa Road; east on this road to the Utah-Colorado state line; north on this state line to a point one mile south of the Dolores River; west on a line one mile south of the Dolores River to SR-128; southwest on SR-128 to US-191.
ZION (early) ZION (late)	204a 204b	Apr 25-May 5, 1998 May 9-May 31, 1998	One Male One Male	Boundary beings at Kannarville; east on the Kannara Mountain Road to the summit and the head of Crystal Creek; then south on Crystal Creek to Deep Creek; south on Deep Creek to the Zion National Park boundary; east on the park boundary to SR-9; east on SR-9 to SR-89; north on SR-9 to SR-20; west on SR-20 to I-15; south on I-15 to Cedar City; south on SR-91 to Kannrarville.
*HUNTS COMPRISED OF ALL OR LARGELY PRIVATE PROPERTY. BEFORE APPLYING FOR THE HUNT, HUNTERS SHOULD OBTAIN WRITTEN PERMISSION FROM THE LANDOWNER TO ACCESS PRIVATE PROPERTY.				

APPENDIX E. Summary of upland game harvest questionnaire returns, 1962-98.

Year	Questionnaires	Total		Useable		Licenses Who
	Mailed	Returns	Percent	Returns	Percent	Did Not Hunt
1962	10,068	4,122	40.9	3,433	34.1	22.0%
1963	11,058	5,062	45.8	4,325	39.1	21.0%
1964	10,718	4,840	45.2	4,180	39.0	23.0%
1965	11,917	6,232	52.3	--	0.0	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	--	0.0	--
1972	15,272	--	--	6,399	41.9	--
1973	17,572	--	--	7,999	45.5	--
1974	27,379	9,157	33.4	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	45.7	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	53.7	6,324	52.6	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	39.6	36.7%
1990	12,236	5,264	43.0	5,175	42.3	39.1%
1991	15,054	6,419	42.6	6,212	41.3	42.7%
1992	16,472	6,207	37.7	5,977	36.3	45.0%
1993	16,534	6,293	38.1	5,442	32.9	42.6%
1994	15,526	5,433	35.0	5,131	33.0	45.1%
1995	14,777	4,951	33.5	4,866	32.9	41.7%
1996	14,088	4,090	29.0	4,028	28.6	36.2%
1997	13,689	4,488	32.8	4,338	31.7	40.0%
1998	14,497	5,536	38.2	3,862	26.6	43.5%