

ALABAMA HUNTING SURVEY

2010 - 2011 SEASON

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STUDY LEADER



Federal Assistance Project

funded by your purchase of
hunting licenses and equipment.

ALABAMA DIVISION OF WILDLIFE AND FRESHWATER
FISHERIES

WILDLIFE RESTORATION PROGRAM

Grant Number W-35, Study 6.

August, 2011

Alabama Hunting Survey, 2010-2011 Season

There is a great demand for outdoor recreation in Alabama. Hunting makes up a significant portion of that demand and contributes greatly to the state's economy. Hunting seasons are scheduled each year for a wide variety of game animals. In order to make decisions to manage those animals it is necessary to gather as much information as practical concerning hunting activities.

Each year since 1963 the Alabama Division of Wildlife and Freshwater Fisheries has conducted a sample survey of licensed Alabama hunters to obtain information in the form of estimates for the number of hunters, man-days of hunting, and harvest levels for each of the game species. This year, survey forms were mailed to a stratified random sample of 8,559 drawn from the 255,771 Alabama hunting licensees. Of the 8,559 survey forms mailed, 656 were returned undeliverable. A total of 3,668 completed survey forms were returned (42.9%) (46.4% of those delivered). A sample is used because it is not practical to contact all hunters each year. Because of this and other factors it is impossible to determine values that would be entirely free of error.

The estimates in this survey represent hunting by licensed hunters only, and do not include other legal hunting by hunters (i.e. those hunters not required to hold a license due to their age or because they hunt on their own property), nor do the estimates include illegal hunting without a license. Table 2 of this report indicates that 220,590 licensed individuals actually hunted in Alabama during the 2010-2011 season. The most recent National Survey of Fishing, Hunting and Wildlife Associated Recreation taken during 2006 indicated 397,000 people (licensed and unlicensed) hunted in Alabama. Of the 397,000 hunters, 256,000 were licensed for that year. Comparison of those figures indicates that hunters who are not required to buy licenses contribute significantly to the overall hunting effort and harvest of game animals in this state.

In reviewing the current survey, it is important to recognize that a degree of uncertainty must be associated with each of the estimates. This uncertainty is due to the estimates being based on a sample instead of a complete census of all licensed hunters. Consequently, each estimate for a hunting activity is likely to represent a value which deviates to some degree from the actual

amount of hunting. A measure of the degree of the uncertainty or “sampling error” associated with each estimate can be determined by analysis of the variability in the survey data. The statistical term for this measure is the “standard error” of the estimate. Standard errors tend to vary with the magnitude of their estimates and are difficult to use for general comparison of the level of uncertainty among estimates. A better index for judging the level of uncertainty is the relative standard error, i.e., the ratio of the standard error over the estimate. Relative standard errors, expressed on a percent basis, are provided in the tables along with the estimates and standard errors for this survey. An estimate with a low percent standard error is more reliable and has less uncertainty associated with it. Estimates with a percentage standard error less than 15% are reliable enough to be useful in making management decisions.

It is normal for the estimates to fluctuate considerably from one year to the next. Therefore, conclusions based on a single annual survey regarding the success of a particular season relative to another season may be misleading. However, comparing annual survey estimates over a number of years can be very useful for detecting trends that reflect real changes in hunting activity and harvest levels for a particular species.

The basic methods used to conduct and analyze the Alabama Hunting Survey were developed in the 1960's by statisticians with North Carolina State University. These statisticians specialized in research and surveys related to fish and wildlife. Minor changes were made periodically to keep the survey methods current. Beginning with the survey for the 2002-2003 hunting season, the data has been analyzed by personnel with Auburn University's School of Forestry and Wildlife Sciences. The methods now used to analyze data are similar; however, results have varied to the extent that direct comparisons to the results from hunting seasons prior to 2002-2003 may not be valid. Additionally, methods of analyzing the data were again adjusted by personnel with Auburn University's School of Forestry and Wildlife Sciences during the 2005-2006 survey in order to address issues identified by the Division of Wildlife and Freshwater Fisheries while working with surveys from 2003-2005. Those adjustments have resulted in more variation within the results that will be noticeable when examining trends in the estimates over the years. Methods for 2010-2011 were consistent with methods used during the 2009-2010

season. However, during the 2010-11 study there were only two mailings of survey forms instead of three. This was done to reduce cost and time involved in publishing the report.

Personnel at Auburn University re-analyzed deer and turkey harvest data for the 2002-2003 through 2008-2009 hunting seasons. This was done so that the methods used would be consistent from the 2002-03 to the 2010-11 season and to remove the variation within the results from previous years. The results of this and all past surveys are statistically valid and of more value in defining trends over multiple hunting seasons rather than comparison of one hunting season to another.

The Alabama Hunting Survey estimates are by no means the only source of information concerning wildlife management decisions, hunting, and game animal populations in this state. We gain much information from other research and surveys, public comments, nuisance wildlife complaints, crop damage reports, road kills, occurrence of disease and parasite problems, law enforcement reports, historical information, etc. All available information is considered in order to develop management programs that meet the needs of Alabama's wildlife resources and the people who enjoy them.

We extend our sincere appreciation to all hunters who participated in the Alabama Hunting Survey for the 2010-2011 season and in the surveys for earlier years.

This study was a contribution of the Alabama Division of Wildlife and Freshwater Fisheries supported in part by funding from the Federal Assistance in Wildlife Restoration Program, Project W-35, Study 6.

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Table 1. Results of the Alabama Hunting Survey for the 2010-2011 Season

Species	<u>Number of Hunters</u>			<u>Man-Days of Hunting</u>			<u>Number Harvested</u>		
	Estimate	Standard Error	Standard Error (%)	Estimate	Standard Error	Standard Error (%)	Estimate	Standard Error	Standard Error (%)
Deer ¹									
Gun ²	188,542	1,781	0.9	3,436,940	84,302	2.5	284,603	10,335	3.6
Archery ²	72,487	2,619	3.6	807,587	46,057	5.7	45,363	3,880	8.6
Muzzleloader ²	23,631	1,705	7.2	121,163	14,131	11.6	7,692	1,386	18.0
Combined	197,105	1,510	0.8	4,366,689	106,422	2.4	337,658	11,559	3.4
Turkey ¹									
Spring ³	59,696	2,453	4.1	536,966	30,979	5.8	46,357	3,857	8.3
Fall ³	2,932	648	22.1	17,485	4,753	27.2	1,074	538	50.1
Combined	61,091	2,470	4.0	554,451	31,870	5.7	47,431	3,893	8.2
Dove									
First Season	57,607	2,465	4.3	182,906	13,088	7.2	1,184,143	86,051	7.3
Remaining Seasons	16,561	1,501	9.1	71,249	8,606	12.1	465,312	71,877	15.5
Combined	59,547	2,490	4.2	254,155	19,267	7.6	1,649,455	145,633	8.8
Quail	8,711	1,039	11.9	45,365	8,422	18.6	230,317	43,058	18.7
Squirrel	37,133	2,138	5.8	257,574	24,532	9.5	488,260	61,092	12.5
Rabbit	17,816	1,568	8.8	112,529	17,822	15.8	109,455	21,241	19.4
Raccoon	8,920	1,171	13.1	113,297	22,711	20.1	79,485	26,487	33.3
Opossum	2,006	563	28.1	14,242	5,248	36.9	15,885	5,892	37.1
Fox	998	365	36.6	9,871	4,499	45.6	2,093	1,153	55.1
Coyote	14,921	1,409	9.4	135,969	22,365	16.5	45,134	6,343	14.1
Bobcat	4,754	872	18.3	41,663	11,937	28.7	8,634	1,519	17.6
Duck	19,881	1,583	8.0	189,336	22,717	12.0	347,608	52,687	15.2
Goose	4,567	787	17.2	22,976	4,803	20.9	16,336	4,884	29.9
Coot	803	315	39.2	5,562	2,661	47.9	9,302	4,949	53.2
Snipe	300	187	62.5	451	287	63.5	486	241	50.0
Woodcock	625	311	50.0	8,859	6,012	67.9	1,899	1,505	79.2
Feral Hogs	25,038	1,755	7.0	303,648	51,270	16.9	98,809	18,461	18.7

¹ Estimates for hunters in separate seasons (gun, archery and muzzleloader deer, spring and fall turkey, 1st and remaining dove) do not sum to the combined estimate because each includes hunters participating in multiple seasons.

² Gun Deer Harvest – 46.6% Bucks / 53.4% Does. Archery Deer Harvest – 20.5% Bucks / 79.5% Does. Muzzleloader Deer Harvest – 41.4% Bucks / 58.6% Does. Combined Deer Harvest – 43.0% Bucks / 57.0% Does.

³ Spring Turkey Harvest – 89.4% Gobblers / 10.6% Jakes. Fall Harvest – 80.3% Gobblers / 19.7% Jakes. Combined Harvest – 89.2% Gobblers / 10.8% Jakes.

Table 2. Results of Miscellaneous Questions Included on the Alabama Hunting Survey for the 2010-2011 Season

Questions	Estimated Number of Hunters	Standard Error	Percent Standard Error (%)	Percent of License Buyers (%)	Percent of Hunters (%)
Hunted Any Game	220,590	595	0.27	86.25 ^a	
Land primarily hunted on was owned	41,551	2,185	5.26		18.84 ^b
Land primarily hunted on was friends/family	91,663	2,845	3.10		41.55 ^b
Land primarily hunted on was leased	91,066	2,723	2.99		41.28 ^b
Land primarily hunted on was public	28,289	1,912	6.76		12.82 ^b

^a Based on total license sales (255,771).

^b Based on the estimate of hunters who hunted any game (220,590). Some hunters indicated they hunted primarily on more than one type of land.

ALABAMA DEER HARVEST ESTIMATES
COMBINED GUN, ARCHERY, AND MUZZLELOADER

Season	Harvest	Bucks	% Bucks	Does	% Does
1984-85	237,000	173,000	73	64,000	27
1985-86	280,000	210,000	75	70,000	25
1986-87	300,000	228,000	76	72,000	24
1987-88	323,000	242,000	75	81,000	25
1988-89	275,000	201,000	73	74,000	27
1989-90	242,000	179,000	74	63,000	26
1990-91	294,000	206,000	70	88,000	30
1991-92	295,000	201,000	68	94,000	32
1992-93	293,000	196,000	67	97,000	33
1993-94	350,000	238,000	68	112,000	32
1994-95	331,000	228,000	69	103,000	31
1995-96	398,000	259,000	65	139,000	35
1996-97	367,000	253,000	69	114,000	31
1997-98	423,000	267,000	63	156,000	37
1998-99	390,000	222,000	57	168,000	43
1999-00	416,000	228,000	55	188,000	45
2000-01	478,000	234,000	49	244,000	51
2001-02	411,000	206,000	50	205,000	50
2002-03	410,000	208,000	51	202,000	49
2003-04	478,000	221,000	46	257,000	54
2004-05	499,000	241,000	48	258,000	52
2005-06	461,000	218,000	47	243,000	53
2006-07	436,000	215,000	49	221,000	51
2007-08	342,000	142,000	42	200,000	58
2008-09	356,000	153,000	43	203,000	57
2009-10	289,000	128,000	44	161,000	56
2010-11	337,000	145,000	43	192,000	57

Harvest estimates rounded to the nearest 1,000

Percentages rounded to the nearest whole number

Beginning with the 2002-2003 report, statistical analysis for the table above and the tables that follow was conducted by Auburn University. Differences in the methodology used for analysis of the data after 2001-2002 has resulted in variations in the survey results as compared to previous years.

ALABAMA HUNTING SURVEY ESTIMATES
DEER - GUN

Year	Hunters	Man-Days	Average Man-days	Harvest	Man-Days Per Harvest	Harvest Per Hunter
1986-87	213,471	3,167,030	14.8	288,487	11.7	1.4
1987-88	219,280	3,259,690	14.9	309,517	10.5	1.4
1988-89	191,862	2,891,790	15.1	257,734	11.2	1.3
1989-90	182,080	2,663,680	14.6	225,077	11.8	1.2
1990-91	193,600	2,997,000	15.5	263,100	11.4	1.4
1991-92	199,700	2,998,000	15.0	269,500	11.1	1.3
1992-93	203,300	3,189,100	15.7	261,500	12.2	1.3
1993-94	204,000	3,421,300	16.8	305,300	11.2	1.5
1994-95	203,700	3,310,900	16.3	290,600	11.4	1.4
1995-96	223,700	3,564,100	15.9	353,000	10.1	1.6
1996-97	217,400	3,288,400	15.1	334,200	9.8	1.5
1997-98	212,400	3,357,500	15.8	367,900	9.1	1.7
1998-99	204,800	3,190,700	15.6	349,000	9.1	1.7
1999-00	215,300	3,378,600	15.7	368,500	9.2	1.7
2000-01	213,200	3,571,400	16.7	435,100	8.2	2.0
2001-02	210,900	3,359,900	15.9	376,200	8.9	1.8
2002-03	184,100	3,247,200	17.6	367,500	8.8	2.0
2003-04	205,600	3,950,800	19.2	432,700	9.1	2.1
2004-05	230,100	4,004,100	17.4	444,300	9.0	1.9
2005-06	203,700	3,636,000	17.8	413,200	8.8	2.0
2006-07	201,800	3,398,700	16.8	377,600	9.0	1.9
2007-08	200,300	3,409,900	17.0	296,100	11.5	1.5
2008-09	194,200	3,436,500	17.7	296,900	11.6	1.5
2009-10	188,100	3,144,100	16.7	242,900	12.9	1.3
2010-11	188,500	3,436,900	18.2	284,600	12.1	1.5

Muzzleloader hunting data was included in this table prior to 2006-07. Beginning with the 2006-07 survey muzzleloader hunting data is presented in a separate table and not included in this table.

ALABAMA HUNTING SURVEY ESTIMATES
DEER - ARCHERY

Year	Hunters	Man-Days	Average Man-Days	Harvest	Man-Days Per Harvest	Harvest Per Hunter
1986-87	37,426	345,619	9.2	17,653	19.6	0.5
1987-88	42,023	336,770	8.0	15,683	21.5	0.4
1988-89	44,259	416,278	9.4	18,854	22.1	0.4
1989-90	40,232	391,557	9.7	20,798	18.8	0.5
1990-91	53,200	552,200	10.4	31,300	17.6	0.6
1991-92	58,900	619,100	10.5	25,500	24.3	0.4
1992-93	61,500	660,300	10.7	31,600	20.9	0.5
1993-94	66,300	762,900	11.5	45,200	16.9	0.7
1994-95	58,900	687,900	11.7	40,400	17.0	0.7
1995-96	70,900	740,600	10.4	45,100	16.4	0.6
1996-97	61,100	528,400	8.6	32,600	16.2	0.5
1997-98	64,300	620,600	9.6	55,500	11.2	0.9
1998-99	59,100	640,000	10.8	41,300	15.5	0.7
1999-00	69,600	741,500	10.7	47,200	15.7	0.7
2000-01	65,700	596,200	9.1	43,600	13.7	0.7
2001-02	55,400	540,700	9.9	34,500	15.7	0.6
2002-03	57,600	670,300	11.6	42,800	15.7	0.7
2003-04	65,700	770,500	11.7	45,800	16.8	0.7
2004-05	80,400	907,000	11.3	54,500	16.6	0.7
2005-06	64,400	747,000	11.6	47,600	15.7	0.7
2006-07	67,700	772,900	11.4	46,700	16.6	0.7
2007-08	69,600	821,900	11.8	38,000	21.6	0.5
2008-09	76,300	880,900	11.5	49,600	17.8	0.7
2009-10	66,500	736,700	11.1	36,400	20.2	0.5
2010-11	72,500	807,600	11.1	45,400	17.8	0.6

ALABAMA HUNTING SURVEY ESTIMATES
DEER - MUZZLELOADER

Year	Hunters	Man-Days	Average Man-Days	Harvest	Man-Days Per Harvest	Harvest Per Hunter
2006-07	24,200	129,500	5.4	11,700	11.1	0.5
2007-08	23,400	115,800	4.9	7,800	14.8	0.3
2008-09	24,100	128,600	5.3	9,900	13.0	0.4
2009-10	25,400	126,300	5.0	9,800	12.9	0.4
2010-11	23,600	121,200	5.1	7,700	15.7	0.3

ALABAMA HUNTING SURVEY ESTIMATES
DEER - GUN, ARCHERY AND MUZZLELOADER COMBINED

Year	Hunters	Man-Days	Average Man-Days	Harvest	Man-Days Per Harvest	Harvest Per Hunter
1963-67	106,020	688,890	6.4	48,884	14.0	0.5
1968-69	115,368	825,917	7.2	63,674	13.0	0.6
1969-70	148,306	1,213,630	8.2	74,239	16.3	0.5
1970-71	146,952	1,188,500	8.1	63,502	18.7	0.4
1971-72	152,753	1,288,980	8.4	80,184	16.1	0.5
1972-73	160,280	1,337,769	8.3	82,555	16.2	0.5
1973-74	172,998	1,613,010	9.3	121,953	13.2	0.7
1974-75	196,406	2,006,080	10.2	120,727	16.6	0.6
1975-76	210,556	2,122,670	10.1	125,625	16.9	0.6
1976-77	206,370	2,175,510	10.5	144,155	15.1	0.7
1977-78	214,364	2,338,130	10.9	147,113	15.9	0.7
1978-79	215,955	2,489,310	11.5	152,733	16.3	0.7
1979-80	211,309	2,439,100	11.5	140,685	17.3	0.7
1980-81	208,838	2,671,280	12.8	130,532	20.5	0.6
1981-82	209,871	2,605,730	12.4	202,449	12.9	1.0
1982-83	203,883	2,803,450	13.8	141,281	19.8	0.7
1983-84	196,706	2,658,670	13.5	192,231	13.8	1.0
1984-85	208,227	3,006,620	14.4	237,378	12.7	1.1
1985-86	211,522	3,075,800	14.5	280,436	11.0	1.3
1986-87	215,764	3,515,220	16.3	300,115	11.7	1.4
1987-88	221,285	3,588,490	16.2	322,977	11.1	1.5
1988-89	195,032	3,306,050	17.0	275,032	12.0	1.4
1989-90	186,211	3,064,900	16.5	242,033	12.7	1.3
1990-91	200,700	3,549,200	17.7	294,400	12.1	1.5
1991-92	205,200	3,617,100	17.6	295,000	12.3	1.4
1992-93	211,100	3,849,400	18.2	293,100	13.1	1.4
1993-94	210,600	4,184,200	19.9	350,500	11.9	1.7
1994-95	211,200	3,998,800	18.9	331,000	12.1	1.6
1995-96	229,600	4,304,700	18.7	398,100	10.8	1.7
1996-97	220,900	3,816,800	17.3	366,800	10.4	1.7
1997-98	217,300	3,978,100	18.3	423,400	9.4	2.0
1998-99	210,600	3,830,700	18.2	390,300	9.8	1.9
1999-00	221,700	4,120,100	18.6	415,700	9.9	1.9
2000-01	218,400	4,167,600	19.1	478,700	8.7	2.2
2001-02	213,400	3,900,600	18.3	410,700	9.5	1.9
2002-03	188,700	3,917,500	20.8	410,300	9.5	2.2
2003-04	210,400	4,721,300	22.4	478,400	9.9	2.3
2004-05	236,300	4,911,200	20.8	498,900	9.8	2.1
2005-06	208,700	4,383,000	21.0	460,800	9.5	2.2
2006-07	207,500	4,301,100	20.7	435,900	9.9	2.1
2007-08	206,000	4,347,500	21.1	341,900	12.7	1.7
2008-09	201,600	4,446,100	22.1	356,400	12.5	1.8
2009-10	194,800	4,007,100	20.6	289,100	13.9	1.5
2010-11	197,100	4,366,700	22.2	337,700	12.9	1.7

ALABAMA HUNTING SURVEY ESTIMATES: TURKEY-SPRING SEASONS

Year	Hunters	Man-Days	Average Man-Days	Harvest	Man-Days Per Harvest	Harvest Per Hunter
1972	23,594	125,805	5.3	10,615	11.9	0.4
1973	25,273	157,809	6.2	12,675	12.5	0.5
1974	23,983	130,730	5.5	11,178	11.7	0.5
1975	26,934	176,526	6.6	16,048	11.0	0.6
1976	27,703	150,617	5.4	17,615	8.6	0.6
1977	30,997	216,282	7.0	19,745	11.0	0.6
1978	33,114	200,129	6.0	31,267	6.4	0.9
1979	31,269	201,245	6.4	16,470	12.2	0.5
1980	34,449	217,039	6.3	19,595	11.1	0.6
1981	36,243	236,790	6.5	15,669	15.1	0.4
1982	35,925	232,428	6.5	24,702	9.4	0.7
1983	36,014	225,347	6.3	20,761	10.9	0.6
1984	39,155	299,133	7.6	26,254	11.4	0.7
1985	37,901	280,708	7.4	37,039	7.6	1.0
1986	40,784	309,279	7.6	43,833	7.1	1.1
1987	38,150	297,422	7.8	37,540	7.9	1.0
1988	47,204	359,730	7.6	45,835	7.8	1.0
1989	38,521	317,734	8.2	43,718	7.3	1.1
1990	38,713	304,193	7.9	29,138	10.4	0.8
1991	41,400	310,200	7.5	33,200	9.3	0.8
1992	43,000	387,600	9.0	30,900	12.5	0.7
1993	40,000	339,700	8.5	29,100	11.7	0.7
1994	47,000	349,100	7.4	40,400	8.6	0.9
1995	43,300	348,900	8.1	41,200	8.5	1.0
1996	51,900	361,200	7.0	37,400	9.7	0.7
1997	48,400	334,700	6.9	39,000	8.6	0.8
1998	51,800	362,400	7.0	41,800	8.7	0.8
1999	51,600	358,600	6.9	35,300	10.2	0.7
2000	47,300	345,900	7.3	31,400	11.0	0.7
2001	53,800	374,700	7.0	43,000	8.7	0.8
2002	50,100	389,800	7.8	36,300	10.7	0.7
2003	52,300	449,400	8.6	48,000	9.4	0.9
2004	56,600	508,100	9.0	53,100	9.6	0.9
2005	58,500	555,700	9.5	57,500	9.7	1.0
2006	59,300	515,100	8.7	55,600	9.3	0.9
2007	56,800	471,900	8.3	65,100	7.2	1.1
2008	57,600	500,900	8.7	45,400	11.0	0.8
2009	52,700	434,500	8.2	36,300	12.0	0.7
2010	51,700	462,400	8.9	40,900	11.3	0.8
2011	59,700	537,000	9.0	46,400	11.6	0.8