2023-24 North Carolina Avid Quail Hunter Survey

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Since 1984, the North Carolina Wildlife Resources Commission (NCWRC) has conducted an annual quail hunter survey to estimate long-term quail hunting trends and to provide insight into quail hunting demographics. Volunteer quail hunters participate by recording and submitting their annual hunting activity throughout the season. Quail hunting activity is recorded by county and landownership type (e.g. private or Game Lands) within 8 management units within North Carolina (Fig. 1). Reported hunting trips typically consist of a single day per hunting party.

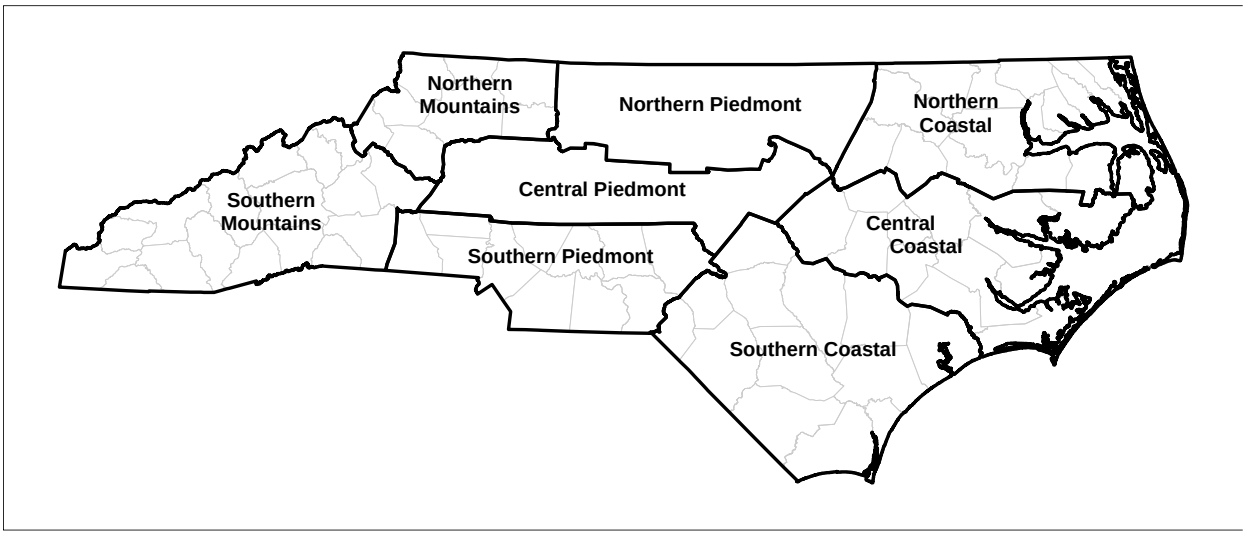

Figure 1. North Carolina quail management units in the avid quail hunter survey, 1984-85 through 2023-24.

Forty avid quail hunters responded during the 2023-24 season, providing quail hunting statistics for 681 hunting trips (Fig. 2). The gradual annual decline of total reported quail hunting trips has primarily been a function of fewer survey respondents and fewer hunting trips taken per hunter. This may also be a reflection of aging hunters, interest in other types of hunting, and/or declining opportunities to hunt quail due to lack of quality habitat and populations.

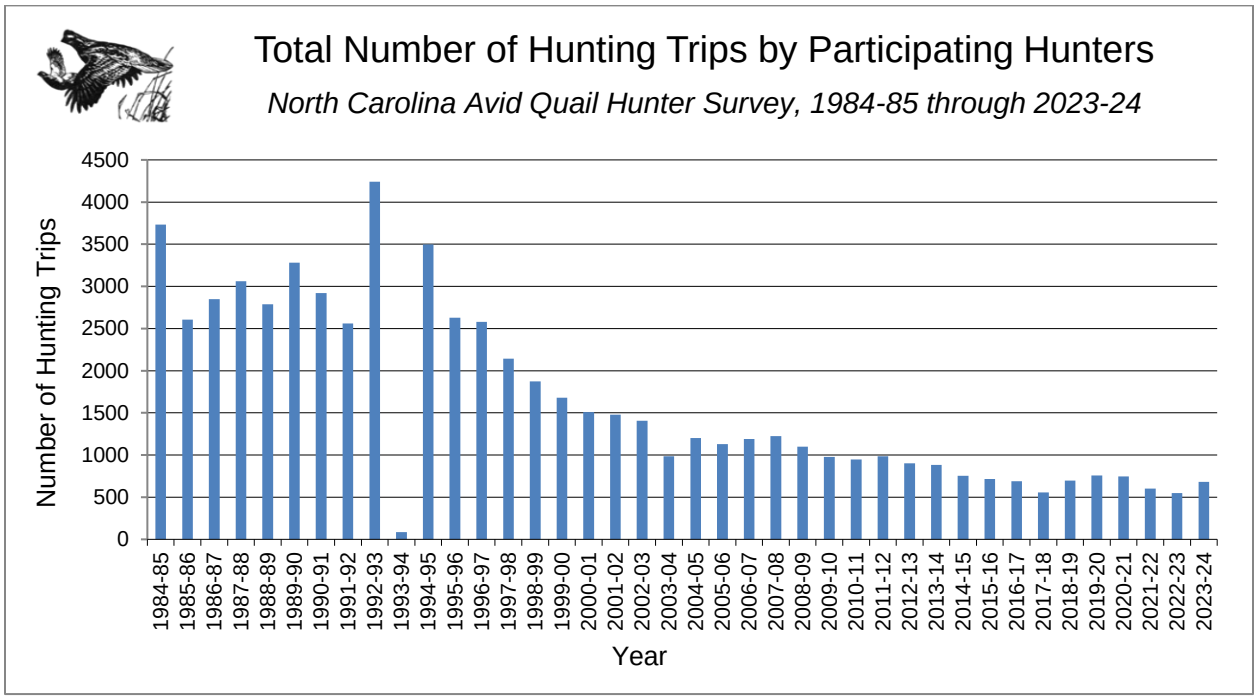

Figure 2. Total number of hunts reported by volunteer avid quail hunter survey respondents, 1984-85 through 2023-24.

During the 2023-24 hunting season, most reported avid quail hunting occurred in the coastal and piedmont management units and the least in the mountain units (Fig. 3). This is not surprising given that quail are fairly common in the coastal plain, somewhat uncommon in much of the piedmont, and extremely rare in the mountains. Since 1984, the long-term trend for the number of trips per hunter has generally declined (Fig. 4). The number of hours hunting per trip has fluctuated around 3.5 hours for most of the last decade (Fig. 5). Party size averaged 1.6 hunters per hunting trip in the 2023-24 season. It is important to remember that these figures only reflect avid hunters' activities when they are hunting wild quail. These individuals likely spend considerable time training or field trialing dogs, hunting out of state, or hunting pen-reared birds.

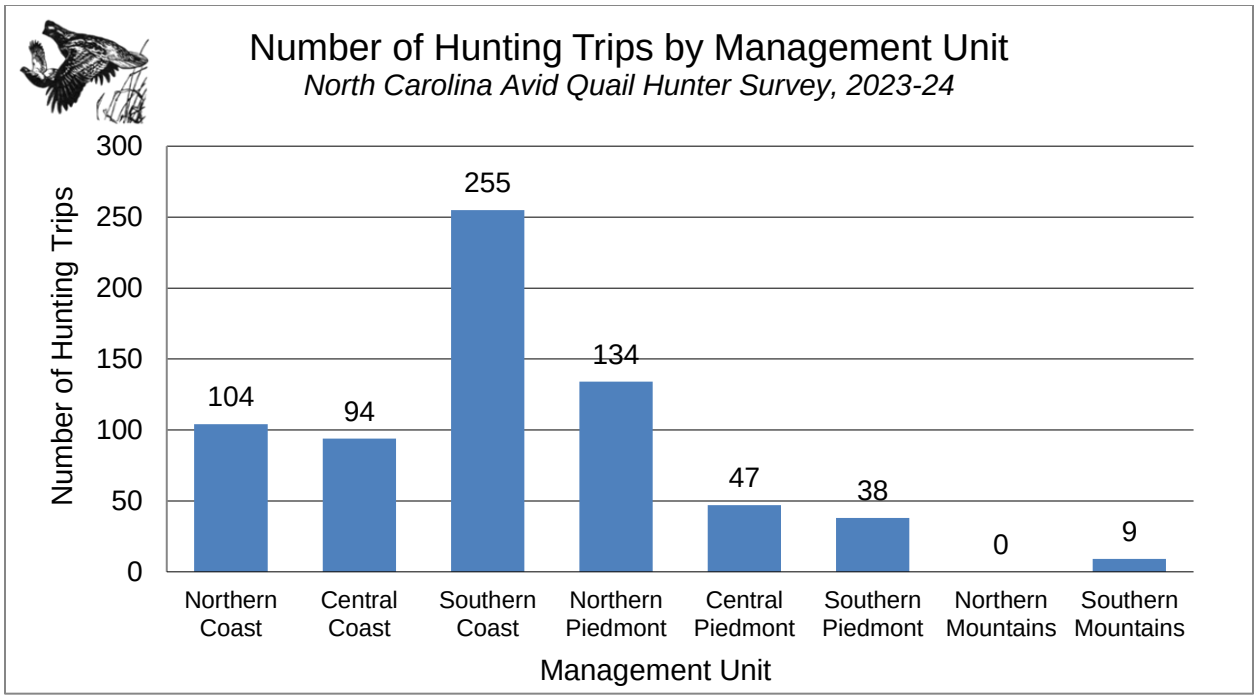

Figure 3. Total number of reported hunting trips by management unit by avid quail hunter survey respondents during the 2023-24 hunting season.

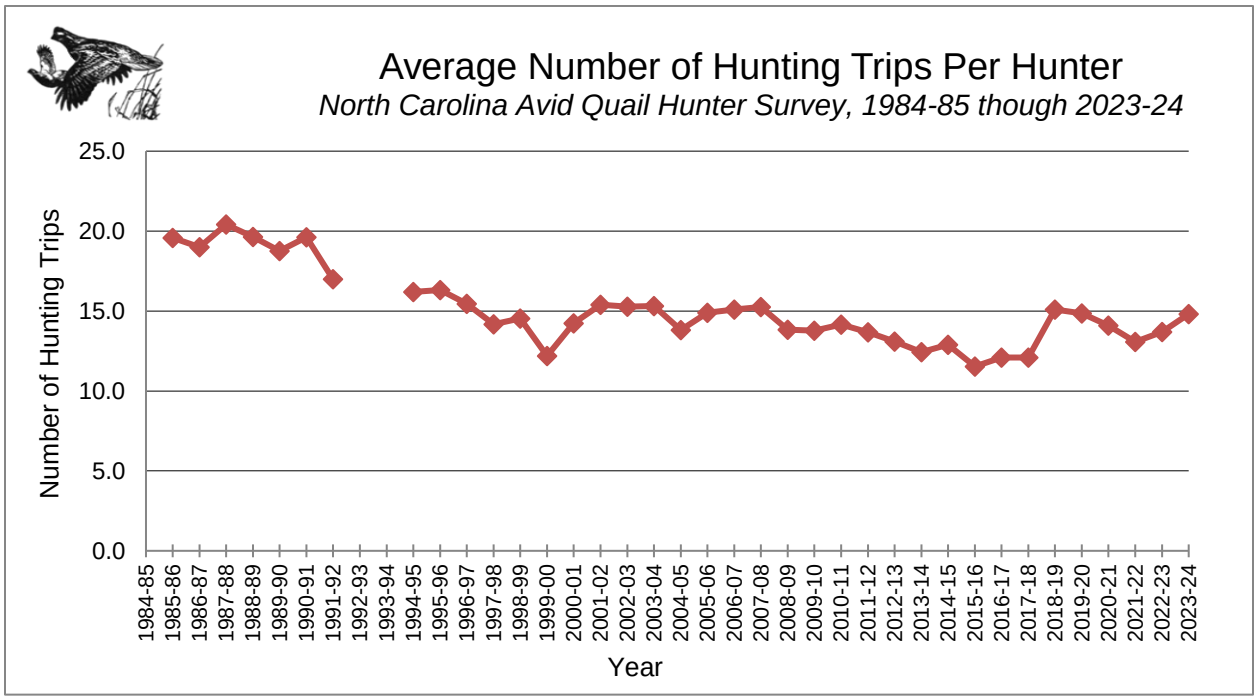

Figure 4. Average number of hunting trips per hunter in the avid quail hunter survey, 1984-85 through 2023-24.

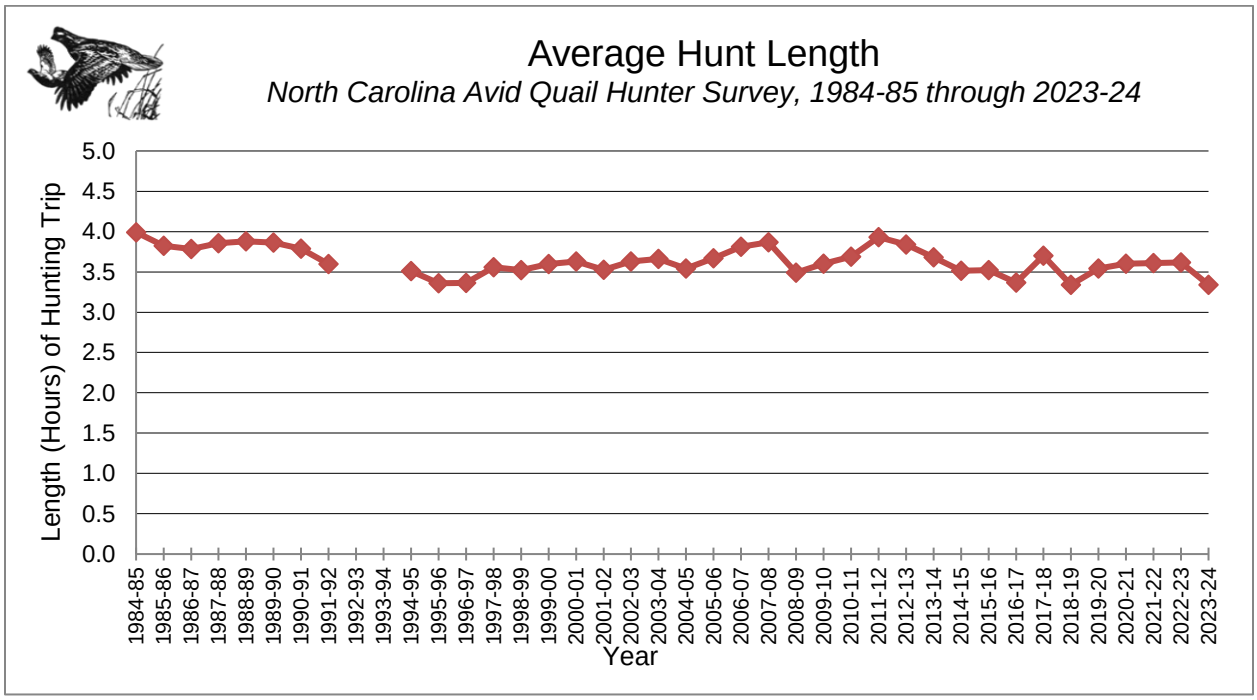

Figure 5. Average hunting hours per trip in the avid quail hunter survey, 1984-85 through 2023-234.

Covey flush rates are presented in this report both by hunting trip and hours hunted. Flush rates by hour may provide more precise indices of quail abundance, while flush rates by hunting trip are more applicable from a quail hunting perspective. However, we recognize that hunters change their hunting locations over time to areas with relatively more quail. This selective behavior by hunters has a tendency to skew estimates such that they may not represent actual abundance or changes in abundance across the full landscape.

More quail are typically found in the coastal management units than in the piedmont or mountain units (Fig. 6). In 2023-24, flush rates in the coastal region (0.64 coveys/hour) were much higher than in the piedmont (0.37 coveys/hour). Hunters flushed no quail at all in the mountains (0.00 coveys/hour), suggesting that quail are nearly extirpated (i.e. locally extinct) from that region. Flush rates continue to be much higher on private lands than on public game lands (Fig. 7). Over the last two decades, flush rates have generally increased on private lands and generally decreased on game lands. This may be a result of the skill of level of the relatively few remaining quail hunters for these land types, as well as the overall habitat conditions and quail populations.

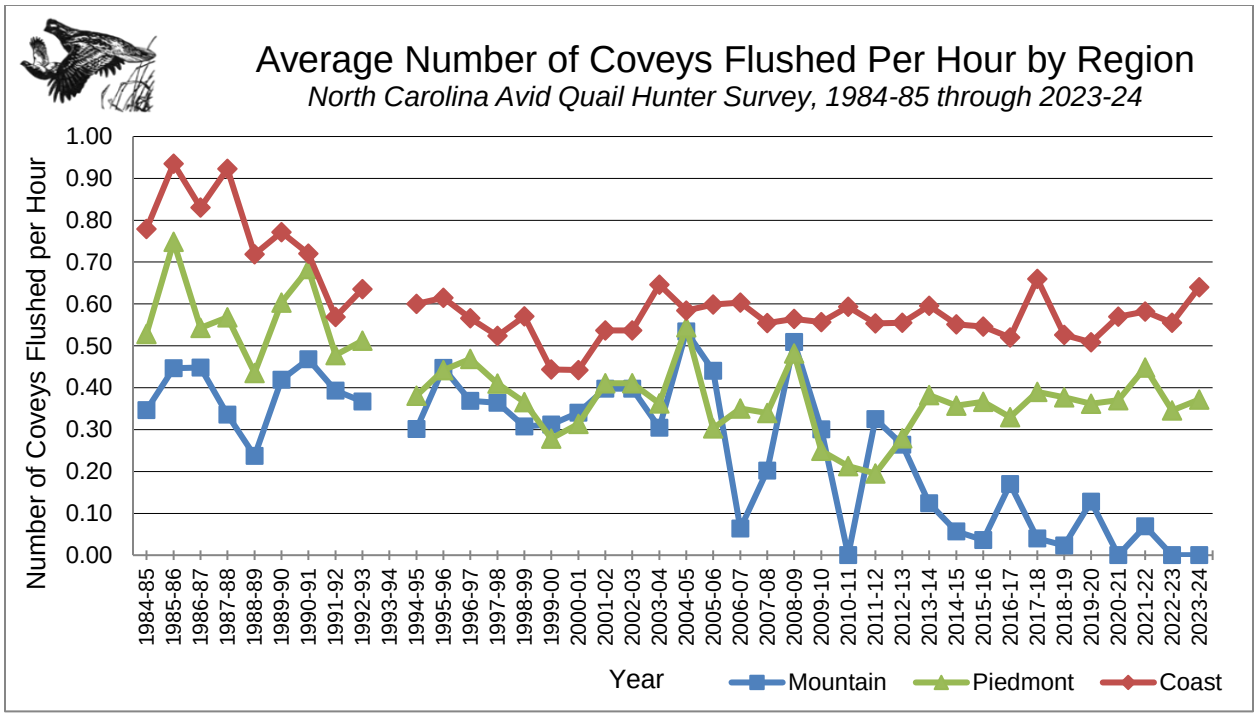

Figure 6. Average number of coveys flushed per hour by region by avid quail hunter survey respondents, 1984-85 through 2023-24.

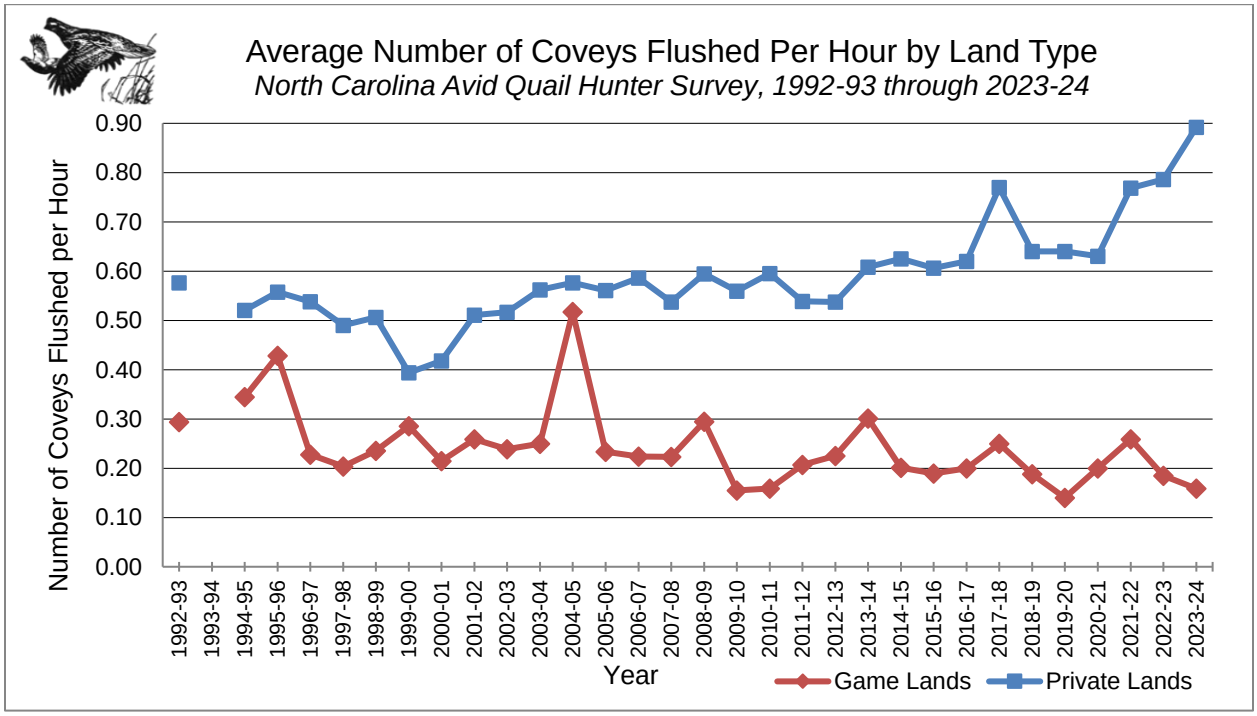

Figure 7. Average number of coveys flushed per hour by land type by avid quail hunter survey respondents, 1992-93 through 2023-24.

During the 2023-24 hunting season, avid hunters in the central and northern coastal management units reported the highest flush and harvest rates on their hunting trips (Fig. 8). The peak in these management units was somewhat driven by a few survey participants that work year-round to ensure they have high-quality areas to hunt. Consequently, they experience high success rates. Most hunters are experiencing far lower success rates. Flush rates and harvest rates in the southern coast and piedmont are roughly comparable, suggesting that quail populations (where they are found) are roughly similar. Hunters in the mountains did not flush any quail or harvest any quail.

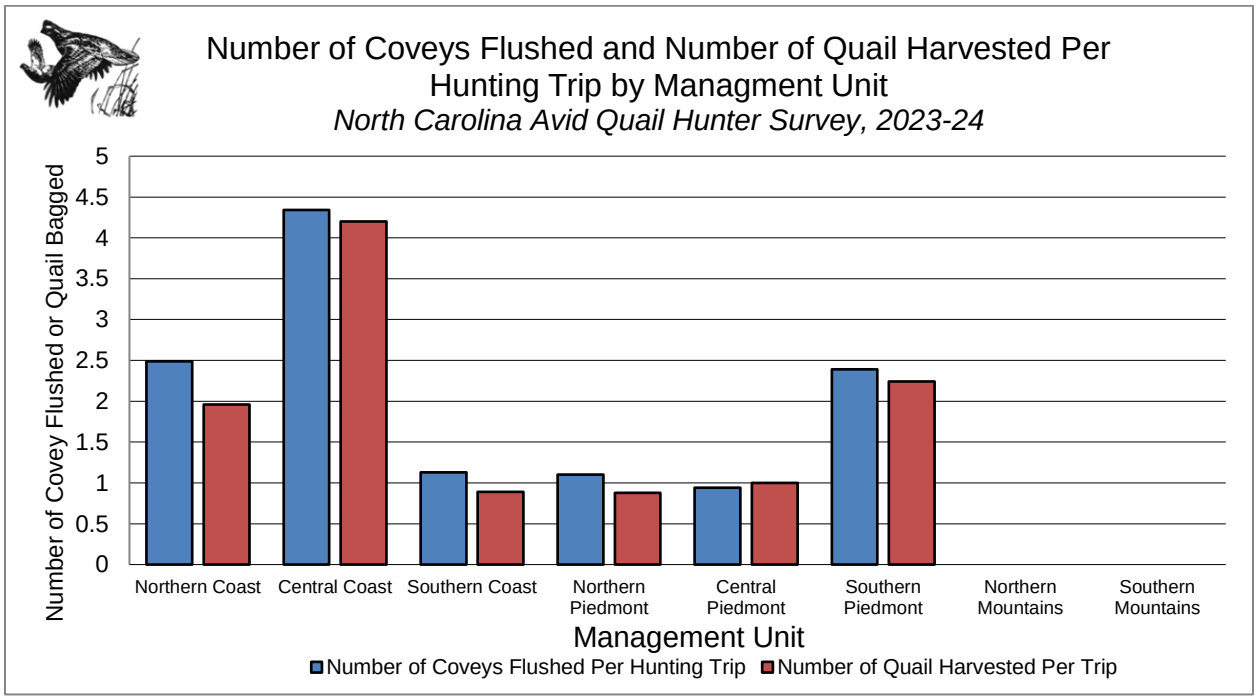

Figure 8. Average number of coveys flushed and quail harvested per hunting trip by management unit in the avid quail hunter survey, 2023-24 hunting season.

Despite the decline in avid quail hunters, the number of coveys flushed and quail bagged per hunting trip was relatively stable over most of the past 20 years (Fig. 9). During the 2023-24 season, avid hunters flushed on average 1.8 coveys and harvested 1.6 quail per hunting trip. "Avid" quail hunters continued to maintain higher harvest rates than "standard" quail hunters who have responded to the NCWRC statewide hunter surveys (<1 quail per hunting trip).

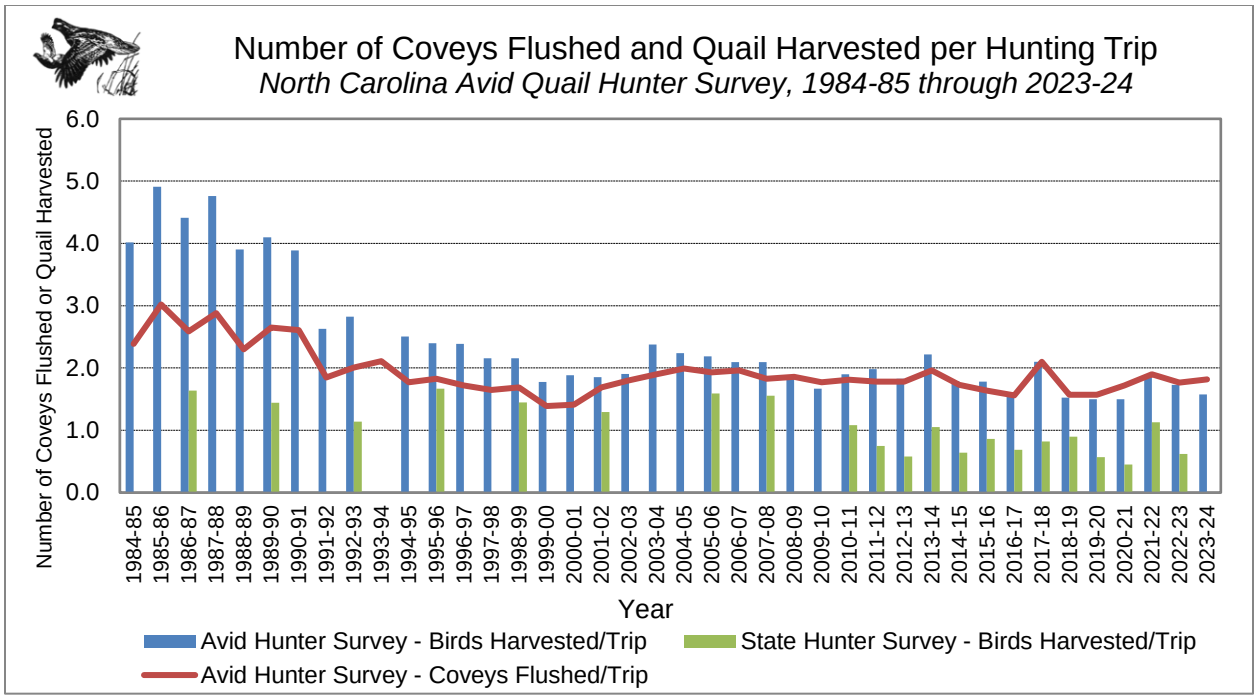

Figure 9. Average number of quail coveys flushed and birds harvested per hunting trip for avid quail hunter survey and state hunter survey respondents, 1984-85 through 2023-24.

The avid quail hunter survey shows a general decline in the number of quail harvested from each covey flushed (Fig. 10). In 2023-24, avid hunters killed about 1 quail per covey on average. In the 1980's avid hunters killed close to 2 quail per covey. This change may be related to more hunters choosing not to shoot flushed quail (because of their concern of quail declines) and/or their desire to primarily train bird dogs. Average reported covey size during 2023-24 was 16.7 quail. Reported covey size was higher on private lands (18.0 quail/covey) than on public game lands 10.0 quail/covey). No quail were flushed on 47% of the reported hunting trips.

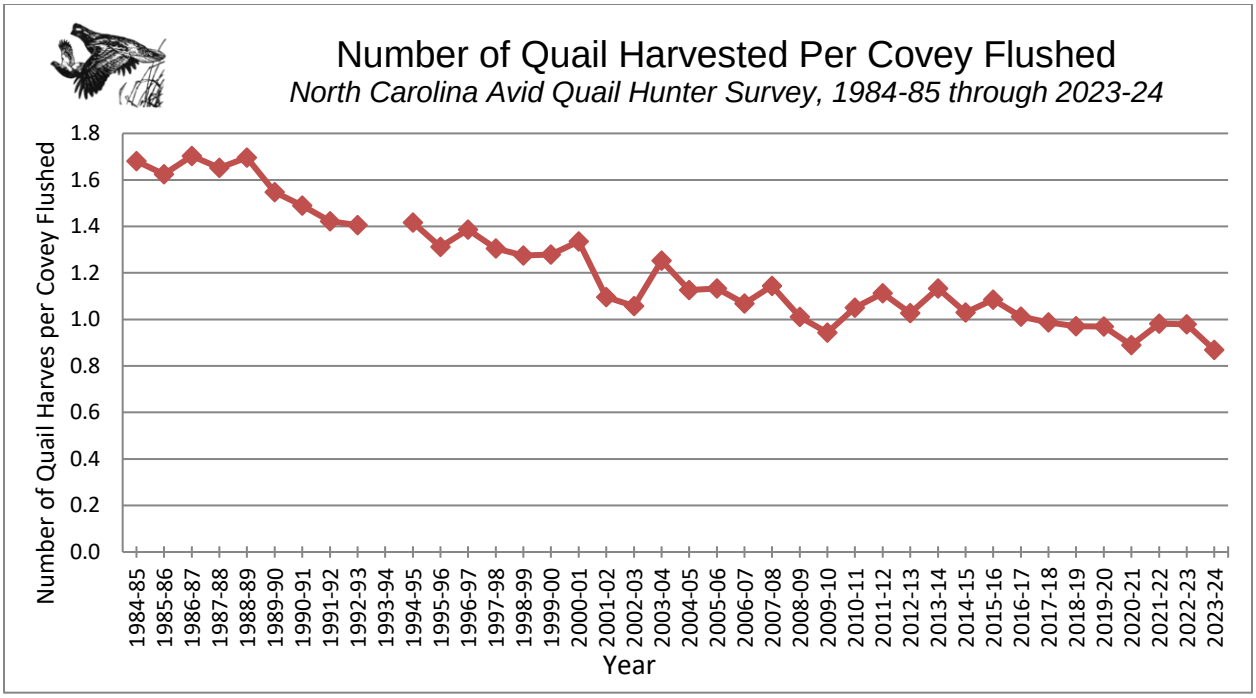

Figure 10. Average number of quail harvested per covey flushed by avid quail hunters, 1984-85 through 2023-24.

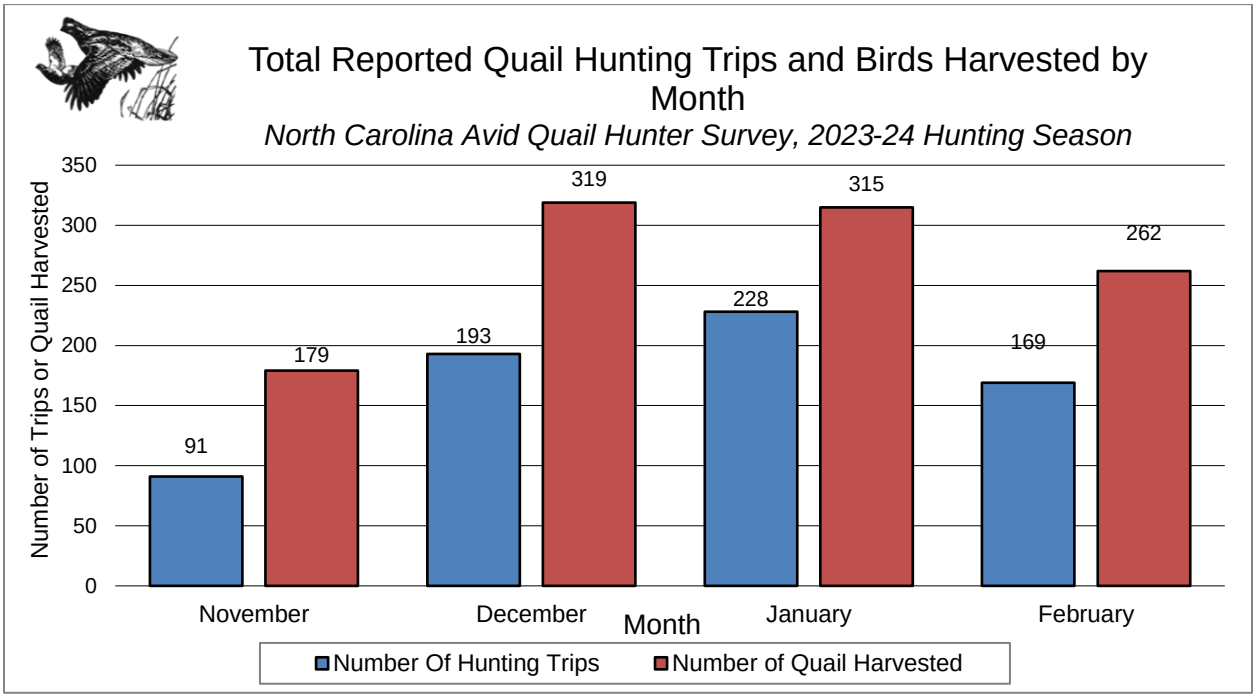

Figure 11. Total reported quail hunting trips and quail harvest by avid quail hunters during the 2023-24 hunting season (November 18, 2023 through February 29, 2024).

Reported quail hunting effort (number of trips) and the number of quail killed was highest during the month of January (Fig. 11). Not surprisingly, avid hunters reported more covey flushes and harvests per trip at the beginning of the hunting season (Fig. 12).

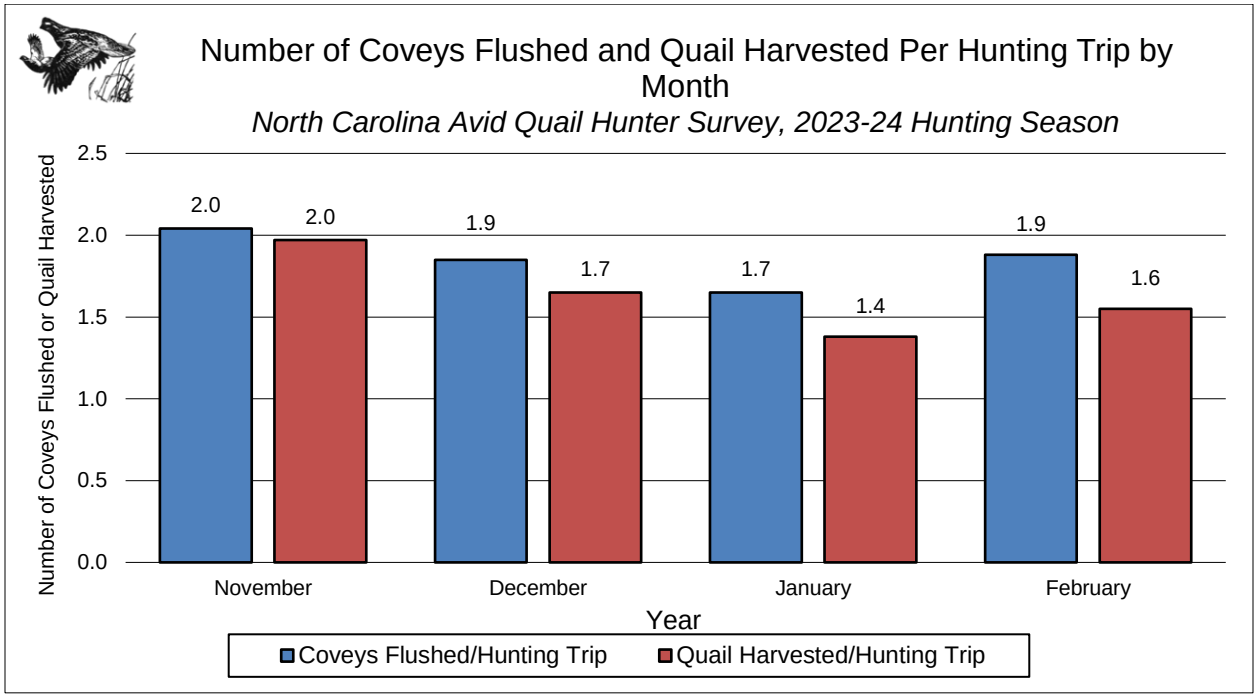

Figure 12. Average number of coveys flushed and quail harvested per hunting trip by month by avid quail hunters during the 2023-24 hunting season.

Funding for the avid quail hunter survey report was partially provided through a Pittman-Robertson Wildlife Restoration Multi-state Grant. The Federal Aid in Wildlife Restoration Act, popularly known as the Pittman-Robertson Act, was approved by Congress on September 2, 1937, and begin functioning July 1, 1938. The purpose of this Act was to provide funding for the selection, restoration, rehabilitation and improvement of wildlife habitat, wildlife management research, and the distribution of information produced by the projects. The Act was amended October 23, 1970, to include funding for hunter training programs and the development, operation and maintenance of public target ranges.

Funds are derived from an 11 percent Federal excise tax on sporting arms, ammunition, and archery equipment, and a 10 percent tax on handguns. These funds are collected from the manufacturers by the Department of the Treasury and are apportioned each year to the States and Territorial areas (except Puerto Rico) by the Department of the Interior on the basis of formulas set forth in the Act. Funds for hunter education and target ranges are derived from one-half of the tax on handguns and archery equipment.

Each state's apportionment is determined by a formula which considers the total area of the state and the number of licensed hunters in the state. The program is a cost-reimbursement program, where the state covers the full amount of an approved project then applies for reimbursement through Federal Aid for up to 75 percent of the project expenses. The state must provide at least 25 percent of the project costs from a non-federal source.

Appendix I. Reported hunting activity from avid quail hunter survey respondents, 1984-85 through 2023-24.

Year	# Avid Hunters	# Hunting Trips	Hours Hunted	Hours / Trip	Average Hunter Age	Trips / Hunter	# Coveys Flushed	Coveys Flushed / Trip	Coveys Flushed / Hour	# Quail Harvested	Quail Harvested / Trip	Quail Harvested / Hour	Quail Harvested / Covey Flush	# Hunts w/No Coveys Flushed	% Hunts w/No Coveys Flushed	Average Covey Size
1984-85		3734	14,905	4.0			8,929	2.39	0.60	15,004	4.0	1.0	1.7	590	15.8%	
1985-86	133	2605	9,963	3.8	47	19.6	7,867	3.02	0.79	12,785	4.9	1.3	1.6	237	9.1%	
1986-87	150	2849	10,785	3.8	47	19.0	7,379	2.59	0.68	12,565	4.4	1.2	1.7	403	14.1%	
1987-88	150	3062	11,802	3.9	47	20.4	8,819	2.88	0.75	14,574	4.8	1.2	1.7	373	12.2%	
1988-89	142	2788	10,817	3.9	48	19.6	6,415	2.30	0.59	10,881	3.9	1.0	1.7	475	17.0%	
1989-90	175	3282	12,677	3.9	48	18.8	8,697	2.65	0.69	13,455	4.1	1.1	1.5	369	11.2%	
1990-91	149	2922	11,068	3.8	48	19.6	7,632	2.61	0.69	11,367	3.9	1.0	1.5	335	11.5%	
1991-92	151	2562	9,213	3.6	49	17.0	4,747	1.85	0.52	6,750	2.6	0.7	1.4	559	21.8%	
1992-93		4241					8,524	2.01		11,977	2.8		1.4	765	18.0%	
1993-94		87					6,718	2.11		0				0		
1994-95	216	3496	12,271	3.5	51	16.2	6,191	1.77	0.50	8,767	2.5	0.7	1.4	802	22.9%	
1995-96	161	2628	8,832	3.4	52	16.3	4,809	1.83	0.54	6,308	2.4	0.7	1.3	584	22.2%	
1996-97	167	2581	8,677	3.4	52	15.5	4,439	1.72	0.51	6,157	2.4	0.7	1.4	608	23.6%	
1997-98	151	2142	7,618	3.6	53	14.2	3,531	1.65	0.46	4,611	2.2	0.6	1.3	548	25.6%	
1998-99	129	1874	6,602	3.5	54	14.5	3,167	1.69	0.48	4,038	2.2	0.6	1.3	488	26.0%	
1999-00	128	1678	6,036	3.6	55	12.2	2,168	1.39	0.36	2,772	1.8	0.5	1.3	538	34.5%	
2000-01	106	1508	5,474	3.6	55	14.2	2,128	1.41	0.39	2,841	1.9	0.5	1.3	471	31.2%	
2001-02	96	1478	5,212	3.5	56	15.4	2,498	1.69	0.48	2,738	1.9	0.5	1.1	390	26.4%	
2002-03	92	1405	5,098	3.6	57	15.3	2,529	1.80	0.50	2,675	1.9	0.5	1.1	384	27.3%	
2003-04	72	987	3,614	3.7	58	15.3	2,096	1.90	0.58	2,625	2.4	0.7	1.3	333	30.2%	
2004-05	87	1201	4,255	3.5	56	13.8	2,388	1.99	0.56	2,691	2.2	0.6	1.1	344	28.6%	
2005-06	76	1131	4,150	3.7	56	14.9	2,185	1.93	0.53	2,475	2.2	0.6	1.1	362	32.0%	
2006-07	79	1192	4,543	3.8	57	15.1	2,336	1.96	0.51	2,495	2.1	0.5	1.1	363	30.5%	
2007-08	81	1223	4,729	3.9	59	15.3	2,262	1.83	0.48	2,589	2.1	0.5	1.1	384	31.1%	
2008-09	81	1100	3,841	3.5	58	13.8	2,083	1.86	0.54	2,105	1.9	0.5	1.0	339	30.3%	
2009-10	71	978	3,521	3.6	61	13.8	1,731	1.77	0.49	1,633	1.7	0.5	0.9	332	33.9%	
2010-11	67	947	3,493	3.7	60	14.1	1,716	1.81	0.49	1,802	1.9	0.5	1.1	324	34.2%	
2011-12	72	985	3,872	3.9	57	13.7	1,753	1.78	0.45	1,950	2.0	0.5	1.1	384	39.0%	
2012-13	69	903	3,468	3.8	58	13.1	1,610	1.78	0.46	1,655	1.8	0.5	1.0	310	34.3%	10.6
2013-14	71	883	3,249	3.7	59	12.4	1,729	1.96	0.53	1,960	2.2	0.6	1.1	271	30.7%	11.1
2014-15	58	752	2,642	3.5	58	12.9	1,303	1.73	0.49	1,345	1.8	0.5	1.0	314	41.8%	15.6
2015-16	62	715	2,519	3.5	61	11.5	1,175	1.64	0.47	1,275	1.8	0.5	1.1	343	48.0%	11.5
2016-17	57	689	2322	3.4	60	12.1	1077	1.56	0.46	1088	1.6	0.5	1.0	289	42.0%	11.4
2017-18	46	557	2071	3.7	60	12.1	1169	2.10	0.56	1155	2.1	0.6	1.0	230	41.0%	17.0
2018-19	46	695	2356	3.3	60	15.1	1093	1.57	0.46	1061	1.5	0.4	1.0	325	46.8%	15.9
2019-20	51	758	2682	3.5	60	14.9	1187	1.57	0.44	1151	1.5	0.4	1.0	346	45.6%	16.9
2020-21	53	746	2713.75	3.6	57	14.1	1284	1.72	0.47	1145	1.5	0.4	0.9	351	47.0%	16.3
2021-22	46	601	2168.75	3.6	58	13.1	1144	1.90	0.53	1124	1.9	0.5	1.0	275	46.0%	16.8
2022-23	40	548	1983.75	3.6	59	13.7	968	1.77	0.49	948	1.7	0.5	1.0	281	51.3%	15.6
2023-24	46	681	2275	3.3	57	14.8	1237	1.82	0.54	1075	1.6	0.5	0.9	321	47.1%	16.9