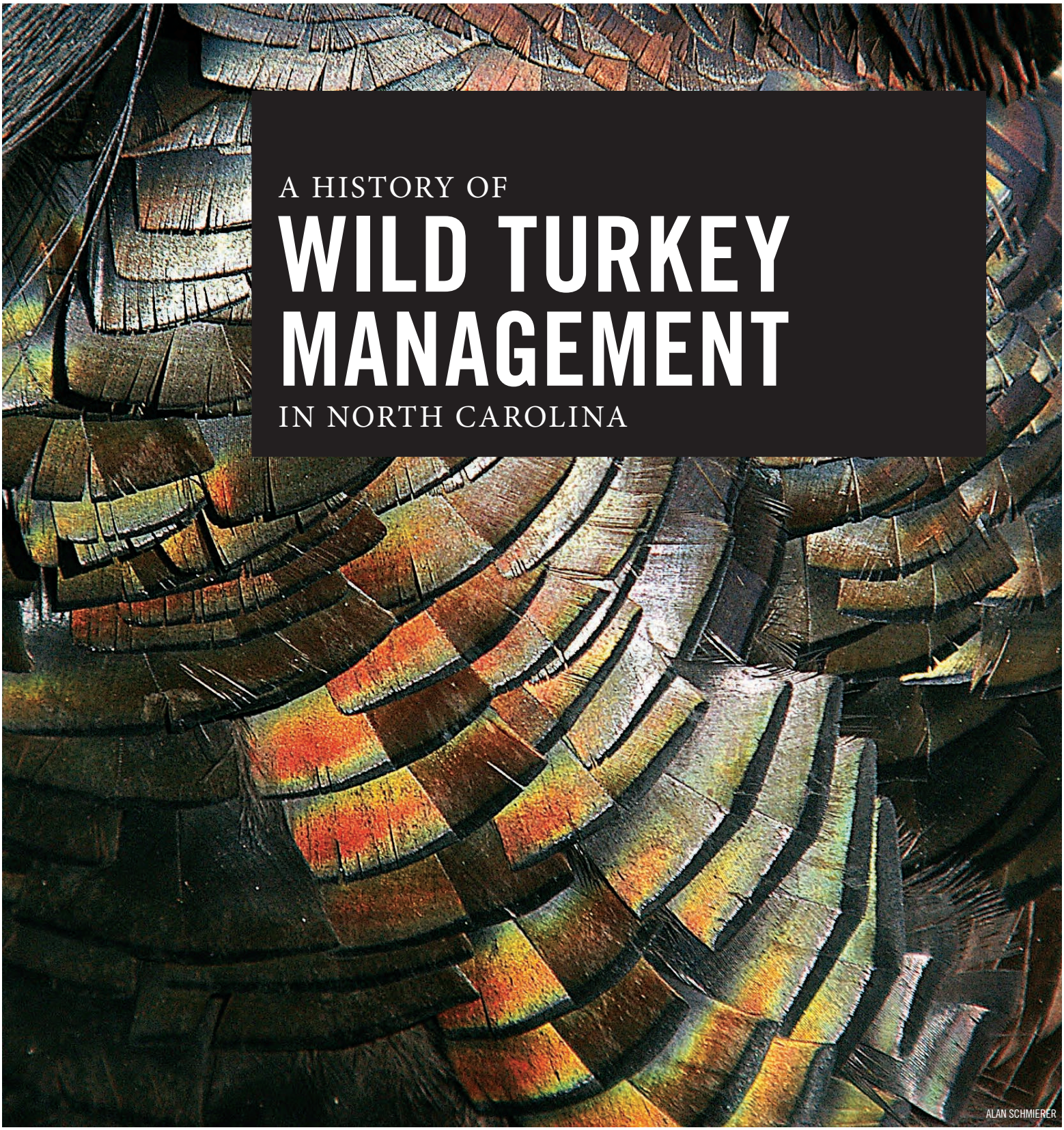

A HISTORY OF WILD TURKEY MANAGEMENT IN NORTH CAROLINA

Michael H. Seamster
Wildlife Biologist (Retired)
NC Wildlife Resources Commission

Edited by Evin Stanford and Christopher Kreh
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A History of Wild Turkey Management in North Carolina

This document will attempt to clarify, in so much as possible, a history of wild turkey management in the State of North Carolina through December 31st, 2016. However, early records are somewhat incomplete or unclear. Much of the information included in this document was collected from annual performance reports, wild turkey management articles from *Wildlife in North Carolina* magazine, wild turkey research manuscripts, and computer files of wild turkey leg band records, harvest data, brood survey data, and other information.

Wild Turkey Project Personnel

Wild Turkey Project Personnel Timeline

October 4, 1946 through February 28, 1950 - **Robert J. Wheeler, Jr.** was hired as the North Carolina Wildlife Resources Commission's (NCWRC) first full-time wild turkey project leader. Under his guidance, the state abandoned its efforts to propagate and release pen-reared turkeys. He was primarily responsible for the establishment and development of a series of wild turkey refuges across the state. These were setup and managed in an effort to provide areas where wild turkeys could flourish and surplus birds could expand out from these refuges onto surrounding lands in a very similar manner as our bear sanctuaries have functioned since the 1970s. These intensively managed turkey refuges were used during the 1960s and 1970s for live-trapping wild birds for transplanting to restoration sites in the mountains.

March 1, 1950 through June 30, 1950 - **Rex Thompson** (equipment operator) assumed the wild turkey project leader's duties from the time Robert Wheeler resigned until the end of the fiscal year.

July 1, 1950 through June 30, 1952 – The Cooperative Farm Game activities and duties were combined with statewide wild turkey restoration activities and duties. **Malcolm Edwards**, who was in charge of Development of Cooperative Wildlife Areas, was responsible for wild turkey management activities on US Forest Service lands while **W. J. (Jack) Rivers** (Sandhills Refuge manager) was responsible for turkey management activities and turkey trapping on the Sandhills area. **Rex Thompson** continued to work on wild turkey refuges across the state. Efforts were primarily directed toward management of the established refuges.

July 1, 1952 through June 30, 1956 – **Robert B. Hazel** was in charge of all upland game restoration which included wild turkeys. Efforts toward management of the turkey refuges continued. Attention was also directed toward the live-trapping and relocation of wild birds. However, results were meager. A total of 49 wild turkeys were relocated during this 4-year period.

July 1, 1956 through June 30, 1959 – **Donald J. Hankla** assumed responsibility for all upland game restoration including wild turkeys. Efforts toward management of the turkey refuges and the live-trapping and relocation of wild birds continued, but results continued to be meager with only 24 wild turkeys being relocated during this 3-year period.

July 1, 1959 through June 30, 1961 – **Ted R. Mitchell** (Big Game Restoration Project Leader for the Central Region) assumed responsibility for all turkey trapping and turkey refuge activities statewide. Again, efforts toward management of the turkey refuges and live-trapping and relocation of wild birds continued with only 5 birds being relocated during this 2-year period.

July 1, 1961 through November 30, 1964 – **Kenneth A. Wilson** (Central Region Wildlife Management Areas Supervisor) assumed responsibility for all turkey trapping and turkey

refuge activities statewide. Once again, efforts toward management of the turkey refuges and live-trapping and relocation of wild birds continued. However, results continued to be less than expected with only 25 wild turkeys being relocated.

December 1, 1964 through April 15, 1966 – **Samuel K. Gooden** was hired as the Commission's second full-time Wild Turkey Project Leader. Primary efforts were directed toward the live-trapping and relocation of wild birds. Twenty six wild turkeys were obtained from the State of Florida and another 30 birds were trapped and relocated in-state. Much time was also devoted to analysis of turkey population density and distribution, assessing reproduction, investigating decimating factors, analysis of foods, plantings, and insect production, and initiating a statewide wild turkey survey.

May 1, 1966 through June 30, 1970 – **S. Thad Cherry** (District 7 Game Biologist) was given the added responsibilities of coordinating the wild turkey project along with his District 7 Game Biologist duties. Primary efforts were directed toward the live-trapping and relocation of wild birds. Only 25 birds were trapped and relocated during this time frame. Analysis of turkey population density and distribution, assessing reproduction, investigating decimating factors, analysis of foods, plantings, and insects, and statewide turkey surveys continued. The Commission also began experimenting with spring gobbler seasons in the late 1960s.

July 1, 1970 through September 30, 1980 – **R. Wayne Bailey** was hired as the Commission's third full-time Wild Turkey Project Leader. He was instrumental in getting a moratorium placed on the fall turkey season in 1971 and in consolidating the split spring gobbler season into one statewide season. He specifically emphasized live-trapping and relocating birds. During his decade long tenure, 414 birds were trapped and relocated. All restoration sites were on public lands and all but two were in the mountains. Those two were on the Uwharrie (Piedmont) and Croatan (Coastal Plain) National Forests.

October 1, 1980 through December, 1986 – **Brian D. Hyder** was promoted to the Wild Turkey Project Leader position after Wayne Bailey's retirement. He continued to emphasize live-trapping and relocating birds. During his tenure, 571 birds were relocated; 506 were trapped in-state, 28 were obtained as a gift from Vermont, and 37 were obtained from West Virginia in trade for 20 river otters. The Commission began relocating birds to private lands as well as public lands in all three geographical regions of the state.

January 1, 1987 through July 1, 2006 – **Michael H. Seamster** was promoted to the Wild Turkey Project Leader position and later given additional duties as the Upland Game Bird Biologist. I continued to emphasize live-trapping and relocating birds to both private lands and public lands in all areas of the state. During my tenure, 4,948 birds were relocated; 3,054 were trapped in-state, 150 were obtained from West Virginia in a trade for river otters, and 1,744 were obtained from Alabama (6), Arkansas (6), Connecticut (66), Iowa (151), Michigan (50), Pennsylvania (364), South Carolina (833), Virginia (33), and Wisconsin (235) through the National Wild Turkey Federation's Super Fund program. The final phase of the wild turkey restoration effort was completed in 2005 and a spring gobbler season was established in all 100 counties. In January, 2004, the first winter wild turkey season in over

three decades was held in nine counties. The following year one additional county was added to the winter season. A youth spring turkey hunting day was established in 2006.

The author with a spring gobbler taken in Caswell County. Mike Seamster

July 1, 2006 through November 4, 2007 - **David Sawyer** (District 7 Wildlife Biologist) was promoted to Upland Game Bird Biologist. David monitored the wild turkey population through mandatory reporting of both spring and fall harvests and summer brood surveys. David also assisted with the completion of a document titled *Status of Wild Turkey Populations and Considerations for Regulatory Strategies to Meet Turkey Management Goals* (Appendix 1). This document was prepared for the Commission and served as an evaluation of wild turkey breeding patterns to determine if hunting seasons could be altered to enhance hunter satisfaction without jeopardizing the continued increase of the wild turkey population. Following the presentation of this document, the Commission's Big Game Committee adopted a goal for wild turkey management (presented in Regulations Section)

November 5, 2007 through September 1, 2014 - **Evin Stanford**, Deer Biologist, was given additional responsibilities for the wild turkey and the wild boar projects. Evin continued to monitor the wild turkey population through mandatory reporting of both spring and winter harvests and summer brood surveys. The winter turkey season was closed in 2010 and the youth spring turkey hunting day was expanded to a weeklong season in 2013. Evin also served as Chair of the Southeast Wild Turkey Technical Committee in 2010-11 and served as Co-Chair from 2011-13.

September 2, 2014 through present – **Christopher D. Kreh** (District 7 Wildlife Biologist) was promoted to Upland Game Bird Biologist and given responsibilities for turkey, grouse, and quail. Chris continues to monitor the wild turkey population through various surveys, evaluations, and special projects. He and Evin Stanford provided edits and additions to the final version of this document in December 2016.

Wild Turkey Restoration

Restoration Efforts

Background Information

By the early 1900s, the abundant wild turkey populations that the settlers encountered when they first came to this country had been eliminated from much of the state. Uncontrolled year-round market hunting and habitat destruction had been the two main culprits. Although fall seasons and bag limits were set (by individual counties initially) to control the harvest in the 1920s (Table 1), they generally ran from mid-November until mid-February and were either sex. Season bag limits were very liberal. This basic season framework continued until the 1940s. Early restoration attempts began in the late 1920s, but little was known about wild turkey restoration in those early days and those attempts involved the use of pen-reared game farm birds. Neither the restoration efforts nor the setting of seasons and bag limits had any appreciable effect on the downward spiral in turkey numbers.

Table 1. Wild Turkey Seasons in North Carolina

SEASONS*	OPENING DATES	CLOSING DATES	LEGAL HARVEST	BAG LIMITS			AREA
				DAILY	POSS.	ANNUAL	
1923-24	Each county set its own season and bag limits.						
1929-32	November 20	February 15	Either Sex	2	-	5	Statewide
1935-36	Thanksgiving	February 1	Either Sex	1	-	3	Closed in some mountain counties
1936-38	November 20	February 15	Either Sex	1	-	3	Closed in some mountain counties
1938-39	December 1	February 15	Either Sex	1	-	3	Closed in some mountain counties
1939-40	November 30	February 15	Either Sex	1	-	3	Closed in some counties
1940-41	November 28	February 15	Either Sex	1	-	3	Closed in some counties
1941-42	Thanksgiving	January 31	Either Sex	1	-	3	Closed in some counties
1942-45	Thanksgiving	February 10	Either Sex	1	-	3	Closed in some counties
1945-46	Thanksgiving	January 31	Either Sex	1	-	1	Closed in some counties
1946-47	Thanksgiving	January 31	Either Sex	1	-	1 or 2	Only 10 piedmont and 5 coastal counties open
1947-48	Thank-giving	January 15	Either Sex	1	-	2	Statewide
1948-49	Thanksgiving	January 10	Gobblers	1	2	6	Statewide
1949-50	Thanksgiving	January 1	Gobblers	1	2	3	Statewide
1950-54	Thanksgiving	January 31	Gobblers	1	2	3	Statewide
1954-56	Thanksgiving	January 31	Gobblers	1	2	2	Statewide
1956-57	Thanksgiving	January 31	Gobblers	1	2	2	Closed in mountains
1957-58	Thanksgiving	February 10	Gobblers	1	2	2	Closed in mountains
1958-63	Thanksgiving	February 15	Gobblers	1	2	2	Closed in mountains
1964	January 2	February 15	Gobblers	1	2	2	Closed in mountains
1964-68	Thanksgiving	February 17	Gobblers	1	2	2	Closed in mountains
1968-70	December 20 April 13 April 13	February 14 April 18 May 2	Bearded	1	2	2	Closed in mountains Piedmont Coastal Plain
1970-71	December 19 April 12	February 13 May 1	Bearded	1	2	2	Statewide except closed in mountains

*Information unavailable for some years.

Table 1 (continued). Wild Turkey Seasons in North Carolina

SEASONS*	OPENING DATES	CLOSING DATES	LEGAL HARVEST	BAG LIMITS			AREA
				DAILY	POSS.	ANNUAL	
1972-73	3rd Saturday in April	3rd Saturday thereafter	Bearded	1	2	2	Statewide
1974-79	2nd Saturday in April	3rd Saturday thereafter	Bearded	1	2	2	Eastern half of state
	3rd Saturday in April	3rd Saturday thereafter					Western half of state
1980-2003	2nd Saturday in April	4th Saturday thereafter	Bearded	1	2	2	Statewide except restoration areas
2004	Monday. closest to January 15	Following Saturday	Either Sex	1	1	1	9 northern counties.
	2nd Saturday in April.	4th Saturday thereafter	Bearded	1	2	2	Statewide exc. Wilson co.
2005	Monday closest to January 15	Following Saturday	Either Sex	1	1	1	10 northern counties.
	2nd Saturday in April	4th Saturday thereafter	Bearded	1	2	2	Statewide
2006-07	Monday closest to January 15	Following Saturday	Either Sex	1	1	1	10 northern counties.
	2nd Saturday in April	4th Saturday thereafter	Bearded	1	2	2	Statewide
	1st Saturday in April	One-day season	Bearded	1	1	1	Youth season on private land
2008-09	Monday closest to January 15	Following Saturday	Either Sex	1	1	1	10 northern counties.
	2nd Saturday in April	4th Saturday thereafter	Male or Bearded	1	2	2	Statewide
	1st Saturday in April	One-day season	Male or Bearded	1	1	1	Youth season statewide
2010-12	2nd Saturday in April	4th Saturday thereafter	Male or Bearded	1	2	2	Statewide
	1st Saturday in April.	One-day season	Male or Bearded	1	1	1	Youth season statewide
2013-2016	2nd Saturday in April	4th Saturday thereafter	Male or Bearded	1	2	2	Statewide
	1st Saturday in April	Following Friday	Male or Bearded	1	1	1	Youth season statewide

*Information unavailable for some years.

Early Restoration Efforts Using Game Farm Birds (1920s, 30s & 40s)

Early attempts at restoring wild turkey populations date back to at least 1928. From 1928 until 1946, restoration efforts in North Carolina were centered on artificial propagation and release of pen-reared turkeys. It was tried many times in almost every county of the state but nowhere with success. The Department of Conservation and Development budgeted $10,000 in 1936 for a statewide turkey propagation program. At the Fayetteville Game Farm, brooder houses, pens and an incubator were built and another turkey propagation unit was slotted for the Mount Mitchell Refuge. In 1937 the state released 230 pen-reared turkeys; the first of several thousand from the Fayetteville Game Farm to be released across the state during the next five years. During this process, brood hens were brought in from Bulls Island, South Carolina and from Georgia's Okefenokee Swamp. Eggs were acquired from a sanctuary in Kalamazoo, Michigan and 20 more brooder hens were acquired from the Santee River area of South Carolina. By 1946, state game farms had raised and released some 10,000 pen-reared turkeys across the state. In addition to those birds released by the state, sportsmen's clubs and private individuals released thousands more. State game farms also distributed over 2,000 eggs to sportsmen's clubs and private individuals for propagation and release. However, all those early efforts failed miserably. Biologists across the nation learned the hard way that pen-reared turkeys were simply incapable of surviving the rigors of life in the wild.

Wild Turkey Refuges

After the formation of the Commission, Robert J. Wheeler was hired as the state's first full-time turkey project leader on October 4, 1946. He began the state's second attempt at restoring wild turkey populations. In his first few years, he established five wild turkey refuges across the state. These were large acreages of land where management was dedicated to wild turkeys. Forest openings were created and planted and hunting was prohibited on these areas. These refuges functioned in a similar manner as our current bear sanctuaries. In a Federal Aid Quarterly Progress Report in October, 1949 Wheeler wrote, "The primary purpose is to develop and manage each area so as to procure a maximum density of wild turkeys and thus provide a perpetual reservoir that will yield a substantial and sustained surplus of these birds for harvest in the surrounding territories by sportsmen." Turkey refuges were initially established at the Orton Plantation near Wilmington (Orton State Refuge – Brunswick County – 4,000 acres), in the Uwharrie Mountains (Uwharrie State Refuge – Montgomery County – 5,000 acres), in Caswell County (Caswell State Refuge – Caswell County – 6,828 acres), and in the Sandhills area (Richmond State Refuge – Richmond County and Scotland State Refuge – Scotland County – no records were found regarding acreages). The Richmond and Scotland State Refuges were later consolidated into the Sandhills State Refuge.

Chufa planting on a wild turkey refuge. NCWRC

The primary focus of the wild turkey program over the next decade was on the development and management of these refuges (later called turkey management areas). A tremendous amount of effort and money were expended in developing, planting, and maintaining numerous openings on these refuges. Plantings included rescue grass, wheat, rye, oats, various clovers, orchard grass, millet, milo, several varieties of lespedeza, chufa, and various annual mixes. Some level of success in increasing turkey numbers was achieved on these areas and they were subsequently used as trapping sources for translocation efforts across the state. However, by the 1960s, turkey numbers on many of these areas had dwindled to the point that it was somewhat of a misnomer to call them turkey management areas. As turkey numbers declined, public sentiment shifted against the continued trapping of birds on these areas. However, at least one refuge, the Caswell Refuge, persisted as a refuge well into the 1970s and continued to be a trapping source until restoration efforts were completed in 2005.

Chufa tubers favored by wild turkeys . NCWRC

As an additional note, during the period when turkey refuges were emphasized, very liberal fall turkey seasons and bag limits were the norm. In 1948, based on recommendations by Robert Wheeler, the Commission changed the fall turkey season to "gobblers only" and shortened it somewhat to a framework of mid-November through the end of January. In 1949 the season bag limit was lowered from 6 to 3 birds. In 1954 the bag limit was further reduced to 2 birds and the season was closed in the mountains in 1956. However, in 1957, the fall season was again lengthened to 3 full months with a mid-February closing in the Piedmont and Coastal Plains.

Restoration Efforts (1950s)

Under Wheeler's guidance in the late 1940s, the state abandoned its efforts to propagate pen-reared turkeys and committed to live-trapping wild birds on these intensively managed turkey refuges and transplanting them to restoration sites in the mountains. In 1953, four birds were trapped in the Uwharrie Mountains and five birds in the Sandhills area and released on the Flat Top Wildlife Management Area in Yancey County to kick off this renewed effort. However, trapping methods were crude. Several of the birds were captured using permanent, drop-door wire traps. The remaining birds were captured with much more efficient cannon nets. However, progress was still painfully slow. During the remainder of the 1950s, an additional sixty-four birds were relocated to several sites in the western portion of the state (Table 2). The elusive birds were proving to be much more difficult to live-trap than wildlife managers had expected.

Table 2. Wild Turkey Restoration – Annual and Cumulative Totals.

YEAR	NUMBER OF BIRDS RELOCATED		ANNUAL TOTAL	CUMMULATIVE TOTAL
	NORTH CAROLINA	OTHER STATES		
1953	9	-	9	9
1954	2	-	2	11
1955	2	-	2	13
1956	36	-	36	49
1957	18	-	18	67
1958	-	-	-	67
1959	6	-	6	73
1960	-	-	-	73
1961	5	-	5	78
1962	2	-	2	80
1963	8	-	8	88
1964	15	26 (FL*)	41	129
1965	30	-	30	159
1966	11	-	11	170
1967	-	-	-	170
1968	-	-	-	170
1969	6	-	6	176
1970	8	-	8	184
1971	36	-	36	220
1972	60	-	60	280
1973	46	-	46	326
1974	34	-	34	360
1975	14	-	14	374
1976	57	-	57	431
1977	30	-	30	461
1978	36	-	36	497
1979	58	-	58	555
1980	43	-	43	598
1981	60	-	60	658
1982	54	28 (VT*)	82	740
1983	81	-	81	821
1984	105	-	105	926
1985	90	-	90	1,016
1986	116	37 (WV**)	153	1,169
1987	74	-	74	1,243
1988	120	-	120	1,363
1989	65	70 (SC)	135	1,498
1990	161	92 (WI)	253	1,751
1991	228	**280** (SC – 204 and WI – 76)	508	2,259
1992	185	128 (SC)	313	2,572

Table 2 (continued). Wild Turkey Restoration – Annual and Cumulative Totals.

YEAR	NUMBER OF BIRDS RELOCATED		ANNUAL TOTAL	CUMMULATIVE TOTAL
	NORTH CAROLINA	OTHER STATES		
1993	169	**305** (IA – 151, PA – 87, and WI – 67)	474	3,046
1994	212	**237** (CT – 17, PA – 97, SC – 109, and VA – 14)	449	3,495
1995	209	**116** (CT – 43, PA – 33, SC – 21, and VA – 19)	325	3,820
1996	193	**371** (AL – 6, AR – 6, CT – 6, MI – 50, PA – 147, SC – 95, and WV** – 61)	564	4,384
1997	183	**176** (SC – 87 and WV** - 89)	359	4,743
1998	227	-	227	4,970
1999	269	104 (SC)	373	5,343
2000	264	15 (SC)	279	5,622
2001	-	-	-	5,622
2002	171	-	171	5,793
2003	102	-	102	5,895
2004	86	-	86	5,981
2005	50	-	50	6,031

Note:
**FL and VT birds were donations.*
***WV birds were in trade for NC river otters.*
All other birds from other states were through the NWTF's Super Fund Program.

Restoration Efforts (1960s)

During the decade of the 1960s, only 103 additional birds were relocated; 77 birds were trapped in-state and 26 birds were received as a donation from the State of Florida (Table 2). Cannon nets were being used for most of the captures. However, by the late 1960s, capture drugs were also being used to capture birds as well. Despite these determined but meager efforts, turkey populations had continued to dwindle throughout this entire time period and reached a low point of only about 2,000 birds in 1970.

Despite the continued decline of the turkey population, the fall season in the Piedmont and Coastal Plains continued to be three full months in length. Although many of the state's most prominent turkey hunters objected, the Commission also began experimenting with a spring gobbler season in the spring of 1969 in the Piedmont and Coastal Plain.

Restoration Efforts (1970s)

In 1970 Wayne Bailey, a retired wild turkey biologist from West Virginia, was hired to head the state's wild turkey program. Despite tremendous opposition, he was instrumental in getting the fall turkey season closed and a statewide spring gobbler season initiated in 1971. This marks the beginning of the return of the wild turkey in North Carolina.

Through Wayne's determined efforts, the Commission began relocating birds consistently on an annual basis. Strict restoration guidelines were established, including a minimum of 10,000 acres of contiguous, suitable habitat. Capture drugs, cannon nets, and, in the late 1970s, even more efficient rocket nets were used to capture birds. Successful restoration areas also began providing additional sites from where to trap birds. By the end of the 1970s, a total of 379 wild turkeys had been relocated (Table 2) and the population had increased to an estimated 7,500 birds. To this point all restoration sites had been on public lands and all but two were in the mountains. The two exceptions were one site on the Birkhead Wilderness Area on the Uwharrie National Forest in Randolph County and one site on the Croatan National Forest in Craven County.

Wayne Bailey

R. Wayne Bailey was considered one of the fathers of wild turkey restoration.

Restoration Efforts (1980s)

At the beginning of the 1980s, biologists began considering private lands as well as public lands in all three regions of the state for restoration purposes. This opened up huge areas of the state that were not previously considered for turkey restoration. During a specific selection and evaluation process, public lands were still given priority status but top quality private land areas began receiving birds as well. Each potential site was evaluated according to several criteria that could influence the success of the restoration effort (Appendices 2 & 3).

Old cannon net systems that some trapping crews were still using were replaced by new, more efficient rocket net systems. Capture drugs continued to be utilized as well. As

valuable experience was gained in using capture drugs, dosages were refined. Successful restoration efforts during the previous decade provided many more areas from where birds could be trapped. The momentum of the restoration program was building.

NCWRC

The author removing a wild turkey from a transport box in preparation for release.

In 1982, the Commission received a donation of 28 birds from the State of Vermont. In 1986, the state acquired another 37 birds from West Virginia in a trade for 20 river otters. And in 1989, the state received 70 birds from South Carolina; the first of many birds to come through the National Wild Turkey Federation's Super Fund Program. A total of 808 birds were trapped in-state during the 1980s for a combined total of 943 birds (Table 2). The estimated statewide population had almost quadrupled during the decade to an estimated 28,000 birds.

Restoration Efforts (1990s)

The use of capture drugs was abandoned by 1990 for several reasons, including excessive cost, difficulty in obtaining the drugs, and the requirement to obtain an investigational new animal drug exemption by the Center for Veterinary Medicine. By then, ample trapping sites were available across the state where rocket nets could be utilized. Therefore, almost all trapping during the 1990s was done with the advanced rocket net systems. Intensified trapping efforts resulted in 2,036 birds being relocated in-state during the period. The Commission received 150 wild turkeys from West Virginia in 1996 and 1997 in another trade for 100 river otters. In addition, the Commission also took full advantage of the National Wild Turkey Federation's Super Fund Program to acquire an additional 1,659 wild turkeys from 9 different states (Table 2), including Alabama (6), Arkansas (6), Connecticut (66),

Iowa (151), Michigan (50), Pennsylvania (364), South Carolina (748), Virginia (33), and Wisconsin (235). A combined total of 3,845 birds were relocated to restoration sites all across the state during the decade. The wild turkey population ballooned to an estimated 130,000 birds by 2000.

Restoration Efforts (2000-2005)

The Commission completed its primary statewide restoration efforts in 2000 by relocating 264 birds in-state and another 15 birds from South Carolina through the National Wild Turkey Federation's Super Fund Program. No birds were relocated in 2001 but the Commission did approve secondary restoration guidelines. These guidelines allowed for additional releases of birds in pockets of habitat where the birds had failed to occupy through natural expansion. A total of 409 birds were relocated between 2002 and 2005; 171 birds were relocated in 2002, 102 birds in 2003, 86 birds in 2004, and 50 birds in 2005 (Table 2). This secondary phase of restoration efforts was completed in 2005.

Restoration Summary

The wild turkey restoration program has been one of the most monumental and successful wildlife management programs in the history of the Commission. In more than five decades of restoration efforts involving the trapping and transferring of wild birds, 6,031 wild turkeys were relocated to 358 restoration sites across the state. A list of individual restoration areas by county is included in Appendix 4 with locations shown on a state map in Figure 1.

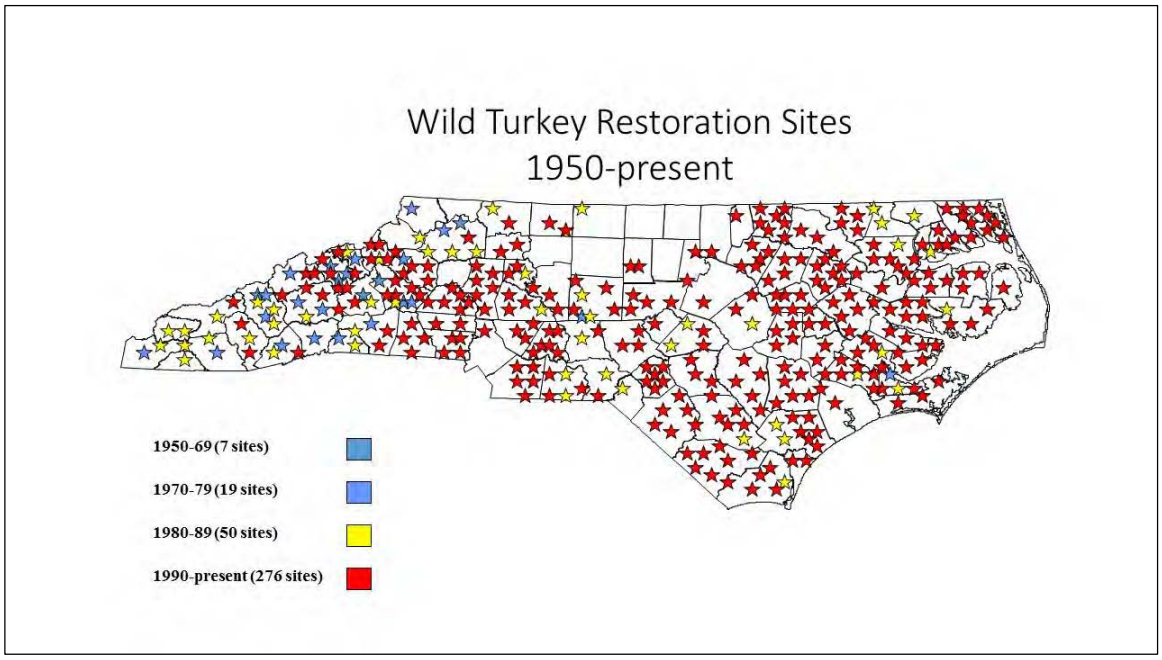


Figure 1. Wild Turkey Restoration Area Locations.

Trapping Techniques

Walk-In Traps

In 1953, when live-trapping of wild turkeys began in North Carolina, trapping attempts involved the use of crude walk-in, drop-door type traps made of boards and chicken wire. These were permanent traps that were usually built in wooded areas frequented by wild turkeys. Frequently, they were elongated in shape with drop doors on both ends, so that when baited, the birds could feed through the traps. They had to be constructed well in advance so they became weathered and the birds would become familiar with them. Bait was usually scattered in a line through the woods and through the trap. A blind was built near the site and the drop doors were triggered manually with a string that was pulled when the birds entered the trap. Although they were not very efficient traps, a few birds were captured with these devices. The first capture made with this style trap occurred on September 5, 1953 when an adult hen was captured on the Sandhills area. A second capture was made on September 11, 1953 when another four birds were captured on the Sandhills area. However, the birds frequently injured themselves flying into the chicken wire when the trap was triggered and when trappers entered the trap to remove the birds. Walk-in traps were used again in 1954 and then abandoned for the more efficient cannon net systems.

Crude walk-in, drop-door type trap made of boards and chicken wire. Wayne Bailey

Cannon Netting

The use of cannon nets was employed from the beginning of the restoration program in 1953. The first capture with the use of the cannon net system occurred on August 29, 1953 with a net borrowed from the U. S. Fish and Wildlife Service's Mattamuskeet Refuge. One jake and three juvenile hens were captured on the Uwharrie area in this first successful attempt.

Both cannon nets and walk-in traps were used in 1954. In 1955, additional cannon nets were purchased and the walk-in traps were abandoned.

Cannon nets systems utilized cannons that were set into the ground that used black powder charges to fire mortars attached to the net. The net was folded accordion-style, laid out flat along the ground, and camouflaged with leaves, grass, or straw. The cannon net system was fired electrically using a 6 or 12 volt battery by a trapper waiting in a nearby blind when the birds were in position. The mortars projected the net out over the birds. After set-up, the system was tested using a standard circuit tester. While the circuit tester would confirm that a complete circuit was achieved, it did not assure the trapper that the connections to the charges were properly made. Later on, more sophisticated galvanometers were used to test the set-ups. The cannon net system was the capture system of choice until the late 1970s.

Drug Trapping

From the late-1960s through the late-1980s, Commission personnel utilized capture drugs as another method for trapping wild turkeys. Several orally administered narcotizing agents were used to capture wild turkeys, including methoxymol, trichloroethanol, tribromoethanol, and alpha-chloralose. Alpha-chloralose probably has been used most by state wildlife agencies because it is relatively inexpensive and comparatively easier to obtain. Commission personnel experimented with its use as well as the use of trichloroethanol, tribromoethanol, and methoxymolin in the late-1960s and early-1970s. The first capture using drugs in North Carolina occurred in August of 1969 using methoxymol. However, tribromoethanol proved to be superior to the other capture drugs due to quicker "knock down" time, a shorter period of narcosis, and a lower mortality rate. Although it was very expensive and difficult to obtain, the positive attributes of tribromoethanol made it the capture drug of choice for the majority of the captures using drugs in North Carolina. Commission personnel began using it to capture birds in 1970 and continued using it until the late 1980s.

The use of capture drugs allowed personnel to trap in areas where nets could not be deployed, such as extremely steep terrain, areas with insufficient openings to deploy nets, and areas with restrictions against the use of explosives, such as Camp Lejeune Marine Corp Base. In collaboration with Dr. George A. Hurst (Mississippi State University), the author prepared a bulletin on the use of capture drugs (Appendix 5).

Rocket Netting

In the late-1970s and early-1980s, Commission personnel began replacing the old cannon net systems with more efficient rocket net systems. Initially, both Wildlife Materials rockets and Winn Star rockets were used. However, these two different rockets had two different sized exhaust ports and, therefore, required two different types of charges. Using improper charges in the rockets resulted in either inadequate deployment of the net or possible explosions of the rocket. To avoid hazardous situations and failed trapping attempts, all personnel eventually switched to Winn Star rockets and charges. The rocket net system is much faster in projecting the net out over the birds and, therefore, more efficient in capturing birds. Additionally, the rocket net system could be fired in the old flat net style or out of a trapezoid net box, a system originally designed for waterfowl trapping. Like cannon nets, the rocket net system was fired electrically from a trapper waiting in a nearby blind when the birds were

in position. The trapezoid box provided additional advantages in ease of set-up and all-weather capabilities. As cannon net systems were replaced with rocket net systems, firing batteries were replaced with blasting devices and circuit testers were replaced with blasting galvanometers. Blasting devices were safer and more reliable than batteries that could get weak without notice, and they provided a much stronger charge. Blasting galvanometers also allowed the trapper to fully test the system to determine if it was properly set up. Charges were connected in a series so that if one charge fired, all three would fire or if one defective charge existed, none of the charges would fire. The blasting galvanometer reads the amount of resistance in ohms. A typical firing wire would have 3 to 4 ohms of resistance. Each pre-packaged charge would have 1 to 1.5 ohms of resistance and three charges were used in the typical set up. When properly set up, the system should have 6 to 8 ohms of resistance. If the galvanometer showed too much or too little resistance, the trapper would know the system was not properly set up and could remedy the situation without having a failed trapping attempt. If the system was left set up overnight, the trapper could quickly recheck it the next morning. Rocket net systems were used for 25 years until trapping was completed in 2005. The overwhelming majority of the wild turkeys relocated in North Carolina were captured using rocket net systems.

Trapezoid rocket net box being set up. NCWRC

Rocket net being fired over turkeys. NCWRC

Wild Turkey Restoration Area Selection Process

Selection of wild turkey restoration areas was an ongoing process that involved much more than simply finding areas capable of supporting turkeys and then stocking the birds. To have a credible restoration program, the Commission had to identify the areas with the most potential and establish populations in those areas first. The process actually involved several steps and a much longer time frame than most people realized.

Range Mapping

Since 1980, every five years Commission biologists have developed or updated wild turkey range maps. Occupied wild turkey range was identified on a county-by-county basis and an attempt was made to estimate the number of birds per square mile within those ranges. Any large areas of potential, unoccupied wild turkey habitat were also identified. This provided personnel with a resource to identify and target appropriate turkey restoration areas.

Requests from the Public

Another method of locating potential wild turkey restoration areas was through requests from other agencies, clubs, and individuals. These requests were investigated on a regular basis throughout the year. The first contact was usually with the District Biologist who may have already been familiar with the area in question. If not, he could generally determine whether the area met the minimum requirements for consideration as a restoration area with his initial visit.

Minimum Requirements for Consideration as a Restoration Area

For consideration as a potential wild turkey restoration area, an area must have met several minimum requirements. The area must have contained a minimum of 5,000 acres of suitable, contiguous habitat. Landowners must be willing to sign up at least 3,000 acres under cooperative agreement with the Commission to assist with the protection and management of wild turkeys and, if the project was successful, agree to allow the Commission to trap birds off the area for use on other restoration areas. Most often the entire wild turkey hunting season for that county was required to be closed for a minimum of three years, but in several instances the season was only closed in a portion of the county. However, in those latter instances, the size of the area closed to wild turkey hunting was always greater than the restoration area itself. If these minimum requirements could be met, an evaluation of the area was conducted.

Evaluation of Potential Restoration Areas

The evaluation of potential wild turkey restoration areas provided a vehicle for comparing and ranking different areas. The process evaluated numerous factors which could affect the success of the project. These factors included: attitudes of landowners and their ability to manage the area for turkeys; public interest and support for the project; projected land use plans for the area; habitat characteristics, such as size of the area, proportion forested, proportion in open land, percentage in mast-producing hardwoods, and understory density; factors relating to potential disturbance of turkeys, such as presence of predators and free-ranging dogs, number of residents in the area, and miles of open public roads in the area; potential hunting opportunity in the area; and the potential for spread of the population to adjacent areas (Appendices 2 & 3).

Priority Restoration List

A priority list of restoration areas was developed and maintained and areas received birds in that order. Each year, as projects were completed, new areas were added to that priority list. While many potential areas were investigated each year, only a few were usually completed, especially during the early years of the program. It was, therefore, imperative to select the very best restoration areas for the priority list. Before adding any new areas to the priority list, the Wild Turkey Project Leader met with the Supervising Wildlife Biologists and the District Biologists to discuss, compare, and rank areas that had been evaluated. Areas that did not make the priority list were kept on file and reviewed again during the next selection process. As populations become established on the better areas, areas that ranked lower moved up in priority.

Stocking Guidelines

1. Areas considered for wild turkey restoration were evaluated and prioritized by project personnel utilizing established inspection procedures. Areas had to meet the following minimum qualifications:

    A. The minimum acreage of suitable unoccupied wild turkey habitat contained in a contiguous tract was 5,000 acres.

    B. At least 3,000 acres of the area must have been under a cooperative agreement with the Commission which would allow the trapping and removal of turkeys from the area for a period of not less than 10 years.

C. Restoration sites were geographically located in areas that would enhance the possibility of a population spreading to surrounding properties with suitable unoccupied habitat.

2. Fifteen to twenty wild turkeys were released on each area with a hen/gobbler ratio of two to three hens per gobbler.
3. Those counties or parts of counties selected for stocking were subjected to a minimum three-year closure of the turkey season to comply with federal aid funding requirements and to further ensure the success of the effort. Most areas averaged approximately five years before the spring gobbler season was opened.
4. Once a prioritized list of restoration areas was established, areas received birds in that order. Additions were made to the bottom of the list, but no substitutions were allowed.

Stocking Rates

During the 1950s and 1960s, trapping was attempted from late summer through the fall and winter. After 1970 almost all of the turkey trapping and subsequent releases were made during January - March. The baiting of sites and subsequent trapping were initiated after the close of deer season. This time frame allowed birds to be relocated just prior to the breeding season. In these winter releases, 15 to 20 wild turkeys were released on each restoration area at a ratio of two to three hens per gobbler and with minimums of 10 hens and 5 gobblers. Late-summer and fall stocking rates usually require twice this number of birds. Efforts were made to obtain birds from different sources to ensure genetic variability at each restoration area.

Guidelines for Maintenance (Secondary) Restoration

The primary phase of the Commission's wild turkey restoration program spanned almost half a century and was completed in 2000. At that point, wild turkeys existed in all 100 counties. In many cases, multiple releases were made in each county. These releases were spaced 10 or more miles apart and located so as to facilitate occupation of the surrounding habitat through reproduction and natural expansion. This plan of action, for the most part, worked very well all across the state. However, some isolated tracts of suitable, unoccupied habitat existed where wild turkeys had not colonized through natural expansion. In some cases, unforeseen barriers may have prevented or slowed expansion. In other cases, isolated island-like tracts of habitat that might never be occupied through natural expansion were identified. In a very few cases, less than satisfactory success of wild turkey restoration projects was simply the result of released wild turkeys not responding as expected. In an effort to fill in these gaps of unoccupied wild turkey range, the Commission approved modified guidelines for this secondary or maintenance phase of wild turkey restoration in 2001.

Under the new guidelines, the minimum acreage requirements remained at 5,000 acres of suitable habitat. However, the minimum acreage required under cooperative agreement was lowered to 2,000 acres. In areas where the spring gobbler season was already open, the agreements specified that no turkey hunting be allowed for a period of at least 3 years following the release of birds but was not closed by the Commission. Evaluation and prioritization of potential restoration areas utilized standard evaluation procedures and forms (Appendices 2 & 3). However, additional factors were also considered. These included: 1) distance from previous restoration sites or known populations of wild turkeys; 2) potential

barriers between the site in question and previous restoration sites or known populations of wild turkeys; 3) expected time frame required for occupation through natural expansion from closest known populations of wild turkeys. If a potential site was less than 5 air miles from a previous restoration site or known population of wild turkeys, and no barriers to expansion existed, the site was not considered. However, if barriers to expansion did exist, then the site was considered. If occupation of a potential site was expected to occur through natural expansion from the closest known population of wild turkeys within 4 years, then the site was not considered. However, if occupation was not expected within 4 years, the site was considered.

Relocation of wild turkeys during this maintenance phase of wild turkey restoration was conducted within regions. Each region had its own prioritized list of restoration sites for that region. Stocking rates remained the same as they had been during the primary phase of wild turkey restoration. Trapping was conducted on private lands as much as possible. This phase of wild turkey restoration was completed in 2005.

In-State Relocations

The trap and transfer program actually began in 1953 when 4 birds were trapped in the Uwharrie Mountains. In those early days, trapping methods were crude and progress was painfully slow. Few areas existed with sufficient numbers of birds to make trapping worthwhile and populations were continuing to decline. After struggling with the restoration program for almost two decades, the Commission finally began relocating wild turkeys consistently on an annual basis in the 1970s. As restoration projects succeeded in establishing new populations, more areas were available for trapping and the program began gaining momentum.

Wild turkeys being released on a restoration area in NCWRC District 6. NCWRC

The number of birds that were trapped from in-state sources increased dramatically during the latter half of the twentieth century (Table 2). From 1953 through 1969, Commission personnel relocated only 150 birds in-state; an average of only about 8 to 9 birds per year with a range of 0 to 30 birds. During the 1970s, 379 birds were relocated instate; an average of almost 38 birds per year with a range of 8 to 60 birds. During the 1980s, 808 wild turkeys were relocated in-state; an average of almost 81 birds annually with a range of 43 to 120 birds. During the 1990s, Commission personnel relocated 2,036 wild turkeys in-state; an average of over 200 birds per year with a range of 161 to 269 birds. The initial phase of the wild turkey restoration program was completed in 2000 when Commission personnel relocated 264 birds in-state.

No birds were relocated in 2001 but in 2002 the Commission began moving a few more birds to "fill in" voids of good habitat where the birds had not occupied through natural expansion. During the 2002 through 2005 period, 409 birds were relocated; an average of about 102 birds per year. A grand total of 4,046 wild turkeys have been relocated in-state since the program began in 1953.

Out-of-State Acquisitions

As the wild turkey restoration program struggled during the early years, the Commission sought to acquire additional birds from other states through several means. In a couple of cases, wild turkeys were received as donations from other states who had previously been the recipient of donations themselves. In a couple of other cases, the Commission was able to work out trades for additional wild turkeys. However, the biggest boost to the restoration program came when the Commission was able to take advantage of a new program administered by the National Wild Turkey Federation (NWTF) to acquire large numbers of wild turkeys from several states.

Donations

In 1964, 26 wild turkeys were received as a donation from the State of Florida. Another donation of 28 wild turkeys was received from the State of Vermont in 1982.

Trades

In 1986, North Carolina received 37 wild turkeys from the State of West Virginia in a trade for 20 river otters from eastern North Carolina. A second wild turkey/river otter trade with West Virginia occurred in 1996-97 when the Commission received another 150 wild turkeys for 100 river otters from eastern North Carolina. Negotiations for trades were attempted with a few other states but were unsuccessful. The details, such as exchange rates, species to be exchanged, etc., were usually very difficult to work out and these two trades were the only ones that occurred.

Super Fund Acquisitions

In an attempt to avoid the problems associated with trades, the NWTF set up their Super Fund Program to assist states with the interstate transfers of wild turkeys in 1988. After polling states as to the average cost of live-trapping and relocating birds, an exchange rate of

$500 per bird was established. Wild turkeys were not bought and sold but the receiving state reimbursed the donor state for their trapping costs. The monies went into the donor state's Super Fund account to be used for wild turkey habitat acquisition, research, or management. The NWTF received a $25 administration fee from the receiving state for each bird transferred. The receiving state also footed any transportation costs (such as airline shipping costs). In essence, the donor states traded surplus turkeys for additional habitat or habitat work in their own state while the receiving state supplemented their restoration program with additional birds.

NCWRC

Wild turkeys from South Carolina being released by the author and Dr. James Earl Kennamer, NWTF, while local chapter members watch.

The North Carolina State Chapter, NWTF, heartily endorsed the program, committed much of their budget from fund raising events to assisting with the cause, and requested that the Commission participate. The Commission approved the request and, in 1989, received the first 70 birds from South Carolina. These were just the first of many to be acquired through the Super Fund Program over the next twelve years (Table 2). Altogether, 1,744 wild turkeys were acquired from nine different states (AL - 6, AR - 6, CT - 66, IA - 151, MI - 50, PA - 364, SC - 833, VA - 33, & WI - 235) through the National Wild Turkey Federation's Super Fund Program to supplement in-state trapping efforts. These birds were acquired at cost of $925,727. The Commission funded $608,000, while $309,477 was funded by the NC State Chapter, NWTF (Table 3).

Table 3. Funding for acquisition of wild turkeys through the NWTF's Super Fund Program.

Year	Number of Birds	NCWRC	NCWTF	Fort Bragg	Annual Totals
1989	70	$35,000	0		$35,000
1990	92	$45,000	$1,000		$46,000
1991	280	$80,000	$60,000		$140,000
1992	128	$64,000	$3,200		$67,200
1993	305	$84,000	$83,600		$167,600
1994	237	$100,000	$27,800		$127,800
1995	116	$63,250	0		$63,250
1996	310	$136,750	$33,602		$170,352
1997	87	0	$45,675		$45,675
1998	0	0	0		0
1999	104	0	$54,600		$54,600
2000	15	0	0	$8,250	$8,250
Totals	1,744	$608,000	$309,477	$8,250	$925,727

Summary

A total of 1,985 wild turkeys was received from other states over the life of the restoration program; 54 birds as donations, 187 birds through trades, and 1,744 birds through the Super Fund Program. This comprised one third of the total number of wild turkeys relocated in the state since the program's inception; an obviously significant component of the program.

Wild Turkey Hunting Regulations

Records show that wild turkey hunting seasons and bag limits were set by each individual county in North Carolina as early as 1923-24 (Table 1). Presented below is information on season frameworks and bag limits for historical season types.

Fall Seasons

The first statewide fall season was set for the 1929-30 season. It ran from November 20 through February 15. This season was for turkeys of either sex with a daily bag limit of two birds and a season limit of five birds. This general season framework was followed, with some minor variations, until the late 1940s (Table 1). However, in 1935 some mountain counties were closed, the daily bag limit was reduced to one bird and the season bag limit was reduced to three birds. In 1939, all mountain counties were closed and a few other select counties were closed to turkey hunting as well. In 1946, the turkey season was closed across the state except for ten Piedmont and five Coastal counties. However, the following year, in 1947, the season was re-opened statewide.

The next major change in fall wild turkey seasons occurred in 1948 when the statewide fall season was changed to gobblers only. The season ran from November 25 through January 10 with a daily bag limit of one bird and a season bag limit of six birds. The following year the season limit was reduced to three birds. In 1950, the season was extended through January 31 and in 1954 the season bag limit was reduced to two birds. In 1956, the mountain counties were again closed to turkey hunting but, in 1957, the season was again extended until mid-February for the rest of the state. With only minor variations in season dates, this season remained relatively unchanged until the late-1960s for Piedmont and Coastal counties. In 1968, the fall season for the Piedmont and Coastal counties was reduced by approximately one month, extending from mid-December through mid-February while the season in the mountains remained closed.

Perhaps the most far reaching change of all occurred after the 1970-71 fall season. Despite opposition across the state, in order to begin serious restoration of turkey populations, the Commission terminated North Carolina's fall season and a spring gobbler season was established statewide. The only fall season in North Carolina during the next three decades was on the Camp Lejeune Marine Corps Base for a very brief period in the mid-1970s.

Spring Seasons

Despite major public opposition, the Commission began experimenting with the first spring gobbler season in the Piedmont and Coastal counties in the spring of 1969. The Mountain counties remained closed to both fall and spring turkey hunting.

Mike Seamster

The author's wife, Barbara, with her nice spring gobbler.

In the spring of 1972 a spring gobbler season was held statewide. This newly established spring season ran from April 22 through May 13 with a daily bag limit of one bird and a season limit of two birds. From the 1974 spring season through the 1979 spring season, the Commission experimented with a split spring gobbler season, opening the eastern portion of the state a week earlier than the western portion. The season length in both areas was three weeks. However, during the 1980 spring season, the two separate seasons were consolidated into one spring gobbler season that opened on the second Saturday in April and ran for four consecutive weeks statewide. This basic spring season framework still exists today. Over the next 25 years this season remained open statewide with the exception of counties and/or parts of counties that were closed for restoration purposes. By 2005, the restoration effort was complete and the entire state was open to spring gobbler hunting.

In 2006 the Commission assigned staff to evaluate wild turkey breeding patterns to determine if spring hunting seasons could be altered to enhance hunter satisfaction without jeopardizing

the continued increase of the wild turkey population (Appendix 1). Following the completion of this assignment, the Commission's Big Game Committee adopted the following goal for wild turkey management:

- *The goal for wild turkey management in North Carolina is to emphasize spring gobbler hunting by managing the population below maximum sustained yield in order to:*
    - *maintain high quality spring hunting, and*
    - *maximize continued increases in population size and distribution.*

Winter Season

Traditionally, fall hunting of wild turkeys was allowed in North Carolina as well as many other southeastern states. A moratorium was placed on the fall turkey hunting season in 1971 when turkey populations were extremely low. Although the fall season closure was very unpopular at the time, history has proven this move to be the correct one. The closure of the fall season, coupled with intensified restoration efforts, marked the beginning of a very successful comeback for the wild turkey in this state. Since 1970, over 5,700 wild turkeys had been relocated to 344 restoration sites across the state and the resulting increase in the wild turkey population had been remarkable.

As wild turkey populations continued to increase across the state, more and more sportsmen asked about the possibility of once again having a fall or winter wild turkey hunting season in North Carolina. There was no doubt that wild turkey populations were more abundant than they have been at any time during the last fifty years. The concentrated wild turkey restoration efforts of the previous three decades had brought wild turkeys numbers back from an all-time low of only about 2,000 birds in 1970 to an estimated 130,000 birds. Wild turkeys existed in all 100 counties in the state. Despite the tremendous progress that had been made in the previous 30 years, the wild turkey population in this state was far from reaching its full potential. However, some counties, particularly some of those counties along the northern border of the state, were at the point where a fall or winter wild turkey season could again be considered.

In an effort to assess the interest in a fall or winter wild turkey hunting season, the Commission surveyed a random sample of wild turkey hunters in the state. The vast majority of the respondents (79%) indicated an interest in having some limited fall or winter either-sex turkey hunting opportunity. When asked to rank several different season and bag limit options, respondents ranked those options offering winter hunting opportunities at the top of the list, while options offering additional spring hunting opportunities were ranked much lower. At the same time, the vast majority of the respondents (77% of those with an opinion) indicated that they would like to see the number of turkeys continue to increase.

The challenge to the Commission was to meet both of these desires; allow some winter either-sex turkey hunting opportunity and, at the same time, allow turkey populations to continue to increase. Wild turkey population dynamics research indicated that fall turkey harvests of greater than 5% of the population could slow population growth and fall harvests of greater than 10% of the population could result in long term population declines. If fall harvests were maintained at less than 5% of the population, then population growth should

continue. Season length, season timing, bag limits, and areas included were critical to managing harvest levels that precisely.

Following numerous meetings and discussions, the winter either-sex wild turkey season proposal was formulated for consideration. The initial recommendation was to include counties whose spring harvest level exceeded 1.0 bird/square mile of habitat. If the spring harvest level dropped below 1.0 bird/square mile of habitat, then the winter season would be closed in that county. This spring harvest level was subsequently reduced to 0.75 birds/square mile of habitat. The Commission took this proposal to the public hearings for comment and subsequently approved the proposal. The season was set by Administrative Rule for January 12 through January 17, 2004. It included Alleghany, Ashe, Caswell, Granville, Person, Rockingham, Stokes, Surry, and Watauga counties. The counties included in the season were along the northern border of the state. The spring harvest level in all of these counties exceeded the 0.75 birds/square mile of habitat except Surry County. Surry County was included in the winter season to make the entire area contiguous. This northern tier of counties included the highest densities of turkeys, as well as the highest spring harvest levels per square mile of habitat in the state. Although it did not meet the spring harvest level criterion, Wilkes County was added to the winter season in 2005.

The season would open on the Monday on or closest to January 15 and would be one week in length. This time frame would avoid overlap with deer seasons which could result in high incidental turkey harvest and avoid problems associated with deer baiting, which was not only legal (for deer) but also prolific. It would also avoid potential safety problems. Deer hunters are required to wear blaze orange while turkey hunters are not.

The annual season bag limit would remain at two birds; only one of which could be taken during the January season. Consideration was given to adding a third bird to the bag limit. An additional bird in the bag would increase hunting pressure and make assessing the impacts to the spring harvest more complicated. If the third bird in the bag were only available for the winter season, some hunters would be “forced” to hunt then to utilize that tag. If the third bird in the bag could be used either in the winter season or for a third bird during the spring season, it would be very difficult to assess the impacts of the winter season on the spring harvest in those counties. It would also increase spring hunting pressure in many counties where populations were low and the spring season was recently opened. Because only a small percentage of turkey hunters take two birds, maintaining the current season bag limit would not affect most hunters.

The use of dogs for hunting turkeys during the January season was allowed. Dogs were allowed in other seasons (quail, grouse, rabbit, etc.) that would be concurrent with the winter season time frame and the use of turkey dogs was a long-standing tradition in North Carolina. The use of rifles for turkey hunting at any time was prohibited by General Statute. The winter either-sex wild turkey season was for private land. Game lands hunts would be by permit only. Only Caswell Game Land was scheduled for a permit hunt during the first few years and 25 permits were issued for that area.

The winter wild turkey season was closed after 6 years. NCWRC

Participation in the winter turkey season was far less than anticipated by Commission personnel and reported harvests were low (Tables 4-10). After six years, the winter season was closed in 2010.

Table 4. 2004 Winter Wild Turkey Harvest by County.

COUNTY	TOTAL REPORTED	ADULT MALES	JAKES	HENS
ALLEGHANY	46	11	8	27
ASHE	35	10	10	15
CASWELL	23	10	3	10
GRANVILLE	16	7	2	7
PERSON	20	6	4	10
ROCKINGHAM	10	9	0	1
STOKES	13	5	2	6
SURRY	7	2	2	3
WATAUGA	11	7	0	4
TOTALS	**181**	**67**	**31**	**83**

Table 5. 2005 Winter Wild Turkey Harvest by County.

COUNTY	TOTAL REPORTED	ADULT MALES	JAKES	HENS
ALLEGHANY	19	6	4	9
ASHE	19	6	4	9
CASWELL	11	2	1	8
GRANVILLE	17	6	5	6
PERSON	7	5	1	1
ROCKINGHAM	12	5	2	5
STOKES	23	7	7	9
SURRY	7	2	3	2
WATAUGA	17	5	3	9
WILKES	19	3	6	10
TOTALS	**151**	**47**	**36**	**68**

Table 6. 2006 Winter Wild Turkey Harvest by County.

COUNTY	TOTAL REPORTED	ADULT MALES	JAKES	HENS
ALLEGHANY	29	10	5	14
ASHE	19	7	3	9
CASWELL	17	10	1	6
GRANVILLE	10	2	4	4
PERSON	7	3	1	3
ROCKINGHAM	17	7	4	6
STOKES	16	7	0	9
SURRY	10	4	1	5
WATAUGA	18	4	3	11
WILKES	31	12	9	10
TOTALS	**174**	**66**	**31**	**77**

Table 7. 2007 Winter Wild Turkey Harvest by County.

COUNTY	TOTAL REPORTED	ADULT MALES	JAKES	HENS
ALLEGHANY	17	5	3	9
ASHE	19	8	4	7
CASWELL	6	3	1	2
GRANVILLE	14	7	2	5
PERSON	7	1	2	4
ROCKINGHAM	16	7	1	8
STOKES	8	5	0	3
SURRY	4	3	0	1
WATAUGA	18	4	5	9
WILKES	21	8	2	11
TOTALS	**130**	**51**	**20**	**59**

Table 8. 2008 Winter Wild Turkey Harvest by County.

COUNTY	TOTAL REPORTED	ADULT MALES	JAKES	HENS
ALLEGHANY	15	4	4	7
ASHE	7	1	4	2
CASWELL	11	4	1	6
GRANVILLE	9	2	1	6
PERSON	6	3	2	1
ROCKINGHAM	20	10	3	7
STOKES	8	3	2	3
SURRY	6	2	2	2
WATAUGA	11	6	1	4
WILKES	24	14	4	6
TOTALS	**117**	**49**	**24**	**44**

Table 9. 2009 Winter Wild Turkey Harvest by County.

COUNTY	TOTAL REPORTED	ADULT MALES	JAKES	HENS
ALLEGHANY	13	5	2	6
ASHE	11	2	1	8
CASWELL	11	7	2	2
GRANVILLE	9	5	2	2
PERSON	5	1	1	3
ROCKINGHAM	7	5	0	2
STOKES	9	2	1	6
SURRY	8	4	1	3
WATAUGA	9	2	1	6
WILKES	16	3	6	7
TOTALS	**98**	**36**	**17**	**45**

Table 10. Total Winter Wild Turkey Harvest, 2004-09.

YEAR	TOTAL REPORTED	ADULT MALES	JAKES	HENS
2004	181	67	31	83
2005	151	47	36	68
2006	174	66	31	77
2007	130	51	20	59
2008	117	49	24	44
2009	98	36	17	45
TOTALS	**851**	**316**	**159**	**376**

Youth Hunts

Youth spring gobbler hunts were established in the late 1990s on several public hunting areas across the state. These were on high quality, permit-only areas on opening day of the spring gobbler season. A licensed adult accompanied each youth, but the adult was not allowed the privilege of harvesting a turkey. While these hunts provided unique opportunities to introduce young hunters to the sport, utilization of these areas was low and somewhat disappointing to Commission staff. Starting in 2006, a one-day youth spring gobbler hunt was established on the Saturday preceding the regular season opening day on private lands statewide (i.e., first Saturday in April). Youth hunts were allowed on a few game lands by permit. In 2008, youth hunts were allowed on all game lands, although a few were still by permit only. Starting with the 2013 season the youth hunt day was extended to a weeklong season that ran from the Saturday before the regular wild turkey season opening day until the following Friday. Youth could only harvest one male or bearded turkey during this weeklong season.

Spring gobbler taken by the author's son, Daniel. Mike Seamster

Wild Turkey Harvest

Tagging and Reporting

After experimenting with a voluntary big game reporting system for a couple of years, tagging and reporting of all big game harvests became mandatory in North Carolina during the 1976-77 big game hunting season. That first year, the spring of 1977, 144 wild turkeys were reported harvested. Over the next thirty-five years the growth in the reported harvest mirrored the growth in wild turkey population levels in the state. In 1985, the reported harvest topped the 500 mark with 509 birds reported and three years later, in 1988, it topped the 1,000 mark with 1,032 birds reported. In 1999, the reported harvest topped the 5,000 mark with 5,340 birds reported and, in 2006, the reported harvest topped the 10,000 mark with 11,706 birds reported. In the spring of 2012 the reported harvest topped the 15,000 mark with 15,451 birds reported (Figure 2). The 1977 – present reported spring gobbler harvest is provided by county in a companion electronic document available at ncwildlife.org.

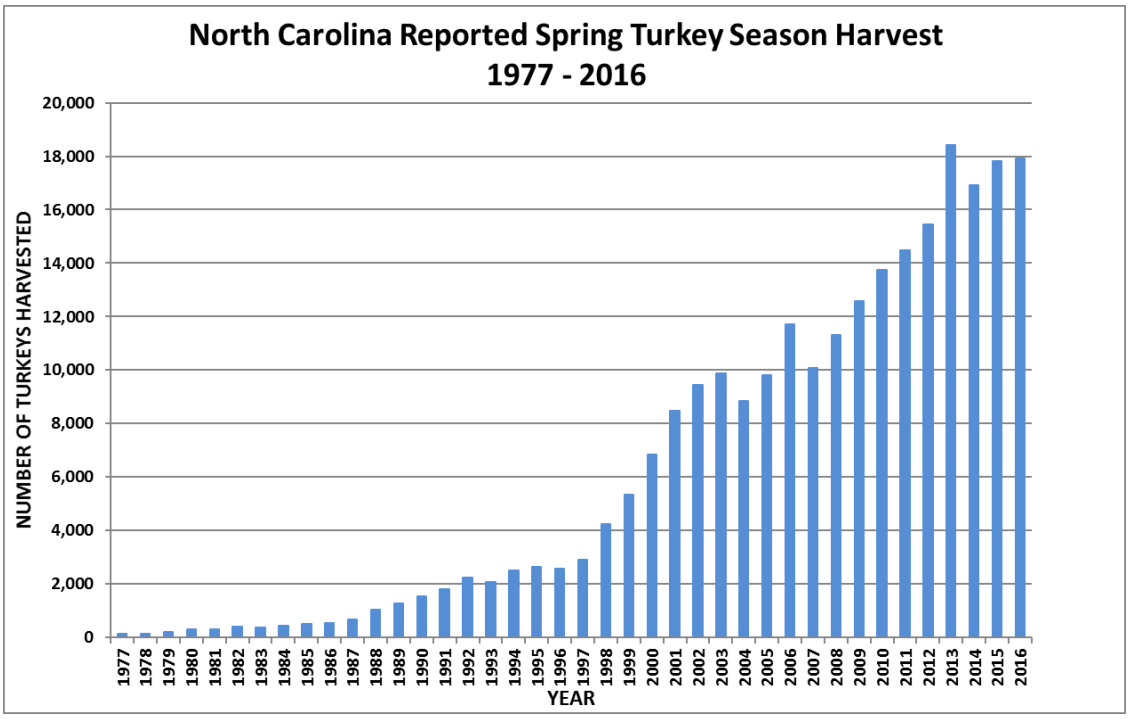


Figure 2. Reported Spring Gobbler Harvest Trend, 1977 – 2016.

Cooperator Agents

Cooperator agents were established across the state to accommodate successful hunters in registering their big game harvests. These agents were commonly convenience stores, gas stations, hardware stores, and sporting goods stores. Numerous agents were established in each county in locations convenient to successful hunters. These agents were furnished cooperator agent signs to put in their store windows and books in which to record the big game harvests. The successful hunter would receive a copy of the report or, later on, an

authorization number to legally possess his harvest. From the 1976-77 big game hunting season through the 1990-91 big game hunting season, the books and signs were delivered to the cooperator agents by local Wildlife Enforcement Officers prior to the big game season opening and picked up after the close of the season. However, the system grew in popularity over time and additional stores were added to the system. Many hunt clubs were also allowed to become cooperator agents and register their own kills. Eventually, some 2,500+ cooperator agents were active in the system. Starting with the 1991-92 big game hunting season, the Commission began mailing books to the cooperator agents and furnishing postage paid envelopes to the agents so they could mail the books back in. Although the system became extremely popular, it was also very expensive, especially during spring gobbler season when a relative small number of animals were being reported.

Telephone Reporting System

In 1994, the Commission added the option for hunters to report their harvest through a telephone reporting system. Successful hunters could dial 1-800-I GOT ONE (1-800-446-8663) to access a fully automated reporting system with a touch tone telephone. At the end of the call the hunter was given a coded authorization number to legally possess his big game harvest. Initially, some problems were encountered with this new system and only a small percentage of the harvests were reported through the system. Not all areas of the state had touch tone service, and on a few occasions the system was inoperable because of technical problems. On heavy call volume days, such as opening day of the spring turkey season and on Thanksgiving during deer season, all telephone circuits would sometimes be busy, which was unrelated to the reporting system problems.

In 1996, the Commission went entirely to the telephone reporting system for the spring gobbler season. Unfortunately, the system "went down" on opening day of the season causing major problems for hunters trying to report their harvests. The following spring the Commission reverted back to using both cooperator agents and the telephone reporting system for the spring gobbler season. Despite these problems, the telephone system became increasingly popular over the years because of the convenience to hunters and, by 2003, over fifty percent of the spring gobbler harvests were being reported by telephone. One of the major advantages to this type of system is the immediate access to harvest data. Commission personnel could access the harvest data at any point during the season and finalize harvest data immediately following the close of the season. In 2004, the Commission again eliminated cooperator agents for both the newly established winter either-sex turkey season (January, 2004) and the 2004 spring gobbler season, but added the option of Internet reporting to the telephone reporting system.

Internet Reporting System

Beginning with the 2003-04 big game hunting season, successful hunters could also check their big game harvest through the Commission's Internet Reporting System. They could log on to the Commission's home page, go to the reporting site, enter their customer identification number and the appropriate harvest information, and receive their authorization number to legally possess their harvest. About seven percent (594 birds) of the 2004 spring gobbler harvest was reported through the Internet Reporting System. Starting with the 2011-2012 hunting season, successful hunters could also report big game harvests online through a

mobile telephone application or by going to a Commission service agent who could report harvests online through their sales machine. The percentage of the spring gobbler harvest reported through all internet-based reporting systems has increased to about twenty percent of the total spring harvest during the last few years.

Wild Turkey Surveys

Surveys have been an integral part of the wild turkey project for many years and provide valuable information in several areas. Long-term brood surveys have been utilized to collect data to detect regional trends in wild turkey productivity in North Carolina. Other long-term surveys, such as the hunter harvest mail survey, have been utilized to detect long-term trends in hunter numbers, hunter effort, and harvest. Still other surveys, such as the spring gobbler season surveys or the winter season turkey hunter survey, have been used to collect data on hunter opinions on a variety of topics or options. Results of these surveys provide valuable information and insight used in making management decisions for the wild turkey resource.

Brood Surveys

In order to gain insight into wild turkey productivity over the various regions of the state, a wild turkey brood survey was initiated during the summer of 1988. Initially, the survey was mailed to just Wildlife Management Division personnel. Numerous additional survey participants were added over the ensuing years. In 2016, a total of 890 individuals participated in the survey. Personnel from the Commission (both Wildlife Management and Enforcement personnel), the North Carolina Forest Service, the U. S. Forest Service, the U. S. Fish and Wildlife Service, several military bases, NWTF members, numerous other sportsmen, key private individuals around restoration areas, and other individuals interested in the management of our state's wild turkey resource have participated in the survey. Individuals from every county of the state participate in the survey in most years. For the purpose of this survey, the state was divided into three geographical regions (Figure 3).

Hen turkey with brood of poults. NCWRC

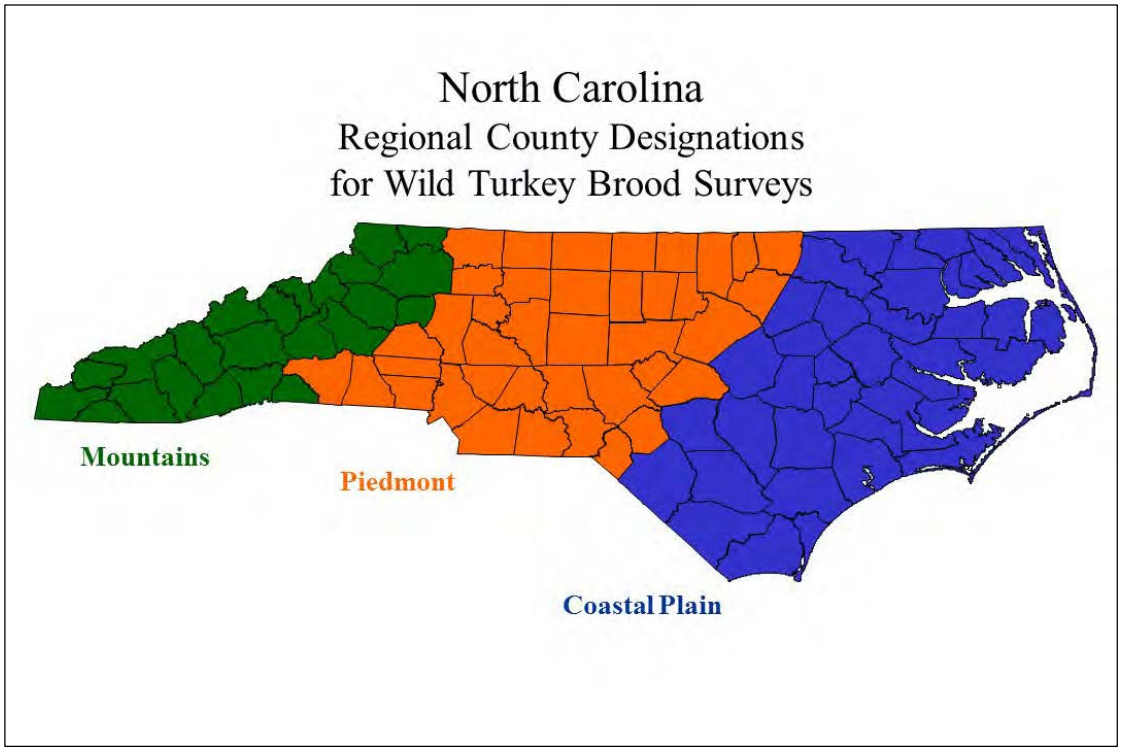


Figure 3. Wild Turkey Brood Survey Map (Geographical Regions).

Observations are made and recorded during the course of routine daily activities during the July 1 through August 31time frame. This information is compiled and analyzed to determine a productivity index from the average poult per hen ratios for each of the three geographical regions in the state (Figure 3). The percentage of hens with poults is an indication of nesting success, while the ratio of poults to hens observed with poults is an indication of poult survival. Overall productivity is determined by the average number of poults/hen. Detailed annual reports of the brood survey from 2003–present are available electronically at ncwildlife.org.

Data from brood surveys were particularly useful in assessing the success of wild turkey restoration areas. Restoration areas with good brood production during the first few years were almost always successful. Conversely, restoration areas where few, if any, broods were reported in the first few years usually met with little success unless additional birds were released in subsequent years.

Productivity indices can be also used for projections on a larger, geographical scale. Excellent productivity as determined from the summer brood surveys can indicate a higher percentage of jakes in the population the following year and more 2 year old gobblers in the population the year after. Conversely, poor productivity can indicate a lower percentage of jakes in the population the following year and fewer 2 year old gobblers in the population the year after.

Biologists should use caution in using these data for direct predictions on an annual basis because there are limitations. Annual fluctuations in productivity are common due to many factors, including weather. However, poor productivity for several consecutive years can help explain declining trends in wild turkey populations. Overall, brood surveys are just one of the tools that biologists can use to gain insight used in making management decisions regarding the wild turkey resource

Big Game Surveys

Statewide hunter harvest and effort surveys have been conducted periodically from the 1949-50 hunting season until the present (Table 11). At times the survey was conducted annually (1952-53 hunting season through 1955-56 hunting season). At other times, a number of years would pass between surveys. For example, no surveys were conducted from the 1963-64 hunting season through the 1975-76 hunting season or from the 1977-78 hunting season through the 1982-83 hunting season. The survey was conducted every three years from the 1983-84 hunting season through the 2001-02 hunting season. The survey was conducted again for the 2005-06 and 2007-08 hunting seasons, and the survey has been conducted annually since the 2010-11 hunting season.

During the early years of the survey the wild turkey population in North Carolina was at a very low level. Likewise, turkey hunter numbers were at a low level as well. Consequently, the standard errors for survey results regarding turkey hunter numbers, hunter effort, and harvest were so large that the data weren't very useful. However, as turkey populations and turkey hunter numbers have increased in recent years, the standard errors for survey results regarding turkey hunter numbers, hunter effort, and harvest have reached acceptable levels, especially on the statewide scale. The 2015-16 hunting season survey indicated more than 68,000 turkey hunters hunted over 368,000 days, and harvested nearly 24,000 wild turkeys statewide (Table 11).

Table 11. Wild Turkey Statewide Hunter Harvest Survey Estimates (1949-2015).

SEASON	# HUNTERS (95% CI)	# TRIPS (95% CI)	HARVEST (95% CI)
1949-50			914
1951-52		32,768 (± 11,503)	4,203 (± 1,837)
1952-53		46,914 (± 23,209)	2,656 (±1,296)
1953-54		48,879	4,301
1954-55		36,916 (± 15,556)	3,294 (± 1,285)
1955-56		70,754 (± 57,759)	5,337 (± 3,531)
1962-63		21,464	1,755
1976	4,826 (± 2,555)	32,940 (± 36,045)	1,484 (± 1,331)
1983	8,449 (± 1,290)	32,384 (± 7,414)	1,411 (± 885)
1986	8,622 (± 394)	41,751 (± 8,813)	1,073 (± 718)
1989	8,506 (± 1,834)	39,938 (± 11,859)	7,117 (± 10,498)
1992	15,701 (± 3,077)	75,057 (± 19,125)	2,536 (± 1,292)
1995	19,588 (± 2,841)	100,910 (± 12,658)	7,421 (± 1,905)
1998	32,318 (± 1,267)	160,600 (± 6,296)	9,092 (± 1,069)
2001	40,638 (± 2,390)	211,492 (± 4,145)	12,200 (± 4,065)

*2005	70,226	352,302	20,884
*2007	72,609 (± 4,612)	400,489 (± 34,866)	28,161 (± 7,050)
2010	66,975 (± 3,115)	384,444 (± 18,521)	25,835 (± 2,233)
2011	57,273 (± 2,663)	286,501 (±13,477)	21,488 (± 1,937)
2012	62,016 (± 2,788)	302,904 (± 14,162)	24,307 (± 2,381)
2013	67,728 (± 3,045)	327,791 (± 14,557)	27,930 (± 2,381)
2014	71,512 (± 3,338)	374,232 (± 17,655)	24,952 (± 2,342)
2015	68,564 (± 3,220)	368,440 (± 17,612)	23,744 (± 2,241)

Note: 95% confidence intervals (CI) provided when available

** Survey only obtained information on spring wild turkey season in these years*

Spring Gobbler Season (NWTF) Surveys

In the late 1980s, the Board of Directors for the North Carolina State Chapter of the National Wild Turkey Federation decided to conduct a spring gobbler season survey of their membership. The Board asked for the Commission's assistance in preparing the survey questions and in compiling the results. The North Carolina State Chapter agreed to cover the cost of the survey. The spring gobbler season survey began in 1989 and was conducted for four consecutive years with the last one in 1992. It is recognized that the survey is somewhat biased and may not represent all turkey hunters since only NWTF members were surveyed (Appendices 6-9).

Turkey Hunter Survey (Winter Season)

In an effort to assess the interest in a fall or winter wild turkey hunting season, the Commission surveyed a random sample of wild turkey hunters in the state in 2003. The vast majority of the respondents (79%) indicated an interest in having some limited fall or winter either-sex turkey hunting opportunity. When asked to rank several different season and bag limit options, respondents ranked those options offering winter hunting opportunities at the top of the list, while options offering additional spring hunting opportunities were ranked much lower. At the same time, the vast majority of the respondents (77% of those with an opinion) indicated that they would like to see the number of turkeys continue to increase (Appendix 10).

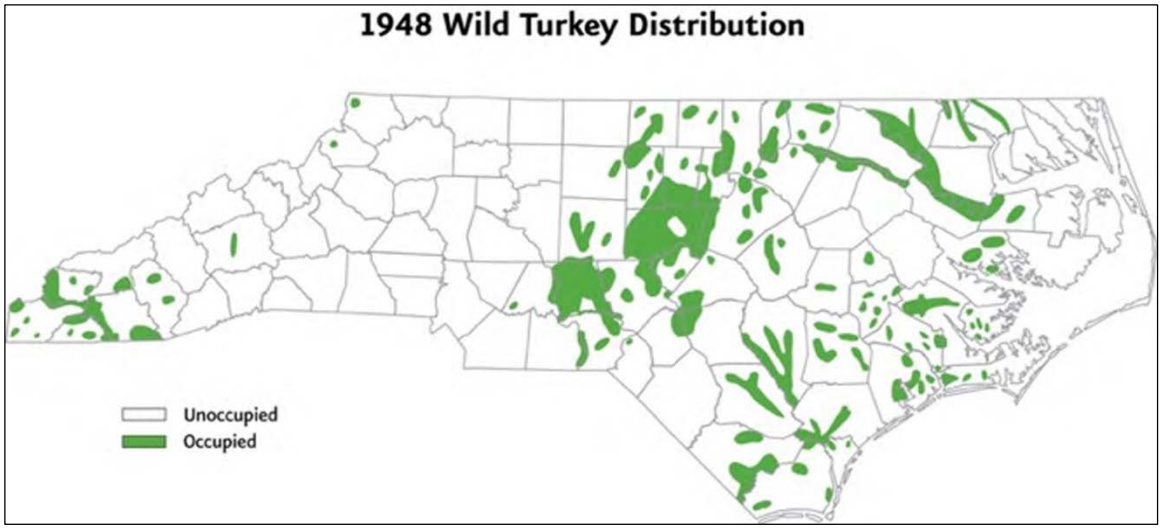
Due partly to the results of this survey, the first winter either-sex wild turkey season in over three decades was established for January 12-17, 2004.

Wild Turkey Range Mapping/Population Estimates

Wild turkey distribution maps were prepared for 1948, 1954, 1964, 1975, 1980, 1985, 1990, 1995, 2000, 2005, 2010, and 2015 (Figures 4-15). The estimated wild turkey population in 1948 was 10,000 birds. The estimated population had declined to only 3,700 by 1964. The wild turkey population in North Carolina reached a low point in 1970 when the estimated population was only 2,000 birds statewide.

In 1980, Commission personnel began mapping occupied wild turkey range in the state in five year intervals. During the mapping processes, wild turkey population numbers were estimated by district and region for 1980, 1985, 1990, 1995, 2000, 2005, 2010, and 2015 (Tables 12-13). These exercises also afforded opportunities to identify areas of unoccupied wild turkey range that offered the potential for restoration.

In 1980, the estimated wild turkey population had increased to about 7,500 birds. By, 1985, the estimate had almost doubled to about 14,000 birds. By 1990, the estimate had again doubled to about 28,000 birds. By 1995, the estimate had tripled to about 85,000 birds. In 2005, the estimate had increased to about 150,000 birds. The last estimate was updated in 2015 to about 265,000 birds statewide (Figure 16).



Figures 4. 1948 Wild Turkey Distribution Map.

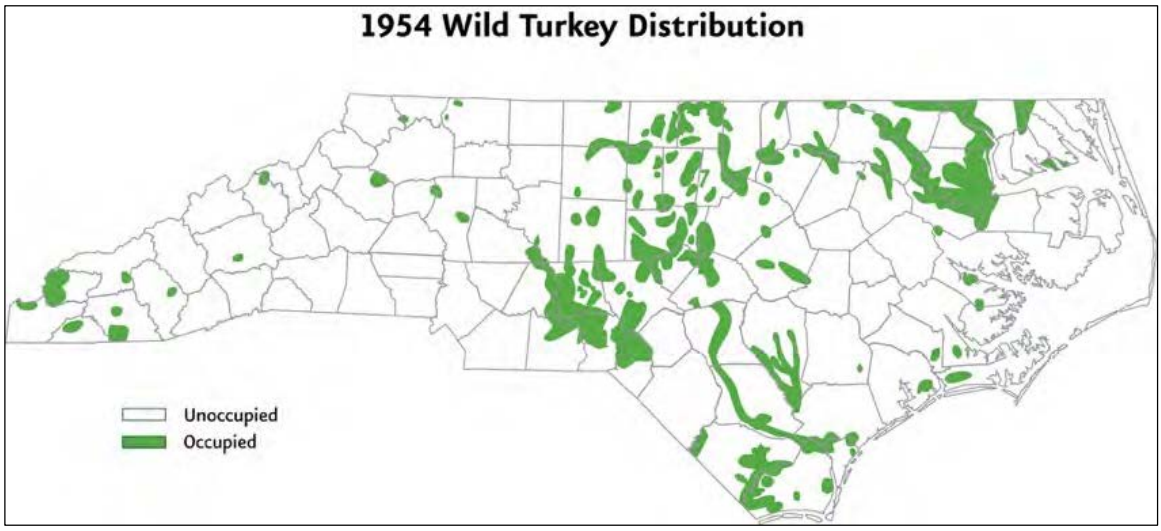


Figure 5. 1954 Wild Turkey Distribution Map.

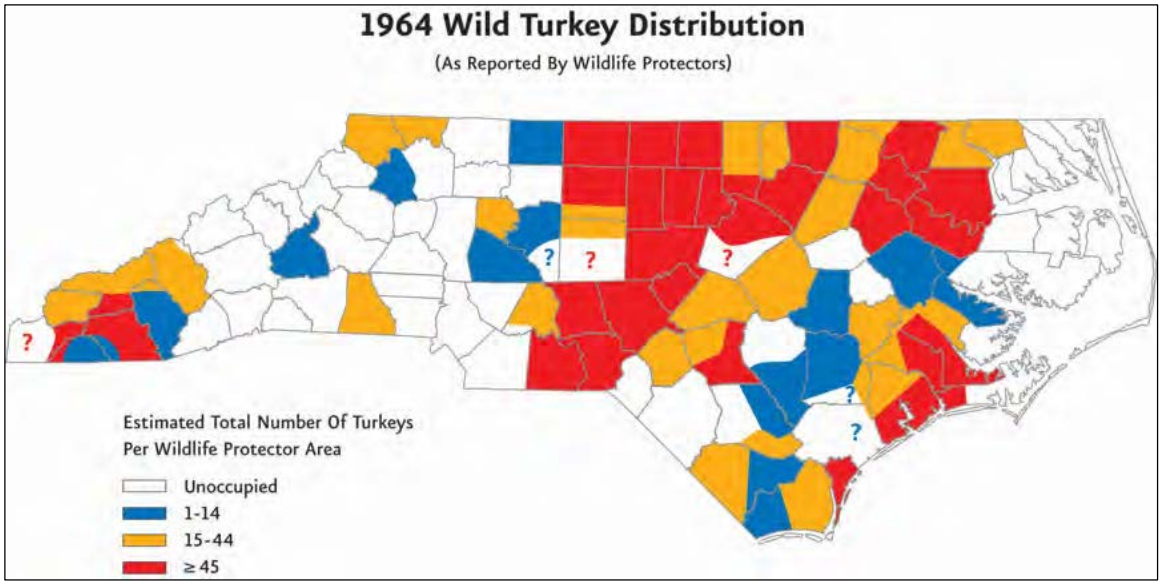


Figure 6. 1964 Wild Turkey Distribution Map.

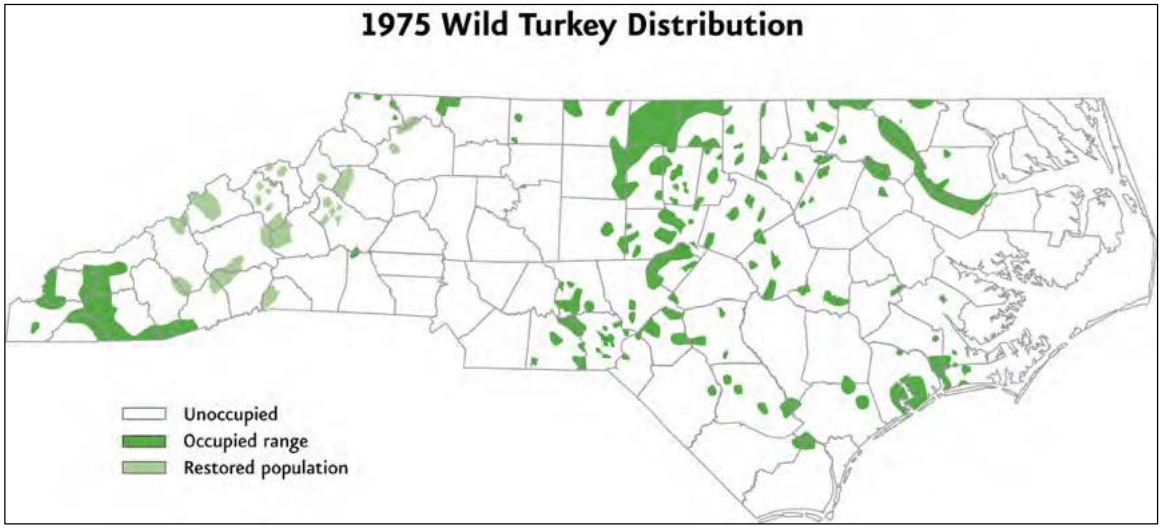


Figure 7. 1975 Wild Turkey Distribution Map.

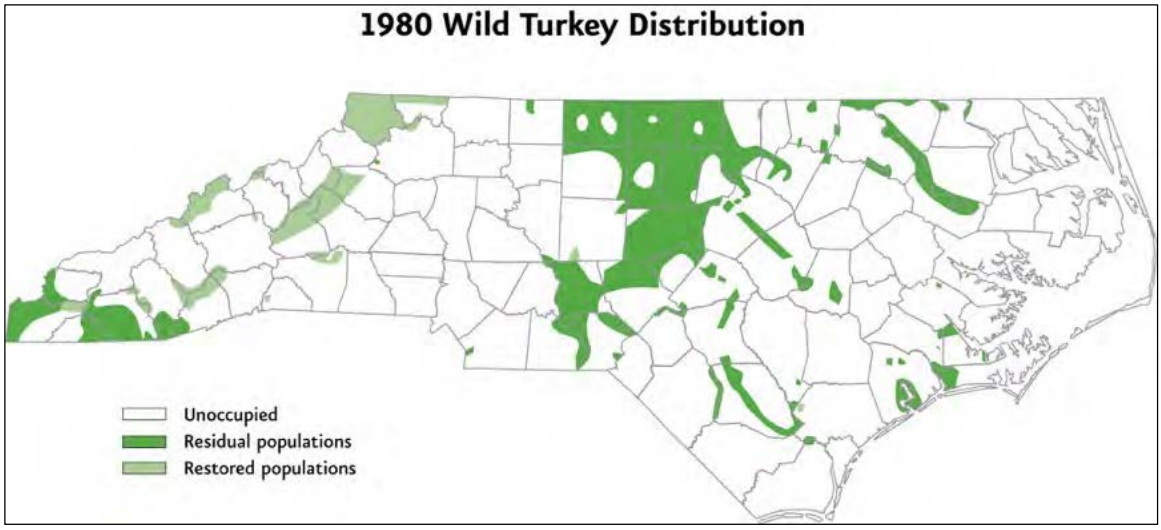


Figure 8. 1980 Wild Turkey Distribution Map.

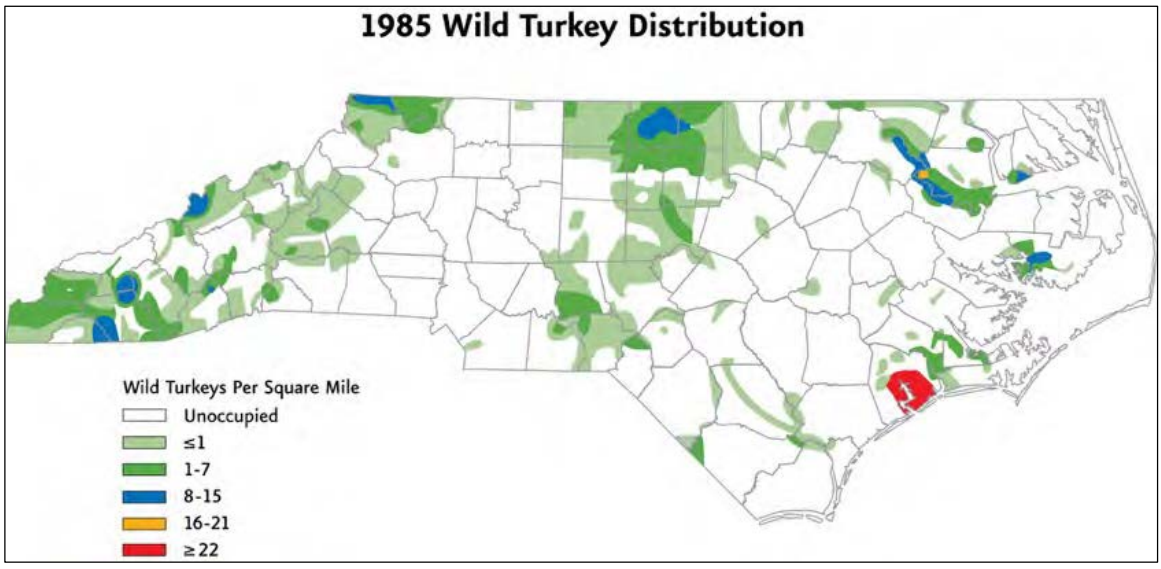


Figure 9. 1985 Wild Turkey Distribution Map.

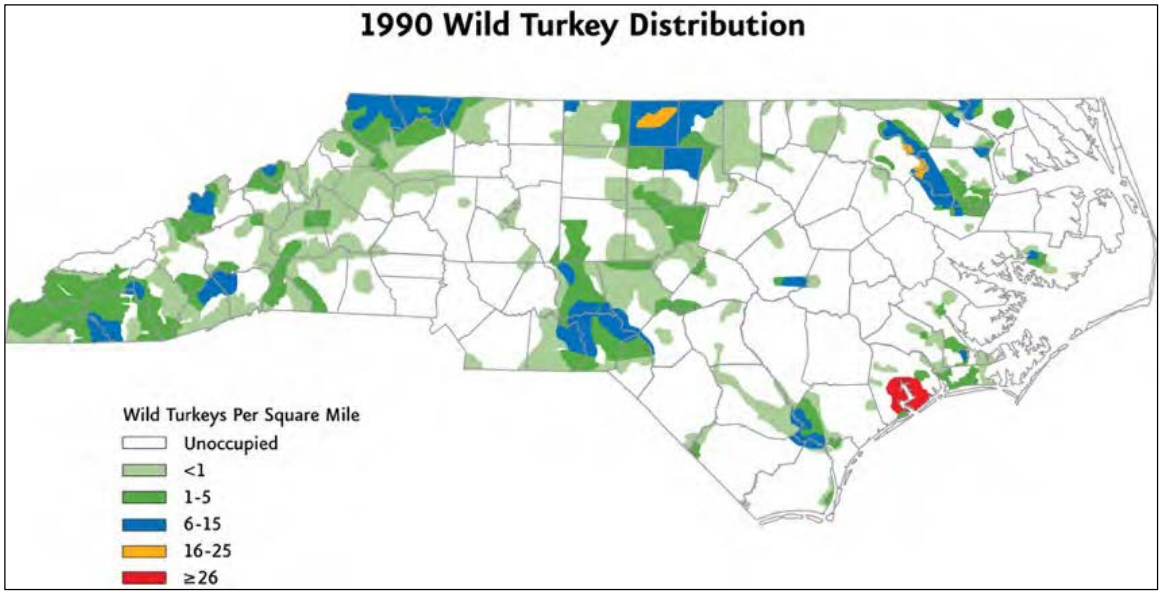


Figure 10. 1990 Wild Turkey Distribution Map.

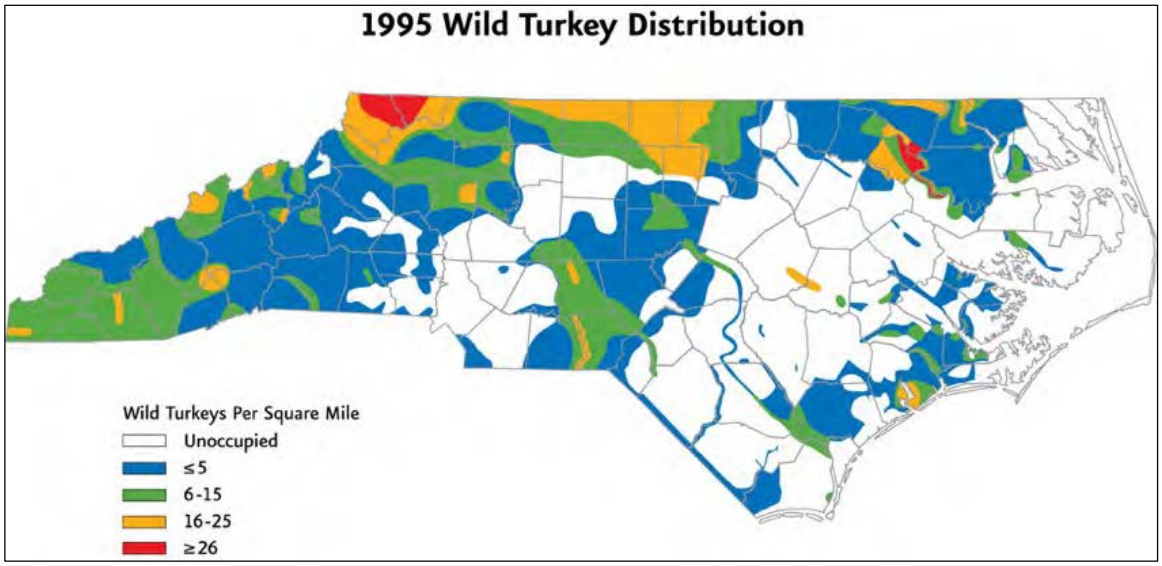


Figure 11. 1995 Wild Turkey Distribution Map.

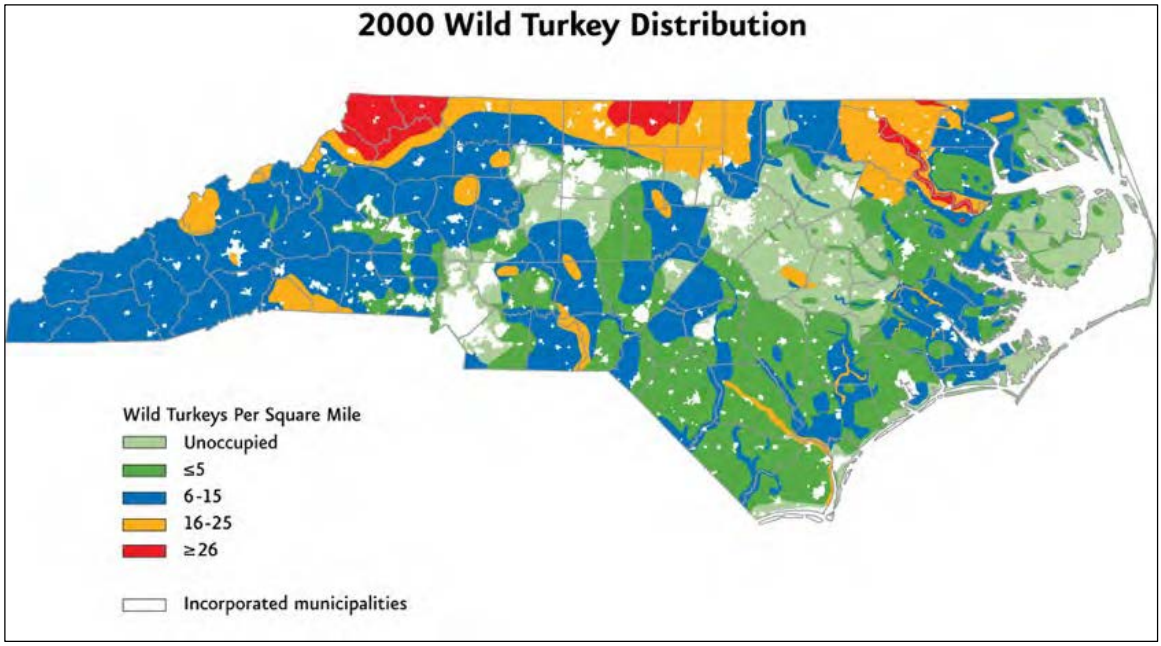


Figure 12. 2000 Wild Turkey Distribution Map.

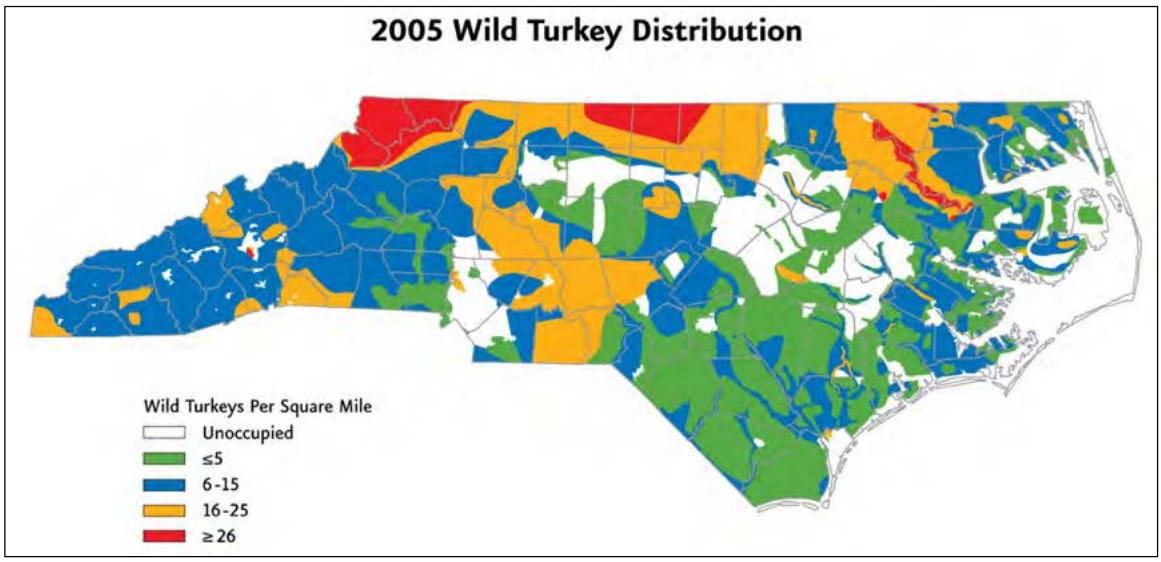


Figure 13. 2005 Wild Turkey Distribution Map.

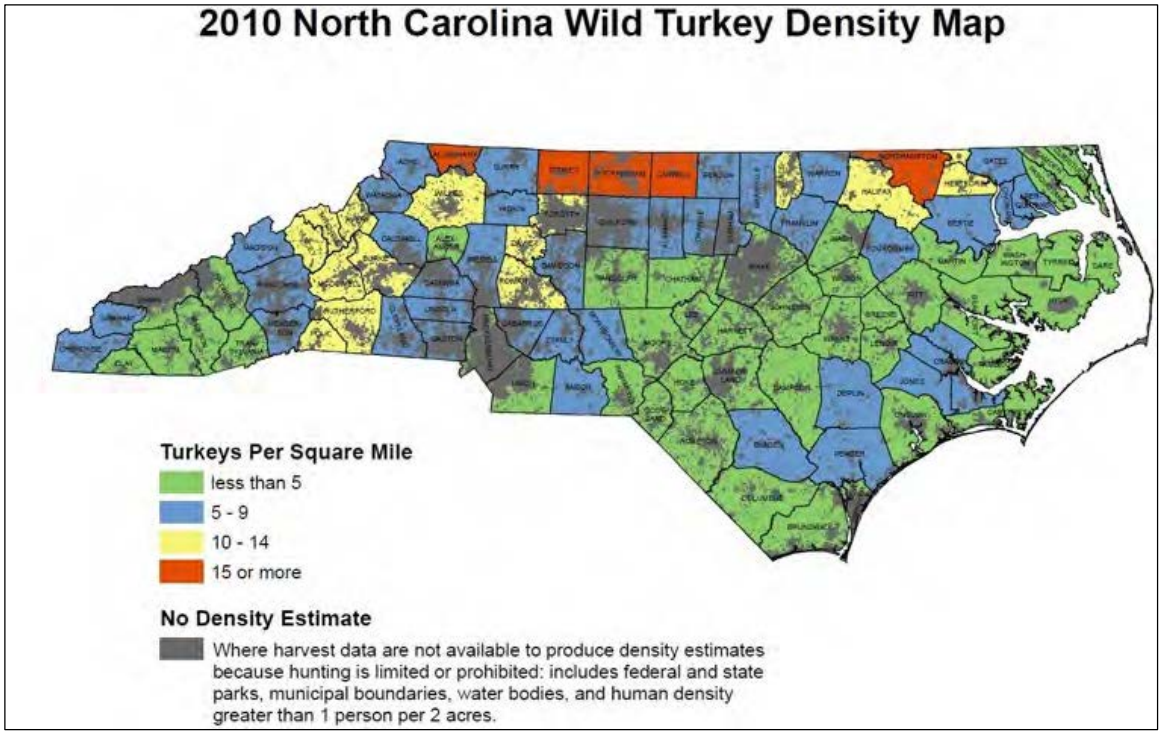


Figure 14. 2010 Wild Turkey Distribution Map.

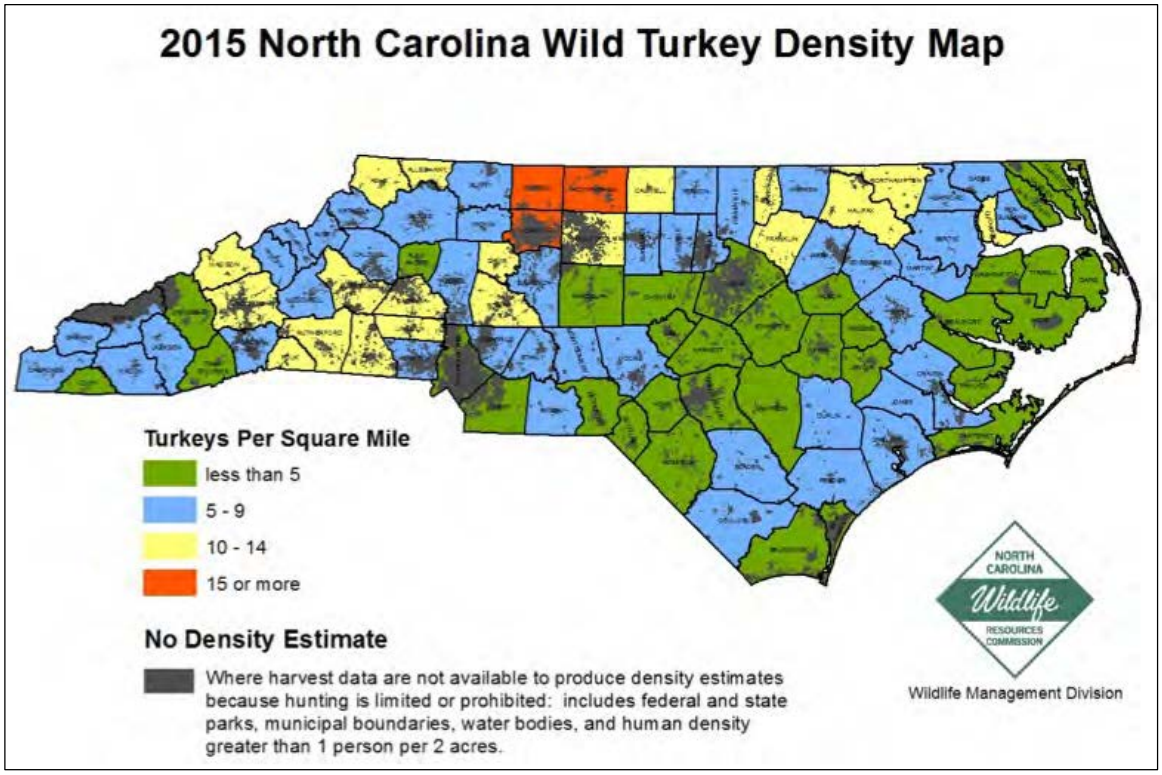


Figure 15. 2015 Wild Turkey Distribution Map.

Table 12. Estimated Wild Turkey Population (by district), 1980-2015.

District	Estimated Population							
	1980	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**
1	895	1,525	2,282	4,124	7,255	10,108	20,000	21,000
2	840	1,226	2,395	4,315	7,543	12,754	27,000	38,000
3	360	280	441	3,458	12,893	15,400	35,000	35,000
4	245	280	545	1,040	5,106	9,369	19,000	24,000
5	2,750	4,800	7,950	13,400	28,289	24,985	36,500	33,000
6	298	605	1,330	3,495	10,357	14,615	25,000	24,000
7	455	1,440	5,555	26,850	27,479	27,877	37,500	32,000
8	400	975	1,565	5,150	15,875	19,785	35,500	31,000
9	1,290	3,225	6,050	24,300	15,214	16,246	24,500	27,000
State	7,533	14,356	28,113	86,132	130,011	151,138	260,000	265,000

Table 13. Estimated Wild Turkey Population (by region), 1980-2015.

Region	Estimated Population							
	1980	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**
Coastal	1,980	3,031	5,222	9,479	19,904	32,231	66,000	83,000
Central	3,408	5,685	9,721	20,353	51,539	55,000	96,500	92,000
Western	2,145	5,640	13,170	56,300	58,568	63,908	97,500	90,000
State	7,533	14,356	28,113	86,132	130,011	151,138	260,000	265,000

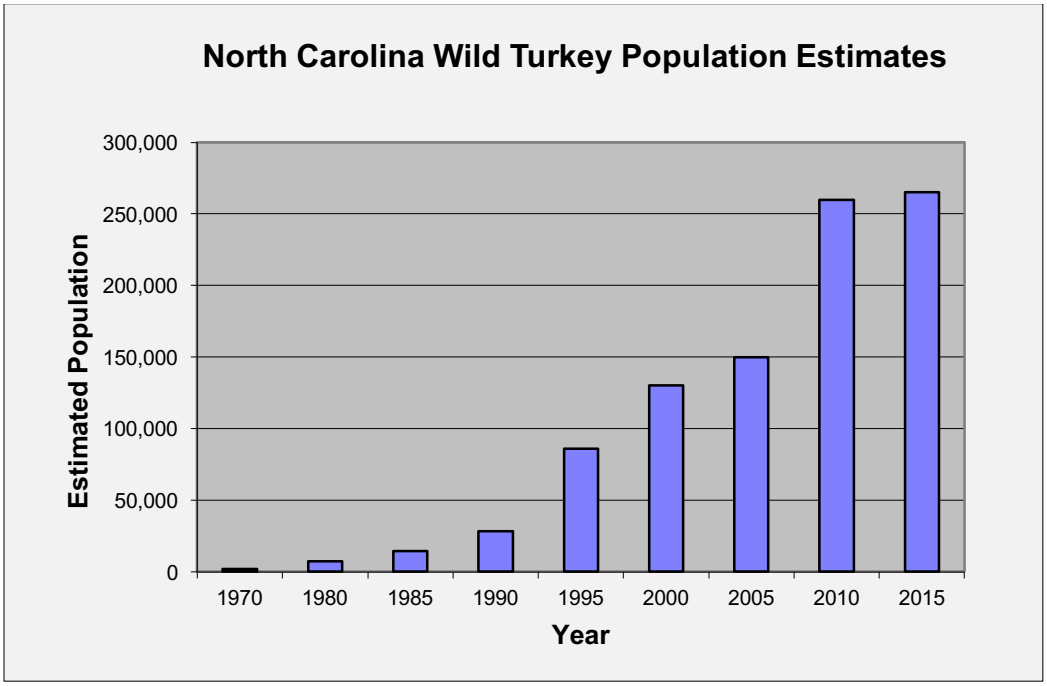


Figure 16. Wild Turkey Population Estimates, 1970-2015.

Wild Turkey Nuisance/Depredation Complaints

In general, wild turkey nuisance and/or depredation complaints have been few in North Carolina. Only in the last decade or so have wild turkey numbers across the state been sufficient to generate nuisance problems of any kind. Typically, these nuisance birds have been either pen-reared birds that have little fear of man or birds that have become acclimated to man through artificial feeding over time. The general policy of the Commission has been that nuisance animals are not captured or relocated. However, on a very few occasions, nuisance pen-reared birds have been captured, euthanized, and tested for diseases.

Wild turkeys usually cause little or no damage to most agricultural crops. While they will forage extensively on waste grain in harvested fields, they seldom cause depredation problems in standing crops. The few nuisance and/or depredation complaints that have been received over the last few years involving wild turkeys have been associated with specialty crops or unusual situations. Examples include wild turkeys scratching in tobacco plant beds or freshly landscaped and seeded areas that have been mulched with wheat straw, a flock of wild turkeys foraging in a grassy area near an airport runway, and turkeys scratching through silage covers. In a few cases, large flocks in the mountains have become acclimated to humans and have caused some nuisance problems around golf courses or residential areas. These cases are usually the result of some residents feeding the birds while others are upset with the birds for scratching in flower beds. Due to their wary nature, scare tactics usually work very well in these situations. If the birds are deliberately scared away from the site in question for several consecutive visits, they usually will discontinue their visits.

As wild turkey populations have increased in some parts of the state, some hunters have complained that turkeys are interfering with other types of hunting. The most common complaint in recent years has been wild turkeys feeding on corn around automatic deer feeders. These feeders are generally set up in remote areas where wild turkeys feel comfortable visiting and they readily feed on the corn put out for deer. Most feeders are set up to distribute a small amount of corn several times each day. A flock of wild turkeys has little trouble cleaning up these small amounts of corn, thus generating complaints from deer hunters who are trying to bait deer to their hunting spot. Scare tactics sometimes work in this kind of situation but, because of the remoteness of the feeder and the irregular visits by the deer hunter, the turkeys often aren't spooked from the site enough to cause them to entirely abandon their visits.

Wild Turkey Disease Testing

Many cases of diseased turkeys have been investigated over the years (Table 14). Additionally, there have been several diseases related projects focusing on wild turkeys in North Carolina. In 1978, tracheal swabs from 70 wild turkeys, collected statewide during live-trapping operations in the winter of 1978, were tested for influenza viruses by the St. Jude Children's Research Hospital, Memphis, Tennessee. All were negative, in contrast to several outbreaks in domestic turkeys (as reported by the hospital). In 2013, samples from were collected from 227 hunter-killed turkeys and tested for previous exposure to Lymphoproliferative Disease Virus (LPDV) as part of a multi-state project coordinated by the Southeastern Cooperative Wildlife Disease Study (SCWDS). Though these turkeys were otherwise healthy and non-symptomatic, many tested positive, indicating previous exposure to LPDV. Samples were collected from another 759 hunter-killed turkeys in 2015 and were tested for LPDV exposure in order to better determine the prevalence of LPDV in North Carolina. These efforts have revealed the overall prevalence rate of LPDV in North Carolina wild turkeys to be 46.1%. A detailed report about LPDV in North Carolina is available at ncwildlife.org.

Table 14. Results of 1993 - 2015 North Carolina Wild Turkey Disease Investigations.

COUNTY	DATE *	SPECIES	LAB **	DIAGNOSIS
Ashe	07/1976-09/1977	Wild Turkey	Unknown	Trauma
Richmond	10/1982	Wild Turkey	NCDA	Mycotic encephalitis and lice
Bertie	05/1985	Wild Turkey	NCDA	Aspergillosis
Halifax	09/1986	Wild Turkey	NCWRC	Unknown
Unknown	09/1986	Wild Turkey	NCDA	Histomoniasis
Macon	09/1987	Wild Turkey	SCWDS	Trauma
Davie	03/1988	Wild Turkey	NCDA	Unknown
Unknown	05/1988	Wild Turkey	NCDA	Salmonellosis
Henderson	12/1988	Wild Turkey	NCDA	Bacterial dermatitis and glossitis
Surry	08/1989	Wild Turkey	NCDA	Histomoniasis
Ashe	09/1989	Wild Turkey	NCWRC	Probably histomoniasis
Richmond	01/1990	Wild Turkey	NCDA	Trauma
Anson	03/1990	Wild Turkey	NCDA	Infection
Randolph	09/1990	Wild Turkey	SCWDS	*Mycoplasma gallisepticum*
Halifax	10/1990	Wild Turkey	NCWRC	Unknown
Watauga	01/1991	Wild Turkey (3)	NCDA	Unknown
Buncombe	03/1993	Wild Turkey	NCDA	Visceral gout
Unknown	11/1993	Wild Turkey	NCDA	Salmonellosis
Edgecombe	01/08/1994	Wild Turkey (3)	NCWRC	Unknown
Unknown	01/28/1994	Wild Turkey (3)	NCDA	Mycotoxicosis and mycoplasmal synovitis
Richmond	05/03/1994	Wild Turkey	SCWDS	Trauma
Richmond	06/13/1994	Wild Turkey	SCWDS	Trauma
Madison	05/03/1999	Wild Turkey	NCDA	Trauma
Richmond	09/27/1999	Wild Turkey	SCWDS	Cerebral and pulmonary nocardosis
Unknown	11/10/1999	Wild Turkey	NCDA	Dermatitis and cellulitis
Wilkes	05/12/2001	Wild Turkey	SCWDS	Avian pox
Unknown	02/18/2002	Wild Turkey	NCDA	Aspergillis pneumonia
Unknown	05/30/2003	Wild Turkey	NCDA	Staphylococcus infection
Anson	10/23/2003	Wild Turkey	NCDA	Avian pox
Unknown	03/05/2004	Wild Turkey	NCDA	Pseudomonas and Staphylococcus infection
Stanly	09/06/2008	Wild Turkey (2)	NCWRC	Unknown
McDowell	04/09/2010	Wild Turkey	NCWRC	Suspected injury
Yancey	01/19/2011	Wild Turkey	SCWDS	Avian pox; lymphoproliferative disease virus also identified
Yancey	01/26/2011	Wild Turkey	SCWDS	Avian pox

COUNTY	DATE *	SPECIES	LAB **	DIAGNOSIS
Yancey	04/11/2011	Wild Turkey	NCWRC	Avian pox
Davidson	10/07/2011	Wild Turkey	NCWRC	Unknown
Yancey	04/02/2012	Wild Turkey	SCWDS	Perforated cecum, severe coelomitis, and severe hepatitis
Bertie	06/18/2012	Wild Turkey	SCWDS	lymphoproliferative disease virus and bacterial dermatitis
Surry	09/10/2012	Wild Turkey	SCWDS	lymphoproliferative disease virus
Watauga	10/24/2012	Wild Turkey	SCWDS	Avian pox; lymphoproliferative disease virus also identified
Hertford	11/15/2012	Wild Turkey	SCWDS	Avian pox; lymphoproliferative disease virus also identified
Pender	11/30/2012	Wild Turkey	SCWDS	Avian pox and pneumonia
Camden	12/02/2012	Wild Turkey	SCWDS	Avian pox; lymphoproliferative disease virus also identified
Halifax	12/05/2012	Wild Turkey	NCWRC	Unknown
Pender	12/31/2012	Wild Turkey	NCWRC	Unknown
Forsyth	01/08/2013	Wild Turkey	SCWDS	Crop impaction
Edgecombe	04/15/2013	Wild Turkey	SCWDS	Chronic bacterial infection
Halifax	04/19/2013	Wild Turkey	NCWRC	Unknown, suspected LPDV
Chowan	09/08/2013	Wild Turkey	SCWDS	Coligranuloma disease
Bladen	10/10/2013	Wild Turkey	SCWDS	Systemic protozoan infection
Halifax	4/20/2015	Wild Turkey	SCWDS	Avian pox; lymphoproliferative disease virus also detected
Avery	4/30/2015	Wild Turkey	SCWDS	Lymphoproliferative disease; chronic dermatitis; pneumonia
Buncombe	7/8/2015	Wild Turkey	SCWDS	Histomoniasis
Forsyth	10/7/2016	Wild Turkey	SCWDS	Histomoniasis
Yancey	11/25/2015	Wild Turkey	NCDA	Salpingitis; Amyloidosis; Intestinal parasites
Pitt	4/22/2016	Wild Turkey	SCWDS	Avian Pox; LPDV also detected
Randolph	4/29/2016	Wild Turkey	SCWDS	Granulomatous myositis
Chatham	7/6/2016	Wild Turkey	SCWDS	Emaciation and heavy parasitism; bacterial dermatitis; LPDV
Perquimans	10/20/2016	Wild Turkey	SCWDS	Suspect sepsis *(Escherichia coli)*

* Collection and archival of date information has been inconsistent. In some years only the month was documented. No date was reported at all for the 1976/1977 Ashe County report. The date period indicated is the reporting period for the 1976-1977 Annual Progress Report.

** Labs: NCWRC - Evaluated by NC Wildlife Resources Commission personnel or reported by citizens
SCWDS - Southeastern Cooperative Wildlife Disease Study
NCDA - North Carolina Department of Agriculture and Consumer Services

NWTF (NC State Chapter) Partnerships

The National Wild Turkey Federation (NWTF) has worked very closely with state wildlife agencies since the organization was first formed in 1973. This is particularly true in North Carolina. Over the years these partnerships developed into very beneficial symbiotic relationships. The NWTF benefited from being closely associated with the state agencies that were in charge of active wild turkey restoration programs that were very popular among sportsmen. This association helped the organization increase membership, raise funds at banquets all across the country, and become one of the leading conservation organizations in the nation. These monies, in turn, were dedicated to funding numerous projects that benefited wild turkeys across North America. The NWTF has also helped educate hundreds of thousands of people about conservation of the wild turkey resource. State wild turkey project leaders serve on the NWTF's Technical Committee that helps direct funding of wild turkey research and habitat improvement projects. The Commission also has a very close working relationship with the North Carolina State Chapter of the National Wild Turkey Federation.

The most beneficial and popular cooperative project in North Carolina involving these three entities was the acquisition of wild turkeys through the NWTF's Super Fund Program to supplement in-state trapping efforts. The State Chapter heartily endorsed the program, committed much of their budget from fund raising events to assisting with the cause, and requested that the Commission participate. A total of 1,744 wild turkeys were acquired from nine different states through this program. These birds were acquired at cost of $925,727; $608,000 was funded by the Commission and $309,477 was funded by the State Chapter (Table 3).

The State Chapter has also funded numerous other projects across North Carolina including trapping equipment purchases, the reward program, turkey decoys for enforcement activities, the Conservation Seed program, the seed subsidy program, numerous educational programs, youth JAKES events, Women in the Outdoors events, Wheeling Sportsmen events for handicapped sportsmen, public land acquisitions, and numerous habitat improvement projects on public lands all across the state. Many of these projects were direct habitat improvement projects, such as prescribed burning, gating of roads, creation of wildlife openings, and various plantings on public game lands administered by the Commission. Since the beginning of the program, literally hundreds of habitat improvement projects impacting thousands of acres of habitat of have been accomplished.

Wild Turkey Research

Several wild turkey research projects have been conducted in North Carolina over the past several decades. A brief summary of each project follows. Citations generated by each project are also listed.

Movements, Mortality, and Productivity of Restocked Wild Turkeys in a Southern Appalachian Habitat

This telemetry study was initiated in February, 1978 by James A. Bowman, Wildlife Biologist with the Commission. The study was originally planned as a five year study (1978-79 through 1983-84) for the South Mountains Game Land and South Mountains State Park in Burke County. However, the study was discontinued in October, 1981 because of the unavailability of a trapping source, poor trapping success, and the reassignment of duties of the principal investigator. Preliminary study results seemed to indicate both poaching and predators were taking a considerable toll on the restocked wild turkeys. Details of the study are included in the Annual Performance Reports from 1978 through 1981. Citations generated by this study are listed below.

Bowman, J. A., C. E. Hill, R. Q. Burleson. 1979. Seasonal movements of restocked wild turkeys in North Carolina. Proceedings of the Annual Conference on the Southeastern Association of Fish and Wildlife Agencies 33: 212-223.

Bowman, J. A. 1982. Factors contributing to the decline of a translocated turkeypopulation. Final Job Report W-57-A4. North Carolina Wildlife Resources Commission. 32pp.

Impacts of Unnatural, Asynchronous River Flooding on the Habitat Use and Population Dynamics of a Wild Turkey Population along the Roanoke River, North Carolina

This telemetry study was conducted by David T. Cobb from July 1, 1985 through August 15, 1990 in partial fulfillment of his doctorate degree. The study area was the Roanoke River basin in Bertie and Martin counties, North Carolina. This study documented the negative impacts of river flooding on wild turkey productivity, availability of brood range, and harvest in the floodplain. It also provided recommendations on water flows from the John H. Kerr Dam and Reservoir project and possible management strategies that would decrease the deleterious effects of flooding on wild turkeys in the floodplain. Citations generated by this study are listed below.

Cobb, D. T. P. D. Doer, and M. H. Seamster. 1989. Above-ground nesting by wild turkeys. Wilson Bulletin 101(4):644-645.

Ley, D. H., M. D. Ficken, D. T. Cobb, and R. L. Witter. 1989. Histomoniasis and reticuloendotheloisis in a wild turkey (*Meleagris gallopavo*) in North Carolina. Journal of Wildlife Diseases 25(2):262-265.

Cobb, D. T. and P. D. Doer. 1991. Evaluating the impacts of man-induced flooding on terrestrial game species. Issues and Technology in the Management of Impacted Wildlife 5:61-65.

Cobb, D. T., D. H. Ley, and P. D. Doer. 1992. Isolation of *Mycoplasma gallopavonis* from free-ranging wild turkeys in coastal North Carolina seropositive and culture-negative for *Mycoplasma gallisepticum*. Journal of Wildlife Diseases 28(1):105-109.

Cobb, D. T., P. H. Doer, and M. H. Seamster. 1993. Habitat use and demography of a wild turkey population subjected to human-induced flooding. Proceeding of the Annual Conference of the Southeastern Association of Fish and Wildlife Agencies 47:148-162.

Cobb, D. T. and P. D. Doer. 1997. Reproduction in a wild turkey population subjected to flooding. Journal of Wildlife Management 61:313-317.

Nesting and Brood Ecology of the Wild Turkey in the Mountains of Western North Carolina

This telemetry study was conducted by D. J. Reed (as partial fulfillment of his master's degree) and James R. Davis (as partial fulfillment of his doctorate degree) from 1985 through 1989. The final dissertation was completed in May, 1992. The study area was the Coweeta Hydrologic Laboratory in Macon County, North Carolina. This study showed the importance to wild turkeys and their movements that gated roads play in the mountains of North Carolina where forest openings are very limited. Hens preferred to nest adjacent to openings which were most often gated or abandoned logging roads. Additionally, broods showed a tendency to orient to roads during the study as well. Gated and closed roads functioned as two types of linear food plots that had distinct vegetative components based primarily on differing amounts of sunlight available to the road bed. Citations generated by this study are listed below.

Reed, D. J. 1988. Movements of wild turkey hens in the southern Appalachians. Unpbl.M. S. Thesis. Clemson University. Clemson, SC. 77 pp.

Davis, J. R. 1992. Nesting and brood ecology of the wild turkey in the mountains of western North Carolina. Unpbl. PhD. Dissertation. Clemson University. Clemson, SC. 173 pp.

Logging Roads as Linear Wildlife Strips in the Southern Appalachian Mountains

This telemetry study of wild turkeys was conducted by Joel S. Martin from 1990 through 1992 as partial fulfillment of his master's degree. The study area was again the Coweeta Hydrologic Laboratory in Macon County, North Carolina and was a follow-up to the previous study. Road utilization by wild turkey hens appeared to be directly related to human disturbance and to the degree of sunlight penetration to the forest floor. Planted roads were used by turkeys during all four seasons of the year but received particularly heavy use during the fall and winter periods as the more succulent woodland vegetation became more

limited. It was concluded that increasing sunlight penetration along roads and periodic maintenance by mowing, either with or without supplemental plantings, can function to enhance turkey and/or general wildlife habitat on gated and closed roads. The citation generated by this study is listed below.

Martin, J. S. 1993. Logging roads as linear wildlife strips in the southern Appalachian Mountains. Unpbl. M. S. Thesis. Clemson University. Clemson, SC. 60 pp.

Utilization of Linear Wildlife Strips by Wild Turkeys in Western North Carolina

This telemetry study was conducted by Bradley W. Howard from 1992 through 1994 as partial fulfillment of his master's degree. It was another companion study to the previous ones on the Coweeta Hydrologic Laboratory in Macon County, North Carolina. This study showed that linear wildlife strips provide open habitat for wild turkeys and were utilized by turkeys and other wildlife when available. It suggested that they can be a viable alternative for creating openings of early successional habitat where forest management practices such as clearcutting, burning, and logging are absent or restricted. It also recommended establishment of mowing regimes to reduce encroachment by undesirable woody species to maintain an early successional stage along these roads. The citation generated by this study is listed below.

Howard, B. W. 1994. Utilization of linear wildlife strips by wild turkeys in western North Carolina. Unpbl. M. S. Thesis. Clemson University. Clemson, SC. 50 pp.

Forage and Arthropod Production on Linear Wildlife Strips in the Southern Appalachian Mountains

This telemetry study was conducted by Jody K. Knox from 1992 through 1994 as partial fulfillment of his master's degree. It was yet another companion study to the previous ones on the Coweeta Hydrologic Laboratory in Macon County, North Carolina. This study concluded that linear wildlife strips provide both forage and arthropods associated with early successional vegetation so that areas with limited openings can better meet the habitat needs of wild turkey populations. It also found that higher amounts of arthropods were produced on the more xeric sites. It also recommended that mowing be postponed until at least a month after the peak of the hatch so that poults would have maximum numbers of arthropods available during the period when they are most dependent on them as a food source. The citation generated by this study is listed below.

Knox, J. K. 1994. Forage and arthropod production on linear wildlife strips in the southern Appalachian Mountains. Unpbl. M. S. Thesis. Clemson University. Clemson, SC. 56 pp.

Analysis of Wild Turkey Brood Habitat within the Southern Appalachians

This telemetry study was conducted by Craig A. Harper from 1994 through 1998 as partial fulfillment of his doctorate degree. The study area was the Wine Spring Creek Ecosystem located on the Wayah Ranger District of the Nantahala National Forest in western Macon County, North Carolina. It concluded that both brooding and non-brooding hens primarily used mature mesic forest stands and non-forested openings (which comprised <1% of the total area). It recommended that habitat management be concentrated in those areas. It recommended thinning and prescribed burning in mesic forest stands to promote increased herbaceous cover and soft and hard mast production. It also recommended continuation of direct habitat improvements on non-forested areas, such as logging roads, old home sites, and other openings. It further recommended altering the current planting regime on those non-forested areas, which is primarily an orchard grass/clover mix. Unless carefully managed (>3 mowings per year and annual top-dressing), openings planted with the orchard grass/clover mix revert to all orchard grass within 18 months. It becomes extremely dense (which makes travel for young poults difficult) and harbors fewer invertebrates than native forbs and grasses. The author concluded that allowing available roads and wildlife openings to revert to native forbs and grasses, while continuing the current top-dressing regime would be more cost effective and would better benefit wild turkeys by providing a greater variety and abundance of invertebrates and plant foods, a vegetative structure easier for poults to travel through, more "edge effect", and the security of a partial canopy cover. He recommended mowing these areas only once every one to two years after the growing season. Citations generated by this study are listed below.

Harper, C. A. 1998. Analysis of wild turkey brood habitat in the southern Appalachians. Unpbl. PhD. Dissertation. Clemson University. Clemson, SC. 166 pp.

Harper, C. A., and D. C. Guynn, Jr. 1998. A terrestrial vacuum sampler for macroinvertebrates. Wildlife Society Bulletin 26(2):302-306.

Harper, C. A. and J. H. Exum. 1999. Wild turkey (*Meleagris gallopavo*) hens renest after a successful hatch. The Wilson Bulletin 111(3):426-427.

Harper, C. A. and D. C. Guynn, Jr. 1999. Factors affecting salamander density and distribution within four forest types in the southern Appalachian Mountains. Forest Ecology and Management 114:245-252.

Harper, C. A., J. K. Knox, D. C. Guynn, Jr., J. R. Davis, and J. G. Williams. Invertebrate availability for wild turkey poults in the southern Appalachians. Proceedings National Wild Turkey Symposium 8:145-156.

Wild Turkey Nesting Ecology and Nest Survival in the Presence of Frequent Growing-season Fire

This study utilizing global positioning system data loggers and VHF-telemetry was conducted by Eric L. Kilburg from 2011 through 2012 as partial fulfillment of his master's degree. Research for this study was conducted on Fort Bragg Military Reservation, with the study site consisting of a longleaf pine ecosystem burned on a 3-year return interval. This study showed that growing season fire did not negatively affect female wild turkey prenesting resource selection or significantly reduce nest survival on Fort Bragg. Although 20% of the study site was burned while turkeys were nesting, only 3% of nests were destroyed by fire. The low incidence of nest destruction was attributed to the fact that nests are only active for a few weeks of the overall nesting season and many nests fail, often because of predation, soon after nest initiation. Both of these factors were believed to have reduced overall nest exposure to fire. It was also documented that hens on this study area preferred prenesting ranges in locations burned the preceding dormant season, in managed openings, and in riparian areas. Hens on the study site selected upland-lowland transitional vegetation communities for nesting and tended to avoid upland pine forests. Estimated nest survival was greater in lowland vegetation types (60%) than uplands (10%). The research indicated that growing season burning does not conflict with wild turkey habitat management activities on Fort Bragg. The citation generated by this study is listed below.

Kilburg, E. L. 2013. Wild turkey nesting ecology and nest survival in the presence of frequent growing-season fire. Unpbl. M. S. Thesis. North Carolina State University. Raleigh, NC. 57 pp.

Kilburg, E. L., C.E. Moorman, C.S. Deperno, D.T. Cobb, and C. A. Harper. 2014. Wild Turkey Nest Survival and Nest-Site Selection in the Presence of Growing-Season Prescribed Fire. Journal of Wildlife Management 78:1033-1039.

Wild Turkey Leg Band Returns

The vast majority of the wild turkeys relocated for restoration purposes were banded with aluminum leg bands. Additionally, some birds that were released at their capture sites were also banded, as were birds trapped for several research projects. A total of almost 6,000 wild turkeys have been leg banded in North Carolina over the last fifty years.

Wild turkey being fitted with an aluminum leg band in preparation for release. NCWRC

Approximately two thirds of the wild turkeys relocated for restoration purposes were hens. With the exception of the six winter either-sex turkey seasons from 2004 – 2009, the only legal hunting seasons over the last 40+ years were spring gobbler seasons. Consequently, only a very small percentage of banded hens were ever recovered. Records exist on 79 leg band returns from hens. Most of these were either found dead (cause of death unknown) or were predator kills or road kills. One was from a bearded hen that was legally harvested and one was from an illegal poacher kill.

Records exist on a total of 149 leg band returns from gobblers. While only about one third of the birds banded were gobblers, almost twice as many band returns from these birds exist. As spring gobbler seasons were opened on former restoration areas, these banded gobblers became legal game. In most cases, the hunters harvesting these banded birds contacted the Commission to learn the history of these banded birds. Information from these banded birds,

such as spur length, beard length, and distances moved, was derived from communications with the successful hunter. In many cases the information is incomplete since the information was second or third hand. Seldom did Commission personnel actually get to authenticate these data. Measurements were taken by the individual hunters so accuracy may also be questionable. However, while far from scientifically acceptable as research, some of the information is very interesting.

While most of the band returns were from birds harvested within a five-mile radius of the release point, band returns exist from four different birds that had moved from fifteen to twenty miles, from one bird that had moved thirty miles, and from one wayward traveler that had moved thirty-five miles from the release point to Rock Hill, SC. Another interesting band return was from a bearded hen with a one half inch spur on one leg.

Some of the band returns also yielded some interesting longevity information. Several band returns were from gobblers that were five to nine years old when harvested; two band returns were from gobblers that were at least ten years old when harvested; and one band return was from a gobbler that was at least eleven years old. This may very well be one of the oldest wild turkey gobblers ever on record.

Probably the most interesting information from these band returns concerns spur length from known-age gobblers. Although the sample size is small and the accuracy of the measurements may be questionable, there is certainly enough information from known-age gobblers to make one question the validity of aging gobblers beyond two years by spur length. To be a known-age gobbler, it must have been banded and released as a juvenile. Since most of these birds were released on restoration areas where hunting was prohibited for several years, most of the band returns were in the older age classes. However, a few that were released at the capture site were in younger age classes. Four band returns exist on known-age, two-year-old gobblers. Their spur lengths were 0" (no spurs), 7/8", 1 1/8", and 1 1/8". It is very surprising to have two different two-year-old gobblers with 1 1/8" spurs. Two band returns were from known-age, three-year-old gobblers and both had spurs measuring 1". This is just what one would expect. Two band returns were from known-age, four-year-old gobblers and their spur measurements were 1 1/8" and 1 1/4". Again, this is about what one would expect. Seven band returns were from known-age, five-year-old gobblers. Their spur measurements were 3/4", 1 1/16", 1 1/8", 1 1/4", 1 1/4", 1 3/8", and 1 3/4". While most of these fall within the expected range for five year old birds, the 3/4" and 1 3/4" were far shorter and far longer, respectively, than what would normally be expected. Three band returns were from known-age, six-year-old gobblers and their spur measurements were 1 1/4", 1 1/4", and 1 3/8". While most of the spur lengths on these known age birds did fall within the expected ranges, enough variation exists to cast doubt on aging birds beyond two years by spur length. To be accurate, gobblers should only be categorized as juveniles and adults.

Synopsis of Wild Turkey Management in North Carolina

The purpose of this section is to provide a concise review of all wild turkey management actions in North Carolina. While this section presents some information that occurs previously, other management activities not previously presented (e.g., habitat management) have been included.

Management of the wild turkey resource in North Carolina has gone through many different phases or approaches over the last century. In the early 1900s, little if any actual management occurred and each individual county set their own wild turkey hunting regulations as late as the 1920s. Since then, a number of different approaches have been tried. These approaches included restoration using game farm birds, management through wild turkey refuges, restoration using live-trapped wild birds, regulatory management, and habitat management. Several of these approaches overlapped each other or were utilized in combination in an effort to reverse declining populations and bring this magnificent game bird back to abundance in North Carolina.

Early Management Using Game Farm Birds

The first early efforts at restoring wild turkey populations date back to at least 1928. From 1928 until 1946, restoration efforts in North Carolina were centered on artificial propagation and release of pen-reared turkeys. It was tried many times in almost every county of the state but nowhere with success. The Department of Conservation and Development budgeted $10,000 in 1936 for a statewide turkey propagation program. At the Fayetteville Game Farm, brooder houses, pens and an incubator were built and another turkey propagation unit was slotted for the Mount Mitchell Refuge. In 1937, the state released 230 pen-reared turkeys; the first of several thousand to be released across the state during the next five years. During this process, brood hens were brought in from Bulls Island, South Carolina and from Georgia's Okefenokee Swamp. Eggs were acquired from a sanctuary in Kalamazoo, Michigan and 20 more brooder hens were acquired from the Santee River area of South Carolina. By 1946, state game farms had raised and released some 10,000 pen-reared turkeys across the state. In addition to those birds released by the state, sportsman's clubs and private individuals released thousands more. However, all those early efforts failed miserably. Biologists across the nation learned the hard way that pen-reared turkeys were simply incapable of surviving the rigors of life in the wild.

Management through Wild Turkey Refuges

In the late 1940s, five wild turkey refuges were established across the state. These were large tracts of land where management was dedicated to wild turkeys. Forest openings were created and planted, and hunting was prohibited on these areas. These refuges functioned in a manner similar to our current bear sanctuaries. In a Federal Aid Quarterly Progress Report in October, 1949 Robert J. Wheeler, Jr. wrote, "The primary purpose is to develop and manage each area so as to procure a maximum density of wild turkeys and thus provide a perpetual reservoir that will yield a substantial and sustained surplus of these birds for harvest in the surrounding territories by sportsmen." Turkey refuges were initially established at the Orton Plantation near Wilmington (Orton State Refuge – Brunswick

County – 4,000 acres), in the Uwharrie Mountains (Uwharrie State Refuge – Montgomery County – 5,000 acres), in Caswell County (Caswell State Refuge – Caswell County – 6,828 acres), and two in the Sandhills area (Richmond State Refuge – Richmond County and Scotland State Refuge – Scotland County – no record of acreages). The Richmond and Scotland State Refuges were later consolidated into the Sandhills State Refuge.

The primary focus of the wild turkey program over the next decade was on the development and management of these refuges (later called turkey management areas). A tremendous amount of effort and money were expended in developing, planting, and maintaining numerous openings on these refuges. Plantings consisted mainly of rescue grass, wheat, rye, oats, various clovers, orchard grass, millet, milo, several varieties of lespedeza, chufa, and various annual mixes. Some level of success in increasing turkey numbers was achieved on these areas and they were subsequently used as trapping sources for translocation efforts across the state. However, by the 1960s, turkey numbers on many of these areas had dwindled to the point that it was somewhat of a misnomer to call them turkey management areas. As turkey numbers declined, public sentiment shifted against the continued trapping of birds on these areas. However, at least one refuge, the Caswell Refuge, persisted as a refuge well into the 1970s and continued to be a trapping source until restoration efforts were completed in 2005.

Management through Restoration (Using Live-Trapped Wild Turkeys)

One of the primary approaches to wild turkey management in North Carolina over the last half century was the restoration of wild turkey populations across the state using live-trapped wild birds. Although wild turkey restoration using live-trapped wild birds actually began in the 1953 in North Carolina, successes during the 1950s and 1960s were sporadic at best. Only 73 birds were relocated during the 1950s and only 103 birds were relocated during the 1960s. During this time frame fall turkey seasons continued to be long and the population continued to decline to an estimated low of only 2,000 birds by 1970. It wasn't until a moratorium was placed on the fall turkey season and intensified restoration efforts resulted in birds being relocated consistently on an annual basis in the 1970s that this declining trend in turkey numbers was reversed. During the 1970s, 379 wild turkeys were relocated, principally to the mountain region of the state, and the population increased to an estimated 7,500 birds by 1980. During the 1980s, another 943 wild turkeys were relocated to all three regions of the state and the population increased to an estimated 28,000 birds by 1990. During the 1990s, 3,845 wild turkeys were relocated all across the state and the population increased to an estimated 130,000 birds by 2000. Since 2000, another 688 wild turkeys have been relocated in an effort to "fill in" holes of suitable but unoccupied range. In more than five decades of restoration efforts involving the trapping and translocation of wild birds, 6,031 wild turkeys were relocated to 358 restoration sites across the state (Appendix 4 & Figure 1). Restoration efforts were completed in 2005. Wild turkeys now exist in all 100 counties of the state and the 2015 wild turkey population estimate was 265,000 birds.

Management through Regulations

Controlling the harvest by manipulation of season length, bag limit, timing, and sex of animals legal to harvest through regulatory changes is one of the primary means of management of any game species. It is no different with management of the wild turkey

resource. An in-depth discussion of individual regulatory changes can be found under the Wild Turkey Regulations section of this document.

Records show that wild turkey hunting seasons were set by each individual county in North Carolina as early as 1923-24 (Table 1). The first statewide fall season was set for the 1929-30 season and was very liberal. It ran from November 20 through February 15. This season was for turkeys of either sex with a daily bag limit of two birds and a season limit of five birds. This general season framework was followed, with some minor variations, until the late-1940s. In those early years, when little was known about wild turkey management, attempts were being made to reverse the decline in the wild turkey population by making changes in the daily and season bag limits and by closing some counties entirely.
The next major change in fall wild turkey seasons occurred in 1948 when the statewide fall season was changed to gobblers only. The season was still very liberal and ran from Thanksgiving through late January with a daily bag limit of one bird and a season bag limit of six birds. With only minor variations in season dates and bag limits, this season remained relatively unchanged until the late-1960s for Piedmont and Coastal counties. Again, attempts were being made to reverse the decline in the wild turkey population by making regulatory changes in the sex of birds legal to harvest, reducing season length, reducing the bag limit, and by closing some counties.

However, the wild turkey population was in dire straits and major changes were needed. Perhaps the most far reaching regulatory changes of all occurred in 1969 when the Commission began experimenting with a spring gobbler season and, in 1971-72, when it closed the fall turkey season.

Over the next 25 years the spring season remained open statewide with the exception of counties and/or parts of counties that were closed for restoration purposes while the fall season remained closed. Although the fall season closure was very unpopular at the time, history has proven this move to be the correct one. The closure of the fall season, coupled with intensified restoration efforts, marked the beginning of a very successful comeback for the wild turkey in this state. Since 1970, over 5,700 wild turkeys had been relocated to 344 restoration sites across the state and the resulting increase in the wild turkey population has been remarkable.

As wild turkey populations continued to increase across the state, more and more sportsmen asked about the possibility of once again having a fall or winter wild turkey hunting season in North Carolina. There was no doubt that wild turkey populations were more abundant than they have been at any time during the last fifty years. Surveys were conducted and meetings were held to develop season guidelines. In 2004, a limited winter either-sex wild turkey season was established in 9 counties along the Virginia border with the highest wild turkey populations. An additional county was added to the season in 2005. However, participation in the winter turkey season was far less than anticipated by Commission personnel and reported harvests were very low (Tables 4-10). After six years, the winter season was closed in 2010 due to a lack of interest.

In 2006, a Youth Day was implemented on the Saturday prior to the regular wild turkey season opening. The youth season was extended to a weeklong season starting with the 2013 spring turkey season. Youth could only harvest one male or bearded turkey during the weeklong season.

Also in 2006, the Commission assigned staff to evaluate wild turkey breeding patterns to determine if spring hunting seasons could be altered to enhance hunter satisfaction without jeopardizing the continued increase of the wild turkey population (Appendix 1). Following the completion of this assignment, the Commission's Big Game Committee adopted the following goal for wild turkey management:

- *The goal for wild turkey management in North Carolina is to emphasize spring gobbler hunting by managing the population below maximum sustained yield in order to:*
    - *maintain high quality spring hunting, and*
    - *maximize continued increases in population size and distribution.*

Manipulation of regulations has played a very vital role in the management of the wild turkey resource as evidenced by this brief summary of the regulatory history of wild turkey management in North Carolina.

Habitat Management

Biologists once believed that wild turkeys needed almost wilderness tracts of mature upland hardwood forests or extensive tracts of bottomland hardwoods and swamps to survive and thrive. This belief was fostered by the fact that these were the only habitats where wild turkeys still survived in the early days of wildlife management. However, these areas supported wild turkeys because topography made them inaccessible; keeping both legal and illegal hunting to a minimum. Inaccessibility and topography also made both logging and farming extremely difficult. Therefore, these areas remained forested. It is now widely known that wild turkeys can thrive in a wide variety of habitat conditions. However, all suitable wild turkey habitat contains two key components. Wild turkeys must have some combination of forest lands and open lands. They have done well in areas with as little as fifteen percent forest lands and in other areas with as little as five percent open lands. The optimal combination probably covers a wide range somewhere in between these two extremes.

Forest lands provide cover and roosting sites all year long and food in the form of mast (seeds, acorns, and other fruits) during the fall and winter. A variety of mature mast-producing species in the forest increases its habitat value for wild turkeys. Grassy openings provide green browse all year long and an abundance of insects that is vital for adequate brood range during the spring and summer. Habitat management for wild turkeys centers on managing both forest lands and open lands.

<u>Forest Management</u>

Forest management involves a wide range of procedures and techniques. Management varies depending upon forest ownership and management objectives. In North Carolina, the type of forest also changes dramatically from the coastal plain in the eastern part of the state, to the

rolling hills of the piedmont, and to the mountains in the western portion of the state. Habitat conditions vary greatly among these three regions and, subsequently, habitat management recommendations for wild turkeys may differ among regions. For example, in the coastal plain, where large tracts of commercial timber company lands are dominated by short-rotation loblolly pine stands, conserving and maintaining adequate amounts of mast-producing hardwoods may be vital to wild turkey management. In the western mountains on National Forest lands, the landscape is dominated by upland hardwood forests with over 99 percent of the land forested. In this area mature, mast-producing hardwoods are abundant but the lack of grassy openings that provide vital brood range is undoubtedly the limiting factor in wild turkey populations.

A discussion of all forest management procedures and techniques beneficial to wild turkeys is beyond the scope of this document. However, several general recommendations can be mentioned. For wild turkey management, silvicultural treatments should favor relatively open understories and an even distribution of age classes. Clearcuts should be relatively small and well dispersed. A component of mature, mast-producing hardwoods with a variety of species should be maintained. Long sawtimber rotations should be favored over short pulpwood rotations, and prescribed burning on a three to five year rotation is very beneficial to wild turkeys and other species.

Management of Openings

Grassy openings provide the vital brood range necessary for optimal habitat conditions for wild turkeys. These openings can be in a wide variety of forms. Pasture lands, seeded logging roads and loading decks, hay fields, many commercial agricultural row crops, recent clearcuts, savannahs, utility rights-of-ways, and openings created specifically for wildlife may all be utilized intensively by wild turkeys. To be of maximum benefit, these openings should be well dispersed across the landscape. Both vegetation height and density are keys to providing ideal foraging conditions for young poults. The vegetation should be both high enough to provide some cover for the young poults and low enough so that the hen can see well to detect danger from predators. It also must be open enough to provide for easy movement of the birds as they forage.

A wide variety of plantings have been used for wild turkeys. These include a variety of grasses, wheat, rye, oats, various clovers, millet, milo, several varieties of lespedeza, chufa, and various annual mixes. Wild turkeys are particularly fond of chufa and clover. Maintenance of openings with permanent vegetation is usually accomplished by mowing to keep the vegetation short, tender, and lush.

History of Habitat Management in North Carolina

Since the formation of the Commission in the 1940s, wild turkey habitat management has played an important role in managing this magnificent game bird. Early efforts at managing wild turkeys through the refuge system involved improving the habitat on those key areas. A tremendous amount of effort and money were expended in developing, planting, and maintaining numerous openings on those refuges to benefit wild turkeys. On Commission-owned lands across the state, forest management plans were developed to manage timber lands for the benefit of wildlife. The aforementioned forest management recommendations

were put into practice on these areas. Management crews were hired to create, plant, and maintain openings to benefit wildlife populations in general and wild turkey populations in particular on these Commission-owned areas. However, Commission-owned lands comprise only a tiny percentage of the habitat in the state.

Management crews were also hired to manage openings on national forest lands in all three regions of the state. These included the Croatan National Forest in the eastern part of the state, the Uwharrie National Forest in the central part of the state, and the Pisgah and Nantahala National Forests in the western part of the state. Additionally, Commission technicians, biologists, and foresters provided input and very specific recommendations on both long-range USFS National Forest timber management plans and on individual timber sales on all of these National Forests. Both through direct management of the openings and through input on the management of the timber lands on these National Forests, Commission personnel have had a tremendous impact on habitat management on almost a million acres of National Forest lands over a long period of time.

Additionally, Commission technical guidance biologists have provided, and continue to provide, technical assistance to private landowners interested in managing wildlife all across the state for over half a century. This technical assistance includes field visits to the properties, verbal recommendations, written recommendations, and written wildlife management plans on management of both private forest lands and private agricultural lands for managing wildlife in general and wild turkeys in particular. These people include hundreds of private landowners participating under cooperative agreement in our wild turkey restoration program across the state.

Furthermore, technical guidance biologists, foresters, and project leaders have provided, and continue to provide, these same types of technical assistance to corporate timber companies, corporate farms, US Fish and Wildlife Service Refuges, conservation organizations, military bases, and other state and federal agencies for management of millions of acres of habitat in North Carolina.

Both through direct habitat improvements and through technical assistance, Commission personnel have had a major impact on habitat management for wild turkeys on both public and private lands in this state. Both actions (habitat improvements and technical assistance) have played a very important and vital role in the restoration and management of the wild turkey resource in North Carolina.

Future Management

Wild turkey restoration efforts in North Carolina were completed in 2005 and wild turkey populations are well established across most of the state. Management of the wild turkey resource in the future should be directed towards three key areas; 1) continued monitoring of the population, 2) habitat management, and 3) regulatory management.

Monitoring of the wild turkey population is a key ingredient in understanding the annual and long-term fluctuations in wild turkey numbers and is a continuous process. The more

knowledgeable biologists are about the wild turkey resource, the better equipped they are to make sound management and regulatory recommendations. Prime examples of current monitoring techniques include summer brood surveys, mandatory reporting of harvests, periodic hunter harvest surveys, disease testing, and periodic range mapping. Summer brood surveys provide valuable knowledge about annual wild turkey productivity and can help explain annual fluctuations in wild turkey numbers. Periodic hunter harvest surveys and mandatory reporting of harvests provide valuable long-term trend information. Testing of diseased birds provides important information on a more local basis, and periodic range mapping provides an assessment of the wild turkey population on county, regional, and statewide levels. Continuous monitoring of the population is essential to the proper management of the wild turkey resource.

Habitat management for wild turkeys centers on managing both forest lands and open lands. A more thorough discussion of forest and open lands management is already included above. However, it should be reiterated that habitat management for wild turkeys should continue to be an integral part of forest and field management plans on both Commission-owned lands and Commission-managed lands, such as USFS National Forests. Additionally, Commission technical guidance biologists, foresters, and other biologists should continue to provide technical assistance regarding wild turkey habitat management to private landowners, corporate timber companies, corporate farms, national wildlife refuges, conservation organizations, military bases, and other state and federal agencies. This technical assistance can potentially impact millions of acres of habitat in North Carolina.

Regulatory management involves the establishment and adjustment of hunting seasons and bag limits as needed to effectively manage the resource while providing quality hunting opportunities to the sportsmen of the state. It will always play a vital role in the management of the wild turkey resource in North Carolina. For over three decades, North Carolina allowed only spring gobbler hunting in the state. It was the safest type of season to implement in terms of providing quality hunting opportunities while allowing maximum growth potential for the population. During the past 30+ years, spring gobbler hunting has become a valued tradition with the majority of the state's wild turkey hunters and the only type of turkey hunting many young hunters have ever known.

Wild turkey gobbler displaying in the spring. NCWRC

Summary

Herein, I document and clarify a history of wild turkey management in North Carolina. Management of this magnificent game bird has been a rather long journey. It begins over 75 years ago when individual counties set their own turkey hunting seasons. As turkey populations declined in the state from the 1920s through the 1960s, early attempts at reversing this downward trend were disappointingly unsuccessful. These attempts included the ill-fated releases of tens of thousands of pen-reared turkeys during the 1930s and 1940s and efforts to restore populations using wild turkey sanctuaries known as turkey refuges during the 1950s.

Meager attempts at restoring wild turkey populations during the 1950s and 1960s included using live-trapped wild birds. The Commission was on the right track in those years, but crude trapping techniques and scarce trapping sources limited the number of birds relocated. Continued fall hunting during this period contributed to the failure of these efforts to reverse the downward trend in wild turkey numbers. The wild turkey population had dwindled to only about 2000 birds by 1970. The fall season was closed in the early 1970s. That move combined with the dedication of additional personnel to the project and improved trapping techniques resulted in the halt of the declining trend and the beginning of a long comeback for the wild turkey in North Carolina.

Like a baby learning first how to crawl, then how to walk, and finally how to run, the wild turkey began its return to prominence across the state. Progress was slow but steady during the 1970s. Restoration sites were limited primarily to public lands in the western portion of the state. By 1980, the estimated population had climbed to about 7,500 birds. Personnel had additional sites where birds could be trapped and the program began gaining momentum. The Commission began considering releases on private lands as well as public lands in all three regions of the state. By 1990, the wild turkey population was estimated at 28,000 birds.

Restoration efforts were greatly accelerated during the 1990s by the acquisition of over 1,800 birds from other states, primarily through the National Wild Turkey Federation's Super Fund Program. Commission personnel also trapped and relocated over 2,000 birds in-state during this same period, for a total of over 3,800 birds relocated during the decade. By 2000, the wild turkey population had ballooned to an estimated 130,000 birds and the primary phase of wild turkey restoration was complete. During the first few years of the new century, Commission personnel filled in the few remaining gaps of unoccupied habitat by relocating another 400+ birds under secondary guidelines approved by the Commission. This secondary phase of restoration was completed in 2005 and the population was then estimated at 150,000 birds. The last statewide population estimate was 265,000 birds in 2015.

The wild turkey restoration program has been one of the most monumental and successful wildlife management programs in the history of the Commission. In more than half a century of restoration efforts, over 6,000 wild turkeys have been relocated to some 358 restoration sites across the state. Wild turkeys now exist in all 100 counties and the spring gobbler season has been opened statewide.

The wild turkey population in North Carolina has obviously been in a very rapid growth phase for the last several decades. In the Commission's pamphlet entitled "The Wild Turkey's Management and Future in North Carolina" published in June, 1976, Wayne Bailey wrote "…the ultimate objective is a population of 20,000…" and "In the long-term future, spring male-only harvests in North Carolina should be in the 500-1,000 range." Now, 40 years later, the estimated population is 265,000 birds and the spring reported gobbler harvest topped 18,000 birds. Obviously, wild turkeys have proven to be much more adaptable than was once believed. They now exist in good numbers in areas that weren't even considered suitable habitat a few years ago.

Wild turkey populations continue to grow in many areas of the state and the immediate future for the wild turkey in North Carolina looks very bright. However, this phenomenal growth in the wild turkey population cannot continue forever. Wild turkey numbers will level out at some point in time consistent with the quantity and quality of available habitat. Then, the continuing habitat loss consequential to the rapidly increasing human population in this state will begin taking its toll on wild turkey numbers. How long that process takes will depend on how well the state manages its rapidly increasing human population and the associated development and how well the Commission manages this magnificent game bird. Certainly, the sportsmen of this state, their children, and their grandchildren can look forward to enjoying the sights and sounds of the once rare wild turkey.

Appendices

Appendix 1. Status of Wild Turkey Populations and Considerations for Regulatory Strategies to Meet Turkey Management Goals

Status of Wild Turkey Populations and Considerations for Regulatory Strategies to Meet Turkey Management Goals

Division of Wildlife Management
North Carolina Wildlife Resources Commission
August 2006

WRC Charge to DWM Staff

At their March 2006 meeting, the Wildlife Resources Commission (WRC) directed WRC staff "to conduct a study of wild turkey breeding patterns in NC to determine if hunting opportunity can be expanded and hunter satisfaction enhanced without jeopardizing maintenance of wild turkey population goals. The study should include the following elements:

- Analyze spring wild turkey hunting seasons in neighboring states and the status of wild turkey populations in those states.
- Identify timing, intensity, and distribution of wild turkey breeding peaks in NC and implications of these factors toward setting spring hunting seasons.
- Specifically address the issues of opening the spring hunting seasons earlier, expanding the season, and/or increasing the bag limit.

The results of this study shall be presented to the WRC Big Game Committee in August 2006 as a subject for discussion and possible proposal for regulatory change for the 2008 spring wild turkey hunting season."

In this report, Division of Wildlife Management (DWM) staff present our analyses and conclusions relative to the above elements. For reasons explained herein, our conclusions are based upon turkey population and harvest management goals of emphasizing spring gobbler hunting and maximizing statewide and local increases in turkey populations.

Introduction

Following the conclusion of our major restoration phase of the wild turkey project in 2000, the agency began looking at regulatory options to manage turkey populations in those areas where birds had become well established. Discussions and potential strategies were based on the principle assumption that perhaps we could increase opportunity on those areas, while also allowing for expansion of populations into the newly restored habitats as well as those properties where birds had been established for several years but where numbers remained below potential maximum levels.

Participation in turkey hunting over the previous several years was thought to have increased in association with increasing densities, enhanced statewide distribution, and the opening of many new counties to hunting. Even though hunting participation and opportunities have increased consistently as turkey populations have increased and spread in distribution, WRC staff and commissioners have received requests for additional hunting opportunities, including a fall season, increases in the bag limits, and increases and modifications in our spring gobbler season.

In an effort to evaluate the interest in and preference for additional turkey hunting opportunities, a survey of big game license holders was conducted in 2002 (see attached final report) and focusing on turkey hunters. For several reasons, including potential conflicts with other hunting seasons and baiting issues, a winter turkey hunting season, rather than a traditional fall season, was included for consideration. Given several alternative season and bag limit options, including adding a week to the existing spring season, the winter season was preferred over a spring season extension even without an increase in the bag limit. Even though there was support for a winter turkey season, 72% of those who hunted turkeys wanted an increase in turkey populations where they turkey hunted most frequently. Furthermore, when hunters were asked which management strategy they preferred if a winter season was implemented, 79% indicated they favored "emphasizing spring gobbler hunting" while also being allowed to hunt in the winter.

Status of the Wild Turkey in North Carolina - 2006

In 2005, the spring gobbler hunting season was opened in all 100 counties. Our estimated statewide population was 150,000 turkeys and the reported harvest for the 2006 spring season was 11,706 birds. Although densities and harvest are at record levels and have increased over the last 10 years, North Carolina's turkey harvest (both total birds harvested and birds harvested/mi^2 of habitat) still ranks relatively low when compared to other southeastern states (Figures 1 and 2, respectively).

Figure 1. Spring Gobbler Harvest, 1996-2005

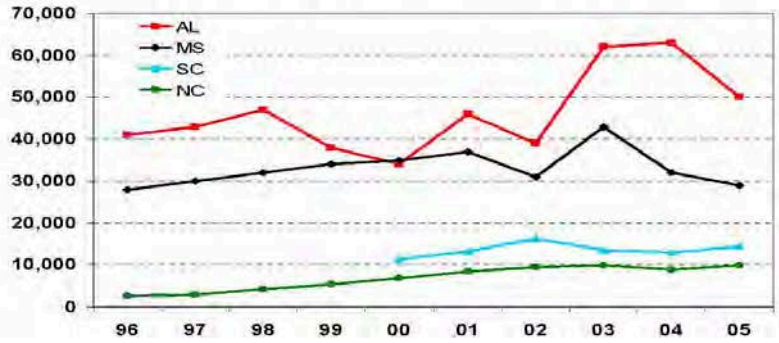
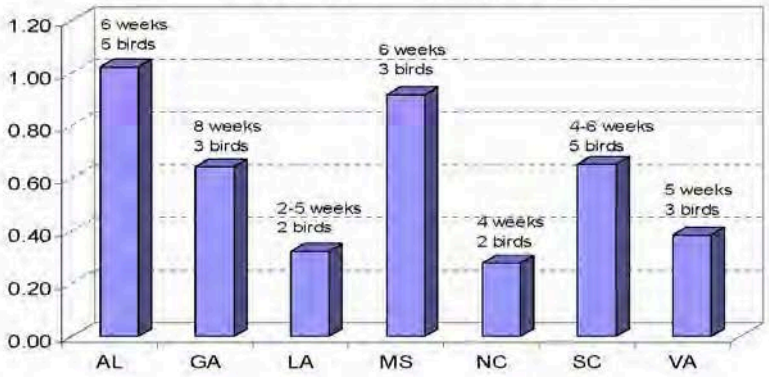


Figure 2. 2005 Spring Gobbler Harvest Rates (Turkeys/Sq.Mi.) with Season Length and Bag Limit



A 2001-02 mail survey of hunters indicated we had approximately 42,000 turkey hunters. Applying hunter success and reporting rates from the 2001-02 survey to our current reported harvest, we now estimate there are 55,000 turkey hunters in the state. When compared to other southeastern states, NC has his one of the highest hunter densities (Figure 3) and, when combined with our low harvest, one of the lowest success rates (Figure 4).

Figure 3. 2005 Spring Gobbler Hunter Densities (Hunters/Sq.Mi.)

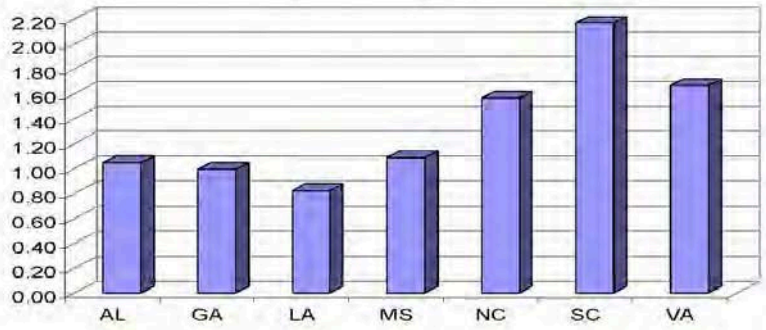
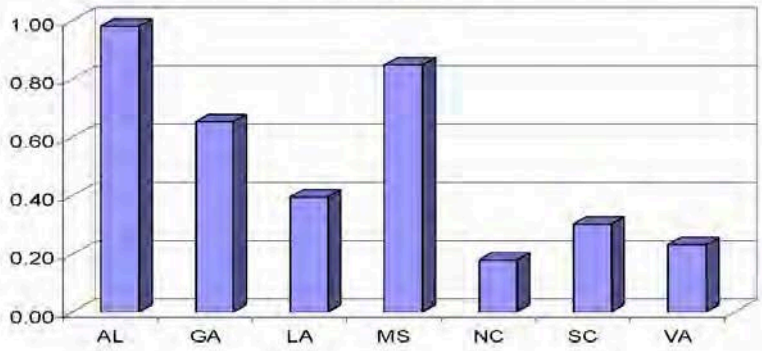
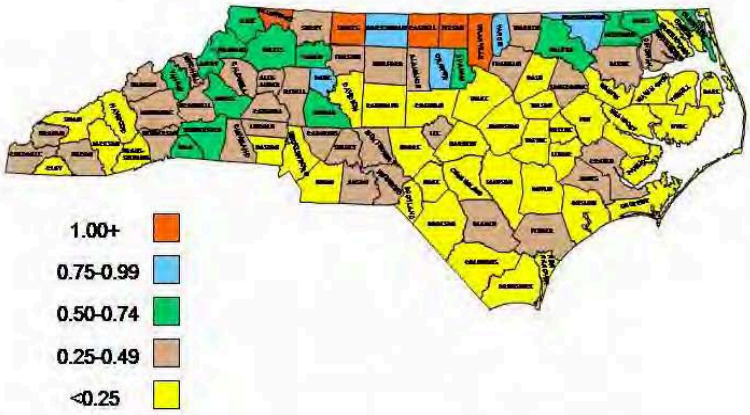


Figure 4. 2005 Spring Gobbler Hunter Success (Harvest/Hunter)



Although turkeys have been established in our Mountains for several years, many of our Foothills, Piedmont and Coastal Plain populations are relatively new, and there is much potential for expansion of bird numbers and increases hunter success. Based on results from other southeastern states and our own experiences, regional saturation levels will not be achieved until birds in these areas are allowed to completely fill unoccupied habitats and are given time to achieve several years of good recruitment. Based on the results we have observed in other areas, when turkeys become firmly established we should be able to support populations that yield sustained harvests of 0.5 or more gobblers/mi^2 in good habitats. In our best habitats, we can expect harvests of 1.0 or more birds. Based on our harvest/mi^2 of habitat in 2006 (Figure 5) it is apparent that in many of our lower Piedmont and Coastal Plain counties we still have not reached our full potential for turkey population density.

Figure 5. North Carolina spring gobbler harvest, 2006.
(birds/sq.mi. habitat)



Development of Goal-Based Regulatory Strategies

DWM staff recommend that any regulatory strategies considered for adoption by the WRC should:

1) be based on sound biological principles,
2) include easily understood regulations,
3) be statewide and hunter-friendly, and
4) be consistent with established goals for turkey population and harvest management.

We also believe that our human dimensions survey information and other feedback from hunters, when consistent with these goals, should be utilized to guide the regulatory decision-making process. Based on our most recent survey of the attitudes and opinions of turkey hunters, we recommend that existing turkey hunting regulations only be changed if those changes will satisfy the goals of emphasizing spring gobbler hunting while also allowing for increases in turkey densities in most areas of the state.

Consideration of Alternative Regulatory Options

A. Winter Either-Sex Season

History and Development of Season Guidelines

While reviewing population and harvest status to develop guidelines for establishment of a winter turkey season, the objective was to allow winter turkey hunting where populations could support harvest of females. Several possible options were discussed, including "permit-only" hunts on private lands and game lands. Permit-only hunts would have given the agency complete control over hunter numbers. Consideration of permits hunts for private lands was discontinued early in deliberations about regulatory options, but this approach was retained as a regulatory option for game lands.

The original guidelines followed a protocol developed in West Virginia and currently used by several other southeastern states with similar habitats. These guidelines tied consideration of a winter season to the spring gobbler harvest/mi^2 of habitat (forested and agricultural lands) in any particular county. The recommended criterion for a county to be included in the winter season was a minimum harvest of 1 bird/mi^2 in the spring harvest. In order to avoid isolation of individual counties, 3 contiguous counties had to meet this harvest threshold before a season could be opened. Finally, to safeguard against declining gobbler harvests, if the spring harvest declined below the harvest threshold, regardless of the reason for the decline, then the winter turkey season would be closed in that county. In 2002, only 3 counties reported harvests that were above the threshold, but several other counties were approaching the harvest threshold.

These original guidelines were modified and the harvest threshold was lowered to 0.75 birds/mi^2 so that additional counties could be included in the winter season. Applying this lower threshold, 8 counties along the Virginia border qualified for a winter turkey season (Alleghany, Ashe, Caswell, Granville, Person, Rockingham, Stokes, and Watauga). Surry County did not qualify for consideration, but was added to make all counties contiguous.

Regulation Proposal

A regulation proposal was prepared that would allow a 1-week season on private lands in the 9 counties opening on the Monday nearest January 15. The bag limit was 1 bird of either sex. The annual limit of 2 birds was maintained, only 1 of which could be taken during the winter season. The proposal allowed hunting with dogs, but hunting with rifles was prohibited. The proposal was taken through the public hearing process in January 2003 for comments and input from the public.

At their March 2003 meeting, the WRC approved the winter season beginning in January 2004. Although not a component of the regulation proposal, there was significant discussion at the March 2003 WRC meeting regarding evaluation of this new winter turkey hunting season. At least one commissioner indicated that the season should be

maintained without modification for a period of 3 years and evaluated at that time. Wilkes County was not included in the original proposal because, based on the above criteria, it did not qualify but was added in 2004 to the list of counties having the winter turkey hunting season.

Results

Although our survey of turkey hunters indicated there was significant interest in a winter season, participation in the season has been low. No additional surveys have been conducted but conversations with enforcement officers working the counties having this season indicate a limited number of hunters observed. Total reported harvest during the 3 years of the winter turkey season has been somewhat lower than anticipated (Table 1). Within counties, harvest during the spring season has varied considerably among years and when compared to the spring harvest criterion of 0.75 turkeys harvested in the spring season/mi^2 of habitat (Figures 6-15).

Table 1. Reported Winter Turkey Harvest, 2004-06.

		Percentage of Total		
Year	**Total**	**Adult Gobblers**	**Jakes**	**Hens**
2004	181	37	17	46
2005	151	31	24	45
2006	174	38	18	44
Totals	**506**	**36**	**19**	**45**

Figure 6. Alleghany County Spring Gobbler Harvest Trends.

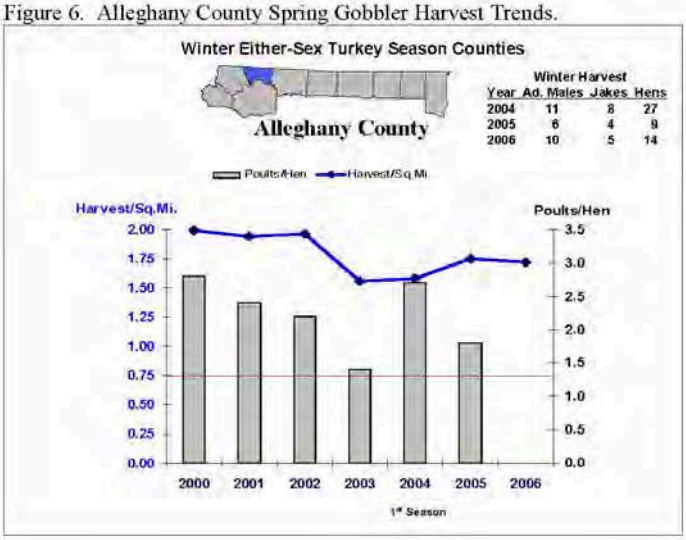


Figure 7. Ashe County Spring Gobbler Harvest Trends.

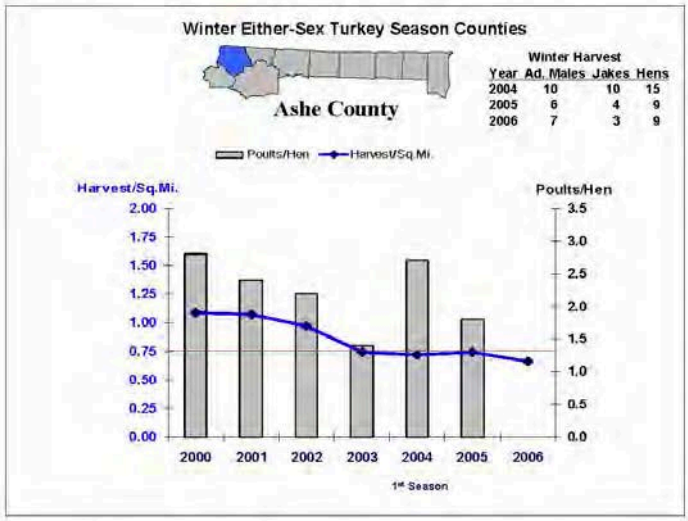


Figure 8. Caswell County Spring Gobbler Harvest Trends.

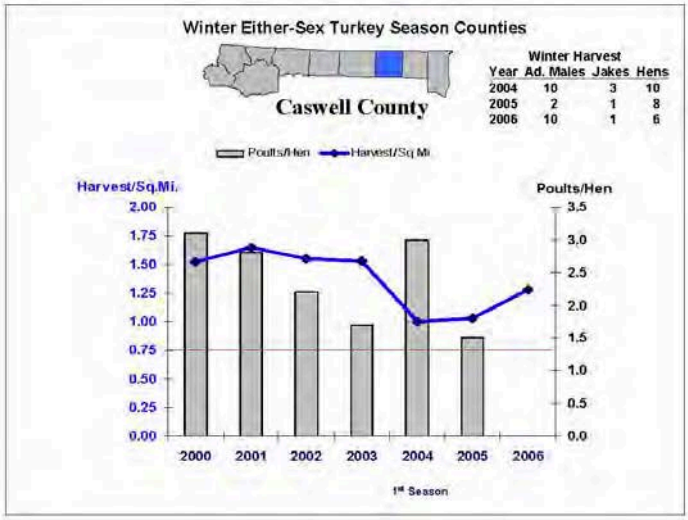


Figure 9. Granville County Spring Gobbler Harvest Trends.

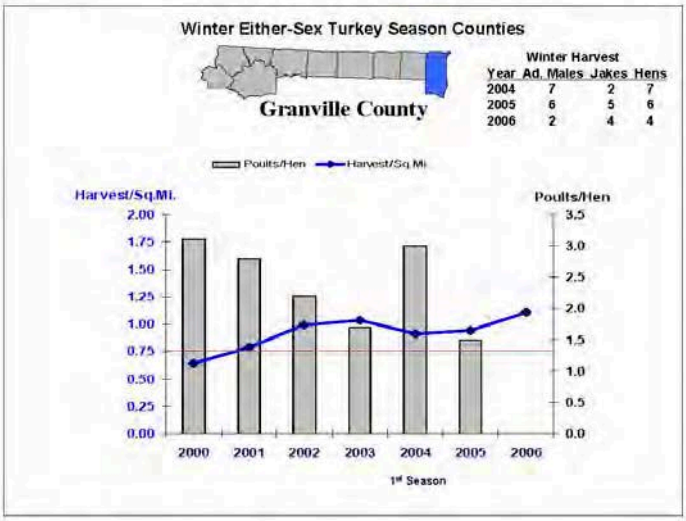


Figure 10. Person County Spring Gobbler Harvest Trends.

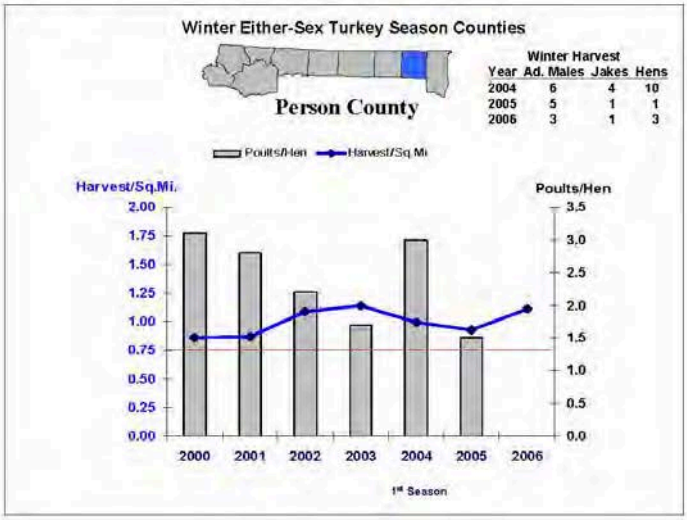


Figure 11. Rockingham County Spring Gobbler Harvest Trends.

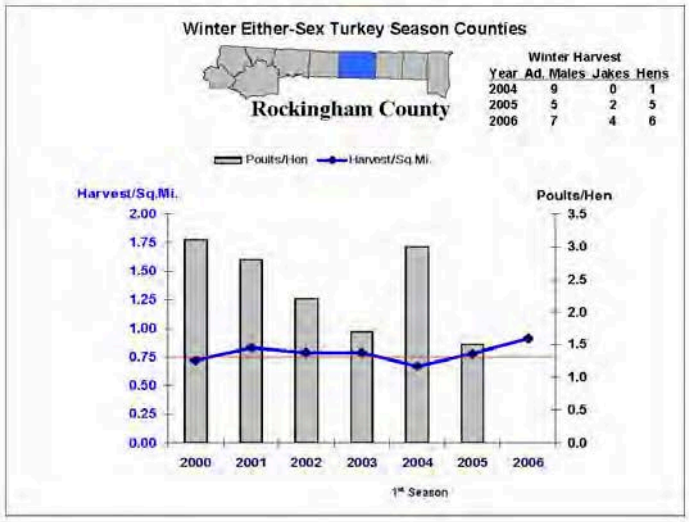


Figure 12. Stokes County Spring Gobbler Harvest Trends.

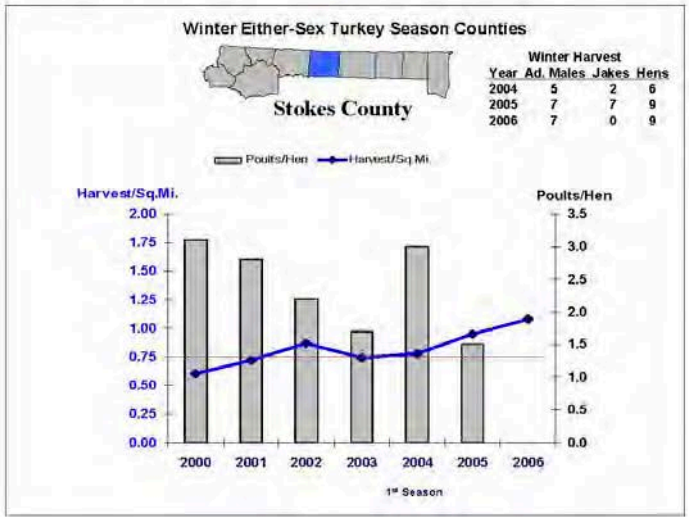


Figure 13. Surry County Spring Gobbler Harvest Trends.

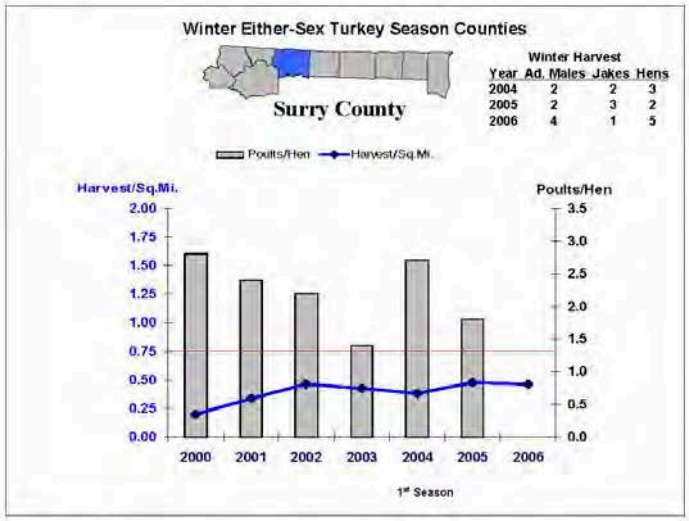


Figure 14. Watauga County Spring Gobbler Harvest Trends.

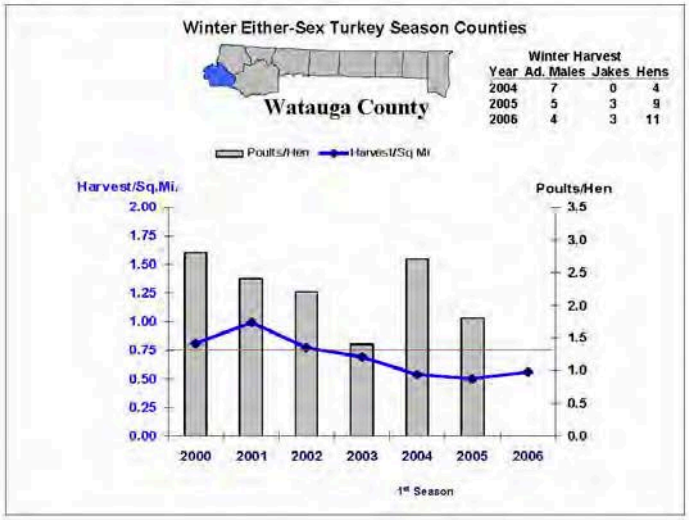
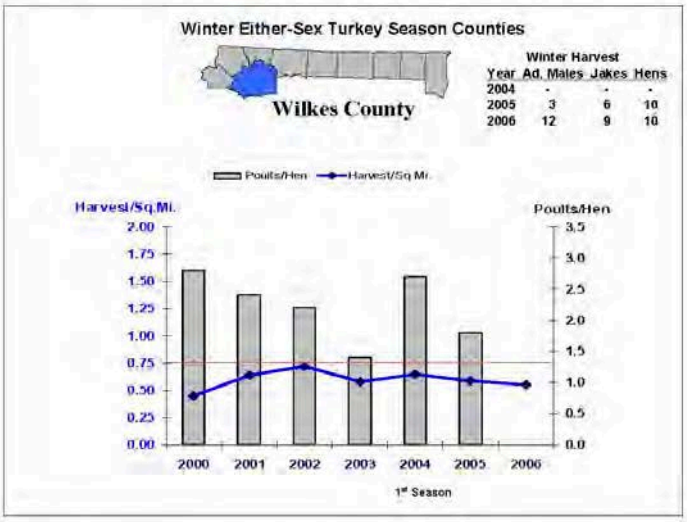


Figure 15. Wilkes County Spring Gobbler Harvest Trends.



Because the spring gobbler harvest is used to evaluate of the impact of the winter turkey season on turkey populations, a review of spring gobbler harvest trends in the 10 affected counties (as reflected in Figures 6-15) is important.

Alleghany County (1.72 birds/mi^2) is still well above the harvest threshold criterion. However, spring harvest has declined 12% in the last 3 years (Figure 6).

Spring harvest in **Ashe County** has declined 31% since the beginning of the winter season, dropping it below the threshold for remaining in that season (0.66 birds/ mi^2, Figure 7).

Although **Caswell County** still qualifies for inclusion in the winter season (1.28 birds/mi^2), the spring harvest declined 33% from 2003 to 2005, but rebounded somewhat in 2006 (Figure 8).

Turkey harvest in **Granville County** and **Person County** has fluctuated, but both counties still qualify for inclusion in the winter season (1.11 birds/mi^2 in each county, Figures 9 and 10, respectively).

Spring turkey harvest in **Rockingham County** has remained relatively stable at approximately 0.91 birds/mi^2 (Figure 11).

Stokes County still qualifies for inclusion in the winter season with a relatively stable to slightly increasing spring harvest of 1.08 birds/ mi^2 (Figure 12).

Spring harvest in **Surry County** (0.46 birds/mi^2) remains below the inclusion criterion (Figure 13).

Spring harvest in **Watauga County** has declined significantly over the last few years to 0.56 birds/ mi^2 in 2006; a 43% decline in harvest since 2001, dropping it well below the inclusion threshold for the winter season (Figure 14).

The winter turkey hunting season was opened in **Wilkes County** in 2004. Since 2002, spring harvest has declined from 0.72 birds/ mi^2 in 2002 to 0.55 birds/ mi^2 in 2006; a 24% decline in harvest that makes it remain below the inclusion threshold for remaining in the winter season (Figure 15).

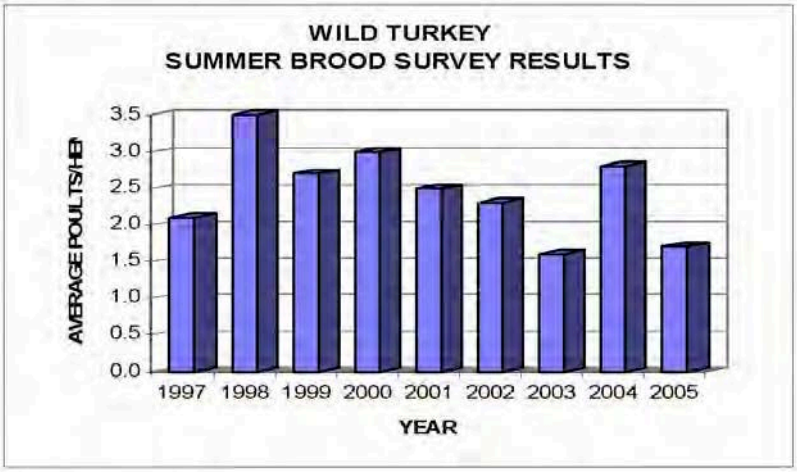
Applying the harvest threshold used to establish the winter season (0.75 birds harvested/ mi^2 of habitat during the spring season), only 5 of the 10 original counties currently qualify (Caswell, Granville, Person, Rockingham, and Stokes). Alleghany County is well above the threshold but is an isolated county.

Discussion

1. Role of Recruitment

Reproduction is one of the primary factors that drive wild turkey population dynamics. Unfortunately relative to evaluating the winter turkey season, the two poorest hatches on record have occurred since 2003. An average of 1.6 poults/hen (reflecting a poor hatch), 2.8 poults/hen (reflecting a good hatch), and 1.7 poults/hen (reflecting a poor hatch) were reported in 2003, 2004, and 2005, respectively (Figure 16). Undoubtedly, poor reproduction has played a major role in the declines in the spring harvest in several of the counties in question since initiation of the winter turkey season.

Figure 16. Wild Turkey Brood Survey Results, 1997-2005.



2. Impacts of Mortality

Relative to the spring season, hunter participation in the winter turkey season and the reported harvest have been low. Consequently, the overall impact of the winter turkey hunting season on turkey populations in high density counties is likely minor. However, there are some impacts.

Somewhat surprisingly, male birds have made up 55% of the reported harvest during the winter season (Table 1). Therefore, one direct impact of the winter season has been the removal of at least 278 male birds from the population during the three-year period. These mortalities are predominately additive to the spring harvest so most male birds removed from the population in January are not available to hunters three months later when the spring gobbler season opens.

The impact of removing a relatively low number of females from the population may seem minimal. However, hen harvest has greater long-term impacts on the turkey population and spring gobbler harvest than removal of gobblers during the winter season. A minimum known harvest of 228 females occurred during the 3 years of the winter season. While this number is relatively low, this mortality occurs just prior to breeding so this harvest is also additive. In years of good productivity which results in population increases, the removal of a small portion of the female segment of the population may go unnoticed. However, in years following poor recruitment, as in two of the last three years, winter harvest of any portion of the female segment of the population exacerbates negative populations impacts, reduces the number of hens available to breed in the spring, and further impacts subsequent harvest during spring seasons.

Precisely how much impact the removal of these hens had to the overall population is difficult to determine. The reported harvest of 228 hens is the known minimum harvest. The actual harvest was almost certainly over 300 hens. Because these birds were harvested during the time frame when birds normally were relocated for restoration purposes, a correlation may be possible. These 300 hens equate to the number of hens that would be released on 30 restoration sites (3 restoration sites per county over the 10 counties containing our best wild turkey habitat in the state). In those terms, the potential impact could be significant over the long-term.

Although winter harvests during the past 3 years have been relatively low, spring harvests have been declining in several of the affected counties. We feel the major factor contributing to these declines is low recruitment. However, we cannot discount the additive impacts of winter harvest of females. The declining trend in the spring gobbler harvest in some counties is likely to continue because the full impact of the poor hatch in 2005 has yet to be fully manifested.

3. Impacts on Agency Credibility

The North Carolina State Chapter of the National Wild Turkey Federation (NC-NWTF) supported original guidelines for the winter hunting season as a way to provide additional winter hunting opportunities while protecting quality spring gobbler hunting. Based upon the criteria adopted by the WRC, they believed that the inclusion criteria for counties to be included in this season would be followed for at least three years and that the season would be closed in counties if the spring harvest dropped below the harvest threshold, regardless of the reason for the decline.

Because the NC-NWTF and other turkey hunters believed that he inclusion criteria would be followed for the first three years of the winter season, modifying originally proposed criteria and adding a county that did not meet these criteria has damaged our agency's credibility with our turkey hunting constituents. With significantly declining spring harvests in some counties, continuing the season in those counties and/or reduce the threshold to include additional counties, would risk further loss of credibility with our principal partner in turkey conservation efforts.

Biological Recommendations

If the WRC supports the goal of continuing to emphasize quality spring gobbler hunting while maximizing the potential for turkey population increases across North Carolina, the DWM recommends that the WRC adopt a spring harvest threshold of 1 bird/mi^2 of habitat for initial consideration of a county to be included in the winter season. Based on reports we have received from DWM and enforcement personnel relative to hunter participation and pressure, we recommend deleting the requirement for 3 contiguous counties to reach the threshold before opening an individual county. Once the season is opened in a county, we recommend that the winter season be closed when the spring harvest level averaged over the previous three years drops below 0.75 birds/mi^2. This

difference in inclusion versus exclusion criteria and using a three-year average would allow for some fluctuation of the harvest without counties being added to or taken out of the winter season annually. Once a county is opened during the winter season, a significant decline in the spring harvest would be required before the winter season would be closed in that county. If a county is closed because the three-year average spring harvest level drops below 0.75 birds/mi^2, then we recommend that it remain closed until the spring harvest again reaches the 1.0 bird/mi^2 threshold. Following these guidelines would allow for significant recovery of the population before the winter season would be reopened. Under these guidelines, 6 of the counties already in the winter season would remain open (Alleghany, Caswell, Granville, Person, Rockingham, and Stokes); 4 of the counties currently in the winter season would close (Ashe, Surry, Watauga, and Wilkes).

If approved by the WRC at the August 2006 meeting, DWM staff will submit these guidelines as a proposed revision to the NCAC for consideration during the 2006-07 regulatory cycle. If so, we will craft the proposed rule change to avoid annual changes to the NCAC and for information purposes, merely present changes to hunters at public hearings each year and in the Regulations Digest.

We also recommend that the WRC consider extending the winter season to 2 weeks in counties that do qualify under the new recommended guidelines. Hunting pressure has been low, the guidelines apply to private lands, and we have the ability to regulate pressure on game lands. This modification would allow additional hunting opportunity for those who choose to hunt during the winter season by doubling the season length.

We also recommend that the WRC maintain our current 2-bird bag, limit but allow hunters to take either bird during the season of their choice.

We believe that extending the season length and making both birds "hunter-choice" relative to the seasons would be popular with hunters who prefer winter hunting over spring hunting. We do no recommend adoption of either of these changes unless the inclusion criteria above is adopted and maintained.

B. Increased Bag Limit

Another regulatory action that could be considered is to increase the bag limit from 2 to 3 birds. Options could include an additional bird in the spring, an additional bird in the winter, or an additional bird that could be harvested in either season.

Bag Limit Options

Of the above options that might be considered, the addition of a third bird that could only be harvested during the winter turkey season would likely have the greatest potential for negatively impacting populations. In our 2002 hunter survey, of those hunters who indicated they would utilize a third bird in the bag, 80% indicated that they would use it in the winter season. Because hunters would be forced to hunt during the winter season

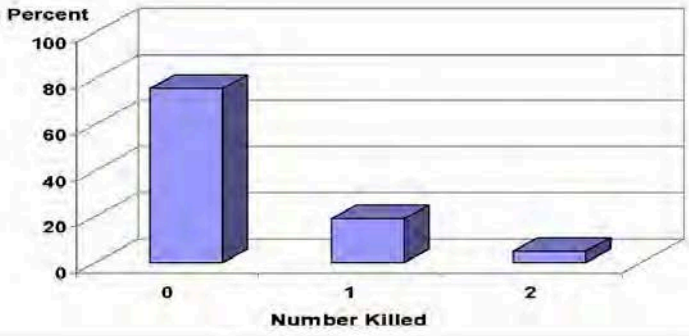
to harvest this third bird only available to them in that season, we believe hunter effort and harvest would increase significantly. Every big game license holder in the state would be allowed a third bird but would only be able to utilize that option in a few counties that have a winter season.

Increasing the bag limit to three birds, only one of which could be harvested in the winter season could also complicate interpretation of the winter season inclusion criteria (gobblers/mi^2 in the spring harvest) and the overall rationale of the guidelines. Due to requests from the public, a third bird in the bag valid only during the winter season could evolve into a third bird in the bag valid during both the winter and spring seasons, as has happened in Virginia. There, and in others states with a long tradition of fall hunting, interest in fall hunting has continued to decline while interest in spring hunting has increased. If this pattern holds true in NC, we could find ourselves facing many of the same current issues, except with a 3-bird bag limit instead of 2, only 1 of which could be used during the winter season.

While we understand that some turkey hunters desire an increase in the bag limit, such an increase also would be contrary to the overall rationale of bag limits. One of the primary functions of a bag limit is to distribute the harvest over as many of the participants as possible, thereby increasing everyone's opportunity to be successful.

So, in North Carolina, who would benefit from an increase in the bag limit to 3 birds? Of those hunters who responded to our 2001-02 mail survey, only approximately 5% took their 2-bird limit and 19% took 1 bird (Figure 17). The remaining 76% of North Carolina turkey hunters were unsuccessful. Therefore, increasing the bag limit at this point in time in NC would only benefit ≤5% of our hunters. In addition, for many hunters, the chances of taking 1 bird could be diminished, especially on public land. For each additional bird that is taken by more successful hunters, there is one less bird available for the majority of turkey hunters.

Figure 17. North Carolina turkey hunter harvest rates from 2001 mail survey.



Another consideration relative to increasing the bag limit is whether it is in the best interest of maintaining quality turkey hunting. As bag limits on gobblers increase, hunters attempting to reach their season limit become more likely to harvest any legal gobbler; consequently, more jakes are killed. Some states have such a high percentage of jakes in the harvest that they have established regulations prohibiting the harvest of jakes and others allow only one jake in the bag. While we do not propose that consideration be given to limiting the number of jakes in the harvest, we expect that increasing the bag limit would increase the number of jakes in the harvest. In 2005, 30% of the statewide harvest in North Carolina was jakes, with 20 counties reporting ≥40% jakes, 8 counties reporting ≥50% jakes, and one county reporting ≥60% jakes in the spring harvest.

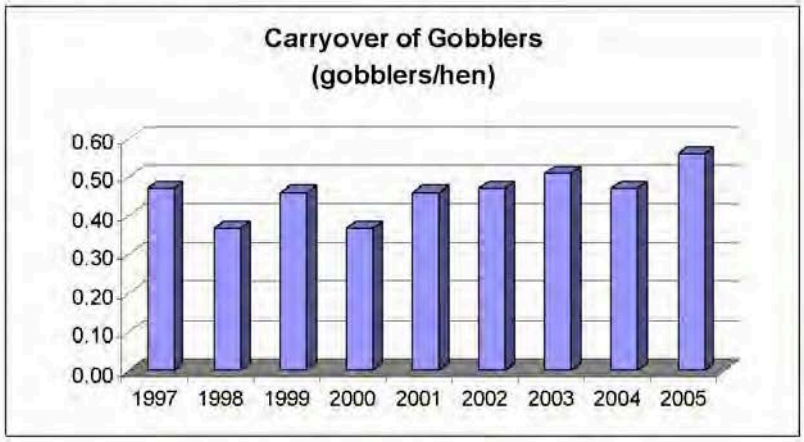
Increasing the bag limit would further exacerbate this situation. Turkey hunting is the fastest growing type of hunting in our state with an estimated hunter increase of 31% over the last 5 years. As the number of turkey hunters continues to grow, additional pressure will be placed on gobblers.

In a recent Kentucky study evaluating gobbler survival (George Wright, personal communication), results revealed a 60% annual mortality rate of male birds. This included legal harvests, illegal harvests, and crippling losses; and illustrates that gobbler mortality can be high, even with a 2-bird limit.

Increases in gobbler hunting mortality results in decreases in gobbler carryover to the following year. Reduced gobbler carryover makes future harvests more dependent on annual reproduction. Variations in reproductive success then contribute to significant fluctuations in harvests from year to year. Conversely, increased carryover of gobblers minimizes the effect of variations in reproduction and results in more consistent spring harvests. More gobbler carryover means more gobbling birds the following spring which translates to higher quality spring gobbler hunting.

Some states are now using the ratio of gobblers to hens observed during their brood surveys as an indicator of gobbler carryover. Brood surveys are conducted during July and August. Because this is after the spring season when most gobbler mortality occurs and after the nesting period when most hen mortality occurs, it provides a good index of gobblers/hen that may be available the next spring. In their Strategic Wild Turkey Management Plan, Arkansas set a minimum benchmark of 0.50 gobblers/hen observed during their brood surveys to maintain quality spring gobbler hunting. When this ratio fell below 0.50 gobblers/hen recently, Arkansas delayed their spring opening by a week and shortened the season by a week. Other states are beginning to look at these same data as indicators of quality spring gobbler hunting. Results from our brood surveys in NC indicate that only twice in the last 9 years has this ratio been above 0.50 (Figure 18); it has averaged 0.46 for the period. These data indicate that by increasing the bag limit and therefore placing additional pressure on gobblers the quality of our spring turkey hunting would likely decrease.

Figure 18. Gobbler Carryover, 1997-2005.



Biological Recommendations

While turkeys and deer are vastly different creatures, some comparisons can be examined relative to any recommendations about altering hunter bag limits. Increasing the male bag limit within reason on either species is not going to decimate the population. However, as the bag limit is increased, future hunting quality can decline with high hunter pressure. The buck bag limit on deer was increased over time until yearlings made up the bulk of the harvest each year. Many hunters shot every buck they saw and few bucks got old enough to reach adult status and become a quality deer. Over time, as a result of deer hunters becoming more successful at just killing a deer and our educational efforts demonstrating the advantages of not exerting heavy pressure on bucks, deer hunters began to understand the negative impact of excessive bag limits on bucks. So, we became challenged with how to reduce hunter pressure and bag limits to promote better quality hunting.

Increasing the bag limit on gobblers will increase gobbler mortality, reduce gobbler carryover, increase the percentage of jakes in the harvest, and eventually reduce the quality of spring gobbler hunting. Other states with higher bag limits are observing changes in turkey population dynamics and now are questioning whether they should reduce the gobbler bag limit. A more conservative bag limit means a higher carryover of gobblers. More carryover means more gobbling birds the next spring and higher quality spring gobbler hunting. It also means that hunters will occasionally kill a real "limbhanger" instead of the harvest being totally dominated by jakes and two year old gobblers, as is the case in states with higher bag limits.

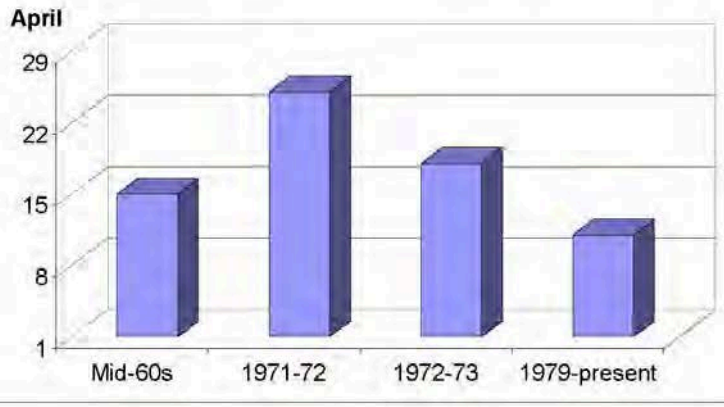
On well-controlled private land, where tract size is large and the harvest is very limited, increasing the bag limit may not have a negative impact on turkey populations. However, we believe it does have the potential to negatively impact the quality of spring gobbler hunting as a statewide regulation, especially on public lands. Finally, increasing the bag limit concurrent with season extensions could result in further departure from management goals. If the goal is to emphasize quality spring hunting and an increasing statewide population, we do not recommend any increases in the bag limit.

C. Timing and Length of Spring Season

History

Since the late 1960s, NC's spring gobbler season opening date has ranged from mid-April to the fourth Saturday in April (Figure 19), and the season length has varied from 3-4 weeks. For most of this period, we had one statewide season. However, for the 1974-79 seasons, the eastern portion of the state opened the second Saturday in April while the western part opened on the third Saturday; both regions of the state had a 3-week season. In an effort to eliminate the migration of hunters and crowded conditions on some public hunting areas, the split spring season was eliminated for the 1980 season. The second Saturday in April was established as the opening date statewide and the season was lengthened to four weeks. The spring season has remained unchanged since 1980.

Figure 19. Mean opening date of North Carolina spring gobbler seasons.



Hunter Desires vs. Biology

Kennamer (2006) stated "turkey biologists and natural resource management agencies walk a fine line when setting the seasons to assure adequate reproduction while balancing the needs of the hunting community". Each year hunters hear turkeys gobbling prior to the opening of the spring gobbler season and express interest in opening the season earlier. As a result, managers are often pressured to set earlier opening dates for spring gobbler seasons, "but the consequences of early hunting seasons may create scenarios that harm turkeys and turkey hunting more than hunters realize" (Kennamer 2006). The whole premise of a spring gobbler season – of it being biologically sound to hunt gobblers in the spring – is based upon harvesting birds after breeding has occurred. Gobblers play no part in nesting or brood rearing; their role is in breeding. After breeding, they are not vital to the incubation and brood rearing phases of reproduction and many can be harvested without negatively impacting population recruitment.

Research Results

The onset of nesting is widely cited as an important biologically-based criterion for setting opening dates for spring gobbler seasons. By that time, breeding already has taken place and hens are much less vulnerable to harvest during incubation as they are spending most of their time on the nest. Opening the spring gobbler seasons before females have begun nesting can lead to high rates of illegal female kill. Whitaker et al. (2004) reported that an illegal hen harvest of only 10% could reduce nesting success and resulting recruitment, ultimately hampering population growth.

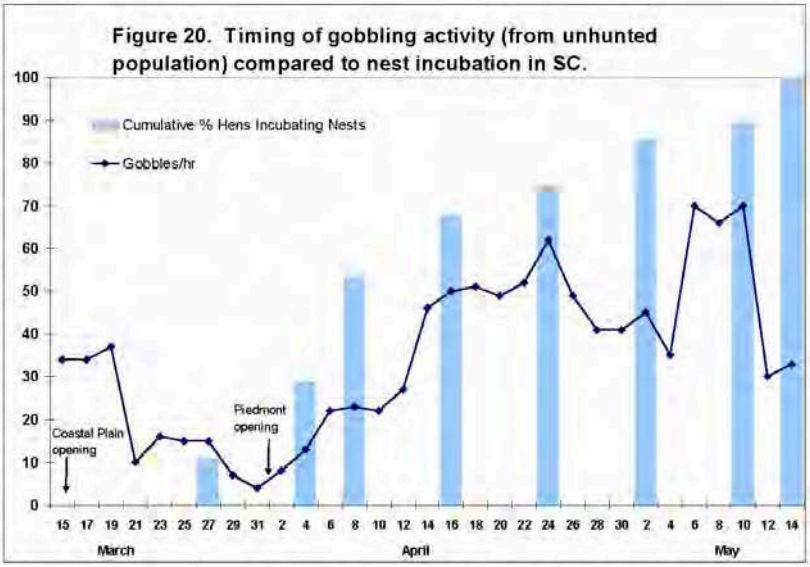
In an attempt to compile information on wild turkey nesting phenology and gobbling activity, we conducted an exhaustive literature search and evaluated the available data. Turkey biologists across the country were also asked to contribute additional unpublished data and information. Whitaker et al. (2004, enclosed) compiled estimates of mean dates of incubation initiation from 58 different localities in 33 states and one province and used these data to evaluate models for predicting nesting phenology (Whitaker et al. 2004). These models were then used to generate maps predicting mean incubation initiation dates for wild turkeys across their entire range.

Comparing available data to the 2004 opening dates for spring gobbler hunting seasons indicated that spring seasons currently open in most states prior to the mean date of incubation initiation. Of the 34 states and provinces examined, all but one (CT) opened their spring gobbler seasons prior to the mean incubation initiation date. Only 26% of the states met the less conservative criterion of delaying hunting until the onset of laying by most females (approximately 2 weeks preceding the mean incubation initiation date). Four of these states opened seasons the week preceding the mean incubation initiation date (ME, NY, PA, and VT), and the other four states opened seasons 8-14 days prior to the mean incubation initiation date (MA, NH, WI, and WV). The remaining 25 jurisdictions (74%, including NC) opened spring seasons at least 28 days prior to the mean incubation initiation date, with three states opening greater than 40 days prior (FL, SC, and TX).

Given their widely varying opening spring season dates, it also is interesting to note some of the median and mean incubation initiation dates from several study sites in North Carolina and surrounding states. The mean incubation initiation dates from studies conducted in South Carolina (1 study), North Carolina (2 studies), Virginia (2 studies), Tennessee (2 studies), and West Virginia (4 studies) were all during the first week of May. Only two studies evaluating the breeding of wild turkeys have been conducted in North Carolina (Davis 1992, Cobb et al. 1993). In western North Carolina, Davis (1992) reported a median incubation initiation date of April 30th (mean = May 6th). From the northern Coastal Plain, Cobb et al. (1993) reported a median incubation initiation date of May 2nd. Not only is there little difference between eastern and western North Carolina, apparently little difference in breeding phenology of wild turkeys exists among these several states (Whitaker et al. 2004).

The gobbling analysis conducted by Whitaker et al. (2004) was restricted to the identification of the initial peak (not necessarily the only or even the largest peak) in gobbling due to inconsistent sampling across studies and uncertainty about the effects of hunting and nesting chronology on patterns of gobbling. However, this analysis did suggest a relatively consistent 2-5 week offset between the initial peak of gobbling by males and the incubation initiation date for females, with the two behaviors occurring closer together in populations breeding later in the spring. This pattern may have been influenced by the most of the estimates being obtained from hunted populations and the onset of hunting may lead to diminished gobbling rates. Further, setting season opening dates to coincide with this initial peak in gobbling could lead to high levels of illegal hen kill.

Whitaker et al. (2004) stated that many jurisdictions are somewhat cavalier and quite liberal in setting spring wild turkey hunting seasons. An example of this may be found in our sister state of South Carolina. Bevill (1975) presented data examining the timing of gobbling activity from an un-hunted area in SC compared to nest incubation (Figure 20). As illustrated, the opening dates for spring gobbler hunting in both the Coastal Plain and Piedmont are considerably earlier than both the peak of gobbling activity and the period when most hens have begun nest incubation. Whitaker et al. (2004) further stated that managers in these areas should be prudent in monitoring wild turkeys, as populations may suffer from reduced female survival and consequently decline, ultimately impacting harvests and hunt quality, all possible results of earlier opening dates in NC.



In well established, high density populations, hunting gobblers prior to breeding may not have a dramatic impact. Enough gobblers probably will survive to ensure most hens are bred. There still could be some adverse impacts if additional hen mortality associated with early openings is high, but in high density populations these impacts may be minor. However, in low density or increasing populations, the harvest of gobblers prior to breeding could result in un-bred hens and the loss of even a few females could have a negative impact. These low density populations occur in two types of areas in the eastern NC. One is areas with recent restoration sites where turkeys are just becoming established. The majority of our most recent restoration sites have been east of I-95. The other area of concern is in marginal habitats that are only capable of supporting low density wild turkey populations. Most of these marginal habitats occur in the eastern portion of the state as well. Regulatory strategies that open the spring gobbler season earlier can negatively impact these low density populations.

Biological Recommendations

Results from the above cited studies when combined with the high density of hunters we have in NC could pose, as Kennamer (2006) stated, "some serious issues with early hunting seasons - less than ideal hunting conditions and significant hen mortality". To better align our existing seasons with the second peak of gobbling when the majority of hens have begun incubation, and thereby address the goals of emphasizing spring turkey hunting while allowing for continued population growth, our spring season in NC should open on the third Saturday in April, instead of the second Saturday in April. If a

statewide shift in the opening date in NC to the third Saturday in April (as opposed to the current opening the second Saturday in April) is determined to be unpalatable in our current socio-political context, we recommend against opening the spring season any earlier than the current opening on the second Saturday in April.

If the WRC determines that breeding data from NC (Davis 1992, Cobb et al. 1993), information presented by Whitaker et al. (2004), guidelines presented by Healy and Powell (1999), and staff conclusions above are insufficient to make to determination in regards to setting an earlier opening date for spring turkey hunting season and, therefore, proceed with establishing a season with an earlier opening date, we recommend:

1. that any area in which the WRC establishes an earlier opening date for spring turkey season be geographically small in area,
2. that any such season be established on a strict experimental basis for no less than three and no more than five years,
3. that rigid evaluation criteria (including criteria to determine whether the season will be retained or eliminated after the experimental period) be established *a priori*, including the use of an experimental control, to determine the impacts of any such season on turkey breeding and harvest dynamics,
4. that the WRC not modify any variable during either the winter or spring turkey hunting seasons anywhere in NC during the experimental season,
5. that the WRC engage representatives from the NC-NWTF to discuss their intent to establish this experimental season,
6. that season variables and the conditions upon which the season will be evaluated be vetted through annual district public hearings, and
7. that the WRC approve additional funding for the DWM to coordinate and conduct the evaluation of this experimental season.

Summary

Most NC turkey populations remain below potential saturation levels and desirable densities for maximum hunter satisfaction. When combined with our high hunter densities, 3 out of every 4 hunters are unsuccessful in bagging a turkey. If our stated goal of emphasizing spring gobbler hunting while also allowing for increases in turkey densities in most areas of the state is appropriate, DWM staff feel that raising the bag limit to 3 birds or lengthening the season is unwarranted at this time. If any changes are to be considered, they should be directed at opening the statewide season a minimum of one week later to maximize hunter satisfactions while also minimizing the impact of our spring season on female survival and resulting recruitment. If we made this change, when our hunter success and harvest rates become more in line with those observed in other southeastern states having well established populations, we could then increase the season to 5 weeks. This would assure that our turkey hunters have the opportunity to pursue gobblers when they are vulnerable to hunting in most years throughout the state.

In a survey of Florida turkey hunters, Williams and Austin (1988) concluded that many factors contributing to a good hunting experience are directly related to the density of the

turkey population while those factors most often cited as degrading to the hunting experience were things that can be directly attributed to human activities, many of which can be dealt with through regulations. Furthermore, they suggested that a large standing population of turkeys may be as important as a large annual harvest.

We concur with that approach and our surveys indicate the majority of our hunters desire our populations to increase in many areas of the state. We have much good habitat that has been stocked in the last 10 years and therefore considerable potential for both range expansion and increased turkey numbers. We believe that we have not achieved completely restored populations that have reached their maximum potential.

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Submitted by:

August 30, 2006

David T. Cobb, Ph.D., CWB
Chief, Division of Wildlife Management

Appendix 2. Wild Turkey Restoration Area Evaluation Form

WILD TURKEY RESTORATION AREA
FIELD EVALUATION FORM

Owners: _____ Name of Area: _____
Biologist: _____ County: _____
Date: _____ Area's Rating: _____

Will owners sign a binding, legal agreement to allow Wildlife Resources Commission to trap and remove turkeys for restoration purposes for a period of 10 years following stocking? (If answer is no or indefinite, the area cannot be stocked)

I. Cooperative Attitude of Owners and Public

A. Owners ability and willingness to manage area for the benefit of turkeys:

Little or no ability or interest in management for turkeys and/or plans that would be detrimental to turkeys				*Moderate or mixed ability and interest in management for turkeys and/or uncertainty over future of the area*				*Serious intent and interest in management for turkeys on a long-term basis*		
0	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*

B. Public interest and support for turkey restoration project in the area:

High degree of interest and support demonstrated by high turnout at public meeting and/or other documents of support such as petitions and letters				*Moderate interest and support at public meeting and by other means of expression*			*Low interest and support by public*			
10	*9*	*8*	*7*	*6*	*5*	*4*	*3*	*2*	*1*	*0*

C. Projected land use plans for the area:

High probability area will not be suitable for turkeys within the next 10 years				*Changes in habitat conditions may occur over the next 10 years, but will have only moderate effect on turkeys*			*Conditions will remain stable or be improved for wild turkeys over the next 10 years*		
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*

II. Habitat Characteristics as Related to Suitability for Turkeys

A. Size of area:

Under 5,000 acres	*5,000-10,000*	*10,000-15,000*	*Over 15,000*
0	*5*	*8*	*10*

B. Proportion forested:

Under 40%	*40-60%*	*60-70%*	*70-90%*	*90-100%*
1	*4*	*6*	*10*	*6*

C. Proportion forest in mature favored hardwoods (oak, beech, cherry, black gum, hickory, dogwood, and other mast producers):

Under 25%	*25-50%*	*Over 50%*
1	*5*	*10*

D. Proportion open land (crop, idle, and pasture):

0-5%	*5-15%*	*15-25%*	*25-35%*	*35-50%*	*Over 50%*
2	6	10	8	4	1

E. Understory density:

Commonly dense		*Moderately dense, dispersed and localized*		*Commonly open*	
2	6	10	8	4	1

III. Factors Relating to Potential Disturbance of Turkeys

A. Presence of predators and free-ranging dogs:

High		*Moderate*		*Low*
1	*3*	*6*	*8*	*10*

B. Number of residents per 5,000 acres:

Under 40%	*40-60%*	*60-70%*	*70-90%*	*90-100%*
1	*4*	*6*	*10*	*6*

C. Miles per 5,000 acres of public roads and other roads not restricted to public access:

0-2.5	*2.6-5.0*	*Over 5.0*
10	*5*	*1*

IV. Public Use of Area

A. Opportunity for hunting:

Over 2,500 acres of the area in Game Lands	*Over 2,500 acres in RENEW*	*Over 2,500 acres generally open to hunting with permission of landowner*	*Hunting opportunity limited with area primarily restricted to club members or special guests*	*No hunting permitted or hunting severely restricted*
10	*8*	*6*	*4*	*1*

B. Potential for spread of turkeys:

Area surrounded by vast expanses of suitable but unoccupied range with adequate corridors for spread		*Several suitable tracts nearby without major barriers to spread*	*Only a few suitable tracts nearby or major obstacles to expansion*	*Island habitat for turkeys; suitable areas within 25 miles miles; major barriers to expansion present*
10	*8*	*6*	*4*	*1*

Appendix 3. Wild Turkey Restoration Area Score Sheet

WILD TURKEY RESTORATION AREA
SCORE SHEET

Biologist: _____

Name of Area: _____
County: _____
Date: _____

MOST IMPORTANT FACTORS	WEIGHT	FACTOR	FACTOR SCORE*	TOTAL
	10	IIA Size		
	10	IB Public Support		
	9	IVA Public Use		
	8	IIB Forest Cover		
	7	IID Open Land		
	6	IA Management		
	6	IC Projected Plans		
	6	IIC Hardwoods		
	5	IIIB Human Population		
	5	IIIC Roads		
	4	IIE Understory		
	4	IVB Spread		
	3	IIIA Predators		
LEAST IMPORTANT FACOTRS	83 X 10 = 830 Highest Possible Rating			

* From Field Evaluation and Inspection Form

Appendix 4. Wild Turkey Restoration Areas by County (358 sites).

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Alamance	Cane Mountain	1990	Wisconsin	5	6		4
		1996	Pennsylvania		2		
(season opened - 1999)		1996	West Virginia		6		
		1996	Caswell GL (Caswell)	2	3	3	_
Anson	Pee Dee NWR	1984	Caswell GL (Caswell)	7	3		
(season opened - 1990)		1985	Caswell GL (Caswell)		1	1	3
Anson	White's Store	1989	Caswell GL (Caswell)		1		
		1989	South Carolina		6	2	4
(season opened - 2000)		1990	Caswell GL (Caswell)			1	
		1990	Camp Lejeune (Onslow)	2			
		1997	Big Creek (Yancey)		1		3
		1997	State Test Farm (Ashe)			2	1
		1997	Tucker Farm (Ashe)		4		1
		1997	Horse Cove (Transylvania)		2		
		1997	Maxwell Cove (Transylvania)			1	_
Anson	Jones Creek	1993	Caswell GL (Caswell)	2			
		1993	Roanoke River (Martin)		1		
(season opened - 2000)		1993	Iowa	2			
		1993	Pennsylvania		4		
		1993	Wisconsin		5	1	_
Anson	Lane's Creek	1996	South Carolina		1		
		1996	Biltmore Estate (Buncombe)				5
		1996	Weaver Farm (Watauga)		3		1
(season opened - 2000)		1996	Rich Mountain (Madison)			4	
		1996	Cherokee Mills (Rutherford)		1		
		1996	Rhinehart Creek (Macon)	1			_

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Ashe	Bluff Mt. GL	1976	Uwharrie NF (Randolph)				1
		1977	Caswell GL (Caswell)	1	2	1	4
(season remained open)		1977	Rich Mt. (Madison)		3		
		1977	Green River GL (Polk)	1			
Avery	Lost Cove	1982	Vermont	4	14	3	7
(season opened - 1998)							
Avery	Plumtree	1990	Wisconsin	1	2		1
		1990	Biltmore Estate (Buncombe)		2		
(season opened - 1997)		1990	Piney Creek (Alleghany)		5	3	3
		1990	Miller's Farm (Ashe)	1			
		1990	Scott's Industries (Ashe)	1			
Avery	Yellow Mountain	1992	Goodman Farm (Ashe)				5
		1992	BASF (Buncombe)		2	3	
(season opened - 1997)		1992	Bluff Mountain (Ashe)	1			
		1992	Piney Creek (Alleghany)	2			
		1992	Shuler Creek (Cherokee)		3		
Avery	Linville River	1994	Pennsylvania		2	2	
		1994	Biltmore Estate (Buncombe)	2	1	2	
(season opened - 1998)		1994	Price Farm (Ashe)				2
		1994	Commissioner Creek (Macon)		4		
		1994	Airport (Buncombe)				2
		1994	Avery Creek (Transylvania)		1		
Avery	Wilson Creek	1995	Burningtown (Macon)		3		2
		1995	Sturgill Farm (Alleghany)		2		3
(season opened - 1998)		1995	Rich Mountain (Madison)			3	
		1995	Park Creek (Macon)	1			
		1995	Bl. Snake Branch (Transylvania)	1		1	

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Avery	Blevins Creek	1995	Bluff (Madison)		1	1	3
		1995	Davis Branch (Madison)		6		
(season opened - 1998)		1995	School House Road (Cherokee)	2			
		1995	Rich Mountain (Madison)			3	
Beaufort	Goose Creek	1993	Caswell GL (Caswell)	1			
		1993	Roanoke River (Martin)	1	1		
(season opened - 1999)		1993	Iowa	1	6	1	3
		1993	Pennsylvania				1
		1993	Wisconsin			3	
Beaufort	Bay City	1995	Connecticut		6		5
(season opened - 1999)		1995	Ashes Creek (Pender)			2	
		1995	Bear Swamp (Perquimans)	1		1	
Beaufort	Blount's Creek	1995	Connecticut		5		6
		1995	Ashes Creek (Pender)			2	
(season opened - 1999)		1995	Bear Swamp (Perquimans)	1			
		1995	Lane's Ferry (Pender)	1			
Beaufort/ Martin/ Pitt	Tranter's Creek (season opened – 2002, Except Pitt – 2003)	1997	BASF Corp. (Buncombe)		7	4	1
		1997	Absher Farm (Ashe)		1		
		1997	Horse Cove (Transylvania)		1		
		1997	Caswell GL (Caswell)	1			
Beaufort	Jackson Swamp	1997	South Carolina	2	4		1
		1997	West Virginia	1	2		
(season opened – 2003)		1997	Ashes Creek (Pender)		2	2	1
Beaufort	Pantego	1997	South Carolina	1	3		
		1997	West Virginia	1			
(season opened – 2003)		1997	Brice's Creek (Craven)			1	
		1997	Croom's Bridge (Pender)			2	
		1997	Bear Swamp (Perquimans)		1		2
		1997	Ashes Creek (Pender)		4		1

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Beaufort	Midway	1997	South Carolina		2		
		1997	West Virginia	2	4		1
(season opened – 2003)		1997	Caswell GL (Caswell)		4	2	
		1997	Brice's Creek (Craven)			1	_
Beaufort	Pinetown	1999	BASF (Buncombe)	1	1	1	
		1999	Caswell GL (Caswell)	1			
(season opened – 2003)		1999	Walnut Creek (Polk)		4	2	
		1999	Upper Mtn. Res. (Ashe)		3		2
Beaufort	North Creek	1999	Caswell GL (Caswell)	2			
		1999	Moxley Farm (Alleghany)		1		
(season opened – 2003)		1999	Dysartsville (McDowell)				2
		1999	Walnut Creek (Polk)		2	3	
		1999	Upper Mtn. Res. (Ashe)		3		2
Beaufort	Chocowinity Creek	2003	Capps Farm (Tyrrell)	3			
		2003	Hill Farm (Jones)			2	
(season closed for 3 yrs. by		2003	William’s Land (Pender)		2		2
coop. agree. – open in 2006)		2003	Blake House (Pender)	1			
		2003	Bannerman (Pender)		7		1
Bertie	Chinquapin	1984	Roanoke River (Bertie)	4	8		2
		1984	Camp Lejeune (Onslow)			1	
(season opened - 1990)		1985	Camp Lejeune (Onslow)		6		_
Bertie	Chowan River	1991	Chinquapin (Bertie)	1			
		1991	South Carolina	1	7		3
(season opened - 1999)		1992	Mapleton (Hertford)			2	_
Bertie	Cashie River	1993	Iowa		5	3	3
		1993	Pennsylvania		1		1
(season opened - 1999)		1993	Wisconsin	1		1	_

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Bertie	Steely Tract	1997	South Carolina		1		3
		1997	Bear Swamp (Perquimans)	1	4		2
(season opened – 2003)		1997	Brice's Creek (Craven)			2	
		1997	Ferry Landing (Craven)	1			
		1997	Holly Neck (Washington)	1			_
Bertie	Sans Souci	1999	Caswell GL (Caswell)			1	
		1999	Holly Ridge (Washington)	1			
(season opened – 2003)		1999	South Carolina	1			
		1999	Brush Creek (Macon)			2	
		1999	Absher Farm (Ashe)		1		2
		1999	Sturgill Farm (Alleghany)		4		3
Bertie	Republican	2000	Maple Hill (Pender)	1	7		2
		2000	Sturgill Farm (Alleghany)		1	3	1
(season opened – 2003)		2000	Conoho Farms (Martin)	1		1	
		2000	IP, Ahoskie (Hertford)		1		1
Bertie	Francis Mill	2000	Conoho Farms (Martin)	2	5	1	2
		2000	IP, Ahoskie (Hertford)		4		
(season opened – 2003)		2000	Deep Gap Farm (Polk)			3	_
Bladen	Colly Creek	1985	Roanoke River (Martin)			3	
		1985	Camp Lejeune (Onslow)		1	2	
(season opened - 1994)	Fall,	1985	Roanoke River (Bertie)		1	2	8
		1986	Camp Lejeune (Onslow)		6		
		1986	Caswell GL (Caswell)	2			_
Bladen	Monroe	1990	Caswell GL (Caswell)	1	1	5	
		1991	Caswell GL (Caswell)	2	4		2
(season opened - 1994)		1991	Cone's Folly (Pender)		1		
		1991	South Carolina				2

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Bladen/ Cumberland	Huske Dam	1991	Pee Dee NWR (Anson)				1
		1991	South Carolina	2	8	2	2
		1992	Caswell GL (Caswell)			1	
(season opened - 1998)		1992	South Carolina			1	
Bladen/ Robeson	Big Swamp	1993	Caswell GL (Caswell)	1			
		1993	Iowa		2	2	3
		1993	Pennsylvania		2		3
(season opened - 1999)		1993	Wisconsin			2	
Bladen	Suggs Mill Pond	1993	Iowa	1	1	1	8
		1993	Pennsylvania				1
(season opened - 1999)		1993	Wisconsin			3	
Bladen	Bladen Lakes SF	1996	Pennsylvania		2		6
(season opened - 1999)		1996	South Carolina	1	3	4	1
Bladen	Bladen Lakes SF II	1998	Crooms Bridge (Pender)	2			
		1998	Panther Top (Cherokee)	1			
		1998	Rockwell Farm (Craven)				1
(season opened – 2003)		1998	Woodie Farm (Ashe)			2	
		1998	South River (Bladen)		2		2
		1998	Narrow Gap Road (Columbus)		2		
		1998	Reigelwood (Columbus)		1		
		1998	Singletary Tract (Bladen)		2		
Brunswick	Sunny Point	1989	Caswell GL (Caswell)			1	
		1989	Camp Lejeune (Onslow)		1		2
(season opened - 1994)		1989	Canetuck (Pender)	1			
		1989	Roanoke River (Martin)			1	
		1989	Roanoke River (Bertie)	2			
		1989	South Carolina		2		5

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Brunswick/ Columbus	Waccamaw River	1991	Cone's Folly (Pender)			2	1
		1991	Pee Dee NWR (Anson)				2
(season opened - 1999)		1991	South Carolina	2	5	1	4
Brunswick	Juniper Creek	1992	South Carolina	2			
		1993	Caswell GL (Caswell)	1			
(season opened - 1999)		1993	Sandbanks (Gates)	3			
		1993	Roanoke River (Martin)		2		
		1993	Pennsylvania			1	10
Brunswick	Doghead Bay	1995	Pennsylvania	3		1	
		1995	South Carolina		1		3
(season opened - 1999)		1996	Michigan		1	1	5
Brunswick	Town Creek	1998	Sandbanks (Gates)		2	1	2
		1998	Queens Creek (Swain)		6		
(season opened – 2002)		1998	Crooms Bridge (Pender)	1			
		1998	Justus Cove (Transylvania)	2			
		1998	Croatan NF (Craven)	1			_
Brunswick	Campbell Island	2002	Suggs Mill Pond (Bladen)		8		
		2002	Point Harbor (Currituck)			3	
(season closed for 3 yrs. by		2002	Singletary Tract (Bladen)		2		
coop. agree. – open in 2005)		2002	Bark Landing (Pender)	2			_
Buncombe	Upper Catawba River	1976	Caswell GL (Caswell)	3	8	5	1
(season remained open)							_
Buncombe	Coxcombe Mt.	1979	Rich Mt. (Madison)	2	5		5
(season remained open)							_
Buncombe	Biltmore Estate	1983	Nantahala NF (Cherokee)	2			
(season opened - 1988)		1983	Nantahala NF (Macon)		6	5	2

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Buncombe	Big Ivy	1993	Rich Mountain (Madison)	4	2	2	3
(season opened - 1996)		1993	Shut-In (Madison)		4		1
Buncombe	North Fork	1993	Rich Mountain (Madison)	4			
		1993	Shuler Creek (Cherokee)		1		
(season opened - 1996)		1993	Wauchecha Bald (Graham)	1			
		1993	Bear Creek (Graham)		3		
		1993	Tsali (Graham)		4		1
		1993	Shut-In (Madison)		2		_
Buncombe	Windy Gap	1993	Rich Mountain (Madison)			3	
		1993	Persimmon Creek (Cherokee)		3		3
(season opened - 1996)		1993	Wauchecha Bald (Graham)	2			
		1993	Round Mountain (Jackson)	1			
		1993	Shut-In (Madison)				5
Buncombe	Reems Creek	1993	Bluff Mountain (Madison)		2	3	
		1993	Greens Creek (Jackson)		3		
(season opened - 1996)		1993	Avery Creek (Transylvania)		2		
		1993	Buckhorn Gap (Transylvania)	2			
		1993	Middle Creek (Henderson)	1			
		1993	Blood River (Madison)		3		_
Burke	South Mountains	1956	Sandhills GL (Richmond/Scotland)	(16 turkeys)			
		1956	Confiscated pen-reared (Graham)	(4 turkeys)			
(season remained open but was		1978	Caswell GL (Caswell)	2	2	1	5
later closed in late 1980s)		1978	Rich Mt. (Madison)	1		2	6
		1981	Pisgah (Burke, McDowell, Madison)	2			2
Burke	Steels Creek/D. Boone	1962	Unknown		2		
		1963	Camp Lejeune (Onslow)	3	5		
(season remained open)		1964	Caswell GL (Caswell)		5		
		1964	South Mountains (Burke)	3			_

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Burke	Silver Creek	1991	Piney Creek (Alleghany)		5	3	
		1991	Templeton Farm (Alleghany)		1		2
(season opened - 1998)		1991	Biltmore Estate (Buncombe)	1	1		4
		1991	Raven Knob (Surry)	1			
		1991	Nantahala NF (Clay)	1			
		1991	Wisconsin		4		
Burke	Chestnut Mountain	1995	Tucker Farm (Ashe)		2	1	
		1995	Stoker Dairy (Alleghany)				1
(season opened - 1998)		1995	Biltmore Estate Buncombe)	1	4	2	3
		1995	Burningtown (Macon)	1			
Burke	Johns River	1995	Biltmore Estate (Buncombe)		5	2	2
		1995	Stoker Dairy (Alleghany)		2		1
(season opened - 1998)		1995	Tucker Farm (Ashe)			1	
		1995	Brown Farm (Ashe)			1	
		1995	Burningtown (Macon)	2			
Burke	Henry Fork	1995	Rich Mountain (Madison)		2	1	3
		1995	Biltmore Estate (Buncombe)		1		1
(season opened - 1998)		1995	N. Mills River (Henderson)		1		
		1995	Shuler Creek (Cherokee)		1		1
		1995	Brown Farm (Ashe)			2	
		1995	Bl. Snake Branch (Transylvania)	2			
Burke	Jacob Fork	1995	Biltmore Estate (Buncombe)		1		4
		1995	N. Mills River (Henderson)		2		
(season opened - 1998)		1995	Burningtown (Macon)		1		
		1995	Brown Farm (Ashe)		1	2	
		1995	Rich Mountain (Madison)			1	
		1995	Bl. Snake Branch (Transylvania)	2			
Cabarrus	Cold Water Creek	1994	Caswell GL (Caswell)	3	1		
(season opened - 1999)		1994	South Carolina		4	2	5

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Cabarrus	Georgeville	1996	South Carolina		1		
		1996	Caswell GL (Caswell)	1			
(season opened – 2003)		1996	Rich Mountain (Madison)	1			
		1996	Rhinehart Creek (Macon)	1			
		1996	Burningtown Creek (Macon)	1			4
		1996	Smith's Dairy (Alleghany)		4		1
Cabarrus	Bear Creek	1996	South Carolina		6		4
		1996	Caswell GL (Caswell)	2			
(season opened – 2003)		1996	Rich Mountain (Madison)	3			
Caldwell	Boone Fork	1973	Daniel Boone (Burke)	2			
(season remained open but was later		1973	Caswell GL (Caswell)			1	1
closed in late 1980s)		1974	Camp Lejeune (Onslow)	2	2	1	5
Caldwell	Oak Hill	1992	Crumpler Farm (Ashe)			3	
		1992	Right Prong (Haywood)	2			
(season opened - 1998)		1992	Blue Valley (Macon)				4
		1992	Peachtree (Cherokee)		3		
		1992	Prospect (Cherokee)		4		
		1992	Shuler Creek (Cherokee)				1
Caldwell	Yadkin Valley	1993	Tucker Farm (Ashe)		1	1	3
		1993	Smith's Dairy (Alleghany)		5		1
(season opened - 1998)		1993	Stoker's Dairy (Alleghany)	4			
Caldwell	Mulberry	1994	Pigeonroost (Mitchell)	1			
		1994	Miller Farm (Ashe)		2		
(season opened - 1998)		1994	Avery Creek (Buncombe)		4	2	
		1994	Fires Creek (Clay)				4
		1995	Biltmore Estate (Buncombe)	1			
		1995	Tucker Farm (Ashe)			1	

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Caldwell	Smoky Creek	1995	Biltmore Estate (Buncombe)		1		1
		1995	Rich Mountain (Madison)		3		3
(season opened - 1998)		1995	Brown Farm (Ashe)		1	1	1
		1995	Billings Dairy (Alleghany)			3	
		1995	Burningtown (Macon)	2			
Camden	Horseshoe	1996	Michigan	2			
		1996	Pennsylvania		1		5
(season opened - 2000)		1996	Sandbanks (Gates)		4		
		1996	Beech Creek (Cherokee)			3	
Camden	Sawyer's Creek	1996	Pennsylvania		2		3
		1996	South Carolina		4	1	1
(season opened – 2003)		1996	West Virginia	1			
		1996	Deveraux Tract (Martin)			2	
		1996	Conoho Farms (Martin)			1	
Camden	Smith's Corner	1999	Brush Creek (Macon)			1	
		1999	South Carolina	2			
(season opened – 2003)		1999	Sturgill Farm (Alleghany)			1	
		1999	Halls Knob (Cherokee)		3	1	
		1999	John Green Bend (Cherokee)		3		4
Camden	Johnson's Corner	1999	Holly Neck (Washington)		1		
		1999	Holly Ridge (Washington)	1			
(season opened – 2003)		1999	Uwharrie GL (Montgomery)				2
		1999	Sturgill Farm (Alleghany)				2
		1999	Parker Tract (Hertford)	1			
		1999	Dysartsville (McDowell)			3	
		1999	Adams Farm (Bladen)		2		3
Carteret	Harlowe	1996	Connecticut	1		1	
		1996	Pennsylvania		6		3
(season opened – 2003)		1996	West Virginia	3	1		

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Carteret	Merrimon	1998	Clark's Landing (Pender)			3	
		1998	Greenfield (Chowan)	2		1	
(season opened – 2003)		1998	Vernon Farm (Caswell)		4		3
		1998	Caswell GL (Caswell)	2			
Carteret	Never Never Land	2000	Hwy. 50 (Pender)		6	2	2
		2000	Suggs Mill Pond (Bladen)	1			2
(season opened – 2003)		2000	Deep Gap Farm (Polk)			3	
		2000	Conoho Farms (Martin)	1			
Catawba	Cooksville	1990	Wisconsin				1
		1990	Biltmore Estate (Buncombe)		5		7
(season opened - 1998)		1990	Miller's Farm (Ashe)			3	
		1990	Scott's Industries (Ashe)	3			
Catawba	Catawba GL	1991	Templeton Farm (Alleghany)		2		1
		1991	NC State Farm (Ashe)			3	
(season opened - 1998)		1991	Biltmore Estate (Buncombe)		7		3
		1991	Wisconsin	2			
Catawba	Lookout Shoals	1991	New Hope Ch. Rd. (Alleghany)			4	
		1991	Yates Farm (Ashe)		4		2
(season opened - 1998)		1991	Templeton Farm (Alleghany)		1		1
		1991	Nantahala NF (Macon)	1			
		1991	Wisconsin		2		3
Catawba	South Fork	1994	Rich Mountain (Madison)		3		
		1994	Sheets Farm (Ashe)			3	
(season opened - 1998)		1994	Miller Farm (Ashe)		3		
		1994	Jones Creek (Macon)	1			
		1994	Panther Top (Cherokee)				4
		1995	Biltmore Estate (Buncombe)	1			

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Catawba	Hagan Fork	1995	Burningtown (Macon)		2		2
		1995	Brown Farm (Watauga)		1	1	4
(season opened - 1998)		1995	Brown Farm (Ashe)		2	1	
		1995	N. Mills River (Henderson)			2	
		1995	Shuler Creek (Cherokee)	2			
Catawba	Oliver's Crossroads	2002	Walnut Creek (Polk)		4	1	4
		2002	Flattop (Yancey)		1	1	2
(season closed for 3 yrs. by		2002	Ranger (Cherokee)		5		
coop. agree. – open in 2005)		2002	Harris Dairy Farm (Buncombe)	3			
Chatham	Meadow Creek	1992	South Carolina	2	3	2	
		1993	Caswell GL (Caswell)	2	4		
(season opened - 1999)		1993	Pennsylvania		2		1
Chatham	Big Woods	1993	Iowa	1	9		
		1993	Pennsylvania		1		
(season opened - 1999)		1993	Wisconsin			4	
Chatham	Deep River	1993	Iowa		2	1	
		1993	Pennsylvania		3	2	5
(season opened - 1999)		1993	Wisconsin	1		1	
Chatham/	Mason Farm	1995	Connecticut			2	
Durham		1995	Virginia	3			
		1995	Carbonton (Chatham)		1		
(season opened - 1999)		1995	Cherry Point (Craven)		3		
		1996	Michigan		2		4
Chatham	Bennett	2002	Ramsey Farm (Madison)		3	3	7
		2002	Ranger (Cherokee)		3		
(season closed for 3 yrs.		2002	Hunter Farm (Madison)		2		
by coop. agree. – open in 2005)		2002	Biltmore Estate (Buncombe)	1			
		2002	Caswell GL (Caswell)	1			

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Cherokee	Gipp Ridge	1977	Nantahala NF (Cherokee)	2	8	2	2
(season remained open)							
Cherokee/	Piercy Creek	1983	Nantahala NF (Cherokee)	1			
Macon		1983	Nantahala NF (Clay)			2	
(season opened - 1986)		1983	Nantahala NF (Macon)	1	5	1	5
Cherokee	Valley River Mtns.	1986	Nantahala NF (Clay)		2		
		1986	Nantahala NF (Cherokee)		4		2
(season opened - 1990)		1986	Nantahala NF (Macon)	1		1	
		1987	Nantahala NF (Macon)	3	1		1
Chowan	Greenfield Plantation	1984	Camp Lejeune (Onslow)	4	9	2	1
(season opened - 1989)		1994	Connecticutt	1		1	
(season was closed - 1994)		1994	Pennsylvania	1	4	1	1
(season opened - 1997)		1994	South Carolina	1	5		
Chowan	Crossroads	1994	Caswell GL (Caswell)			2	
		1994	Croatan NF (Craven)		1		3
(season opened - 2000)		1994	Cherry Point (Craven)		1		1
		1994	Roanoke River (Martin)		4	2	
		1995	Sandbanks (Gates)	1			
Clay	Tusquitee Mtns.	1982	Nantahala NF (Cherokee)	5		1	
(season opened - 1985)		1982	Nantahala NF (Macon)		4		7
Cleveland	Polkville	1990	Wisconsin	4	7		6
(season opened - 1996)		1990	Mulberry Gap (Alleghany)			2	
		1990	Peak Creek (Ashe)		1		4
Cleveland	Gardner Webb GL	1991	Biltmore Estate (Buncombe)	3	2	2	2
(season opened - 1996)		1991	Cranberry Creek (Ashe)		5		1
		1991	Wisconsin		3		

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Cleveland	Fallston	1994	Pennsylvania			2	
		1994	Rich Mountain (Madison)				4
(season opened - 1999)		1994	Rhinehart Creek (Macon)		5		
		1994	Rainbow Springs (Macon)		1		
		1994	Thrift Cove (Transylvania)			3	
Cleveland	Buffalo Creek	2002	Biltmore Estate (Buncombe)	3	8		3
(season closed for 3 yrs. by		2002	Hunter Farm (Madison)		2	2	1
coop. agree. – open in 2005)		2002	Green Cove (Clay)				1
Columbus	White Marsh	1994	Croatan NF (Craven)	1			1
		1994	Corbett Property (Columbus)		1		1
(season opened – 2004)		1994	Connecticutt			1	1
		1994	Pennsylvania		1	2	
		1994	South Carolina	1	6		
Columbus	Crusoe Island	1996	Michigan	2	2	3	
(season opened – 2002)		1996	Flat Branch (Cherokee)		4		3
		1996	Chigger Ridge (McDowell)		1		
Columbus	White's Crossing	1996	South Carolina	2	6	3	5
(season opened – 2002)							
Columbus/	Slade's Swamp	1997	South Carolina	3	8		
Bladen		1997	Holly Neck (Washington)	1		1	
(season opened – 2002)		1997	Cherry Point (Craven)				
Columbus	Little Big Horn	1998	Mulberry Club (Pender)		3		2
		1998	Santeetlah Lake (Graham)	2			
(season opened – 2002)		1998	South River (Bladen)		3		2
		1998	Woodie Farm (Ashe)			3	
Columbus	Wananish Tract	1999	Adams Farm (Bladen)				1
(season opened – 2002)		1999	Bladen Lakes SF (Bladen)	1			
		1999	South Carolina	1	8	3	1

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Columbus	Iron Hill	2000	Waddell Farm (Ashe)	1	9		
		2000	Rich Mountain (Madison)			3	
(season opened – 2004)		2000	Suggs Mill Pond (Bladen)			1	
		2000	Greentree Mill Br. (Craven)	1			
		2000	Hill Farm (Jones)				1
Craven	Pinecliff/Croatan	1972	Camp Lejeune (Onslow)		3		
(season remained open,was closed in		1974	Camp Lejeune (Onslow)	2	4	2	2
1989 - re-opened in 1996)		1991	South Carolina	2	9	3	1
Craven	Brice's Creek/Croatan	1976	Camp Lejeune (Onslow)	1	1	3	
		1977	Camp Lejeune (Onslow)			1	2
(season remained open when stocked,		1992	Lindsley Tract (Martin)	2			
was closed in 1989, then re-opened		1992	Reigelwood (Columbus)		3		2
in 1996)		1992	South Carolina		6		
		1993	Caswell GL (Caswell)	2			
Craven	Gum Swamp	1985	Roanoke River (Bertie)	1		1	
(season opened - 1990)		1985	Camp Lejeune (Onslow)		9	3	1
Craven	Pettiford Woods	1986	Caswell GL (Caswell)	1	2	2	7
		1986	Camp Lejeune (Onslow)			3	
(season opened - 1992)		1986	Roanoke River (Bertie)			1	
Craven	Cherry Point	1991	Caswell GL (Caswell)		1		
		1991	Chinquapin (Bertie)		2		
(season opened - 1996)		1991	Croatan NF (Craven)		1		
		1991	South Carolina	2	6		
		1992	Mapleton (Hertford)			1	
Craven	Turkey Quarter	1993	Sandbanks (Gates)			1	
		1993	Roanoke River (Martin)	1			
(season opened - 1999)		1993	Iowa	1	10		
		1993	Wisconsin			2	

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Craven	Vanceboro	1995	Connecticut		3	2	4
		1995	South Carolina			1	
(season opened - 1999)		1995	Virginia	1			
		1995	Lane's Ferry (Pender)		3		
		1995	Bear Swamp (Perquimans)	1			_
Craven/ Beaufort/ Pitt	Creeping Swamp	1996	Connecticut			4	
		1996	West Virginia	1	2		
		1997	Big Creek (Yancey)		2		5
(season opened - 2000)		1997	Maxwell Cove (Transylvania)			1	_
Cumberland	Riverland	1994	Sandbanks (Gates)			2	
(season opened - 1998)		1994	Pennsylvania	1	4	2	6
Cumberland	Lookout Mountain	1999	Bladen Lakes State Forest (Bladen)	1			
(season opened – 2004)		1999	Suggs Mill Pond (Bladen)			3	
		1999	South Carolina	1	7		3
Cumberland	Brown Swamp	2003	William’s Land (Pender)		1		
		2003	Dupont (Bladen)			2	
(season closed for 3 yrs. by		2003	Capps Farm (Tyrrell)	3			
coop. agree. – open in 2006)		2003	Deerfield (Bladen)		7		2
Cumberland	Shady Grove	2004	Grandy Farm (Currituck)	2			
		2004	Wells Club (Pender)		2		
(season closed for 3 yrs. by		2004	Sledge Property (New Hanover)			4	
coop. agree. – open in 2007)		2004	G. E. (New Hanover)		8		1
Currituck	Purgatory	1996	Pennsylvania		1		5
		1996	South Carolina		2	1	2
(season opened - 2000)		1996	West Virginia	1			
		1996	Deveraux Tract (Martin)			1	
		1996	Conoho Farms (Martin)			2	_

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Currituck	Bertha	1997	Oakland Pl. (Bladen)		1	1	
		1998	Sandbanks (Gates)	1			
(season opened – 2003)		1998	S. White Pines (Transylvania)		2		
		1998	Parrish Farm (Chowan)	1		1	1
		1998	Moxley Tract (Alleghany)		5		2
		1998	Caswell GL (Caswell)	2			
Currituck	Dawson Tract	1998	Sandbanks (Gates)	1	1		
		1998	Croatan Club (Craven)			2	
(season opened – 2003)		1998	Riddick's Field (Hertford)		5		
		1998	Atkin's Farm (Montgomery)		1	1	
		1998	Rockwell Farm (Craven)			1	2
		1998	Singletary Tract (Bladen)	1			
Currituck	Powell's Point	1999	Holly Ridge (Washington)	1			
		1999	Uwharrie GL (Montgomery)	1			
(season opened – 2003)		1999	Bear Swamp (Perquimans)		1		4
		1999	Dysartsville (McDowell)			3	
		1999	Paul's Place (Pender)		5		
Dare	ARNWR	1999	Caswell GL (Caswell)	2			
		1999	Buck Busters Hunt Club (Pender)		1		
		1999	Angola Bay (Pender)		2		1
(season opened – 2004)		1999	Hill Farm (Jones)			4	
		1999	Bull Farm (Pender)		3		
		1999	Bear Swamp (Perquimans)		2		1
Davidson	Wildcat Mountain	1991	Caswell GL (Caswell)				1
(season opened - 1998)		1991	South Carolina	1	1	3	9
Davidson	Healing Springs	1994	Caswell GL (Caswell)	4			
(season opened - 1998)		1994	Pennsylvania		11	1	

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Davidson	Churchland	1994	Caswell GL (Caswell)	2		1	1
(season opened – 2004)		1994	Connecticutt		6		
		1994	South Carolina		4	2	
Davidson	Jersey Church	2003	Caswell GL (Caswell)	2			
		2003	Pryor Farm (Rockingham)		1		
(season closed for 3 yrs. by		2003	Millingport (Stanly)	3			
coop. agree. – open in 2006)		2003	Uwharrie NF (Montgomery)		1	1	5
Davie	Cooleemee Plantation	1988	Biltmore Estate (Buncombe)	3	4	2	7
		1988	Pisgah NF (McDowell)		1		1
(season opened - 1998)		1988	Miller Farm (Ashe)		1		
Davie	Farmington	1991	NC State Farm (Ashe)			2	
		1991	New Hope Ch. Rd. (Alleghany)			1	1
(season opened - 1998)		1991	Wisconsin	2	5		7
Davie	South Yadkin	1994	Pennsylvania			1	1
		1994	Rich Mountain (Madison)	2			
(season opened - 1998)		1994	State Research Farm (Ashe)		1	1	
		1994	Commissioner Creek (Macon)		3	1	3
		1994	Thrift Creek (Transylvania)			1	
		1994	Avery Creek (Transylvania)		2		
Duplin/	Doctor's Creek	1995	Connecticut	1			
Pender		1995	South Carolina	1	2	1	2
(season opened - 2000)		1995	Virginia	2			
		1996	Michigan		1		5
Duplin	Sarecta	1996	Pennsylvania				3
(season opened - 2000)		1996	BASF (Buncombe)		6	3	1
		1996	Burningtown Creek (Macon)	2			

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Duplin	Goshen Swamp	1996	Pennsylvania		2		1
(season opened - 2000)		1996	BASF (Buncombe)		5	3	2
		1996	Burningtown Creek (Macon)	2			_
Duplin	Popeye	1996	Pennsylvania		7	4	3
(season opened - 2000)		1996	Burningtown Creek (Macon)	1			_
Duplin	Stockinghead Creek	1996	Pennsylvania		2	2	1
(season opened - 2000)		1996	South Carolina		1	2	7
		1996	Haywood Landing (Jones)	1			_
Duplin	Cypress Creek	1997	West Virginia		2	3	
(season opened - 2000)		1997	Cherry Point (Craven)	2	7		1
Duplin	Beautancus	2003	Buckhead (Pender)	1			
		2003	Capps Farm (Tyrrell)	1			
(season closed for 3 yrs. by		2003	Blake House (Pender)	3			
coop. agree. – open in 2006)		2003	William’s Land (Pender)		6		4
Duplin	Cedar Fork	2005	Caswell GL (Caswell)	2			
		2005	Sugarloaf (Bladen)		2	1	6
(season closed for 3 yrs. By		2005	Buck Busters (Pender)		2		
coop. agree. – open in 2008)		2005	Hill Farm (Jones)				3
Durham	Hill Forest	1995	Connecticut			1	
		1995	Pennsylvania			1	
(season opened - 1999)		1995	Virginia	2			
		1995	Cherry Point (Craven)		2		1
		1996	Michigan		2	1	3
		1996	Pennsylvania				2
Edgecombe/	Fishing Creek	1991	Caswell GL (Caswell)	1			
Halifax (season opened - 1996)		1991	South Carolina	1	5	3	5

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Edgecombe	Gethsemane	1994	Pennsylvania		1		
(season opened - 1999)		1994	Virginia	5	5		4
Edgecombe	Gatlin	1996	Alabama		1		1
(season opened - 1999)		1996	Pennsylvania	1	4	4	4
Edgecombe	Heartsease	1996	Pennsylvania	1	2	3	1
		1996	Mulberry Creek (Macon)		2		
(season opened - 1999)		1996	Rich Mountain (Madison)		2		1
		1996	T. Brown Farm (Ashe)		2		
		1996	Bear Paw (Cherokee)			1	_
Edgecombe	Sparta	1996	Alabama		3	1	
		1996	Pennsylvania	1		1	
(season opened - 1999)		1996	West Virginia	1			
		1996	Mulberry Creek (Macon)		2	1	1
		1996	Rich Mountain (Madison)		2		1
		1996	T. Brown Farm (Ashe)		1		_
Edgecombe	Maple	1996	West Virginia	1	7	4	2
(season opened - 1999)		1996	Caswell GL (Caswell)		1		_
Edgecombe	Deep	1996	West Virginia		7	5	1
(season opened - 1999)		1996	Caswell GL (Caswell)		1		1
Franklin	Red Bud	1993	Iowa	1	6		1
		1993	Pennsylvania		1	2	
(season opened - 1999)		1993	Wisconsin	2	2		_
Franklin	4-Bridge	1996	Pennsylvania		8	1	1
		1996	West Virginia	2			1
(season opened - 1999)		1996	Deveraux Tract (Martin)			2	_

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Franklin	Tooles	1998	Deep Gap Farm (Polk)		1		1
		1998	R. Ramsey Farm (Madison)		2		1
(season opened – 2001)		1998	Caswell GL (Caswell)	2	3	4	2
Franklin	Margaret	2004	Tabernacle Church (Montgomery)			2	
(season closed for 3 yrs. by		2004	Caswell GL (Caswell)	3	5		1
coop. agree. – open in 2007)		2004	Hodges Place (Caswell)		1		3
Gaston	Catawba Creek	1995	Hamm Dairy (Alleghany)		1	3	
		1995	Stoker Dairy (Alleghany)		2		
(season opened - 2000)		1995	Billings Dairy (Alleghany)		4		3
		1995	Shuler Creek (Cherokee)	2			
Gaston	Crowder Mountain	1995	N. Mills River (Henderson)		2		
		1995	Davis Branch (Madison)		4		4
(season opened - 2000)		1995	School House Road (Cherokee)	2			
		1995	Rich Mountain (Madison)			1	
		1995	State Farm (Ashe)	1		2	
Gaston	Stanley	1995	N. Mills River (Henderson)		2	1	2
		1995	Davis Branch (Madison)		2		
(season opened - 2000)		1995	Shuler Creek (Cherokee)		2		3
		1995	Park Creek (Macon)	2			
		1995	Rich Mountain (Madison)			2	
		1995	State Farm (Ashe)			1	
Gaston	Landers Chapel	1996	Biltmore Estate (Buncombe)		2	5	5
		1996	Avery Creek (Transylvania)		3		
(season opened - 2000)		1996	Norris Farm (Watauga)		2		
		1996	Rich Mountain (Madison)	2			
		1996	Cherokee Mills (Rutherford)			1	

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Gates	Merchant's Mill Pond	1988	Caswell GL (Caswell)	2	3	2	4
		1988	Chinquapin (Bertie)	1			
(season opened - 1995)		1989	Roanoke River (Bertie)	2			
		1989	Canetuck (Pender)		1		1
Graham	Cheoah Bald	1981	Nantahala NF (Cherokee)	2	4	4	6
(season opened - 1984)							_
Graham	Wauchecha Bald	1984	Nantahala NF (Cherokee)			1	
		1984	Nantahala NF (Jackson)			1	
(season opened - 1988)		1984	Nantahala NF (Macon)	2			
		1984	Pisgah NF (Madison)	1			
		1985	Nantahala NF (Cherokee)		2		3
		1985	Nantahala NF (Macon)	1	4		1
Granville/ Durham	Butner	1995	Connecticut			3	
		1995	Virginia	2			
		1995	Cherry Point (Craven)		2		2
(season opened - 1999)		1996	Michigan		5		1
Greene	Fool's Bridge	1996	South Carolina		7	4	4
		1996	West Virginia	1			
(season opened – 2004)		1996	Caswell GL (Caswell)	1			_
Greene	Fourway	1999	Caswell GL (Caswell)	2			
		1999	Walnut Creek (Polk)			3	
(season opened – 2004)		1999	Dysartsville (McDowell)		7		3
Halifax	Beech Swamp	1990	Wisconsin	5	3		7
(season opened - 1996							_
Halifax	Rocky Swamp	1993	Sandbanks (Gates)	2			
		1993	Iowa		8		2
(season opened - 1999)		1993	Pennsylvania			3	_

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Halifax	Gretna	1995	Connecticut			3	
		1995	Pennsylvania		5		4
(season opened - 1999)		1995	South Carolina		1		
		1995	Virginia	2			
Harnett	Overhills	1988	Caswell GL (Caswell)	2	4	3	6
(season opened 1998)							
Harnett	Raven Rock	1989	Caswell GL (Caswell)		1		
		1989	South Carolina		9	2	1
(season opened - 1998)		1990	Caswell GL (Caswell)	1		2	
Harnett/	Cape Fear	1992	Caswell GL (Caswell)	2			
Cumberland	(season opened - 1998)	1992	South Carolina		2	2	9
Harnett	Kipling	1994	Croatan NF (Craven)	1			
		1994	Corbett Property (Columbus)		2	2	
(season opened - 1998)		1994	Roanoke River (Martin)	2			
		1994	Pennsylvania				2
		1994	South Carolina		2		4
Haywood	Harmon Den	1959	Unknown	5	5		
(season remained open)		1971	Daniel Boone (Burke)	4	6	7	1
Haywood	Sunburst	1975	Caswell GL (Caswell)	5	5	2	2
		1984	Nantahala NF (Macon)		5		3
(season opened - 1988)		1984	Nantahala NF (Cherokee)	5			1
		1984	Nantahala NF (Graham)				1
Haywood	Mt. Pisgah	1988	Pisgah NF (Transylvania)				1
		1988	Nantahala NF (Cherokee)	2	2	2	7
(season opened - 1991)		1988	Nantahala NF (Macon)			1	

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Haywood	Twelve Mile Strip	1988	Pisgah NF (Transylvania)		2		2
		1988	Nantahala NF (Cherokee)		1	1	3
(season opened - 1991)		1988	Nantahala NF (Macon)	4	3		
Henderson	North Mills River	1970	Daniel Boone (Burke)		2	5	7
(season remained open)		1971	Camp Lejeune (Onslow)		3		
Hertford	Potecasi Creek Fall,	1986	Roanoke River (Bertie)			1	5
		1987	Caswell GL (Caswell)	1		1	
(season opened - 1995)		1987	Camp Lejeune (Onslow)	1		1	
		1987	Cameron Tract (Hyde)		1		
		1988	Caswell GL (Caswell)	1			1
		1988	Camp Lejeune (Onslow)		1	1	
		1988	Canetuck (Pender)	1			
		1988	Gum Swamp (Craven)		1		5
Hertford/ Northampton	Meherrin River	1989	Caswell GL (Caswell)	1	4		4
		1989	South Carolina		3	1	
(season opened - 1995)		1990	Caswell GL (Caswell)			3	
Hoke	Fort Bragg	1998	Cherry Point (Craven)	1	1	5	
	(Juniper Creek)	1998	Camp Mackall (Moore)		7		1
(season opened – 2004)		1998	Caswell GL (Caswell)	1			
Hoke	Fort Bragg II	1999	South Carolina	1	5	1	1
	(Piney Bottom Creek)	1999	Camp McKall (Scotland)	3		2	
(season opened - 2004)		1999	Cherry Point (Craven)	2		1	
Hoke	Fort Bragg III	1999	South Carolina	2	5		
	(Flat Creek)	1999	Camp McKall (Scotland)		2		
		1999	Cherry Point (Craven)		3	1	
		1999	Caswell GL (Caswell)			1	
(season opened - 2004)		1999	Hill Farm (Jones)			1	
		2000	Cherry Point (Craven)			1	

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Hoke	Fort Bragg IV	1999	N. Training Area (Harnett)		4		
	(Jump & Run Creek)	1999	Hill Farm (Jones)			2	
		2000	South Carolina			1	
(season opened - 2004)		2000	Caswell GL (Caswell)		1	1	
		2000	Camp MacKall (Scotland)		1		
		2000	Cherry Point (Craven)			1	_
Hoke	Fort Bragg V (McDuffie)	2000	South Carolina		5	4	5
(season opened - 2004)		2000	Cherry Point (Craven)	2			_
Hoke	Rockfish Creek	1999	Caswell GL (Caswell)	1			
(season opened – 2004)		1999	South Carolina	1	7	3	3
Hyde	Cameron Tract	1981	Camp Lejeune (Onslow)	3	2	4	6
		1983	Cone's Folly (Pender)	3			
(season opened - 1989)		1983	Camp Lejeune (Onslow)		6		4
Hyde	Mattalux	1997	Greenfield Pl. (Chowan)	1		3	2
		1997	South Carolina		5		
(season opened – 2003)		1997	Ashes Creek (Pender)		3	1	_
Hyde	Gull Rock	1997	West Virginia		3		3
		1997	Caswell GL (Caswell)		1		
(season opened – 2003)		1997	Oakland Pl. (Bladen)		2	2	
		1997	Conoho Farms (Martin)	1			
		1997	Holly Neck (Washington)	1			_
Hyde	All Star-Rich Farms	2002	Buck’s Corner (Duplin)		4		2
		2002	Croom’s Bridge (Pender)		2		1
(season closed for 3 yrs. by		2002	Hudson’s Field (Currituck)		2		1
coop. agree. – open in 2005)		2002	Hill Farm (Jones)	2			
		2002	Point Harbor (Currituck)			3	
		2002	Indian Creek (Bertie)	1		1	_

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Iredell	Turnersburg	1990	Wisconsin		1		2
		1990	Biltmore Estate (Buncombe)	2		3	
(season opened - 1998)		1990	Piney Creek (Alleghany)		7		3
		1990	Bearwallow Creek (Mitchell)			1	
Iredell	Harmony	1991	Scott's Industries (Ashe)			3	
		1991	Splawn Property (Alleghany)		7		3
(season opened - 1998)		1991	Wisconsin	2			3
Iredell/ Davie	Hunting Creek	1991	Yates Farm (Ashe)				6
		1991	Templeton Farm (Alleghany)	1		1	
		1991	Nantahala NF (Graham)	2			
(season opened - 1998)		1991	Wisconsin		5	1	2
Iredell	Cool Springs	1993	Smith's Dairy (Alleghany)		1		3
		1993	Stoker's Dairy (Alleghany)		4		2
(season opened - 1998)		1993	Shelton Farm (Ashe)	2			
		1993	State Research Farm (Ashe)		1		
		1993	Tucker Farm (Ashe)			1	
		1993	Wisconsin	2			
Iredell	Midway	1993	Sandburg Farm (Polk)		4		
		1993	Tanner Farm (Polk)	2			
(season opened - 1998)		1993	State Research Farm (Ashe)		2		
		1993	Flat Branch (Cherokee)		1		
		1993	Wisconsin	3		1	
		1994	Biltmore Estate (Buncombe)		1		2
		1994	Airport (Buncombe)				1
		1994	Avery Creek (Transylvania)				1

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Iredell	Jennings	1994	Pennsylvania		1	2	
		1994	Rich Mountain (Madison)	2			
(season opened - 1998)		1994	State Research Farm (Ashe)			1	1
		1994	Biltmore Estate (Buncombe)		6	1	
		1994	Airport (Buncombe)		1	1	
		1994	Maxwell Creek (Transylvania)				1
Jackson	Roy Taylor NF	1986	Nantahala NF (Clay)		4		
	(Caney Fork)	1986	Nantahala NF (Macon)	4	3	2	3
(season opened - 1990)							
Jackson	Dick's Creek	1991	Nantahala NF (Clay)		1		
		1991	Nantahala NF (Cherokee)		2		
(season opened - 1994)		1991	Nantahala NF (Macon)	2	1	1	6
		1991	Pisgah NF (Madison)			4	
Jackson	Panthertown	1991	Nantahala NF (Macon)	2	1		
(season opened - 1994)		1991	Pisgah NF (Madison)		3	3	6
Johnston	Neuse River Lowgrounds	1986	Caswell GL (Caswell)	1	3	2	
		1986	Camp Lejeune (Onslow)		1	2	1
(season opened - 1990)		1986	Roanoke River (Bertie)	1	2	1	3
Johnston	Flowers	1999	Caswell GL (Caswell)		1		
		1999	Hanks Farm (Wilkes)				1
(season opened – 2004)		1999	South Carolina	2			
		1999	Bluff (Madison)		4	3	1
		1999	Absher Farm (Ashe)		2		1
Johnston	Little River	2000	Loftis Farm (Caswell)		8		1
		2000	Uwharrie NF (Montgomery)	1	1		1
(season opened – 2004)		2000	Hill Farm (Jones)	1		1	
		2000	Deep Gap Farm (Polk)			4	

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Jones	Trent River	1988	Caswell GL (Caswell)	1	6	2	4
(season opened - 1997)		1988	Chinquapin (Bertie)	1		1	_
Jones	Island Creek/Croatan	1991	Cone's Folly (Pender)		1		3
		1991	Pee Dee NWR (Anson)				1
(season opened - 1996)		1991	South Carolina	2	2	3	4
Jones	White Oak River/Croatan	1991	Croatan NF (Craven)			1	
		1991	Pee Dee NWR (Anson)				2
(season opened - 1996)		1991	South Carolina	3	5	1	5
Jones	Eagle Nest	1992	Caswell GL (Caswell)			1	
		1992	South Carolina	2	7		4
(season opened - 1997)		1993	Caswell GL (Caswell)	1			_
Jones	Ravenwood	1993	Iowa	2	4	1	3
		1993	Pennsylvania		1		2
(season opened - 1997)		1993	Wisconsin			2	_
Jones	Beaver Creek	1993	Iowa	2			
		1993	Pennsylvania	2	2		2
(season opened - 1997)		1993	Wisconsin		6	1	_
Jones	Beaverdam Creek	1994	Caswell GL (Caswell)	2			
		1994	Sledge Property (New Hanover)			1	
(season opened - 1999)		1994	Pennsylvania		7	2	2
		1994	South Carolina				1
Lee	Pocket Creek	1991	Caswell GL (Caswell)	2			
		1991	Wisconsin		6		4
(season opened - 1999)		1992	South Carolina			2	_

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Lenoir	Oak Bridge	1993	Sandbanks (Gates)		3	1	
		1993	Bladen Lakes SF (Bladen)	3		1	
(season opened - 2000)		1993	Iowa		3		1
		1993	Pennsylvania				3
Lenoir	Bucklesberry	1995	Connecticut				1
		1995	Pennsylvania			3	
(season opened - 2000)		1995	South Carolina	1	2		1
		1995	Virginia		3		2
		1995	Bear Swamp (Perquimans)	1			
		1996	Pennsylvania				1
Lincoln	Pumpkin Center/	1991	Piney Creek (Alleghany)		4		5
	Iron Station	1991	Biltmore Estate (Buncombe)			3	
		1991	Nantahala NF (Clay)	2			
(season opened - 1999)		1991	Pisgah NF (Madison)	1			
		1991	Wisconsin		5		
		1992	Biltmore Estate (Buncombe)	1		3	2
		1992	Research Farm (Ashe)		1		2
Lincoln	Indian Creek	1992	Piney Creek (Alleghany)	2		1	
		1992	Goodman Farm (Ashe)		6	2	
(season opened - 1999)		1992	Yates Farm (Ashe)				5
Macon	Cowee Mt.	1976	Nantahala NF (Macon)	3	3	4	5
(season remained open)							_
Macon	Ellijay Creek	1980	Nantahala NF (Macon)	1	4		
(season opened - 1985)		1981	Nantahala NF (Macon)	2	7	2	_
Madison	Mill Ridge	1972	Nantahala NF (Macon)	4	9	9	3
(season remained open)							_

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Madison	Shelton Laurel	1989	Pisgah NF (Transylvania)			2	
		1989	Nantahala NF (Cherokee)		9		1
(season opened - 1992)		1989	Nantahala NF (Graham)	2			
		1989	Nantahala NF (Macon)	2			
Madison	Peter Cove	1992	Bear Paw (Cherokee)		1		1
		1992	Right Prong (Haywood)		5		
(season opened - 1995)		1992	Highlands (Macon)	1			
		1992	Big Bear Pen (Transylvania)	2	2		
		1992	Looking Glass (Transylvania)		2	2	
Martin	Smithwick	1991	South Carolina	2	4	3	6
(season opened - 1999)							
Martin	Oak City	2004	Hill Farm (Jones)	3		1	
(season closed for 3 yrs. by		2004	Crooms Bridge (Pender)		4	1	
coop. agree. – open in 2007)		2004	Bannerman (Pender)		4		2
McDowell	Curtis Crk/Mt. Mitchell	1964	Florida	6	7		
(season remained open)							
McDowell	Hickory Nut Mt.	1982	Pisgah NF (Madison)	3	8	5	
(season opened - 1986)		1983	Pisgah NF (Burke)			3	2
McDowell	Greenlee	1993	Wisconsin	3	8	2	2
(season opened - 1997)							
Mecklenburg	Cowan's Ford	1996	Biltmore Estate (Buncombe)		6	3	4
(season opened – 2002)		1996	Cherokee Mills (Rutherford)			3	
		1996	Rich Mountain (Madison)	2			

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Mitchell	Pigeonroost	1973	Caswell GL (Caswell)	5	6	1	3
		1984	Pisgah NF (Madison)	7	4		1
(season opened - 1989)		1984	Pisgah NF (Burke)		1		
		1984	Nantahala NF (Macon)		1		
		1985	Pisgah NF (McDowell)		2		
		1985	Pisgah NF (Burke)		1		
		1986	Pisgah NF (Madison)	2			
Mitchell	Snow Creek	1993	Cooper Farm (Ashe)		4	1	1
		1993	Shelton Farm (Ashe)	2			
(season opened - 1997)		1993	State Research Farm (Ashe)		2		
		1993	Flat Branch (Cherokee)		1		
		1993	Blood River (Madison)		2		
		1993	Wisconsin	2			
Mitchell	Cane Creek	1994	Rich Mountain (Madison)	2			1
		1994	Commissioner Creek (Macon)				3
(season opened - 1997)		1994	State Research Farm (Ashe)			2	
		1994	Biltmore Estate (Buncombe)	2	3	1	
		1994	Avery Creek (Transylvania)		3		
		1994	Price Farm (Ashe)				1
Montgomery	Morris Mt./Uwharrie	1986	Caswell GL (Caswell)	2	1	5	1
(season opened - 1993)		1986	Camp Lejeune (Onslow)		6		4
Montgomery	Little River	1992	Caswell GL (Caswell)	1			
(season opened - 1997)		1992	South Carolina	1	5	2	6
Moore	McLendon's Creek	1990	Wisconsin	5	4		6
		1998	Dutch Buffalo Creek (Cabarrus)	2			
(season opened – 2001)		1998	Clawhammer (Transylvania)	1			
		1998	Rich Mountain (Madison)	1			
		1998	G. C. Bryan Farm (Watauga)	1	2		
		1998	Round Mountain (Jackson)		4		
		1998	Shuler Creek (Cherokee)		4		

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Moore	Richland Creek	1993	Pennsylvania	3	7	2	5
(season opened - 2000)							
Nash	Ita	1996	Pennsylvania	2	6	3	2
(season opened - 1999)		1996	Chigger Ridge (McDowell)				2
Nash	581	1997	West Virginia		10		
		1997	Cane Creek (Jackson)			4	
(season opened – 2004)		1997	Rich Mountain (Madison)	1			
Nash	Tar	1999	Davis Farm (Jones)	1			
		1999	Uwharrie GL (Montgomery)			3	4
(season opened – 2004)		1999	Wingate Farm (Buncombe)		6	1	
Nash	Jones	2000	Flat Top (Yancey)	1	6	3	4
(season opened – 2004)		2000	Meetinghouse Mountain (Graham)	1			
Nash	Castalia	2002	Green Cove (Clay)		6	2	1
		2002	Caswell GL (Caswell)		7		
(season closed for 3 yrs. by		2002	Biltmore Estate (Buncombe)	2			
coop. agree. – open in 2005)		2002	Hunter Farm (Madison)			1	
		2002	Ranger (Cherokee)				1
Nash	Gold Rock	2003	Caswell GL (Caswell)	3			
(season closed for 3 yrs. by		2003	Uwharrie NF (Montgomery)	3			
coop. agree. – open in 2007)		2003	Atkins Farm (Montgomery)		1		
		2004	Tabernacle Church (Montgomery)		1	3	2
		2004	Hodges Place (Caswell		2		
		2004	Atkins Farm (Montgomery)				3
		2004	Caswell GL (Caswell)	3	4		
New Hanover	Clark's Landing	1990	Caswell GL (Caswell)	1	1	5	3
(season opened - 1995)		1990	Camp Lejeune (Onslow)		5		1

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
New Hanover	Scott’s Hill	2002	Bark Landing (Pender)		7		3
		2002	Buck’s Corner (Duplin)		2		1
(season closed for 3 yrs. by		2002	Point Harbor (Currituck)			2	
coop. agree. – open in 2005)		2002	Bannerman (Pender)	2			
		2002	Indian Creek (Bertie)			1	
Northampton	Jack's Swamp	1994	Sandbanks (Gates)	1			
		1994	Pennsylvania	1	1		
(season opened - 1999)		1994	South Carolina		6	3	3
Northampton	Creeksville	1994	Connecticutt	1			
		1994	Pennsylvania			3	
(season opened - 1999)		1994	South Carolina		3	1	7
Northampton	Corduroy	1994	Pennsylvania	1		4	
(season opened - 1999)		1994	South Carolina		5		5
Northampton	Urahaw	1996	Pennsylvania	2	5	3	2
		1996	Chigger Ridge (McDowell)		1		1
(season opened - 1999)		1996	Flat Branch (Cherokee)				1
Onslow	Southwest Creek	2002	Bark Landing (Pender)		2		3
		2002	Hill Farm (Jones)		4		
(season closed for 3 yrs. by		2002	Buck’s Corner (Duplin)		1		1
coop. agree. – open in 2005)		2002	Point Harbor (Currituck)			2	
		2002	Indian Creek (Bertie)	1		1	
		2002	Bannerman (Pender)	1			
		2002	Croom’s Bridge (Pender)		1		
Pamlico	Broad Creek	1992	Lindsley Tract (Martin)	2			
		1992	Dupont (Brunswick)				1
(season opened - 1999)		1992	South Carolina	1	9	1	2

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Pamlico	Kershaw	1997	South Carolina	2			
		1997	West Virginia		8		1
(season opened – 2004)		1997	Elbow Creek (Cherokee)	1			
		1997	Deweese Creek (Macon)		1		
		1997	Croom's Bridge (Pender)			2	_
Pamlico	Merritt	1997	South Carolina	3	2		2
		1997	West Virginia		6		
(season opened – 2004)		1997	Croom's Bridge (Pender)			2	_
Pamlico	Goose Creek Island	2005	Sledge Property (New Hanover)	3	5	3	
(season closed for 3 yrs. by		2005	Wells Club (Pender)		4		1
coop. agree. – open in 2008)						_	_
Pasquotank	Newbegun	1998	Whitley Farm (Martin)		9	3	1
		1998	Mapleton (Hertford)			1	
(season opened – 2003)		1998	Parker Tract (Hertford)	1			_
Pasquotank	Symond’s Creek	2003	Buck’s Corner (Duplin)		4		
(season closed for 3 yrs. by		2003	Hill Farm (Jones)			4	
coop. agree. – open in 2006)		2003	Capps Farm (Tyrrell)	3	5		2
Pender	Cone's Folly	1979	Camp Lejeune (Onslow)	4	4	4	3
(season remained open)		1980	Camp Lejeune (Onslow)	1	4	6	_
Pender	Canetuck	1984	Camp Lejeune (Onslow)	2	1	2	1
		1984	Cone's Folly (Pender)	1		1	
(season opened - 1990)		1985	Roanoke River (Bertie)	1			
		1985	Camp Lejeune (Onslow)	1	6		2
Pender	Ashes Creek	1991	South Carolina	2	8		2
(season opened - 1996)		1992	Dupont (Brunswick)			2	_
Pender	Lane's Ferry	1992	Mapleton (Hertford)			2	
(season opened - 1997)		1992	South Carolina	2	5		6

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Pender	Croom's Bridge	1993	Iowa	1	3	2	6
		1993	Pennsylvania		1		
(season opened - 1999)		1993	Wisconsin			2	_
Pender	Holly Shelter	1995	Connecticut	1			
		1995	South Carolina	2	3		
(season opened - 1999)		1995	Virginia	1			
		1996	Michigan			1	7
Pender	Dead Sea	1999	Singletary Tract (Bladen)			2	
		1999	Bladen Lakes SF (Bladen)	1			
(season opened – 2004)		1999	South Carolina	1	7	1	3
Pender	Doctor’s Creek	2000	Bannerman (Pender)		1	1	7
		2000	Hill Farm (Jones)		2		
(season opened – 2004)		2000	Greentree Mill Br. (Craven)			2	
		2000	Maple Hill (Pender)	2			
		2000	Suggs Mill Pond (Bladen)			1	_
Perquimans	Bear Swamp	1991	South Carolina	2	7		3
(season opened - 1997)		1992	Lindsley Tract (Martin)	1			_
Perquimans	Goose Nest	1994	Connecticut	1			
		1994	Pennsylvania			2	
(season opened - 1997)		1994	South Carolina		8	2	2
Perquimans	Craney Island	1996	Michigan	1		1	
		1996	Pennsylvania		2	1	8
(season opened - 2000)		1996	South Carolina		1		
		1996	Beech Creek (Cherokee)			3	_

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Perquimans	New Hope	1999	Caswell GL (Caswell)		1		
		1999	Holly Ridge (Washington)	1			
(season opened – 2003)		1999	John Green Bend (Cherokee)		1		
		1999	South Carolina	1			
		1999	Brush Creek (Macon)			2	
		1999	Absher Farm (Ashe)		3		1
		1999	Halls Knob (Cherokee)		3	1	1
Pitt	Grifton	1991	Caswell GL (Caswell)			1	
		1991	Cone's Folly (Pender)			2	
(season opened – 2003)		1991	Pee Dee NWR (Anson)				2
		1991	South Carolina	2	8		2
Pitt	Contentnea Creek	1994	Croatan NF (Craven)	1			
		1994	Sledge Property (New Hanover)		1	2	
(season opened – 2003)		1994	South Carolina		7	2	3
Pitt	Yankee Hall	1994	Croatan NF (Craven)	1			
		1994	Connecticutt	1		3	
(season opened – 2003)		1994	South Carolina		4		6
Pitt	Tar River	1997	Big Creek (Yancey)		3		6
		1997	Absher Farm (Ashe)			2	
(season opened – 2003)		1997	Maxwell Cove (Transylvania)			2	1
		1997	Caswell GL (Caswell)	1			_
Pitt	Willow Green	1998	Panther Top (Cherokee)	1			
		1998	Rich Mountain (Madison)			1	
(season opened – 2003)		1998	Deep Gap (Polk)		2		1
		1998	Woodie Farm (Ashe)	1	2	1	1
		1998	Piedmont BSA (Rutherford)		2		2
		1998	Caswell GL (Caswell)			1	_

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Polk	Green River GL	1972	Camp Lejeune (Onslow)	3	7	4	7
		1972	Caswell GL (Caswell)	2		1	
(season remained open with first		1985	Pisgah NF (Madison)		2		4
stocking; was closed in 1984;		1985	Pisgah NF (McDowell)			1	
then re-opened in 1992)		1985	Nantahala NF (Macon)	5			
		1985	Nantahala NF (Swain)		1		2
Polk/ Rutherford	Broad River	1987	Biltmore Estate (Buncombe)	2	7		1
		1987	Pisgah NF (McDowell)	2	3		
		1987	Pisgah NF (Yancey)		2	1	1
(season opened - 1993)		1988	Pisgah NF (McDowell)		1	1	_
Randolph	Birkhead/Uwharrie	1974	Camp Lejeune (Onslow)	3	5	1	1
		1979	Caswell GL (Caswell)	1	4	3	7
(season opened - 1999)		1980	Caswell GL (Caswell)	2	2		3
		1989	Caswell GL (Caswell)		1		
		1989	Cone's Folly (Pender)	5			
		1989	South Carolina		6		4
Randolph	Camp Caraway	1983	Caswell GL (Caswell)		4	4	4
(season opened - 1999)		1984	Caswell GL (Caswell)	2			_
Randolph	Erect	1999	Caswell GL (Caswell)	1	1		
		1999	Moxley Farm (Alleghany)	1		2	
(season opened – 2004)		1999	Dysartsville (McDowell)		3	2	2
		1999	Hanks Farm (Wilkes)		4		2
Randolph	Uwharrie River	1997	South Carolina		7		4
		1997	West Virginia	1		2	
(season opened – 2001)		1997	Caswell GL (Caswell)			2	_
Randolph	Liberty	2000	Tucker Farm (Ashe)		6	1	4
		2000	Biltmore Estate (Buncombe)	1		3	
(season opened – 2004)		2000	Uwharrie NF (Montgomery)	1		1	_

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Randolph	Finch Farm	2002	Ramsey Farm (Madison)		2	3	3
		2002	Walnut Creek (Polk)		1		4
(season closed for 3 yrs. by		2002	Caswell GL (Caswell)	2			
coop. agree. – open in 2005)		2002	Ranger (Cherokee)				2
		2002	Green Cove (Clay)		2		
		2002	Hunter Farm (Madison)		1		
		2002	Biltmore Estate (Buncombe)	1			
Richmond	Sandhills - Block A	1982	Caswell GL (Caswell)		1		2
		1983	Cone's Folly (Pender)			1	
(season opened - 1990)		1983	Camp Lejeune (Onslow)		11	3	6
		1984	Camp Lejeune (Onslow)	5	1		4
Richmond	Zion Church	1993	Iowa		3	3	5
		1993	Pennsylvania				2
(season opened - 1997)		1993	Wisconsin	1		1	_
Robeson	Big Swamp II	1994	Pennsylvania		5	4	5
(season opened - 1999)		1994	South Carolina	1			_
Robeson/	Big Swamp III	1996	Arkansas	1			
Bladen		1996	Pennsylvania		1	5	1
(season opened - 1999)		1996	Bladen Lakes SF (Bladen)		8		1
Robeson	Ashpole Swamp	1997	South Carolina	1	7	2	3
(season opened – 2003)		1997	Greenfield Pl. (Chowan)	2			_
Robeson	Hog Swamp	1997	South Carolina	1	6	2	4
(season opened – 2003)		1997	Greenfield Pl. (Chowan)	2			_
Robeson	Raft Swamp	1999	Suggs Mill Pond (Bladen)			3	
(season opened – 2004)		1999	South Carolina	2	6		4

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Robeson	Rowland	2003	Dupont (Bladen)			1	
		2003	Bannerman Bridge (Pender)	2			
(season closed for 3 yrs. by		2003	Bannerman Tower (Pender)			3	
coop. agree. – open in 2006)		2003	Sportsman's Club (Pender)		1		1
		2003	Deerfield (Bladen)		5		3
Rockingham	Mayo River	1981	Caswell GL (Caswell)	1	8	5	
(season opened - 1986)							_
Rowan	Flatwoods	1987	Camp Lejeune (Onslow)	1		1	
		1988	Caswell GL (Caswell)	1		4	
(season opened - 1998)		1988	Camp Lejeune (Onslow)		5		2
		1988	Gum Swamp (Craven)		1		_
Rowan	Bear Poplar	1996	Cherokee Mills (Rutherford)		4		1
		1996	Norris Farm (Watauga)			3	3
(season opened – 2002)		1996	Weaver Farm (Watauga)				2
		1996	Rhinehart Creek (Macon)	2			_
Rowan	Potneck	1998	Rich Mountain (Madison)	1			
		1998	Clawhammer (Transylvania)	2			
(season opened – 2002)		1998	G. C. Bryan Farm (Watauga)		1		
		1998	Tucker Farm (Alleghany)		2	2	1
		1998	Shore Farm (Alleghany)		5		1
Rowan	Third Creek	1999	Suther Farm (Cabarrus)	2			
(season opened – 2002)		1999	South Carolina		6	3	4
Rutherford	Dysartsville GL	1975	Rich Mountain (Madison)		3	2	3
		1975	Mill Ridge (Madison)	2			3
(season remained open)		1975	Green River GL (Polk)			3	2
		1975	Flat Top (Yancey)	1			
		1975	Mt. Mitchell (McDowell)	1			_

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Rutherford	Golden Valley	1990	Wisconsin	4	3		9
		1990	Mulberry Gap (Alleghany)			2	
(season opened - 1995)		1990	Nantahala NF (Cherokee)		2		_
Rutherford	Piedmont BSA	1991	Muriel Corp. (Ashe)			2	
		1991	Biltmore Estate (Buncombe)	2	3	1	2
(season opened - 1995)		1991	Piney Creek (Alleghany)		4		
		1991	Brown Farm (Ashe)				2
		1991	Wisconsin				2
Sampson	Quwhiffle	1993	Caswell GL (Caswell)	1		4	
(season opened - 1999)		1993	Roanoke River (Martin)		8		2
Sampson	Coharie	1994	Connecticutt	1			
		1994	Pennsylvania	1	3	1	6
(season opened - 1999)		1994	South Carolina	1	1	1	_
Sampson	Merkle Swamp	1996	Arkansas	1			
		1996	Pennsylvania			4	
(season opened - 1999)		1996	South Carolina		9		1
Sampson	Black River	1996	Pennsylvania				2
(season opened - 1999)		1996	West Virginia	2	6	4	2
Sampson	South River	1998	Fontana (Graham)		6		
		1998	Parrish Farm (Chowan)				2
(season opened – 2002)		1998	Rich Mountain (Madison)	2			
		1998	Crooms Bridge (Pender)	1			
		1998	Queens Creek (Swain)		2		
		1998	Caswell GL (Caswell)	2			_
Scotland	Camp McKall	1982	Camp Lejeune (Onslow)	4	5	6	3
(season opened - 1990)		1984	Camp Lejeune (Onslow)	1		1	8

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Stanly	Tuckertown	1991	Caswell GL (Caswell)		1		
		1991	South Carolina	1		3	11
(season opened - 2000)		1997	Absher Farm (Ashe)		2		
		1997	Cane Creek (Jackson)			3	
		1997	White Pines (Transylvania)				6
		1997	Horse Cove (Transylvania)		4		
Stanly/ Anson	Rocky River	1991	Caswell GL (Caswell)		2		
		1991	South Carolina	2			
		1991	Wisconsin		7		3
(season opened - 2000)		1992	South Carolina			2	
Stanly	Morrow Mountain	1993	Roanoke River (Martin)		1		
		1993	Iowa	1	6	3	1
(season opened - 2000)		1993	Pennsylvania		2		1
		1993	Wisconsin	1		1	
Stanly	Old Mill	1997	West Virginia		7		1
		1997	English Farm (Madison)			4	
(season opened – 2003)		1997	Horse Cove (Transylvania)		2		
		1997	Elbow Creek (Cherokee)	1			
Stanly	PC	1998	Rich Mountain (Madison)	1			
		1998	Clawhammer (Transylvania)	2			
(season opened – 2003)		1998	Tucker Farm (Alleghany)			1	
		1998	G. C. Bryan Farm (Watauga)				1
		1998	Dan River Corporation (Rutherford)		9	1	
Stokes	Hanging Rock	1991	Scott's Industries (Ashe)	3			
		1991	Biltmore Estate (Buncombe)	1		2	
(season opened - 1996)		1991	New Hope Ch. Rd. (Alleghany)		6		4
		1991	Wisconsin		3		

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Stokes	Sauratown	1991	Piney Creek (Alleghany)		3	3	1
		1991	Biltmore Estate (Buncombe)		3		3
(season opened - 1996)		1991	Nantahala NF (Clay)	2			
		1991	Wisconsin	2	3		_
Surry	Raven Knob	1986	Pisgah NF (Madison)		5	3	1
		1986	Pisgah NF (McDowell)		1		
(season opened - 1988)		1986	Pisgah NF (Buncombe)	3	2		
		1987	Wiggins Farm (Alleghany)		3		1
Surry	Rockford	1990	Wisconsin		2		1
		1990	Biltmore Estate (Buncombe)	3			
(season opened - 1996)		1990	Mulberry Gap (Alleghany)		3	2	3
		1990	Cranberry Creek (Ashe)		4		_
Swain	Wesser Creek	1990	Nantahala NF (Cherokee)		4	2	2
(season opened - 1993)		1990	Nantahala NF (Macon)	3	3		1
Transyl.	Bennett Gap	1979	Nantahala NF (Cherokee)	4			
		1979	Nantahala NF (Clay)		3	2	2
(season remained open)		1979	Nantahala NF (Macon)		5		_
Transyl.	Upper French Broad	1987	Pisgah NF (Transylvania)	1			
		1987	Nantahala NF (Cherokee)	1	3		1
(season opened - 1990)		1987	Nantahala NF (Jackson)		3		1
		1987	Nantahala NF (Macon)	3	1		1
Transyl.	Toxaway	1990	Pisgah NF (Transylvania)	5	3		3
		1990	Nantahala NF (Cherokee)		3		
(season opened - 1993)		1990	Nantahala NF (Macon)		2		_

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Tyrrell	Creswell	1996	Arkansas			3	
		1996	Pennsylvania		2		1
(season opened – 2000 in Wash. Co.,		1996	South Carolina		3	1	
2003 in Tyrrell Co.)		1996	Bear Swamp (Perquimans)		2		2
		1996	Conoho Farms (Martin)	1			
Tyrrell	Alligator	1999	Caswell GL (Caswell)	1			
		1999	Holly Ridge (Washington)	1			
(season opened – 2003)		1999	Hanks Farm (Wilkes)		1		2
		1999	Dysartsville (McDowell)			3	
		1999	Moxley Farm (Alleghany)				2
		1999	Adams Farm (Bladen)		4		1
Tyrrell	Lantern Acres	1999	Holly Neck (Washington)	1			
		1999	Ashes Creek (Pender)				1
(season opened – 2003)		1999	Adams Farm (Bladen)			1	
		1999	Uwharrie GL (Montgomery)	1		2	
		1999	Meeks Farm (Pender)				3
		1999	Mapleton (Hertford)		3		1
		1999	Bear Swamp (Perquimans)		1		2
Tyrrell	Buckridge	2004	Riviera Hotel (Currituck)		3	2	
(landowners failed to sign coop. agreement)							
Union	New Salem	1997	West Virginia		4		
		1997	Rich Mountain (Madison)		3		
(season opened – 2004)		1997	English Farm (Madison)			4	
		1997	Deweese Creek (Macon)		3		
		1997	Elbow Creek (Cherokee)	1			
Union	Polk Mountain	1999	Tessentee Creek (Macon)		4	2	2
(season opened – 2004)		1999	South Carolina	2	3	1	2

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Union	Gaye	2000	Biltmore Estate (Buncombe)	1	2	2	
		2000	English Farm (McDowell)		2		2
(season opened – 2004)		2000	Hooper Farm (Jackson)		3		
		2000	McFadden Farm (Rutherford)			1	
		2000	Tucker Farm (Ashe)				1
		2000	Hunter Farm (Madison)	1			
Union	Little	2000	Biltmore Estate (Buncombe)	1	2	3	
		2000	English Farm (McDowell)		1		3
(season opened – 2004)		2000	Rhinehart (Macon)		3		
		2000	Hooper Farm (Jackson)		2		
		2000	Hunter Farm (Madison)	1			
Union	Cox	2005	Caswell GL (Caswell)	5	5	1	1
(season closed for 3 yrs. by		2005	Tabernacle Church (Montgomery)		2		
coop. agree. – open in 2008)		2005	Yates Place – USFS (Montgomery)		2		
		2005	Wells Club (Pender)		2		
Vance	Little Island Creek	1993	Sandbanks (Gates)	2			
		1993	Iowa		8		
(season opened - 1999)		1993	Pennsylvania		2	3	
Wake	Shearon Harris	1997	South Carolina				1
		1997	West Virginia		7	3	2
(season opened – 2001)		1997	Caswell GL (Caswell)	2			
Warren	Hubquarter	1991	Croatan NF (Craven)	1			
		1991	Roanoke River (Martin)			1	
(season opened - 1999)		1991	South Carolina	1	7		3
		1992	South Carolina			2	
Warren	Possumquarter	1991	Roanoke River (Martin)	1			
		1991	South Carolina	1	5		5
(season opened - 1999)		1992	South Carolina			1	

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Warren	Upper Shocco	1992	Caswell GL (Caswell)	2			
(season opened - 1999)		1992	South Carolina		8	2	2
Warren	Lower Shocco	1992	Caswell GL (Caswell)	1			
(season opened - 1999)		1992	South Carolina	1	9	2	2
Warren	Reedy Pond	1993	Roanoke River (Martin)		1		
		1993	Iowa	1	3		5
(season opened - 1999)		1993	Pennsylvania		1	2	
		1993	Wisconsin	2			
Warren	Hawtree	1994	Caswell GL (Caswell)	1	2	2	
		1994	Roanoke River (Martin)		6		1
(season opened - 1999)		1995	Pennsylvania			1	1
Warren	Oine	1995	Pennsylvania		1	3	10
(season opened - 1999)		1995	Virginia	1			
Washington	Holly Neck	1994	Bear Swamp (Perquimans)		5	2	1
(season opened - 2000)		1994	Sandbanks (Gates)	3			
		1994	Cherry Point (Craven)		3		1
Washington	Welch Creek	1996	Arkansas			1	
		1996	South Carolina		5		2
(season opened - 2000)		1996	West Virginia	1			
		1996	Sandbanks (Gates)		3		
		1996	Bear Swamp (Perquimans)			2	
		1996	Conoho Farms (Martin)	2			
Washington	Pungo NWR	2000	Hill Farm (Jones)		4	1	6
		2000	Greentree Mill Br. (Craven)	3			
(season opened – 2004)		2000	Maple Hill (Pender)	1			

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Washington	Mackeys	2004	Grandy Farm (Currituck)	1			
		2004	Hill Farm (Jones)	2			
(season closed for 3 yrs. by		2004	Wells Club (Pender)		4		
coop. agree. – open in 2007)		2004	G. E. (New Hanover)			3	
		2004	Crooms Bridge (Pender)		5		1
Watauga/	Dugger Mt.	1986	West Virginia	2	4	4	
Wilkes	Fall,	1986	West Virginia		3	15	9
(season opened - 1991)		1987	Goodnight Farm (Watauga)	1	2		_
Wayne	Cliff's	1992	Caswell GL (Caswell)	2			
(season opened - 1997)		1992	South Carolina		7	2	5
Wayne	13	1997	South Carolina	2	4		2
(season opened – 2001)		1997	West Virginia		4	3	_
Wayne	Faro	2000	English Farm (McDowell)		3		4
		2000	Biltmore Estate (Buncombe)		2		
(season opened – 2004)		2000	Hooper Farm (Jackson)		1	1	
		2000	State Farm (Ashe)			2	
		2000	Flat Top (Yancey)	1			
		2000	Shuler Creek (Cherokee)	1			_
Wayne	222	2000	Biltmore Estate (Buncombe)		5		
		2000	English Farm (McDowell)				3
(season opened – 2004)		2000	Hooper Farm (Jackson)		1	2	1
		2000	Flat Top (Yancey)			1	
		2000	Meetinghouse Mountain (Graham)	1			
		2000	Shuler Creek (Cherokee)	1			_
Wilkes	Thurmond Chatham	1955-56	Sandhills GL (Richmond/Scotland)	(19 turkeys)			
		1972	Caswell GL (Caswell)	3	3		1
(season remained open)		1973	Caswell GL (Caswell)	2			
		1973	New Hope GL (Chatham)	1	2	1	_

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Wilkes	Bald Mountain	1989	South Carolina		1		
		1989	Goodnight Farm (Watauga)	3			
(season opened - 1996)		1989	Biltmore Estate (Buncombe)	3	4		4
		1989	Laurel Springs (Alleghany)		1		
Wilkes	Hickory Knob	1989	South Carolina		3		7
		1989	Biltmore Estate (Buncombe)	1		3	
(season opened - 1996)		1989	Bluff Mountain (Ashe)			1	
Wilkes	Kilby Gap	1989	South Carolina		9	4	1
		1990	Biltmore Estate (Buncombe)		2		2
(season opened - 1996)		1990	Piney Creek (Alleghany)			3	
Wilkes	Ronda	1992	Piney Creek (Alleghany)	2		1	
		1992	Yates Farm (Ashe)		6		4
(season opened - 1996)		1992	Goodman Farm (Ashe)			2	1
Wilson	Golf	1997	West Virginia		7		
		1997	D. Brown Farm (Watauga)			3	
(season opened – 2005)		1997	Absher Farm (Ashe)		2	1	
		1997	Horse Cove (Transylvania)		1		
		1997	Rich Mountain (Madison)	1			
Wilson	Cosin	1998	Deep Gap Farm (Polk)				1
		1998	Dutch Buffalo Creek (Cabarrus)	1			
(season opened – 2005)		1998	Croatan NF (Craven)			2	
		1998	Jim Cook Farm (Watauga)		7		1
		1998	Caswell GL (Caswell)	2			1
Wilson	Oak	1999	Davis Farm (Jones)	1			
		1999	Cobb Farm (Caswell)		4		1
(season opened – 2005)		1999	Mapleton (Hertford)		5		
		1999	Dysartsville (McDowell)			3	
		1999	Angola Bay (Pender)			1	

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Wilson	42	2000	State Farm (Ashe)	2	6	3	1
(season opened – 2005)		2000	Biltmore Estate (Buncombe)				3
Wilson	301	2000	Rich Mountain (Madison)		5		3
		2000	Flat Top (Yancey)			3	
(season opened – 2005)		2000	McFadden Farm (Rutherford)		2		
		2000	Meetinghouse Mountain (Graham)	1			
		2000	Shuler Creek (Cherokee)	1			
Wilson	Rock Ridge	2000	Rich Mountain (Madison)		4		2
		2000	McFadden Farm (Rutherford)		2	4	1
(season opened – 2005)		2000	Conoho Farms (Martin)	2			
		2000	Loftis Farm (Caswell)				1
Yadkin	Flint Hill	1992	Laurel Springs (Alleghany)		3		2
		1992	Goodman Farm (Ashe)				4
(season opened - 1998)		1992	Biltmore Estate (Buncombe)	2			
		1992	Crumpler Farm (Ashe)			2	
		1992	Bear Paw (Cherokee)			1	
		1992	Wayah (Macon)	1			
		1992	Shuler Creek (Cherokee)		2		
Yadkin	Longtown	1994	Biltmore Estate (Buncombe)			3	
		1994	Sheets Farm (Ashe)	2			
(season opened - 1998)		1994	Sturgill Farm (Alleghany)		6		3
		1994	Panther Top (Cherokee)				1
Yancey	Flat Top	1950s	Maryland (game farm)	(unknown)			
		1953	Uwharrie NF (Montgomery)	1	3		
(season remained open)		1953	Sandhills GL (Richmond/Scotland)	3	3		
		1954	Sandhills GL (Richmond/Scotland)		2		
		1955	Sandhills GL (Richmond Scotland)	3	2		

COUNTY	RESTORATION AREA	YEAR	TRAP SITE (County)	NUMBER OF BIRDS AM	AF	IM	IF
Yancey	S. Toe Rvr/Mt. Mitchell	1964	State of Florida	3	11		
		1971	Caswell GL (Caswell)		6	1	
(season remained open)		1971	Duke Forest (Durham)			1	
		1971	Camp Lejeune (Onslow)	3	4	1	3
Yancey	Mitchell Creek	1990	Wisconsin		2		1
		1990	Biltmore Estate (Buncombe)			2	2
(season opened - 1998)		1990	Piney Creek (Alleghany)		4		4
		1990	Bluff Mountain (Ashe)	2			
		1990	Scott's Industries (Ashe)	1			
		1990	Bearwallow Creek (Mitchell)			1	
		1995	Biltmore Farms (Buncombe)	2	4	1	_
Yancey/ Madison	Blue Mountain	1992	Biltmore Estate (Buncombe)	1		3	2
		1992	Piney Creek (Alleghany)	1			
(season opened - 1996)		1992	BASF (Buncombe)			1	_
Yancey	Spivey Creek	1992	Research Farm (Ashe)		4	1	
		1992	Biltmore Estate (Buncombe)		2		5
(season opened - 1996)		1992	Piney Creek (Alleghany)	3			
		1992	Goodman Farm (Ashe)			1	_
Yancey	Victor Tract	1992	Piney Creek (Alleghany)	2			
		1992	Bluff Mountain (Ashe)	1			
(season opened - 1996)		1992	BASF (Buncombe)		3	2	
		1992	Yates Farm (Ashe)		1		3
		1992	Goodman Farm (Ashe)		1	1	3
Yancey	Brush Creek	1994	Pigeonroost (Mitchell)	1			
		1994	Price Farm (Ashe)		3		4
(season opened - 1998)		1994	Avery Creek (Buncombe)		3	3	2
		1994	Hiwassee Dam (Cherokee)	1			_

Appendix 5. Wild Turkey Capture Drugs – Procedures and Guidelines.

WILD TURKEY CAPTURE DRUGS
PROCEDURES AND GUIDELINES

Note: The use of these capture drugs is no longer allowed for trapping wild turkeys without an investigational new animal drug (INAD) exemption from the Center for Veterinary Medicine, Food and Drug Administration, HFV-199, 7500 Standish Place, MPN 2, Rockville, MD 20855.

Introduction

Conventional capture techniques involving drop nets, cannon nets and rocket nets are highly effective in capturing wild turkeys for research and restoration purposes. However, conventional techniques require physical restraint which may result in at least some physical injury or defeathering of the birds, or capture myopathy (Spraker et al. 1987, Weinstein et al, 1995). In addition, wild turkeys are quite wary of the presence of trapping devices, such as nets or rocket boxes, unless they are well hidden. Extremely steep terrain, lack of openings to deploy nets, and, in some cases, restrictions against the use of explosives may also limit the use of these techniques for capturing wild turkeys.

An alternate method for capturing wild turkeys is capture drugs. Several orally administered narcotizing agents have been used to capture wild turkeys, including methoxymol, trichloroethanol, tribromoethanol and alpha-chloralose. Alpha-chloralose probably has been used most often because it is relatively inexpensive and comparatively easier to obtain. Tribromoethanol has proven to be superior to the others due to quicker "knock down" time, a shorter period of narcosis and a lower mortality rate (Williams et al. 1973, Evans et al. 1975). Discussions in this bulletin, therefore, will be limited to these two drugs.

Bait and Bait Site Selection

1) Bait sites should be selected with the widest possible field of view, so that turkeys can be easily observed as they become narcotized.
2) Sites located near roosts will enhance the probability of early visits.
3) The potency of tribromoethanol is affected by light. Therefore, when using this drug, sites should be selected that will be in the morning shade for the longest period of time. Alpha-chloralose is unaffected by light so this would not be a consideration.
4) Sites near water should be avoided as drugged birds could drown.
5) Sites near fences or where disturbance by livestock, people, or dogs is likely to occur should also be avoided.
6) Select the best bait for your particular area. A variety of baits are satisfactory but coarsely cracked yellow corn is a favorite among veteran trappers. It's comparatively easy to pick up when removing uneaten bait from the site and is less attractive to deer than whole corn.

Prebaiting

1) The bait site should be established and maintained as it will be when the capture attempt is made.
2) Long, thin bait lines may be used to attract turkeys to the main bait site from considerable distances. Once the birds visit the main bait site, the bait lines should be discontinued.
3) No more bait should be placed on the site than will be consumed by the number of turkeys visiting it daily.
4) Presenting the bait in small piles of one-quarter to one-half cup will facilitate pick up of uneaten bait. In some cases, the birds may shy away from bait presented in piles unless it has been presented that way from the beginning of prebaiting operations.
5) Bait piles should be spaced to minimize unsociable behavior among the birds.
6) Lightly covering the bait with leaves or grass may make the birds less wary of the site by giving it a more natural appearance.
7) Try to avoid spooking the birds from the site. Check sites from a vehicle during mid-day hours or after dark if possible.
8) Pay attention to sign at the site, such as droppings, feathers, and tracks, to determine the size and composition of the flock and the time of day it was used. A day in the blind may be necessary to make these determinations.
9) After visits from the birds on two or three consecutive days, the birds are ready to trap. Avoid holding birds on bait for very long. Their habits may change and/or non-target animals may begin using the site.

Bait Preparation and Dosages

1) Do not prepare the bait-drug mixture ahead of time. Once the mixture dries, some of the drug make flake off. Both drug and bait can be measured ahead of time, but the mixture should be prepared at the site.
2) Do not handle drugs without rubber gloves; some people are allergic to them.
3) A list of suggested drug dosages is presented in Table 1.
4) Accurately measure both drug and bait for the number of birds expected.
5) Wet the dry, clean bait in a pail of water for a minute or two and then drain off excess water.
6) Thoroughly mix the drug with the bait by stirring until even coverage is obtained.
7) Present the mixture on the site in the same manner as prebaiting was done. Again, placing the mixture in piles of one-quarter to one-half cup will facilitate pickup of uneaten bait.
8) Do not put out less bait-drug mixture than may be consumed by the total number of turkeys visiting the site.
9) Carry extra bait and drugs in case the mixture has to be replaced during the day.

Table 1. Recommended dosages for wild turkey capture drugs (authors recommendations based upon review of the literature and personal experience).

Drug	Recommended Dosage per Standard Cup of Bait (grams)		Usual Number Captured per Cup of Bait	Knockdown Time (minutes)	Narcotic Duration (hours)
	Adult Males	All Others			
Tribromoethanol	10-12	8-10	2-4	10-40	4-10
Alpha-chloralose	2	1.6	1-3	30-90	20-40

Note: Recommended dosages are for winter trapping. For late summer/early fall trapping of poults, dosages may need to be reduced.

Capture Procedure

1) Prepare a check list of equipment needed and review the list prior to leaving for the capture attempt (Appendix I).
2) Set up blind and conceal long-handled dip nets and transport boxes on the day prior to the trapping attempt if possible.

3) Upon arriving at the site for the capture attempt, remove all uneaten bait before placing bait-drug mixture on the bait site.
4) Do not attempt to trap on rainy days. Heavy fog and/or light rain may increase the potency of the drug due to an increase in the absorption rate (Williams et al. 1973). Heavy rains may rinse the drug from the bait. If rain washes the drug from the bait, the mixture must be replaced if the capture attempt is to continue.
5) Three to four hours of sunlight reduces the potency of tribromoethanol by about 80% (Bailey et al. 1980). The bait-drug mixture should be replaced by 1000 hours if is located in a sunny area or by noon if it is located in a shaded area. On heavily overcast days, tribromoethanol may be potent all day.
6) Allow sufficient time for narcotized birds to go down slowly; narcosis generally lasts several hours so there is no need to hurry.
7) Pay close attention to partially narcotized birds and carefully note the direction in which they wander off. A complete and exhaustive search should be made for every bird.
8) Usually some birds are less narcotized than others. The stages of hypnosis (Williams et al. 1973) are described in Table II.
9) Attempt to capture the most alert birds first. Turkeys can usually be captured with a long-handled dip net in Stage II if approached with extreme caution (Williams et al. 1973).
10) Quietly and cautiously approach the bird from the rear and firmly place long-handled dip net over the bird. Quickly get control of the bird and place it in a transport box.
11) Birds that seem to be dozing in Stages II and III may be easily aroused and run or fly away. This physical exertion will increase the absorption rate of the drug. When the bird comes to rest, it frequently goes into a deeper state of narcosis. A follow-up search, after a 10 to 15 minute wait, often proves successful in capturing the bird.
12) Wild turkeys previously captured with tribromoethanol may be difficult to recapture with this drug. Experienced birds frequently refuse to ingest the treated grain and often disrupt the trapping of other birds in their company. Alternative trapping methods should be considered when researchers plan prolonged trapping efforts in a study area (Davis et al. 1994).

Table 2. Hypnotic stages defined for turkeys (Williams et al. 1973).

Stage	Depth of Hypnosis	Posture	Coordination	Escape Response
I	Barely evident	Standing or walking	Good, able to fly	Unwary until approached; cannot be captured
II	Sluggish	Standing, walking, or squatting	Noticeable impaired	Difficult to capture
III	Shallow anesthesia	Not standing or walking	Very poor	Can usually be picked up by hand
IV	Deep anesthesia	Prostrate	None	None

Post-Trapping Considerations

1) Before leaving the trapping area, any uneaten, treated grain should be removed from the bait site.
2) During winter trapping operations, narcotized birds should be kept warm while they recover.
3) For birds in Stage IV of narcosis, an injection of pure caffeine in sodium benzoate (3.75 grains/cc) into the breast muscle (1.0 cc for adult males and 0.5 cc for all others) is recommended (Bailey 1972).
4) Another method, that seems to speed the recovery of birds in Stage IV, is flushing the crop immediately after capture. This is done by holding the bird upside down and carefully inserting a small rubber surgical tube down the esophagus and into the crop. Be careful that the tube is inserted down the esophagus and not the trachea. Warm saline solution is then forced through the tube and into the crop with a large syringe and allowed to drain back out. Repeating this procedure several times flushes any unabsorbed drug from the bird's crop. To be effective, this procedure should be done immediately, before all of the drug has been fully absorbed into the bird's system.

5) In an emergency, the crop can be surgically opened and flushed with warm saline solution (Bailey et al. 1980). Two sutures are needed to close the incisions; one for the crop and one for the skin. Again, to be effective, this procedure should be done immediately, before all of the drug has been fully absorbed into the bird's system.
6) Birds in Stages I, II and III should be allowed to recover on their own.
7) Brevane (a brand of sodium methohexital) is a fast-acting and short-duration barbiturate that aids in anesthetizing turkeys for handling and transporting. Intramuscular breast injections of 25 mg per 4 pounds of body weight are recommended (Williams et al. 1973). It can also be used to calm rocket-netted birds in warm weather (>75°F), thus preventing death from overheating and shock (Bailey et al 1980).
8) Narcotized birds should be held until they have fully recovered from the effects of the drug before they are released.
9) See the NWTF Bulletin entitled Procedures for Handling and Transporting Wild Turkeys for more details on handling and transporting birds.

Prepared by:

Michael H. Seamster, NC Wildlife Resources Commission, 791 Seamster Road, Providence, NC 27315

George A. Hurst, Forest and Wildlife Research Center, Mississippi State University, Box 9690, Mississippi State, MS 39762

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Appendix I

Check List of Suggested Equipment and Supplies for Drug Trapping Wild Turkeys

1) Grain
2) Drug (tribromoethanol or alpha-chloralose)
3) Bucket(s)
4) Metal spoon
5) Jug of water
6) Measuring devices (for drug and bait)
7) Pharmaceutical box (caffeine, Brevane, small syringes, small rubber surgical tube, scalpel and blades, needles and surgical thread, rubber gloves, surgical kit, small pump or large syringe, antibiotics, etc.)
8) Net(s), long-handled dip type
9) Blind
10) Chair(s)
11) Heater and fuel
12) Transport boxes
13) Bands and banding pliers
14) Binoculars
15) Camera
16) Lunch
17) Tool box
18) Clipboard, pencils, paper, data sheets, etc.
19) Telemetry equipment (optional, depending on project)
20) Flashlight, extra batteries
21) Ruler or measuring tape
22) Rain gear
23) Two way radio

Appendix 6. 1989 Spring Gobbler Season Survey Results.

1989 SPRING GOBBLER SEASON SURVEY RESULTS

North Carolina State Chapter
National Wild Turkey Federation

1. Did you hunt in North Carolina during the 1989 spring turkey season?

Yes No (If no, go to question 13)

67 survey forms were returned; 61 (91%) stated they hunted in NC, 6 (9%) stated they did not hunt in NC.

2. If you hunted, how many days did you hunt during the 1989 spring turkey season?
.

The fewest number of days hunted was 2 and the highest was 24 with an average of 9.4 days per hunter.

3. What period of the day did you hunt?

Morning Afternoon Both

33% of the hunters hunted only in the morning, 3% of the hunters hunted only in the afternoon, and 64% of the hunters hunted both morning and afternoon. Therefore, 67% of the respondents utilized the opportunity to hunt in the afternoon (which is not allowed in some states) at least part of the time.

4. Please list the counties in which you hunted.
.

In order of frequency listed:

Caswell	17	Buncombe	2
Ashe	9	Mitchell	2
Halifax	8	Montgomery	2
Bertie	7	Wake	2
Person	6	Burke	1
Alleghany	6	Cherokee	1
Northampt.	5	Clay	1
Chatham	4	Columbus	1
McDowell	4	Craven	1
Wilkes	4	Granville	1
Surry	4	Henderson	1
Graham	3	Hyde	1
Swain	3	Madison	1

Transylvan.	3	Martin	1
Watauga	3	Onslow	1
Alamance	2	Rockingham	1
Bladen	2		

5. On what type of land did you turkey hunt during the 1989 spring season?

Game Lands Other lands

18% of the hunters hunted only on game lands, 52% of the hunters hunted only on private land, and 30% of the hunters hunted both game lands and private land. Therefore, almost half of the respondents utilized game lands at least part of the time.

6. Did you use a decoy at any time during the 1989 spring turkey season?

Yes No

39% of the hunters used a decoy and 61% of the hunters did not.

7. How many hens did you flush off the nest during the 1989 spring turkey season? .

Only 11% of the hunters flushed at least one hen off a nest while one hunter flushed three hens off the nest.

8. How many hens did you call in during the 1989 spring turkey season? .

54% of the hunters called in at least one hen during the season. The range was from a low of 0 to a high of 32 with an average of 2.6 hens called in per hunter.

9. Did you experience any interference with your hunting activities while in the field during the 1989 spring turkey season?

No interference
Interference by dogs
Interference by other hunters
Interference by ATVs
Other interference

77% of the hunters reported some type of interference during the season while 23% of the hunters experienced no interference.

Of those reporting interference, 47% reported interference by other hunters, 39% reported interference by dogs, 6% reported interference by ATV's, and 8% reported other interference.

10. Did you observe any illegal hunting or failure to tag during the 1989 spring turkey season?

Yes No

Only 8% of the hunters reported observing illegal activities while 92% reported observing no illegal activities.

11. If yes, was the violation reported?

Yes No

Of the hunters observing illegal activities, 60% stated they reported the violation and 40% stated they did not.

12. Please list the following information on any gobblers you shot at during the 1989 spring turkey season:

	Distance (yards)	Time of Day	Results (Killed, missed, or crippled)
a.			
b.			
c.			
d.			

Hunters responding to the survey reported taking shots at 67 gobblers. 82% reported the bird was killed, 18% reported the bird was missed, and no one admitted crippling a bird.

Of the shots taken, 81% of the birds were shot at in the morning and 19% of the birds were shot at in the afternoon.

Average distance of all shots taken was 29 yards with a range of 7 yards to 65 yards.

Average distance of the shots taken at birds that were killed was 27 yards with a range of 7 yards to 45 yards.

Average distance of the shots taken at birds that were missed was 40 yards with a range of 25 yards to 65 yards.

The following chart shows the time of day when shots were taken:

daylight - 6:59 - 16.5%
7:00 - 7:59 - 28.5%
8:00 - 8:59 - 15.0%
9:00 - 9:59 - 10.0%
10:00 - 10:59 - 9.0%
11:00 - 11:59 - 1.5%
12:00 - 12:59 - 1.5%
1:00 - 1:59 - 1.5%
2:00 - 2:59 - 3.0%
3:00 - 3:59 - 3.0%
4:00 - 4:59 - 3.0%
5:00 - 5:59 - 4.5%
6:00 - dark - 3.0%

13. How do you feel about the current spring season dates?

Season opens too early
Season opens too late
Season dates are about right
No opinion or unsure

6% season opens too early
84% season dates are about right
9% season opens too late
1% no opinion or unsure

14. In areas containing high turkey populations in North Carolina, how do you currently feel about a fall either-sex turkey season?

Favor Oppose No opinion or unsure

15% favor fall either-sex turkey season
82% oppose fall either-sex turkey season
3% no opinion or unsure

15. What type of weapon do you use when you turkey hunt?

Shotgun
Bow
Muzzle-loading shotgun

99% shotgun
7% bow
1% muzzle-loading shotgun

Figures total over 100% because some use more than one type of weapon.

16. If you use a shotgun, what shot size do you use?

Buckshot #4 shot #7 1/2 shot
BB's #5 shot other .
#2 shot #6 shot

0% buckshot
0% BB's
7% #2 shot
45% #4 shot
10% #5 shot
64% #6 shot
0% #7 1/2 shot
9% other (duplex loads)

Figures total over 100% because some use more than one size shot.

17. How do you feel about a mandatory shot size restriction for turkey hunting?

Favor no restrictions
Favor BB's and smaller
Favor #2 shot and smaller
Favor #4 shot and smaller
Favor #6 shot and smaller
Favor other .

71% of the hunters favored some type of shot size restrictions, 27% of the hunters favored no restrictions, and 2% of the hunters were unsure or had no opinion.

The following chart shows the preference of those hunters favoring some type of shot size restriction:

2% favor BB's and smaller
19% favor #2 shot and smaller
58% favor #4 shot and smaller
17% favor #6 shot and smaller
4% favor other restrictions

18. How do you feel about a voluntary wild turkey stamp as a way to raise additional money for wild turkey restoration, research, and habitat improvement?

Favor Oppose No opinion

79% favor a voluntary wild turkey stamp
12% oppose a voluntary wild turkey stamp
9% no opinion or unsure

Appendix 7. 1990 Spring Gobbler Season Survey Results.

1990 SPRING GOBBLER SEASON SURVEY RESULTS

North Carolina State Chapter
National Wild Turkey Federation

1. Are you a turkey hunter?

Yes No

95% - 657 respondents - Yes
5% - 36 respondents - No
100% - 693 total respondents

2. Did you hunt in North Carolina during the 1990 spring turkey season?

Yes No (If no, go to question 14)

72% - 498 respondents - Yes
28% - 191 respondents - No
100% - 689 total respondents

3. How many days did you hunt during the 1990 spring turkey season? .

This question was answered by 493 respondents who hunted a total of 4,471 days for an average of 9.1 days hunted. Obviously, there are some dedicated turkey hunters out there. The fewest number of days hunted was one, while the greatest number of days hunted was 25 (every day of the season).

4. What period of the day did you hunt?

Morning Afternoon Both

41.4% - 206 respondents - Morning only
1.2% - 6 respondents - Afternoon only
57.4% - 286 respondents - Both morning and afternoon
100.0% - 498 total respondents

It is clear that the majority of the respondents take advantage of the opportunity to hunt in the afternoon, an opportunity that is not allowed in some states.

5. Please list the counties in which you hunted.

.

This question was answered by 489 respondents who hunted in 827 counties for an average of 1.7 counties hunted per respondent. The following is a list of the counties mentioned and the frequency in which they were listed:

138 Caswell	15 Transylvania	3 Haywood
59 Bertie	13 Jackson	3 Madison
50 Ashe	13 McDowell	3 Robeson
44 Person	12 Swain	3 Scotland
39 Halifax	11 Anson	2 Chowan
33 Northamp.	11 Graham	2 Columbus
30 Macon	11 Surry	2 Franklin*
24 Alleghany	10 Buncombe	2 Johnston
24 Onslow	10 Clay	2 Moore
23 Richmond	9 Durham	1 Avery*
21 Granville	9 Pender	1 Brunswick
20 Alamance	9 Watauga	1 Caldwell
20 Martin	8 Cherokee	1 Carteret
20 Wilkes	8 Mitchell	1 Duplin*
19 Rocking.	6 Burke	1 Hoke
18 Chatham	5 Hyde	1 Wake*
16 Henderson	4 Jones	1 Warren*
15 Montgom.	3 Bladen	1 Yancey
15 Orange		

The top county, Caswell County, was listed more than twice as often as the next highest county. It is pretty easy to see where the heaviest hunting pressure is occurring. It is also interesting to note that only 3 of the top 13 counties listed were in the mountain region where 48% of this year's harvest occurred. Maybe this is a factor of the distribution of the human population in this state or possibly the distribution of the Federation membership. It may also be indicative of hunting pressure. It makes interesting food for thought. Another interesting facet of the answers to this question is that 5 counties were listed as being hunted that were closed to spring gobbler hunting. These counties are noted by the asterisks. I certainly hope these guys were hunting with a camera only!

6. On what type of land did you turkey hunt during the 1990 spring season?

Game Lands Only Other Lands Only Both

12% - 60 respondents - Game lands only
54% - 269 respondents - Private land only
34% - 168 respondents - Both game lands and private land
100% - 497 total respondents

Almost half of the respondents utilized game lands to some degree.

7. Did you use a decoy at any time during the 1990 spring turkey season?

Yes No

44% - 218 respondents - Yes
56% - 280 respondents - No
100% - 498 total respondents

Decoys are obviously becoming very popular with Federation members.

8. How many hens did you flush from nest during the 1990 spring turkey season? .

This question was answered by 498 respondents who flushed 166 hens from their nests for an average of 0.2 hens flushed per respondent. 75 respondents (15%) flushed at least one hen from the nest, while one respondent flushed 10 hens.

9. How many hens did you call in during the 1990 spring turkey season? .

This question was answered by 498 respondents who called in a total of 1,037 hens for an average of 2.1 hens called in per respondent. 80 respondents (16%) called in at least one hen during the season, while one respondent called in 25 hens.

10. Did you experience any interference with your hunting activities while in the field during the 1990 spring turkey season?

No interference
Interference by dogs
Interference by other hunters
Interference by ATVs
Other interference

29% - 144 respondents - No interference
71% - 349 respondents - Experienced interference
100% - 493 total respondents

Of those respondents reporting interference:

55% - 144 respondents - Interference by dogs
74% - 260 respondents - Interference by other hunters
14% - 48 respondents - Interference by ATV's
8% - 27 respondents - Other types of interference

Figures total more than 100% because many respondents experienced more than one type of interference.

Other types of interference listed included other animals (bear, deer, bobcats, foxes, hawks, cats, and coyotes), other forest users (trail hikers and ramp diggers), workers (agricultural workers, farm equipment, farm vehicles, logging trucks, and chain saws), military personnel, and game wardens. One disgusted soul even reported interference by a low-flying blimp. How unlucky can a guy get!

11. Did you observe any illegal hunting or failure to tag during the 1990 spring turkey season?

Yes No

8% - 40 respondents - Yes
92% - 456 respondents - No
100% - 496 total respondents

12. If yes, was the violation reported?

Yes No

58.5% - 23 respondents - Yes
42.5% - 17 respondents - No
100.0% - 40 total respondents

13. Please list the following information on any gobblers you shot at during the 1990 spring turkey season:

	Distance (yards)	Time of Day	Results (Killed, missed, or crippled)
a.			
b.			
c.			
d.			

Respondents shot at a total of 374 gobblers.

81% - 304 gobblers - Killed
17% - 63 gobblers - Missed
2% - 7 gobblers - Crippled
100% - 374 gobblers - Shot at

Respondents listed the time the shots were taken at 352 gobblers.

86% - 304 gobblers - Shot at in the morning
14% - 48 gobblers - Shot at in the afternoon
100% - 352 gobblers - For which time of day was listed

The following chart lists the time of day when the shots were taken:

TIME OF DAY SHOTS WERE TAKEN

TIME	NUMBER OF BIRDS	PERCENTAGE
Daybreak - 6:59	54	15.3%
7:00 - 7:59	99	28.1%
8:00 - 8:59	65	18.5%
9:00 - 9:59	46	13.1%
10:00 - 10:59	31	8.8%
11:00 - 11:59	9	2.6%
12:00 - 12:59	5	1.4%
1:00 - 1:59	0	-
2:00 - 2:59	9	2.6%
3:00 - 3:59	4	1.1%
4:00 - 4:59	7	2.0%
5:00 - 5:59	13	3.7%
6:00 - 6:59	6	1.7%
7:00 - Dark	4	1.1%

Respondents listed the distance at which shots were taken on all 374 birds. The average distance of all shots taken was 28.2 yards with a minimum distance of 5 yards and a maximum distance of 65 yards. The following chart shows the distances at which all shots were taken:

DISTANCES OF ALL SHOTS TAKEN

DISTANCE (YARDS)	NUMBER OF SHOTS	PERCENTAGE
0 to 10	18	4.8%
11 to 20	104	27.8%
21 to 30	138	36.9%
31 to 40	80	21.4%
41 to 50	27	7.2%
51 to 60	6	1.6%
61 to 70	1	0.3%

The average distance of shots taken at birds that were killed was 26.7 yards with a minimum distance of 7 yards and a maximum distance of 60 yards. The following chart shows the distances at which shots were taken at birds that were killed:

DISTANCES OF SHOTS TAKEN AT BIRDS THAT WERE KILLED

DISTANCE (YARDS)	NUMBER OF SHOTS	PERCENTAGE
0 to 10	16	5.3%
11 to 20	91	29.9%
21 to 30	116	38.2%
31 to 40	62	20.4%
41 to 50	14	4.6%
51 to 60	5	1.6%

The average distance of shots taken at birds that were missed was 32.7 yards with a minimum distance of 5 yards and a maximum distance of 55 yards. The following chart shows the distances at which shots were taken at birds that were missed:

DISTANCES OF SHOTS TAKEN AT BIRDS THAT WERE MISSED

DISTANCE (YARDS)	NUMBER OF SHOTS	PERCENTAGE
0 to 10	2	3.2%
11 to 20	13	20.6%
21 to 30	17	27.0%
31 to 40	18	28.6%
41 to 50	12	19.0%
51 to 60	1	1.6%

The average distance of shots taken at birds that were crippled was 36.4 yards with a minimum distance of 25 yards and a maximum distance of 65 yards. The following chart shows the distances at which shots were taken at birds that were crippled:

DISTANCES OF SHOTS TAKEN AT BIRDS THAT WERE CRIPPLED

DISTANCE (YARDS)	NUMBER OF SHOTS	PERCENTAGE
0 to 10	0	-
11 to 20	0	-
21 to 30	5	71.4%
31 to 40	0	-
41 to 50	1	14.3%
51 to 60	0	-
61 to 70	1	14.3%

The following chart shows the average distances that shots were taken with the varying results:

RESULTS OF SHOTS TAKEN

AVERAGE DISTANCE (YARDS)	NUMBER OF SHOTS	RESULTS
26.7	304	KILLED
32.7	63	MISSED
36.4	7	CRIPPLED
28.2	374	TOTAL SHOTS TAKEN

It is easy to see that as the average distance increases the chances of missing or crippling a bird also increases.

14. How do you feel about the current spring season dates?

Season opens too early
Season opens too late
Season dates are about right
No opinion or unsure

3.2% - 22 respondents - Season opens too early
62.4% - 421 respondents - Season opens too late
22.4% - 151 respondents - Season dates are about right
12.0% - 81 respondents - No opinion or unsure
100.0% - 675 total respondents

Our spring gobbler season opens on the second Saturday in April. Therefore, opening day can vary from as early as April 8 to as late as April 14. It is interesting to note that this past spring season opened as late as it possibly can, on April 14, and was also coupled with an early spring. On last year's survey, following a normal spring, 84% of the respondents felt the season dates were about right, while only 9% felt the season opened too late.

15. In areas containing high turkey populations in North Carolina, how do you currently feel about a fall either-sex turkey season?

Favor Oppose No opinion or unsure

26% - 178 respondents - Favor
61% - 411 respondents - Oppose
13% - 88 respondents - No opinion or unsure
100% - 677 total respondents

This question generated more written comments than any other. Most of the respondents providing written comments were not opposed to the concept of a fall either-sex turkey season, but felt it should be delayed until restoration is complete.

16. What type of weapon do you use when you turkey hunt?

Shotgun
Bow
Muzzle-loading shotgun

99% - 667 respondents - Shotgun
1% - 5 respondents - Bow
0% - 0 respondents - Muzzle-loading shotgun
100% - 672 total respondents

17. If you use a shotgun, what shot size do you use?

Buckshot #4 shot #7 1/2 shot
BB's #5 shot other .
#2 shot #6 shot

1% - 6 respondents - Buckshot
4% - 24 respondents - BB's
14% - 87 respondents - #2 shot
49% - 308 respondents - #4 shot
6% - 41 respondents - #5 shot
25% - 157 respondents - #6 shot
1% - 4 respondents - #7 1/2 shot
1% - 6 respondents - Other loads
100% - 633 total respondents

It is easy to see that number 4 shot is by far the most popular load for Federation members, with number 6 shot a distant second.

18. How do you feel about a mandatory shot size restriction for turkey hunting?

Favor no restrictions
Favor BB's and smaller
Favor #2 shot and smaller
Favor #4 shot and smaller
Favor #6 shot and smaller
Favor other .

31% - 206 respondents - Favor no restrictions
69% - 456 respondents - Favor some type of restrictions
100% - 662 total respondents

The following chart shows the preference of those respondents favoring some type of shot size restriction:

6.8% - 31 respondents - Favor BB's and smaller
28.5% - 130 respondents - Favor #2 shot and smaller
47.1% - 215 respondents - Favor #4 shot and smaller
11.0% - 50 respondents - Favor #6 shot and smaller
6.6% - 30 respondents - Favor other type restrictions
100.0% - 456 total respondents favoring restrictions

19. How do you feel about a voluntary wild turkey stamp as a way to raise additional money for wild turkey restoration, research, and habitat improvement?

Favor Oppose No opinion

72.4% - 497 respondents - Favor
14.1% - 97 respondents - Oppose
13.4% - 92 respondents - No opinion or unsure
100.0% - 686 total respondents

20. How would you feel about a regulation prohibiting the shooting of turkeys on the roost?

Favor Oppose No opinion

81.1% - 519 respondents - Favor
11.6% - 74 respondents - Oppose
14.4% - 47 respondents - No opinion or unsure

100.0% - 640 total respondents

21. How would you feel about a regulation prohibiting the training of dogs during the period of March 1 through June 30?

Favor Oppose No opinion

78.1% - 496 respondents - Favor
11.7% - 74 respondents - Oppose
10.2% - 65 respondents - No opinion or unsure
100.0% - 635 total respondents

Appendix 8. 1991 Spring Gobbler Season Survey Results.

1991 SPRING GOBBLER SEASON SURVEY RESULTS

North Carolina State Chapter
National Wild Turkey Federation

1. Are you a turkey hunter?

Yes No

94% - 644 respondents - Yes
6% - 43 respondents - No
100% - 687 total respondents

2. Did you hunt in North Carolina during the 1991 spring turkey season?

Yes No (If no, go to question 14)

70% - 473 respondents - Yes
30% - 204 respondents - No
100% - 677 total respondents

3. How many days did you hunt during the 1991 spring turkey season? .

This question was answered by 463 respondents who hunted a total of 3,939 days for an average of 8.5 days hunted. Obviously, there are some dedicated turkey hunters out there. The fewest number of days hunted was one, while the greatest number of days hunted was 26 (every day of the season).

4. What period of the day did you hunt?

Morning Afternoon Both

41% - 194 respondents - Morning only
1% - 5 respondents - Afternoon only
58% - 274 respondents - Both morning and afternoon
100% - 473 total respondents

It is clear that the majority of the respondents take advantage of the opportunity to hunt in the afternoon, an opportunity that is not allowed in some states.

5. Please list the counties in which you hunted.

.

This question was answered by 465 respondents who hunted in 782 counties for an average of 1.7 counties hunted per respondent. The following is a list of the counties mentioned and the frequency in which they were listed:

139 Caswell	14 Chatham	6 Madison
49 Bertie	14 Jackson	5 Pender
48 Person	14 Orange	4 Cherokee
41 Ashe	14 Transylvania	3 Clay
35 Halifax	14 Wilkes	3 Columbus
30 Richmond	13 Johnston	3 Hyde
26 Northampton	12 Buncombe	3 Mitchell
25 Granville	10 McDowell	2 Craven
25 Macon	10 Surry	2 Hoke
24 Rockingham	10 Swain	2 Yancey
21 Alamance	10 Watauga	1 Avery*
18 Alleghany	8 Burke	1 Bladen
18 Henderson	8 Graham	1 Brunswick
18 Martin	7 Moore	1 Robeson
17 Montgomery	7 Scotland	1 Sampson*
16 Anson	6 Durham	1 Stokes*
15 Onslow	6 Haywood	

The top county, Caswell County, was listed more than twice as often as the next highest county. It is pretty easy to see where the heaviest hunting pressure is occurring. It is also interesting to note that only 2 of the top 11 counties listed were in the mountain region where 51% of this year's harvest occurred. Maybe this is a factor of the distribution of the human population in this state or possibly the distribution of the Federation membership. It may also be indicative of hunting pressure. It makes interesting food for thought. Another interesting facet of the answers to this question is that 3 counties were listed as being hunted that were closed to spring gobbler hunting. These counties are noted by the asterisks. I certainly hope these guys were hunting with a camera only!

6. On what type of land did you turkey hunt during the 1991 spring season?

Game Lands Only Other Lands Only Both

12% - 55 respondents - Game lands only
59% - 278 respondents - Private land only
30% - 140 respondents - Both game lands and private land
101% - 473 total respondents

41.2% of the respondents utilized game lands to some degree.

7. Did you use a decoy at any time during the 1991 spring turkey season?

Yes No

44% - 209 respondents - Yes
56% - 263 respondents - No
100% - 472 total respondents

Decoys are obviously becoming very popular with Federation members.

8. How many hens did you flush from nest during the 1991 spring turkey season? .

This question was answered by 473 respondents who flushed 146 hens from their nests for an average of 0.1 hens flushed per respondent. 68 respondents (14%) flushed at least one hen from the nest, while one respondent flushed 12 hens.

9. How many hens did you call in during the 1991 spring turkey season? .

This question was answered by 473 respondents who called in a total of 1,066 hens for an average of 2.3 hens called in per respondent. 64 respondents (14%) called in at least one hen during the season, while one respondent called in 30 hens.

10. Did you experience any interference with your hunting activities while in the field during the 1991 spring turkey season?

No interference
Interference by dogs
Interference by other hunters
Interference by ATVs
Other interference

37% - 172 respondents - No interference
63% - 297 respondents - Experienced interference
100% - 469 total respondents

Of those respondents reporting interference:

57% - 168 respondents - Interference by dogs
68% - 202 respondents - Interference by other hunters
11% - 33 respondents - Interference by ATV's
14% - 42 respondents - Other types of interference

Figures total more than 100% because many respondents experienced more than one type of interference.

Other types of interference listed included other animals (deer, bobcats, foxes, geese, deer flies, and mosquitoes), other forest users (trail hikers, campers, and horseback riders), workers (agricultural workers, farm equipment, farm vehicles, logging trucks, and chain saws), military personnel, and game wardens. One disgusted soul even reported organized interference to his turkey hunt.

11. Did you observe any illegal hunting or failure to tag during the 1991 spring turkey season?

Yes No

6% - 29 respondents - Yes
94% - 443 respondents - No
100% - 472 total respondents

12. If yes, was the violation reported?

Yes No

52% - 15 respondents - Yes
48% - 14 respondents - No
100% - 29 total respondents

13. Please list the following information on any gobblers you shot at during the 1991 spring turkey season:

	Distance (yards)	Time of Day	Results (Killed, missed, or crippled)
a.			
b.			
c.			
d.			

Respondents shot at a total of 401 gobblers.

79% - 317 gobblers - Killed
19% - 78 gobblers - Missed
2% - 6 gobblers - Crippled
100% - 401 gobblers - Shot at

Respondents listed the time the shots were taken at 400 gobblers.

82% - 327 gobblers - Shot at in the morning

18% - 73 gobblers - Shot at in the afternoon
100% - 400 gobblers - For which time of day was listed

The following chart lists the time of day when the shots were taken:

TIME OF DAY SHOTS WERE TAKEN

TIME	NUMBER OF BIRDS	PERCENTAGE
Daybreak - 6:59	39	11%
7:00 - 7:59	110	30%
8:00 - 8:59	68	18%
9:00 - 9:59	36	10%
10:00 - 10:59	33	9%
11:00 - 11:59	15	4%
12:00 - 12:59	8	2%
1:00 - 1:59	0	-
2:00 - 2:59	6	2%
3:00 - 3:59	10	3%
4:00 - 4:59	18	5%
5:00 - 5:59	6	2%
6:00 - 6:59	17	5%
7:00 - Dark	5	1%

Respondents listed the distance at which shots were taken on all 401 birds. The average distance of all shots taken was 30.7 yards with a minimum distance of 0 yards and a maximum distance of 70 yards. The following chart shows the distances at which all shots were taken:

DISTANCES OF ALL SHOTS TAKEN

DISTANCE (YARDS)	NUMBER OF SHOTS	PERCENTAGE
0 to 10	21	5%
11 to 20	97	24%
21 to 30	121	30%
31 to 40	95	24%
41 to 50	49	12%
51 to 60	15	4%
61 to 70	3	1%

The average distance of shots taken at birds that were killed was 28.4 yards with a minimum distance of 2 yards and a maximum distance of 65 yards. The following chart shows the distances at which shots were taken at birds that were killed:

DISTANCES OF SHOTS TAKEN AT BIRDS THAT WERE KILLED

DISTANCE (YARDS)	NUMBER OF SHOTS	PERCENTAGE
0 to 10	16	5%
11 to 20	85	27%
21 to 30	108	34%
31 to 40	72	23%
41 to 50	26	8%
51 to 60	8	3%
61 to 70	2	1%

The average distance of shots taken at birds that were missed was 35.9 yards with a minimum distance of 0 yards and a maximum distance of 70 yards. The following chart shows the distances at which shots were taken at birds that were missed:

DISTANCES OF SHOTS TAKEN AT BIRDS THAT WERE MISSED

DISTANCE (YARDS)	NUMBER OF SHOTS	PERCENTAGE
0 to 10	4	5%
11 to 20	12	15%
21 to 30	12	15%
31 to 40	22	28%
41 to 50	20	26%
51 to 60	7	9%
61 60 70	1	1%

The average distance of shots taken at birds that were crippled was 35.3 yards with a minimum distance of 5 yards and a maximum distance of 50 yards. The following chart shows the distances at which shots were taken at birds that were crippled:

DISTANCES OF SHOTS TAKEN AT BIRDS THAT WERE CRIPPLED

DISTANCE (YARDS)	NUMBER OF SHOTS	PERCENTAGE
0 to 10	1	17%
11 to 20	0	-
21 to 30	1	17%
31 to 40	1	17%
41 to 50	3	50%
51 to 60	0	-
61 to 70	0	-

The following chart shows the average distances that shots were taken with the varying results:

RESULTS OF SHOTS TAKEN

AVERAGE DISTANCE (YARDS)	NUMBER OF SHOTS	RESULTS
28.4	317	KILLED
35.9	78	MISSED
35.3	6	CRIPPLED
30.7	401 TOTAL SHOTS TAKEN	

It is easy to see that as the average distance increases the chances of missing or crippling a bird also increases.

14. How do you feel about the current spring season dates?

Season opens too early
Season opens too late
Season dates are about right
No opinion or unsure

4% - 27 respondents - Season opens too early
22% - 146 respondents - Season opens too late
59% - 394 respondents - Season dates are about right
14% - 96 respondents - No opinion or unsure
100% - 663 total respondents

Our spring gobbler season opens on the second Saturday in April. Therefore, opening day can vary from as early as April 8 to as late as April 14. It is interesting to note that, two years ago with an April 8 opening and a normal spring, 84% of the respondents felt the season dates were about right, while only 9% felt the season opened too late. Last year, with an April 14 opening and an early spring only 22% of the respondents felt the season dates were about right, while 62% felt the season opened too late. This year, with an April 13 opening, 59% of the respondents felt the season dates were about right, while only 22% felt the season opened too late. To use the second Saturaday of April as the opening, as we currently do, means the season can vary by about a week and, of course, no one can control the weather. To use a standard opening date, such as April 10, would mean opening day would vary as to which day of the week it would open. In only one year in seven would opening day be on a Saturday.

15. In areas containing high turkey populations in North Carolina, how do you currently feel about a fall either-sex turkey season?

Favor Oppose No opinion or unsure

27% - 176 respondents - Favor
60% - 398 respondents - Oppose
13% - 86 respondents - No opinion or unsure
100% - 660 total respondents

This question generated more written comments than any other. Most of the respondents providing written comments were not opposed to the concept of a fall either-sex turkey season, but felt it should be delayed until restoration is complete.

16. What type of weapon do you use when you turkey hunt?

Shotgun
Bow
Muzzle-loading shotgun

99% - 650 respondents - Shotgun
1% - 4 respondents - Bow
0% - 0 respondents - Muzzle-loading shotgun
100% - 654 total respondents

17. If you use a shotgun, what shot size do you use?

Buckshot #4 shot #7 1/2 shot
BB's #5 shot other .
#2 shot #6 shot

1% - 5 respondents - Buckshot
3% - 18 respondents - BB's
10% - 63 respondents - #2 shot
51% - 326 respondents - #4 shot
7% - 44 respondents - #5 shot
25% - 158 respondents - #6 shot
0% - 1 respondents - #7 1/2 shot
4% - 25 respondents - Other loads
101% - 640 total respondents

It is easy to see that number 4 shot is by far the most popular load for Federation members, with number 6 shot a distant second.

18. How do you feel about a mandatory shot size restriction for turkey hunting?

Favor no restrictions
Favor BB's and smaller
Favor #2 shot and smaller
Favor #4 shot and smaller
Favor #6 shot and smaller
Favor other .

32% - 209 respondents - Favor no restrictions
68% - 442 respondents - Favor some type of restrictions
100% - 651 total respondents

The following chart shows the preference of those respondents favoring some type of shot size restriction:

8% - 34 respondents - Favor BB's and smaller
30% - 132 respondents - Favor #2 shot and smaller
46% - 205 respondents - Favor #4 shot and smaller
8% - 37 respondents - Favor #6 shot and smaller
8% - 34 respondents - Favor other type restrictions
100% - 442 total respondents favoring restrictions

19. How do you feel about a voluntary wild turkey stamp as a way to raise additional money for wild turkey restoration, research, and habitat improvement?

Favor Oppose No opinion

74% - 488 respondents - Favor
11% - 74 respondents - Oppose
15% - 99 respondents - No opinion or unsure
100% - 661 total respondents

20. How would you feel about a regulation prohibiting the shooting of turkeys on the roost?

Favor Oppose No opinion

79% - 526 respondents - Favor
11% - 75 respondents - Oppose
10% - 63 respondents - No opinion or unsure
100% - 664 total respondents

21. How would you feel about a regulation prohibiting the training of dogs during the period of March 1 through June 30?

Favor Oppose No opinion

78% - 519 respondents - Favor
12% - 80 respondents - Oppose
10% - 66 respondents - No opinion or unsure
100% - 665 total respondents

22. How would you feel about a regulation prohibiting the use of bait to attract any wild game species for hunting purposes?

Favor Oppose No opinion

55% - 366 respondents - Favor
34% - 223 respondents - Oppose
11% - 73 respondents - No opinion or unsure
100% - 662 total respondents

Appendix 9. 1992 Spring Gobbler Season Survey Results.

1992 SPRING GOBBLER SEASON SURVEY RESULTS

North Carolina State Chapter
National Wild Turkey Federation

1. Are you a turkey hunter?

Yes No

94% - 721 respondents - Yes
6% - 45 respondents - No
100% - 766 total respondents

2. Did you hunt in North Carolina during the 1992 spring turkey season?

Yes No (If no, go to question 14)

70% - 535 respondents - Yes
30% - 228 respondents - No
100% - 763 total respondents

3. How many days did you hunt during the 1992 spring turkey season? .

This question was answered by 526 respondents who hunted a total of 4,601 days for an average of 8.7 days hunted. Obviously, there are some dedicated turkey hunters out there. The fewest number of days hunted was one, while the greatest number of days hunted was 28.

4. What period of the day did you hunt?

Morning Afternoon Both

36% - 194 respondents - Morning only
1% - 5 respondents - Afternoon only
63% - 336 respondents - Both morning and afternoon
100% - 535 total respondents

It is clear that the majority of the respondents take advantage of the opportunity to hunt in the afternoon, an opportunity that is not allowed in some states.

5. Please list the counties in which you hunted.

.

This question was answered by 524 respondents who listed 849 counties for an average of 1.7 counties hunted per respondent. The following is a list of the counties mentioned and the frequency in which they were listed:

123 Caswell	15 Montgomery	5 Durham
57 Ashe	14 Onslow	5 Mitchell
53 Bertie	14 Watauga	4 Polk
36 Alleghany	12 Clay	3 Moore
35 Halifax	12 Swain	2 Bladen
35 Macon	11 Graham	2 Brunswick
33 Person	11 Jackson	2 Carteret
30 Wilkes	11 McDowell	2 Chowan
26 Northampton	11 Pender	2 Columbus
24 Rockingham	10 Buncombe	2 Hoke
22 Orange	10 Craven	1 Avery*
21 Granville	8 Burke	1 Caldwell
20 Alamance	8 Haywood	1 Duplin*
20 Richmond	8 Surry	1 Franklin*
20 Transylvania	7 Anson	1 Hertford*
19 Martin	6 Hyde	1 Pitt*
18 Cherokee	6 Johnston	1 Randolph*
17 Henderson	6 Madison	1 Rutherford*
15 Chatham	6 Scotland	1 Union*

The top county, Caswell County, was listed more than twice as often as the next highest county. It is pretty easy to see where the heaviest hunting pressure is occurring. Another interesting facet of the answers to this question is that 8 counties were listed as being hunted that were closed to spring gobbler hunting. These counties are noted by the asterisks. Either these guys are hunting with cameras or they need to read their regulations a little closer!!

6. On what type of land did you turkey hunt during the 1992 spring season?

Game Lands Only Other Lands Only Both

11% - 59 respondents - Game lands only
58% - 310 respondents - Private land only
31% - 165 respondents - Both game lands and private land
101% - 534 total respondents

42% of the respondents utilized game lands to some degree.

7. Did you use a decoy at any time during the 1992 spring turkey season?

Yes No

55% - 292 respondents - Yes
45% - 243 respondents - No
100% - 535 total respondents

Decoys are obviously becoming very popular with Federation members. Incidentally, only 44% of the respondents to last year's survey said they used decoys. Are we seeing a trend here?

8. How many hens did you flush from the nest during the 1992 spring turkey season?
.

This question was answered by 535 respondents who flushed 199 hens from their nests for an average of 0.2 hens flushed per respondent. 99 respondents (19%) flushed at least one hen from the nest, while one respondent flushed 10 hens.

9. How many hens did you call in during the 1992 spring turkey season? .

This question was answered by 535 respondents who called in a total of 1,260 hens for an average of 2.4 hens called in per respondent. One respondent stated he called in 50 hens!

10. Did you experience any interference with your hunting activities while in the field during the 1992 spring turkey season?

No interference
Interference by dogs
Interference by other hunters
Interference by ATVs
Other interference

35% - 189 respondents - No interference
65% - 346 respondents - Experienced interference
100% - 535 total respondents

Of those respondents reporting interference:

49% - 168 respondents - Interference by dogs
75% - 261 respondents - Interference by other hunters
13% - 44 respondents - Interference by ATV's
11% - 37 respondents - Other types of interference

Figures total more than 100% because many respondents experienced more than one type of interference.

Other types of interference listed included weather, other animals (deer, cows, snakes, bobcats, foxes, geese, deer flies, and mosquitoes), other forest users (trail hikers, bikers, campers, fishermen, and horseback riders), workers (agricultural workers, farm equipment, farm vehicles, logging trucks, and chain saws), military personnel, trespassers, poachers, and game wardens.

11. Did you observe any illegal hunting or failure to tag during the 1992 spring turkey season?

Yes No

6% - 31 respondents - Yes
94% - 502 respondents - No
100% - 533 total respondents

12. If yes, was the violation reported?

Yes No

48% - 15 respondents - Yes
45% - 14 respondents - No
93% - 29 total respondents

Two individuals from question 11 said they observed illegal activities, but did not respond to question 12.

13. Please list the following information on any gobblers you shot at during the 1992 spring turkey season:

	Distance (yards)	Time of Day	Results (Killed, missed, or crippled)
a.			
b.			
c.			
d.			

Respondents shot at a total of 434 gobblers.

80% - 348 gobblers - Killed
17% - 72 gobblers - Missed
3% - 14 gobblers - Crippled
100% - 434 gobblers - Shot at

Respondents listed the time the shots were taken at 427 gobblers.

87% - 370 gobblers - Shot at in the morning
13% - 57 gobblers - Shot at in the afternoon
100% - 427 gobblers - For which time of day was listed

The following chart lists the time of day when the shots were taken:

TIME OF DAY SHOTS WERE TAKEN

TIME	NUMBER OF BIRDS	PERCENTAGE
Daybreak - 6:59	43	11%
7:00 - 7:59	122	31%
8:00 - 8:59	61	16%
9:00 - 9:59	51	13%
10:00 - 10:59	48	12%
11:00 - 11:59	18	5%
12:00 - 12:59	3	1%
1:00 - 1:59	0	0%
2:00 - 2:59	6	2%
3:00 - 3:59	8	2%
4:00 - 4:59	6	2%
5:00 - 5:59	7	2%
6:00 - 6:59	17	4%
7:00 - Dark	2	1%

Respondents listed the distance at which shots were taken on all 434 birds. The average distance of all shots taken was 30.4 yards with a minimum distance of 0 yards and a maximum distance of 100 yards. The following chart shows the distances at which all shots were taken:

DISTANCES OF ALL SHOTS TAKEN

DISTANCE (YARDS)	NUMBER OF SHOTS	PERCENTAGE
0 to 10	14	3%
11 to 20	97	22%
21 to 30	144	33%
31 to 40	141	32%
41 to 50	29	7%
51 to 60	4	1%
over 60	5	1%

The average distance of shots taken at birds that were killed was 27.8 yards with a minimum distance of 4 yards and a maximum distance of 52 yards. The following chart shows the distances at which shots were taken at birds that were killed:

DISTANCES OF SHOTS TAKEN AT BIRDS THAT WERE KILLED

DISTANCE (YARDS)	NUMBER OF SHOTS	PERCENTAGE
0 to 10	12	3%
11 to 20	91	26%
21 to 30	126	36%
31 to 40	101	29%
41 to 50	17	5%
51 to 60	1	<1%
over 60	0	0%

The average distance of shots taken at birds that were missed was 37.9 yards with a minimum distance of 0 yards and a maximum distance of 100 yards. The following chart shows the distances at which shots were taken at birds that were missed:

DISTANCES OF SHOTS TAKEN AT BIRDS THAT WERE MISSED

DISTANCE (YARDS)	NUMBER OF SHOTS	PERCENTAGE
0 to 10	2	3%
11 to 20	4	6%
21 to 30	17	24%
31 to 40	30	42%
41 to 50	11	15%
51 to 60	3	4%
over 60	5	7%

The average distance of shots taken at birds that were crippled was 35.2 yards with a minimum distance of 15 yards and a maximum distance of 50 yards. The following chart shows the distances at which shots were taken at birds that were crippled:

DISTANCES OF SHOTS TAKEN AT BIRDS THAT WERE CRIPPLED

DISTANCE (YARDS)	NUMBER OF SHOTS	PERCENTAGE
0 to 10	0	0%
11 to 20	2	14%
21 to 30	1	7%
31 to 40	10	71%
41 to 50	1	7%
51 to 60	0	0%
over 60	0	0%

The following chart shows the average distances that shots were taken with the varying results:

RESULTS OF SHOTS TAKEN

AVERAGE DISTANCE (YARDS)	NUMBER OF SHOTS	RESULTS
27.8	348	KILLED
37.9	72	MISSED
35.2	14	CRIPPLED
30.4	434 TOTAL SHOTS TAKEN	

It is easy to see that as the average distance increases the chances of missing or crippling a birds also increases. The results from these spring gobbler surveys from the last four years shows that the average distance for all birds that were missed or crippled was 36.1 yards while the average distance for all birds that were killed was 27.5 yards. With that in mind, it makes good sense to try to call the bird within that critical 30-yard range.

14. How do you feel about the current spring season dates?

Season opens too early
Season opens too late
Season dates are about right
No opinion or unsure

3% - 24 respondents - Season opens too early
15% - 115 respondents - Season opens too late
67% - 501 respondents - Season dates are about right
15% - 111 respondents - No opinion or unsure
100% - 751 total respondents

Our spring gobbler season opens on the second Saturday in April. Therefore, opening day can vary from as early as April 8 to as late as April 14. This year's opening was on April 11 and the majority of the respondents felt the season dates were about right.

15. In areas containing high turkey populations in North Carolina, how do you currently feel about a fall either-sex turkey season?

Favor Oppose No opinion or unsure

24% - 179 respondents - Favor
60% - 451 respondents - Oppose
16% - 117 respondents - No opinion or unsure
100% - 747 total respondents

This question generated a considerable amount of written comments. Most of the respondents providing written comments were not opposed to the concept of a fall either-sex turkey season, but felt it should be delayed until restoration is complete.

16. What type of weapon do you use when you turkey hunt?

Shotgun
Bow
Muzzle-loading shotgun

99% - 730 respondents - Shotgun
1% - 8 respondents - Bow
0% - 0 respondents - Muzzle-loading shotgun
100% - 738 total respondents

17. If you use a shotgun, what shot size do you use?

Buckshot #4 shot #7 1/2 shot
BB's #5 shot other .

#2 shot #6 shot

1% - 6 respondents - Buckshot
4% - 27 respondents - BB's
11% - 81 respondents - #2 shot
48% - 342 respondents - #4 shot
8% - 58 respondents - #5 shot
25% - 179 respondents - #6 shot
0% - 2 respondents - #7 1/2 shot
3% - 24 respondents - Other loads
100% - 719 total respondents

It is easy to see that number 4 shot is by far the most popular load for Federation members, with number 6 shot a distant second. Collectively, #4, #5, and #6 shot sizes were used by 81% of the respondents.

18. How do you feel about a mandatory shot size restriction for turkey hunting?

Favor no restrictions
Favor BB's and smaller
Favor #2 shot and smaller
Favor #4 shot and smaller
Favor #6 shot and smaller
Favor other .

34% - 250 respondents - Favor no restrictions
66% - 480 respondents - Favor some type of restrictions
100% - 730 total respondents

The following chart shows the preference of those respondents favoring some type of shot size restriction:

8% - 39 respondents - Favor BB's and smaller
24% - 116 respondents - Favor #2 shot and smaller
51% - 244 respondents - Favor #4 shot and smaller
9% - 42 respondents - Favor #6 shot and smaller
8% - 39 respondents - Favor other type restrictions
100% - 480 total respondents favoring restrictions

19. How do you feel about a voluntary wild turkey stamp as a way to raise additional money for wild turkey restoration, research, and habitat improvement?

Favor Oppose No opinion

71% - 529 respondents - Favor
15% - 114 respondents - Oppose
14% - 100 respondents - No opinion or unsure
100% - 743 total respondents

20. How would you feel about a regulation prohibiting the shooting of turkeys on the roost?

Favor Oppose No opinion

83% - 616 respondents - Favor
9% - 68 respondents - Oppose
8% - 63 respondents - No opinion or unsure
100% - 747 total respondents

21. How would you feel about a regulation prohibiting the training of dogs during the period of March 1 through June 30?

Favor Oppose No opinion

76% - 568 respondents - Favor
12% - 92 respondents - Oppose
12% - 87 respondents - No opinion or unsure
100% - 747 total respondents

22. How would you feel about a regulation prohibiting the use of bait to attract any wild game species for hunting purposes?

Favor Oppose No opinion

53% - 393 respondents - Favor
36% - 270 respondents - Oppose
11% - 78 respondents - No opinion or unsure
100% - 741 total respondents

Appendix 10. 2002 Winter Wild Turkey Season Survey Results.

Final Report on Statewide Wild Turkey Opinion Survey, Federal Aid in Wildlife Restoration Project W-57, Job F3-2

Purpose

With the conclusion of the major reintroduction phase of the wild turkey restoration program in 2000, we are now looking at regulatory options to address established turkey populations. The agency has had requests for opportunities outside the regular spring season and requests for a more liberal bag. The survey was designed to address these issues. The goals of the survey were to:

I. To determine the acceptance of an alternate season (among a limited set of options)

II. To determine the acceptance of an additional bird in the bag

III. To learn the proportion of big game hunters that hunt turkeys

IV. To learn the opinion of turkey densities in their areas

V. To predict the extent of participation in the alternate season

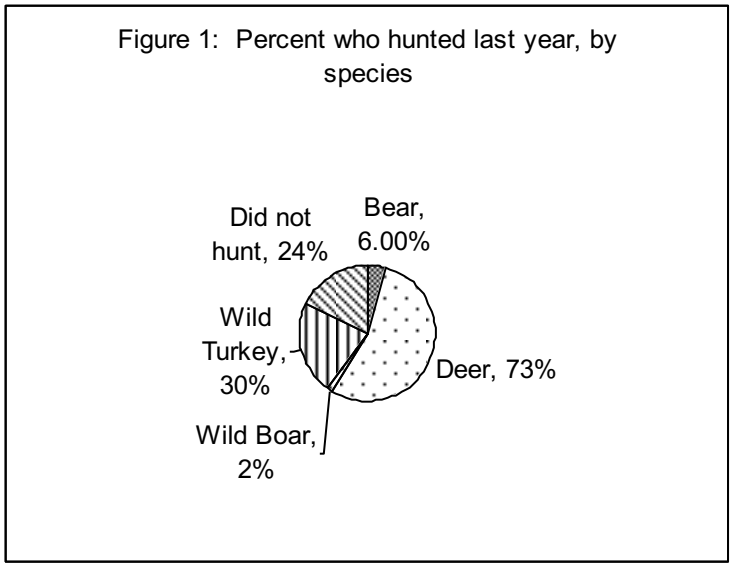
Methods

A survey was sent to 1,753 individuals. This was a 0.5% sample of 350,073 adult hunting license holders who had held a license since 1997 and who held a license that allowed them to hunt big game. Based on the population size, a response by approximately 1,050 individuals is needed for 95% level of confidence at plus or minus 3% error rate (Rea and Parker 1997). The first mailing was sent out on June 5, 2002. A reminder post card was sent June 13th and a second survey was sent to all non-respondents on June 27, 2002. Responses were accepted through August 2, 2002. A copy of the questionnaire including a map showing the counties surveyed is attached.

Results

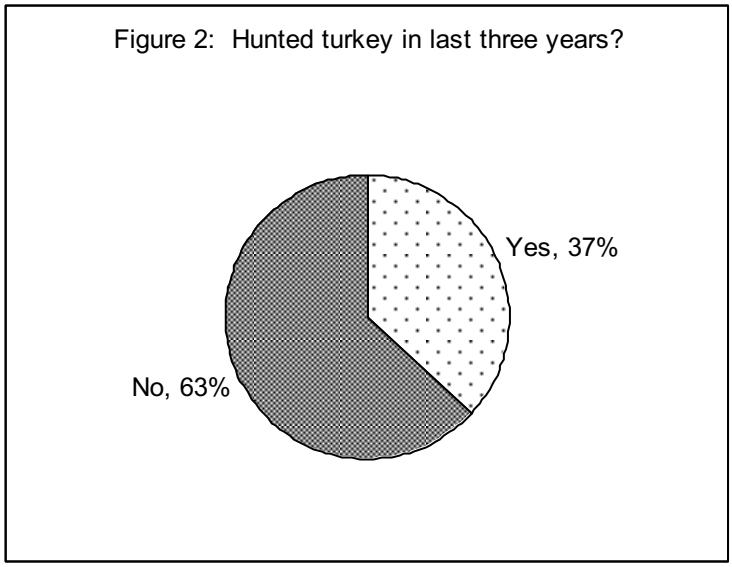
Response rates (40% based on number of deliverable surveys) were somewhat less than predicted with only 636 individuals responding to the survey. This lowered the confidence interval on most questions to plus or minus 5% or better. Unless specifically stated otherwise in the discussion for each question the confidence interval is <+- 5% at the 95% level of confidence. No attempt was made to correct for non-response bias.

Question 1: Which big game species did you hunt in NC last season?



Six hundred fourteen responded to this question. It should be remembered that this survey was mailed to all who had held a license since 1997, therefore many did not hold a valid license for the season in question.

Question 2: Have you hunted wild turkeys in NC in the last three years?



Six hundred eight responded to this question.

Question 3: In which NC County have you turkey hunted most frequently?

Figure 3: Which district did you turkey hunt most frequently?

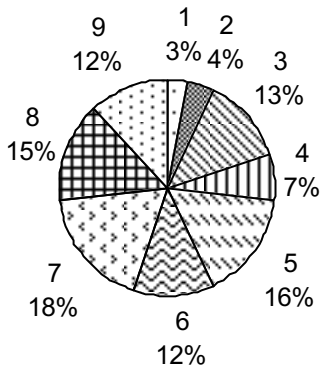
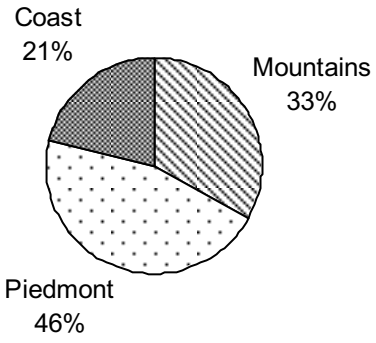
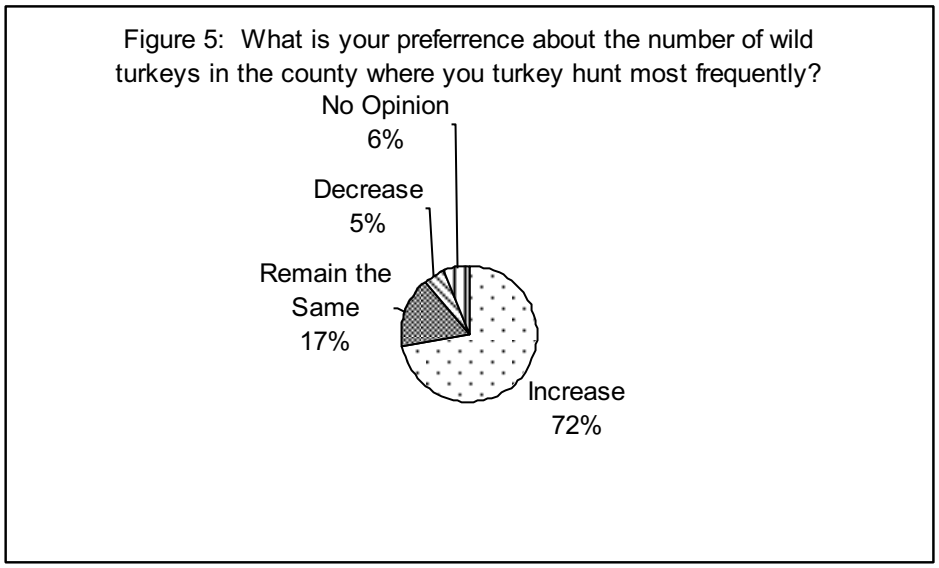


Figure 4: Which region did you turkey hunt most frequently?



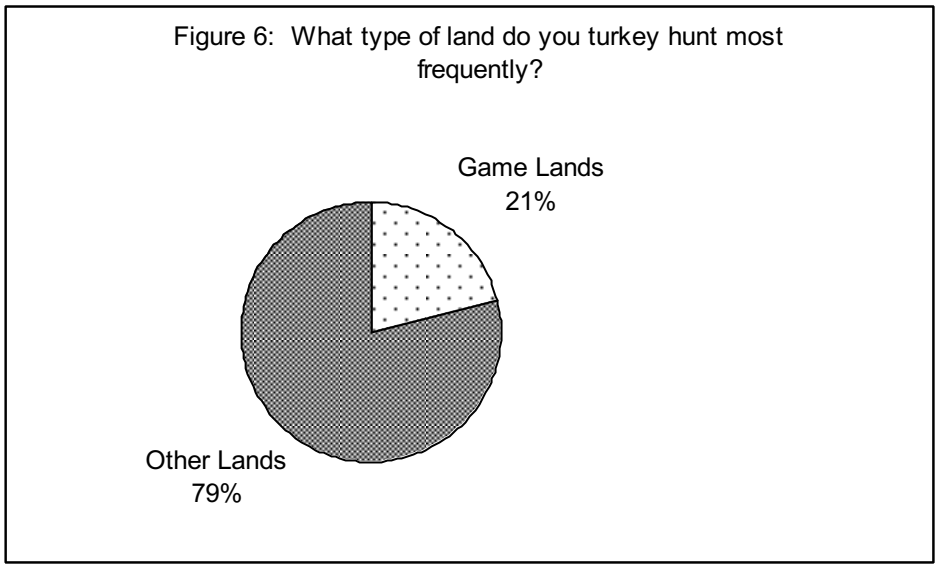
Two hundred twenty-four responded to this question providing a confidence interval of <+- 10% at the 95% level of confidence.

Question 4: What is your preference about the number of wild turkeys in the county where you hunted most frequently?



Two hundred eighteen responded to this question providing a confidence interval of <+- 10% at the 95% level of confidence.

Question 5: On what type of lands have you turkey hunted most frequently?



Two hundred twenty-one responded to this question providing a confidence interval of <+- 10% at the 95% level of confidence.

Question 6: If you hunt deer, which NC County have you deer hunted most frequently?

Figure 7: If you hunt deer, in which district do you hunt deer most frequently?

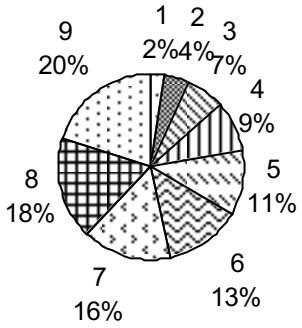
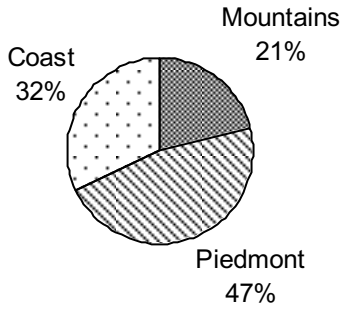


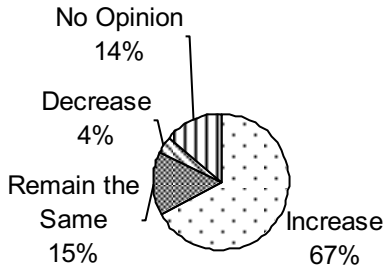
Figure 8: If you hunt deer, which district do you deer hunt most frequently?



Five hundred thirteen responded to this question. Results are shown totaled by District and Region

Question 7: In this county where you deer hunted most frequently, what is your preference about the number of wild turkeys?

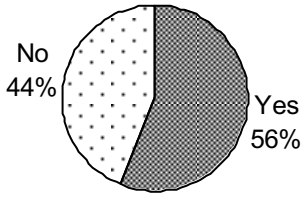
Figure 9: What is your preferrence about the number of wild turkeys in the county where you deer hunt most frequently?



Five hundred four responded to this question.

Question 8: Do you have an opinion about the turkey-hunting season and bag limit options?

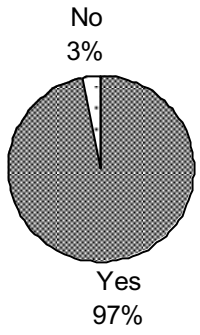
Figure 10: Do you have an opinion about turkey hunting season and bag limit options?



This question referred to a description of the options as follows: *"Currently North Carolina has a 4 -week "Spring" turkey hunting season with a 2 bearded-bird bag limit. Some sportsmen have expressed an interest in expanding the hunting season beyond the current spring period. Because turkey populations in some areas of North Carolina have continued to increase and could support additional hunting pressure, there is a possibility that the Commission will make more turkey hunting opportunities available in the future. These additional opportunities could be provided through increases in season length, increases in the bag limit, a Winter either-sex turkey season, or a combination of these options."* Six hundred nineteen responded to this question. Responses from those that indicated that they had no opinion were screen out from the remainder of the survey.

Question 9: If these additional turkey hunting opportunities were available, what would be your future plans for hunting turkeys in NC?

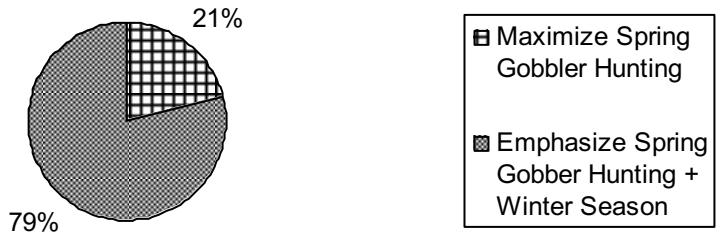
Figure 11: Do you plan to hunt turkeys in the future in North Carolina?



Three hundred forty-four responded to this question providing a confidence interval of <+- 10% at the 95% level of confidence. Responses from those that indicated that they had no plans to hunt were screen out from the remainder of the survey.

Question 10: If the turkey population in your area of the state reaches a level sufficient to support additional hunting opportunity, which of the following management strategies would you prefer?

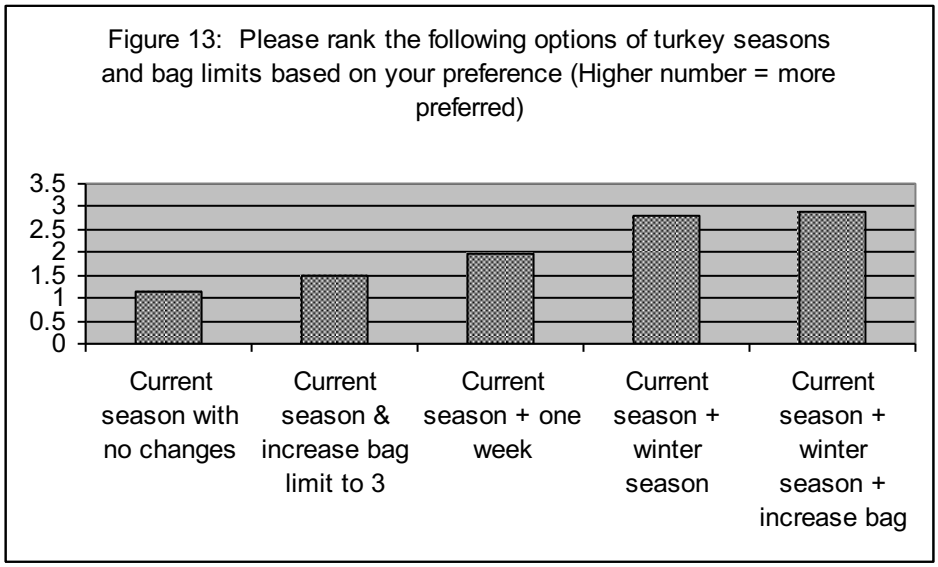
Figure 12: If the turkey population in your area of the state reaches a level sufficient to support addittional hunting opportunity, which of the following management strategies would you prefer?



Three hundred twenty-eight responded to this question providing a confidence interval of <+- 10% at the 95% level of confidence. This question was based on the following information provided to the respondent: *"If implemented, a Winter either-sex turkey season most likely would be one week in length and occur in mid-January to avoid conflicts with other hunting seasons and baiting laws. During this Winter either-sex turkey hunting season, private lands in some counties would be open for hunting, while*

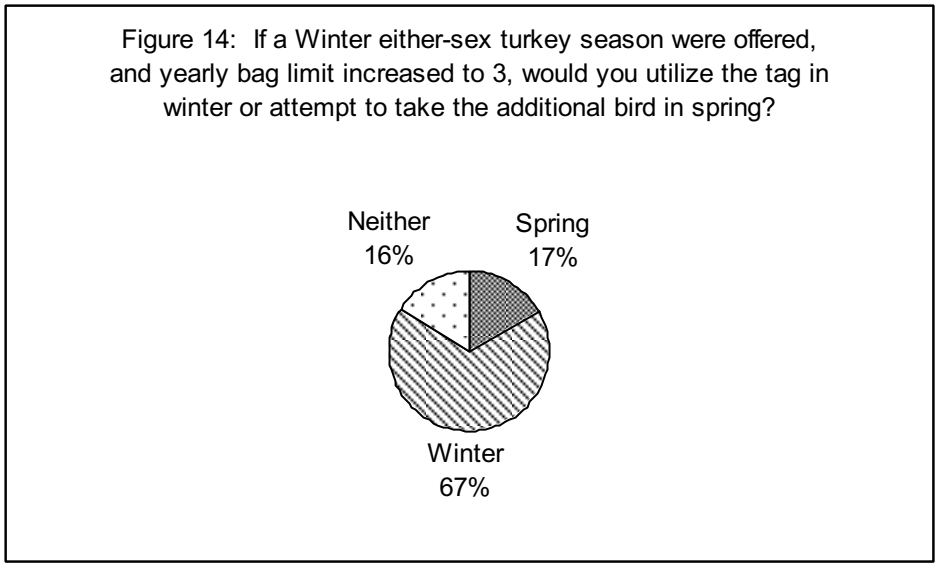
hunting opportunities on some Game Lands within these counties would be determined by a special permit lottery."

Question 11: Please rank the following options for turkey seasons and bag limits based on your preference.



Two hundred forty-nine responded to this question providing a confidence interval of <+- 10% at the 95% level of confidence.

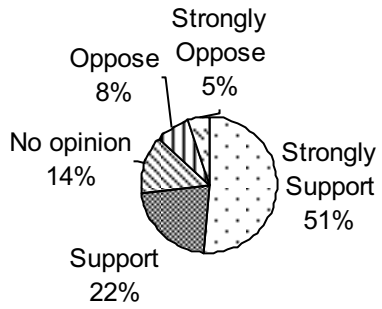
Question 12: If a winter either-sex turkey season were offered, and the yearly bag limit increased to 3 birds (with the option of taking one of those birds in the Winter), would you utilized that Winter hunting opportunity to take the additional bird or would you attempt to take the additional bird in the spring?



Three hundred thirty-three responded to this question providing a confidence interval of <+- 10% at the 95% level of confidence.

Question 13: Describe your opinion of a Youth Only Turkey Hunt on the Saturday prior to opening day of the spring turkey season?

Figure 15: Would you support a Youth Only Turkey Hunt on the Saturday prior to opening day of spring season



Three hundred thirty-four responded to this question providing a confidence interval of <+- 10% at the 95% level of confidence.

Discussion

Proportion of Big Game Hunters who hunt Turkey

Participation in turkey seasons within the past several years has increased with increasing turkey populations and hunting opportunities. The extent of this increase was unknown since North Carolina's license structure does not issue species specific licenses for wild turkey. Figure 1 provides estimates of the proportion surveyed who turkey hunted last year. This figure must be interpreted with caution, however since the sampling universe included all persons who held a license since 1997. Figure 2 provides the more useful statistic indicating that 63% of big game hunters have hunted turkey within the last 3 years. Figures 3, 4 and 6 indicate where they were hunting.

Alternate Seasons

For several reasons including conflicts with other hunting seasons and baiting issues, a fall season was ruled out While there was a tradition of fall turkey hunting in NC, the concept of a winter turkey season was a new one. Very little information was available prior to this survey to determine how well this alternative to a fall season would be accepted. Most biologists involved in the design of the survey had not anticipated the wide acceptance of the winter season concept (Figure 12). Given several alternative season options including added a week to the existing season, the winter season was accepted over a spring season extension even without an increase in bag (Figure 13). It was also hypothesized that given an increase in bag not exclusive to the winter season, that most would take the extra bird during the spring. This was not the case as shown in Figure 14.

On the question of a youth hunting opportunity prior to the opening of regular season, there was overwhelming support (Figure14). Seventy-two percent supported the proposal while only 13 percent opposed.

Opinions about densities

Prior to the survey there had been some comments from deer hunters at public meetings that there were now too many turkeys in this region. This complaint resulted primarily with large flocks of turkeys consuming legally placed deer bait. The extent of this perception was unknown. When asked, 72% of

those who hunted turkeys wanted an increase in turkey populations where they turkey hunted most frequently. In contrast, of those who deer hunted, 67% wanted an increase in turkey populations where they deer hunted most frequently. The difference was not significant and, as would be expected, the largest difference within the responses was in the larger number of hunters that had "No opinion" concerning turkey populations in the area that they deer hunted. It appears that the complaint of "too many turkeys" remains low even among deer hunters.

Participation

Participation in turkey hunting is fairly evenly distributed in all the inland regions (Figure 3). The popularity of turkey hunting in coastal regions continues to lag behind the remainder of the state (Figure 4).

Acceptance of the results of the survey

As a result of the support shown in this survey as well as support at public hearings, the Commission established a winter either-sex turkey season with no increase in bag for the 2004 season. Unfortunately, there was a decision not to trust the survey concerning the popularity of the youth hunting day prior to the regular season. Instead a youth hunting day was approved for the week after the season. However, as a result of public comments and organized opposition, a youth hunting day prior to the season has been proposed for the 2005 season.

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