# Movements and Arrival Dates of Piedmont, North Carolina Winter Banded Canada geese, 1984-1996.


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Like other Atlantic Flyway states, North Carolina is faced with the dilemma of managing decreasing populations of migratory Canada geese (*Branta canadensis*), while resident goose populations increase throughout the state. Both the Southern James Bay Population (SJBP) and Atlantic Population (AP) winter in portions of North Carolina and both have seen tremendous population declines in the state since the 1950's. Hunting seasons were first closed west of Interstate 95 in 1987 to protect SJBP geese and closed in 1992 in the remainder of the state to protect AP geese. Hunting for resident geese is permitted in September throughout most of the state.

As part of 2 cooperative Atlantic Flyway studies researching various goose population parameters, the North Carolina Wildlife Resources Commission trapped and neck-collared Canada geese in winter from 1984 through 1994. Subsequent observations of neck-collars were gathered by personnel in North Carolina as well as other Atlantic and Mississippi flyway states. Goose flocks thought to be migratory were targeted and bandings occurred primarily in the Piedmont and Northern coastal plain regions of the state. While previous analysis of neck collar observations has focused on identifying regional and flyway survival rates and movements, little work has been done to identify population characteristics of geese banded specifically in North Carolina. Our objectives were to determine: (1) inter-state movements of winter banded geese, (2) possible population affiliation (resident vs. migrant, SJBP vs. AP), and (3) arrival dates of known or potential migratory Canada geese thought to be of SJBP origin.

Methods:

We banded and neck collared 2024 geese during the winter from 1984 through 1994 in several locations in Piedmont and Coastal plain counties in North Carolina (Figure 1, Appendix). Emphasis was placed on banding migratory Canada geese from the SJBP. With the exception of possible mixing of AP Canada geese in several coastal plain counties, AP geese are not thought to winter in this area. (Figure 2). Although, numerous resident Canada geese are located in this region, personnel focused efforts on flocks with the most likelihood of being migratory.

After being trapped, geese were aged, sexed, and fitted with a US Fish and Wildlife Service legband. From 1984 through 1990 a yellow, rigid, cylinder type collar, stamped with a black unique 4 digit alpha-numeric code was also added (Samuel et. al. 1990). From winter 1991 to 1994, white, cone shaped collars stamped with a black unique alpha-numeric-symbol code were used (Castelli and Trost 1996). From 1984 to 1996 personnel were assigned in North Carolina and other Atlantic Flyway states to re-observe geese and to record observation locations and collar codes. An observer in North Carolina also made observations during summer months. During the study, observations were also made of orange/white neck collars. Birds banded with these type collars are considered known SJBP geese. These geese were being banded on Akimiski Island, Northwest Territories and the James Bay region in Ontario as part of a separate population study (Byers 1996). Bandings first occurred in this area in 1979 and have continued each year since 1984 (J. Peterson, U.S. Fish & Wildlife Service, pers. commun.). Personnel in the Mississippi flyway also made observations of Canada geese as part of separate Canada goose studies. No observers in the Mississippi flyway routinely made observations of geese during summer months.

In North Carolina, 1 observer was available to cover an approximately 40 county region. In the beginning of the study it took about 3 weeks for the observer to cover all known goose locations in the region; however, with growing resident flocks and the addition of new locations, the time needed to visit all sites once, increased to about 5-7 weeks. All banding and observation records were sent to researchers heading flyway projects for compilation into master banding and observation files for the flyway.

To determine population characteristics, we queried several databases including:

1. Observations within the Atlantic Flyway of North Carolina winter banded geese from 1984 to 1996. Observations outside of North Carolina of geese banded with yellow/black collars from 1984 to 1990 were not available after 1990.
2. Observations within the Mississippi Flyway of North Carolina winter banded geese. Observations were available from 1984 to 1996.
3. Observation of geese neck collared outside of North Carolina and observed in North Carolina from 1984 to 1996.
4. Observations of orange/white collars in North Carolina from 1984 to 1996.
5. Legband recovery data as of April 1997.

We assigned geese to a population affiliation by reviewing observation and harvest data. Geese were considered residents if they were observed or harvested anywhere south of 47 degrees latitude from 16 May - 15 September (Atl. Flyway Canada Goose Committee, Requested Data for Evaluation of Special Canada Goose Seasons, 1996). Geese located south of 47 degrees longitude and during this time period are highly likely to be resident geese (Hindman and Ferrigno 1990). Geese were considered potential migrants if they had been observed in any state other than North Carolina and were never observed within the 16 May - 15 September time period. Geese were considered to have an unknown population affiliation if they were never seen outside of North Carolina and were not seen in the 16 May - 15 September time period. We also plotted observation and legband recovery locations of resident and potential migrant geese to help determine if geese were from the SJBP or AP and to determine if resident geese were seen in similar areas. Hanson and Smith (1950) and Bednarik and Lümsden (1977) describe the breeding and wintering distribution of SJBP geese, while Bellrose (1980) describes the distribution of Atlantic and North Atlantic Population geese (Figure 3). We combine together the distribution of the Atlantic and North Atlantic Population for this report because the two populations are grouped as one for management purposes in the United States. Because we felt that there was potential overlap in the wintering locations of SJBP and AP geese in the Northampton and Hertford county area, many of the results are presented separately for these banding sites.

To determine arrival dates of migrant geese, we looked to see what dates potential migrant birds banded in North Carolina were re-observed in North Carolina and arrival dates of potential migrant geese banded outside of North Carolina. We looked at all observations of geese west of 77th degree line of longitude to gather observation data of out-of-state banded geese (Figure 4). We chose this somewhat arbitrary line because nearly all observations of known SJBP geese are found west of this line and all known concentrations of AP geese are found east of this line in North Carolina. We also reviewed dates of orange/white collar observations. Observations of these collars indicates the presence of a

definite migrant bird and may be the best indicator of arrival dates of migrant geese to the Piedmont region.

## Results

Population affiliation & Inter-state movements

Of 2024 collared geese, 1188 (58.7%) were subsequently re-observed or harvested after banding and are included for analysis (Table 1). A total of 477 (40.2%) of the collared geese were considered residents. In many instances, resident geese were observed in North Carolina during the summer and were never observed anywhere else; however, in several instances, geese were observed in another state during the summer and were never re-observed in North Carolina. Geese considered as potential migrants accounted for 25.8% of birds observed while 404 (34.0%) were not assigned a population affiliation (Table 1). If bandings from Northampton and Hertford counties are excluded, numbers of banded geese considered potential migrants decreases to 19.9%. See Appendix for a breakdown of population affiliation by banding site.

Observations indicated that 416 geese banded in North Carolina were encountered in several other states and provinces. Most resident geese seen outside of North Carolina were observed in New Jersey, New York, Ontario, and Pennsylvania (Table 2). Potential migrant geese were observed primarily in Maryland, New York, Pennsylvania, and Ohio. Plots of observed and harvested geese for many banding sites showed that potential migrant geese may be from both the SJBP and AP (Fig's 5-14). However, there appeared that many geese banded in Northampton and Hertford counties were affiliated with the AP. Two sites in these 2 counties (Ahoskie and Pendleton, Fig. 12 and 14) showed an almost exclusive affiliation with the AP while 1 site (Woodard's, Fig. 11) appeared to have a mix of both SJBP and AP geese. Potential migrant geese banded at remaining sites may have been from either population; however, there was a tendency for these geese to observed and harvested in traditional SJBP wintering areas. Observation and recovery data of geese banded at several areas (Furr Farm, Seven Lakes, Beville, Cress Dairy, and 20/20 Sand & Gravel) indicated that both resident and potential migrant geese were seen in very similar areas (Fig's. 5,7,8,9,13). Distribution maps are not presented for remaining areas because very few potential migrants were banded at these sites and most resident geese from these sites were observed only in North Carolina.

Table 1. Summary of banding totals and population affiliation of geese banded in NC, 1983-1993.

| | All Sites | Northampton & Hertford Co. only | Remaining sites |
|---|---|---|---|
| Total Banded | 2024 | 298 | 1726 |
| Total Observed or Harvested | 1188 (58.7%) | 211 (70.8%) | 977 (56.6%) |
| Resident | 477 (40.2%) | 46 (21.8%) | 431 (44.1%) |
| Potential Migrant | 307 (25.8%) | 113 (53.6%) | 194 (19.9%) |
| Unknown | 404 (34.0%) | 52 (24.6%) | 352 (36.0%) |

Table 2. Numbers of geese observed and/or harvested in states and provinces other than North Carolina, winter banded in Piedmont, North Carolina, 1984-1994. Note: In several instances a single goose may have been observed in more than 1 state or province.

| | Population Affiliation | | | |
|---|---|---|---|---|
| Place Observed | Resident | | Migrant | |
| | Northampton & Hertford | Remaining Sites | Northampton & Hertford | Remaining Sites |
| Atlantic Flyway | | | | |
| | | | | |
| Connecticut | | 2 | 2 | 4 |
| Delaware | | 1 | 7 | 1 |
| Maryland | | 7 | 57 | 22 |
| New Hampshire | | 1 | | |
| New Jersey | 1 | 17 | 11 | 13 |
| New York | 1 | 24 | 33 | 20 |
| Ontario | | 33 | 3 | 31 |
| Pennsylvania | 5 | 26 | 23 | 48 |
| Quebec | | | 1 | 2 |
| South Carolina | | | | 6 |
| Virginia | 6 | 2 | 19 | 12 |
| West Virginia | | 1 | 1 | |
| | | | | |
| Mississippi Flyway[a] | | | | |
| | | | | |
| Alabama | | | 2 | 2 |
| Kentucky | | | 1 | 2 |
| Illinois | | | | 2 |
| Indiana | | | | 1 |
| Michigan | | | 1 | 24 |
| Ohio | | | 10 | 34 |
| Tennessee | | | | 7 |
| Wisconsin | | | | 2 |

[a] no routine collar observations were made during summer months in the Mississippi flyway.

Geese not banded in North Carolina were also observed. Of the 278 geese observed that were banded outside of North Carolina, 165 (59.4%) were considered resident birds (Table 3). Fifty-two percent of these were banded in West Virginia and were all observed at several locations near Durham, Durham County. Ninety orange/white collars were also observed in various locations across North Carolina (Table 3, Figure 15.) Only 24 geese banded in other states and considered potential migrants were observed west of 77 degrees longitude.

Table 3. Numbers of different geese observed in SJBP area, North Carolina and banded outside of North Carolina, 1983-1995.

| | Population Affiliation | | |
|---|---|---|---|
| Place Banded | | | |
| | Resident | Potential Migrant | Migrant |
| Connecticut | 11 | | |
| Delaware | | 1 | |
| Maryland | 10 | 13 | |
| Massachusetts | 7 | | |
| New Jersey | 3 | 1 | |
| New York | 7 | 3 | |
| Northwest Territories & Ontario [a] | 1[b] | | 89 |
| Pennsylvania | 8 | 2 | |
| Rhode Island | 2 | | |
| South Carolina | 13 | | |
| Virginia | 18 | 4 | |
| West Virginia | 85 | | |

[a] includes Akimiski Island, Northwest Territories and the Southern James Bay mainland, Ontario

[b] 1 goose with an orange/white collar was observed in June and several times in August & September

Arrival dates of migrant geese.

Of 1188 geese re-observed during the study, only 59 (5.0%) met the criteria for consideration as a potential migrant and were re-observed in North Carolina. The earliest recorded observation dates for these birds range from 19 September to 16 February (Table 5, Appendix). Nearly 15 % of geese classified as potential migrants banded in Northampton and Hertford counties were reobserved in North Carolina prior to 1 December. Only 5 percent of geese classified as potential migrants banded at remaining sites were reobserved prior to 1 December. Earliest observation dates for potential migrant geese banded outside of North Carolina ranged from 30 September to 13 February (Table 5). The first observations of orange/white neck collars occurred during the 1 November to 15 November time period. Approximately 97% of orange/white neck collars observed in North Carolina were first observed 1 December or later (Table 5).

Table 5. Numbers of unique collared, potential migrant, Canada geese observed for the first time in North Carolina within a given year, 1983-1995.

| Date Range | Banded in NC | Banded outside NC | orange/white collars |
|---|---|---|---|
| 09/16 - 09/30 | 3 | 1 | 0 [a] |
| 10/01 - 10/15 | 3 | 3 | 0 |
| 10/16 - 10/31 | 4 | 2 | 0 |
| 11/01 - 11/15 | 11 | 2 | 1 |
| 11/16 - 11/30 | 6 | 2 | 2 |
| 12/01 - 12/15 | 12 | 3 | 10 |
| 12/16 - 12/31 | 5 | 2 | 7 |
| 01/01 - 01/15 | 5 | 2 | 37 |
| 01/16 - 01/31 | 3 | 6 | 32 |
| 02/01 - 02/15 | 2 | 3 | 6 |
| 02/16 - 02/28 | 4 | 0 | 3 |

[a] 1 goose with an orange/white collar was observed in June and several times in August & September

## Discussion

Population affiliation and inter-state movements of winter banded geese

*Resident geese*

It appears that most Canada geese banded during this study were resident geese. The majority of resident geese appear to be residents of North Carolina; however, 109 of the 477 resident geese may be residents of other states. Erratic movements of geese make assigning a resident bird to a particular state somewhat difficult, but it appears that many of these short-distance migrators may be resident geese from Pennsylvania, New York, New Jersey, and Ontario. All of these areas are known to have extremely large resident populations of Canada geese. Many of the geese observed in Ontario, were seen in the Toronto area, a location known to have a large population of resident geese.

Except for one large group of resident geese from West Virginia, the observation data did not indicate any annual large group movements of resident birds into the Piedmont. This includes geese either winter banded in North Carolina or other states. It may simply be that no other group of birds may have been collared as intensively as the group from West Virginia and thus were not as easy to detect. It is thought that observations of resident geese banded in other states were random movements of individual birds or small group of birds rather than a large scale movement of an entire flock.

*Potential migrants*

The extremely high proportion of resident geese banded at most sites puts into question the status of those geese grouped as potential migrants. There are several circumstances or "oddities" that indicate this being the case. For example, geese with collars GEC and GG0 were banded on 16 February, 1991 at Cowan's Ford (Mecklenburg Co.). Both have been observed once each in New Jersey on 28 October, 1992 at the same location. GG0 was later reobserved in North Carolina on 25 July, 1995. GEC was later reobserved with GG0 and other geese on 11 October, 1995 at the exact location that GG0 was observed on 25 July. The total observation history indicates that GEC is a potential migrant and GG0 as a resident, although the comparison raises doubt. Geese banded at 5 sites (Furr Farm, Seven Lakes, Beville, Cress Dairy, and 20/20) indicated that those classified as residents and potential migrants were observed and recovered in very similar locations. This raises question as to the correct classification of geese from these sites. Because of the very similar recovery pattern of these geese, there is the possibility that many or all of these geese are in fact resident, but just were not observed prior to 15 September. However, from 4 of these sites (Seven Lakes, Beville, Cress Dairy, and 20/20), many observations and hunter recoveries of potential migrant geese have been in northwest Pennsylvania, primarily in the counties of Crawford, Mercer, Butler, Lawerence, and Venago. This part of northwest Pennsylvania includes a principal migration area for SJPB geese (Smith et. al. 1992). Because many of these geese have not been reobserved in North Carolina since being banded here, it is theorized that cold weather pushed these SJBP geese to North Carolina along with resident geese from the same area. This may account for the similar observation and legband recovery pattern in subsequent years.

The fact that only 59 geese were ever seen in another state and then reobserved in North Carolina tends to indicate that many of the geese grouped as potential migrants do not visit North Carolina every winter. This also sheds some doubt on population affiliation and give some credence to the notion that many of these birds are in fact residents and may only visit this state occasionally, perhaps during years of harsh winters.

Arrival Dates of Migrant Geese

The data indicates that birds classed as potential migrants arrive in the Piedmont area of North Carolina as early as the third week of September. However, the previous discussion over whether these birds are in fact migrants raises serious doubts as to whether this database should be used to determine arrival dates. Of geese winter banded outside of North Carolina, earliest arrival dates are similar. While we do not have the overall observation history of geese banded outside of the state, we believe that strong consideration should be given that the population affiliation of these geese may also be incorrect. Other states that winter banded Canada geese as part of flyway studies also have large populations of resident geese and it is feasible that some resident geese were winter banded in those states also. The subsequent observation of those geese in North Carolina is likened to the observation of resident geese in other states being winter banded in North Carolina.

The best indicator of arrival dates of migrant geese into the Piedmont should be observation of breeding grounds banded geese. The earliest observation of orange/white

collars was during the first 2 weeks of November, which is much different than the arrival dates of other collared geese. Arrival dates of geese in Northampton county should be looked at more cautiously. Nearly all geese banded at one site (Pendleton) were potential migrants and observations indicate that these geese are most likely from the AP. Observation of orange/white collars would therefore not be representative for this group of geese. Twelve of 41 potential migrant geese from this site have been reobserved in North Carolina in several subsequent years. The earliest arrival date for this flock is 7 October, with the remaining observations occurring 19 November or later.

The amount of time needed to visit all sites should be considered in interpreting arrival dates. Factors influencing this time period include: personality and motivation of the observer, numbers of goose sites and numbers of geese seen, and weather. This time period ranged from approximately 3 to 6 weeks and generally increased from year to year because of increasing numbers of goose observation locations. Therefore arrival dates could potentially be a several weeks earlier than recorded. We attempted to correct for this by allowing observers to visit sites (usually several counties at once) in any order they wished as long as they visited all sites before starting over. This should have varied the site/date combination among years to some extent.

Population status of migrant Canada geese

We considered the overall population status of migrant Canada geese in the Piedmont of North Carolina. Is the migrant population increasing?, decreasing?, or stable? The SJBP is the primary migrant population wintering in the Piedmont and recent breeding grounds surveys, when compared to historical data, indicate that the population has experienced a decline over the past several decades (Mississippi Flyway Council Technical Section and Atlantic Flyway Council Technical Section, 1994). Recovery distributions of SJBP banded geese have also shown a similar trend in North Carolina. From the decade of the 50's to the 80's, as a percentage, legband recoveries from southern latitudes including North Carolina have shifted greatly to more northern areas (Kasul and Wright, 1984). Undoubtedly, the reduction and cessation of goose hunting in SJBP portions of the Atlantic flyway make interpretation of legband recoveries difficult for more recent years. Orr et. al. (1991) have also documented that numbers of geese have been declining over the last 2 decades at traditional SJBP wintering refuges in the south. Population size and changes in distribution specific to North Carolina are more difficult to obtain but available information also indicates that the population has declined in North Carolina. Gaddy's goose pond in Anson county was known for many years in the 1950's and 1960's to winter 10 - 15 thousand SJBP geese each winter (Gaddy 1964). This number has now declined to only several hundred. Mid-winter surveys of this area (Figure 16) also indicate a decline in geese observed in spite of recent increases in resident goose populations. From 1979 to 1995, 13,352 SJBP geese have been marked with orange neck collars as part of ongoing breeding grounds studies (J. Peterson, U.S. Fish & Wildlife Service, pers. commun.). Only 89 (0.7%) have been observed in North Carolina during this same time frame. During this study, observations indicated that in the relatively harsh winters of 93-94 and 95-96 more orange/white collars were observed and in more scattered locations. Observations of these geese appeared to occur just after heavy snowfalls in the northern portion of the eastern United States.

Low numbers of potential migrant geese banded during this study also raises questions over the status of migrant geese in the Piedmont. Although banding crews attempted to locate and band migrants, their lack of success may indicate that flocks of birds once assumed to be migrants may in fact be groups of resident geese from other states or several groups of local resident geese joining together for several months during the winter. Arrival of large concentrations of geese to areas where only small numbers of geese are normally present may lead one to believe that these "new" geese are migrants. The lack of formal surveys designed to estimate population size of migrant Canada geese in the Piedmont prevents us from making definitive statements about their status. However, breeding grounds surveys and this study indicate that the population has declined since the 50's and known migrant geese that currently winter in the Piedmont occur in widely scattered flocks and do not arrive primarily until early December.

**Management Implications**

Currently there is a closed season for taking migratory Canada geese in North Carolina. The hunting season was closed west of Interstate 95 in 1987 to protect SJBP geese and closed in 1992 in the remainder of the state to protect AP Canada geese. There are currently 2 special seasons established for the taking of resident geese. With the exception of several northeastern counties, the majority of the state has a resident goose season that runs from 1 September to 30 September (Figure 17, see addendum). The current Memorandum of Agreement requires that special seasons established for resident geese have minimal impacts on migrant populations. This stipulation has necessitated a conservative approach when selecting season lengths and dates. Based on observations of known SJBP geese (orange/white collars) and the suspect population affiliation of winter banded geese during this study, we believe that it is feasible to hunt resident Canada geese through 15 November throughout much of the current western zone with little or no impact to migrant birds. We do recommend that goose hunting not extend past 15 October in Northampton county. While we have not observed orange/white collars in this area until later in the winter, observation data indicates that migrant birds from either the SJBP or AP are arriving in mid-late October. We are being conservative in this county because nearly all birds banded at two locations (Pendleton, Woodard's) are potential migrant geese, and many of these have been reobserved as early as mid-late October. Hunting season dates for Hertford county should be included with other western zone counties. While all birds banded in this county were considered potential migrants, only 1 bird was ever reobserved (12/08). Extensive observations in this county since 1991 have not located any potential migrant goose flocks throughout the entire winter.

If there is a continued concern that there may be migrant geese present during this time, personnel may wish to visit all known orange/white collar observation locations once/week from early September to late November. This should allow for further refinement of arrival dates. A continued, intensive effort of observing geese at other locations is unwarranted.

**Addendum**

Based partially on this report, at the July 1997 Atlantic Flyway Council Meeting, the Atlantic Flyway Technical Section and Flyway Council approved a regular Canada goose hunting season. This season was granted for several states in the Atlantic Flyway and can occur where there is little or no chance of harvesting AP geese. The framework selected for North Carolina includes a season that runs from 1 October to 15 November. The bag limit is 2 geese/day. Figure 17 shows North Carolina's 1997 Canada goose hunt units, season dates and bag limits.

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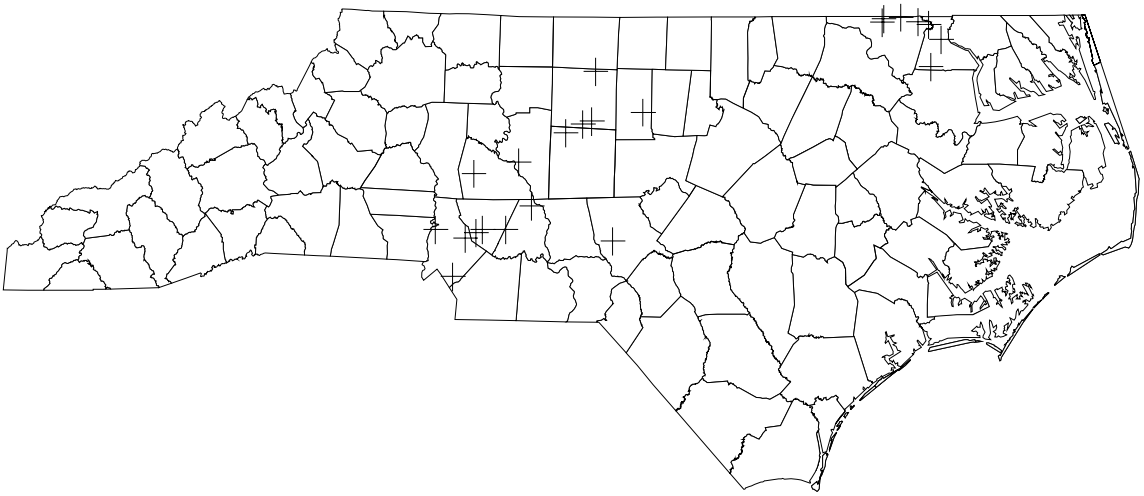


Figure 1. Locations of Piedmont, winter goose banding sites, 1984-1994.

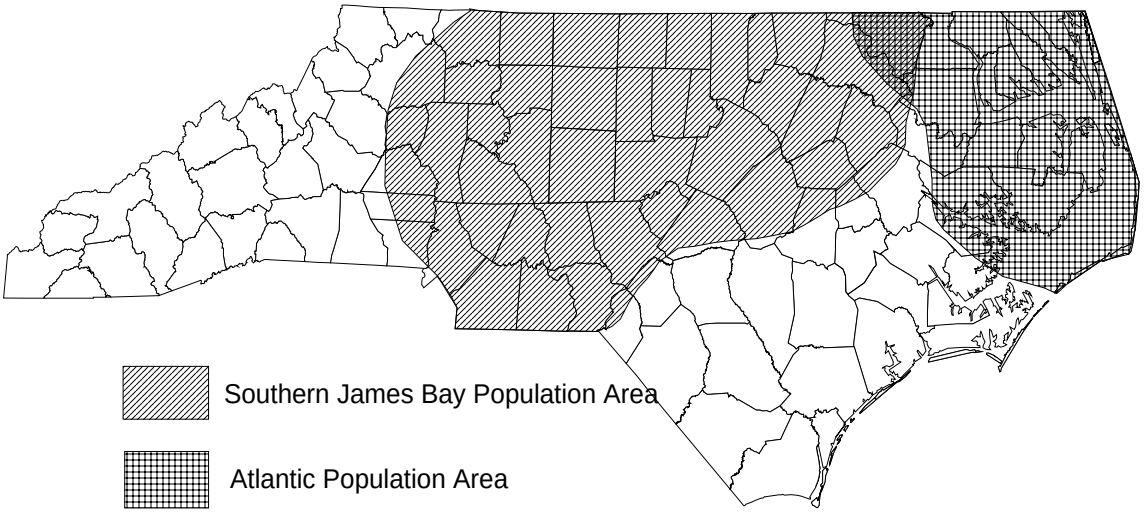
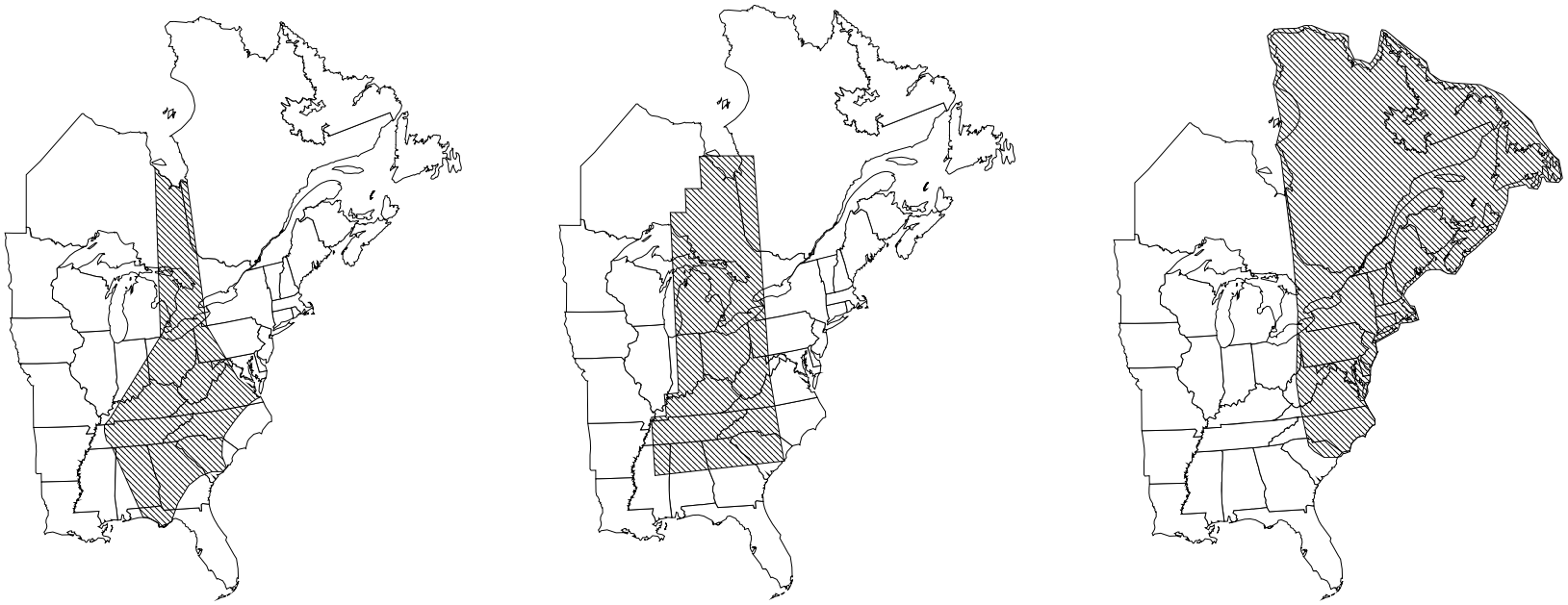



Figure 2. Southern James Bay and Atlantic Population wintering areas in North Carolina.



(A) (B) (C)

Figure 3. A. Distribution of Southern James Bay Population (SJBP) Canada geese described by Hanson and Smith (1950). B. Distribution of SJBP Canada geese described by Bednarik and Lümsden (1977). C. Combined distribution of Atlantic and North Atlantic Population Canada geese described by Bellrose (1978).

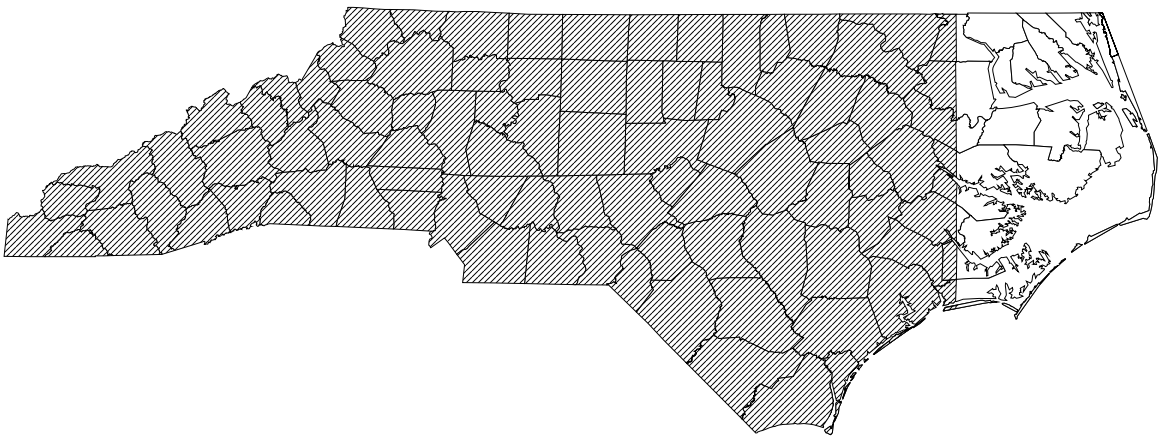


Figure 4. Area (slashed) included in database search for out-of-state banded Canada geese.


Figure 5. Distribution of neck collar observations and legband recoveries for geese classified as potential migrants (A) and residents (B), banded at Furr Farm, Cabarrus Co., NC.


Figure 6. Distribution of neck collar observations and legband recoveries for geese classified as potential migrants (A) and residents (B), banded at Cowan's Ford, Mecklenburg Co., NC.


Figure 7. Distribution of neck collar observations and legband recoveries for geese classified as potential migrants (A) and residents (B), banded at Seven Lakes, Moore Co., NC.


Figure 8. Distribution of neck collar observations and legband recoveries for geese classified as potential migrants (A) and residents (B), banded at Beville Site, Rockingham Co., NC.


Figure 9. Distribution of neck collar observations and legband recoveries for geese classified as potential migrants (A) and residents (B), banded at Cress Dairy, Cabarrus Co., NC.

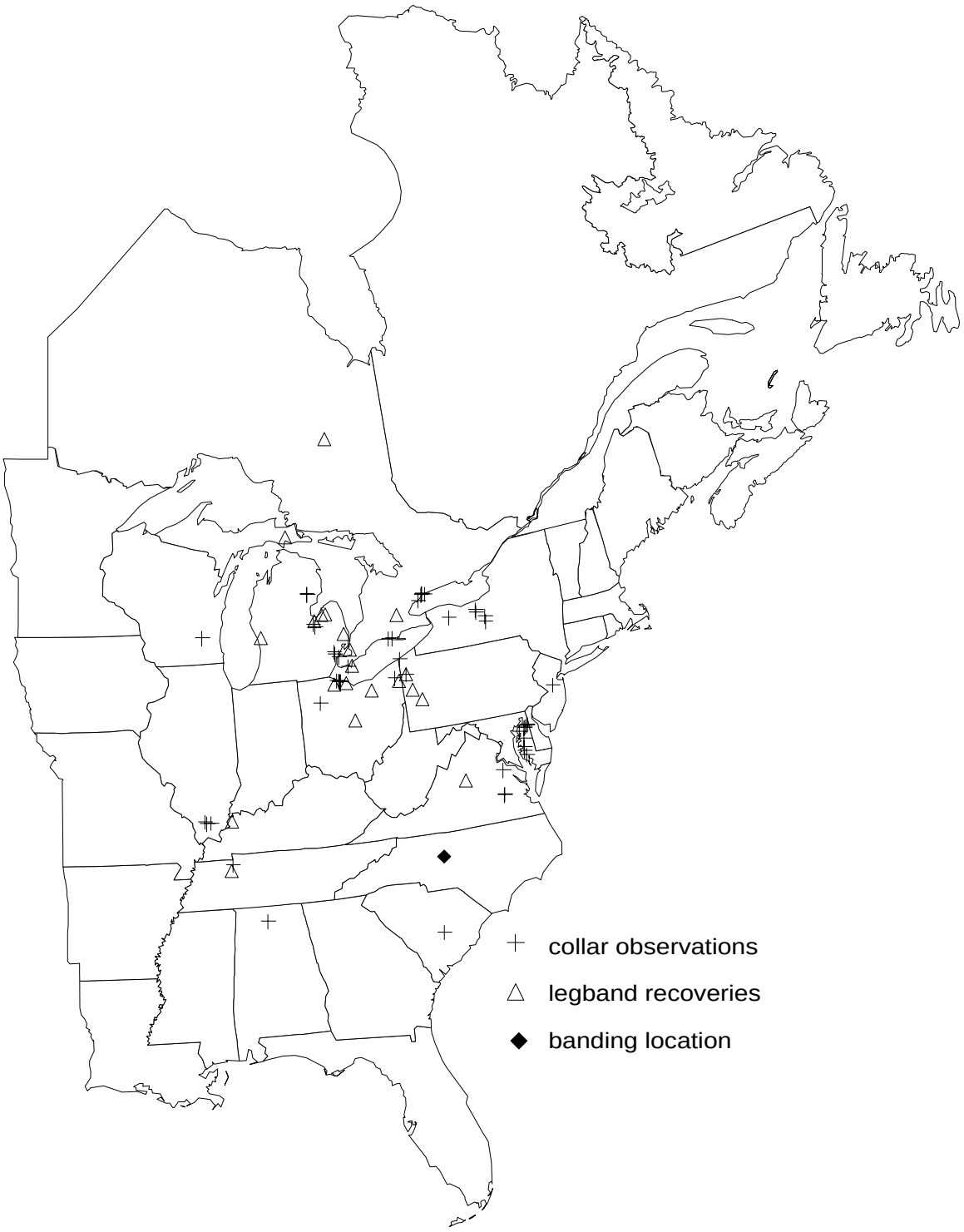



Figure 10. Distribution of neck collar observations and legband recoveries of geese classified as potential migrants, banded at Wheatmore Dairy, Randolph Co., NC. No geese were classified as residents and observed outside of North Carolina from this banding site.


Figure 11. Distribution of neck collar observations and legband recoveries of geese classified as potential migrants, banded at Woodard's, Northampton Co., NC. No geese were classified as residents and observed outside of North Carolina from this banding site.


Figure 12. Distribution of neck collar observations and legband recoveries of geese classified as potential migrants, banded at Ahoskie, Hertford Co., NC. No geese were classified as residents and observed outside of North Carolina from this banding site.


Figure 13. Distribution of neck collar observations and legband recoveries for geese classified as potential migrants (A) and residents (B), banded at 20/20 Sand & Gravel, Northampton Co., NC.


Figure 14. Distribution of neck collar observations and legband recoveries for geese classified as potential migrants (A) and residents (B), banded at Pendleton, Northampton Co., NC.

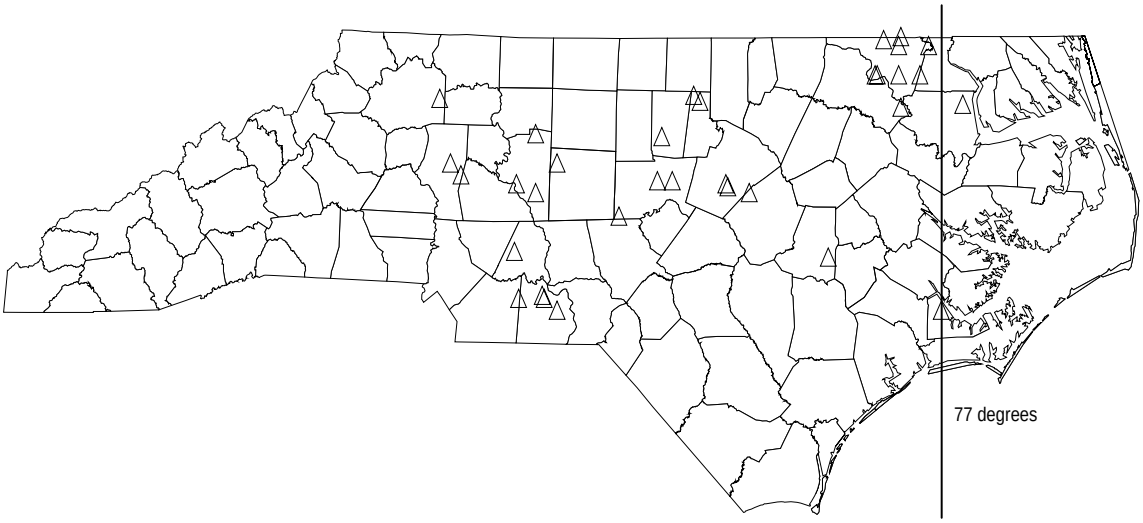



Figure 15. Observation locations of orange/white neck collars in North Carolina, 1983-1995.

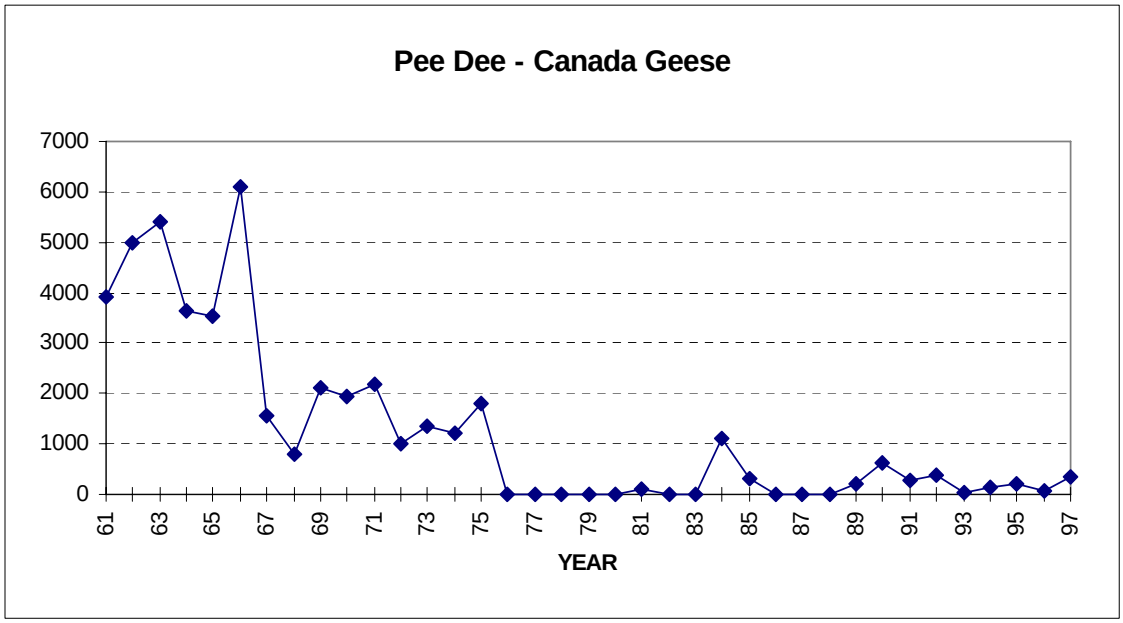
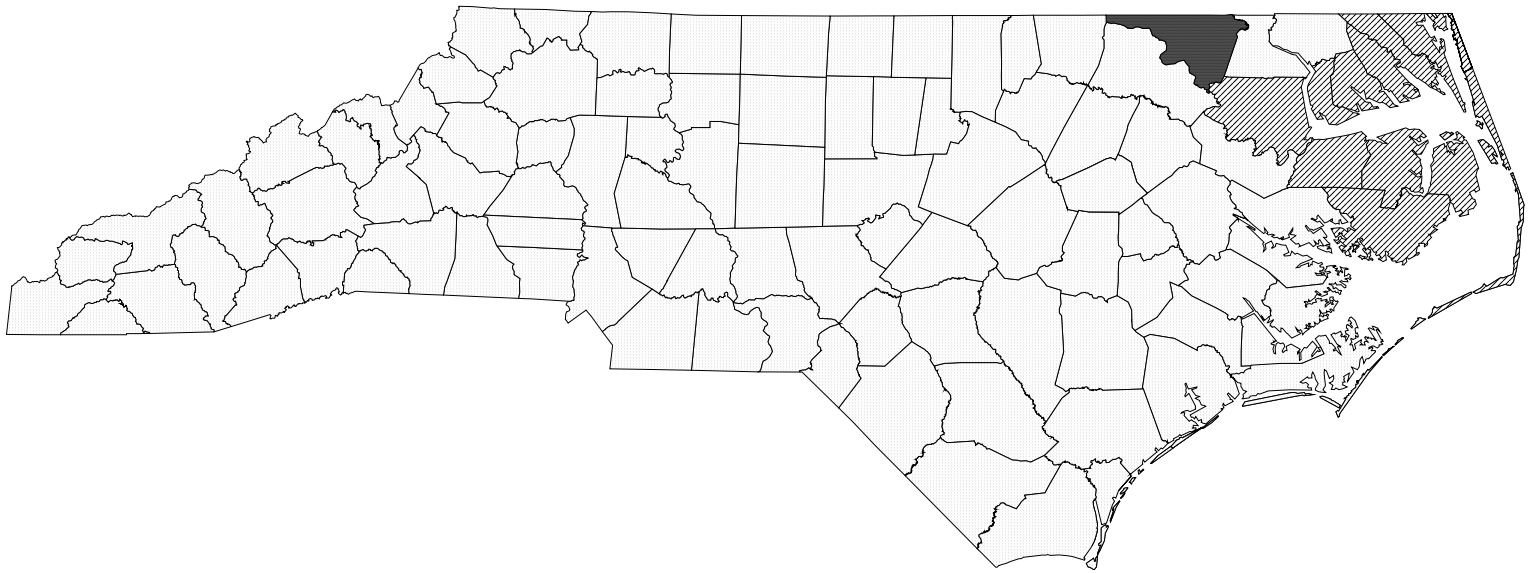



Figure 16. Trend in numbers of Canada geese observed during the mid-winter survey in the Pee Dee area of North Carolina. This area encompasses survey units 37-41.



| | | September (Early) Season<br>bag limit - 3 | Regular Season<br>bag limt - 2 |
|---|---|---|---|
| | Western hunt unit | Sept. 2 - 30 | Oct. 1 - Nov. 15 |
| | Northeast hunt unit * | Sept. 2 - 20 | closed |
| | Northampton County | Sept. 2 - 30 | closed |

* Currituck & Dare counties are closed in both the September and Regular Seasons.

Figure 17. Locations and season dates of North Carolina's 1997 goose hunting seasons.

Appendix A. Locations, 10 minute banding blocks, and total numbers of geese banded in Piedmont North Carolina, 1984-1994.

| Location - (Coordinates) | Total Banded | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | Total [1] |
| Furr Farm, Cabarrus Co. - (352-0802) | | | | | 2 | | | 39 | 85 | | 126 |
| Stonewall Jackson, Cabarrus Co. - (352-0803) | | | | | | | | | 33 | | 33 |
| Sharpe Site, Davidson Co. - (354-0801) | | | | | | 155 | 35 | 61 | | | 251 |
| Ross Farm, Guilford Co. - (355-0794) | | | | | | 59 | | 69 | | | 128 |
| Baucom's Nursery, Mecklenburg Co. - (351-0804) | | | | | | | | | | 11 | 11 |
| Cowan's Ford - Mecklenburg Co. - (352-0805) | 18 | 28 | 58 | | 22 | 65 | 55 | 84 | 2 | | 332 |
| Seven Lakes - Moore Co. - (351-0793) | | 13 | | 18 | 21 | | | 7 | 11 | | 70 |
| White farm, Randolph Co. - (355-0795) | | | | | | | | | 36 | | 36 |
| Beville Site, Rockingham Co. - (361-0794) | | | | | | | 78 | 43 | 46 | | 167 |
| Cress Dairy - Rowan Co. - (354-0804) | | | | | | | | | 40 | | 40 |
| Mauney site, Stanly Co. - (352-0801) | | | | | | | | | 12 | | 12 |
| Wheatmore Dairy, Randolph Co. - (355-0800) | 29 | 36 | 45 | 93 | 34 | | | | | | 237 |
| Pineville, Mecklenburg Co. - (350-0804) | 47 | 2 | 6 | | | | | | | | 55 |
| Hagan-Stone Park, Guilford Co. - (360-0794) | | | 88 | 12 | 71 | | | | | | 171 |
| Graham, Alamance Co. - (360-0792) | | | | | | | 38 | | | | 38 |
| Harrisburg, Cabarrus Co. - (351-0803) | | | | | | 19 | | | | | 19 |
| Woodard's, Northampton Co. - (362-0772) | 20 | 18 | 39 | | | | | | | | 77 |
| Glover's, Northampton Co. - (363-0772) | | | | | | | | | | 31 | 31 |
| Ahoskie, Hertford Co. - (361-0770) | 40 | | | | | | | | | | 40 |
| Mapleton, Hertford Co. - (362-0770) | 9 | | | | | | | | | | 9 |
| 20/20 Sand & Gravel, Northampton Co. - (363-0770) | | | | | | | | | 55 | | 55 |
| Margarettsville Gravel, Northampton Co. - (363-0772) | | | | | | | | | 23 | | 23 |
| Pendleton, Northampton Co. - (362-0771) | | | | | | | | 63 | | | 63 |
| All Sites | 163 | 97 | 236 | 123 | 150 | 298 | 206 | 366 | 343 | 42 | 2024 |

[1] Total includes all geese banded minus any collars that may have been replaced

Appendix B. Population affiliation of geese by banding site.

| Location | Total Banded | Total Seen | Resident | Potential Migrant | Unknown |
|---|---|---|---|---|---|
| Furr Farm | 126 | 61 | 39 | 8 | 14 |
| Stonewall Jackson | 33 | 26 | 19 | 1 | 6 |
| Sharpe Site | 251 | 172 | 65 | 12 | 95 |
| Ross Farm | 128 | 79 | 31 | 4 | 44 |
| Baucom's Nursery | 11 | 7 | 3 | 0 | 4 |
| Cowan's Ford | 332 | 147 | 67 | 34 | 46 |
| Seven Lakes | 70 | 47 | 18 | 27 | 2 |
| White Farn | 36 | 21 | 14 | 0 | 7 |
| Beville Site | 167 | 71 | 28 | 27 | 16 |
| Cress Dairy | 40 | 33 | 21 | 9 | 3 |
| Mauney site | 12 | 12 | 8 | 0 | 4 |
| Wheatmore Dairy | 237 | 126 | 35 | 56 | 35 |
| Pineville | 55 | 43 | 29 | 1 | 13 |
| Hagen-Stone Park | 171 | 112 | 45 | 9 | 58 |
| Graham | 38 | 6 | 0 | 6 | 0 |
| Harrisburg | 19 | 14 | 9 | 0 | 5 |
| Woodards | 77 | 42 | 0 | 29 | 13 |
| Glover's | 31 | 18 | 11 | 6 | 1 |
| Ahoskie | 40 | 27 | 0 | 25 | 2 |
| Mapleton | 9 | 5 | 0 | 5 | 0 |
| 20/20 | 55 | 46 | 16 | 8 | 22 |
| Margarettsville | 23 | 22 | 15 | 0 | 7 |
| Pendleton | 63 | 51 | 4 | 40 | 7 |
| | | | | | |
| Totals | 2024 | 1188 (58.7%) | 477 (40.2%) | 307 (25.8%) | 404 (34.0%) |
| Totals-Northampton & Hertford only | 298 | 211 (70.8%) | 46 (21.8%) | 113 (53.6%) | 52 (24.6%) |
| Totals-Remaining sites | 1726 | 977 (56.6%) | 431 (44.1%) | 194 (19.9%) | 352 (36.0%) |

Appendix C. Arrival dates of individual geese winter banded Piedmont, North Carolina.

| | Earliest obs. date | Banding Location |
|---|---|---|
| Collar code | | |
| U63C | 09/19 | Pineville, Mecklenburg Co. |
| M+V | 09/28 | Stonewall Jackson, Cabarrus Co. |
| GC3 | 09/29 | Ross Farm, Guilford Co. |
| GEC | 10/01 | Cowan's Ford, Mecklenburg, Co. |
| GCN | 10/06 | Ross Farm, Guilford Co. |
| AX0 | 10/07 | Pendleton, Northampton Co. |
| Y13T | 10/22 | Woodard's, Northampton Co. |
| U5F1 | 10/24 | Woodard's, Northampton Co. |
| GC3 | 10/25 | Ross Farm, Guilford Co. |
| NAM | 10/31 | 20/20, Northampton Co. |
| JZ3 | 11/01 | Furr Farm, Cabarrus Co. |
| U94U | 11/02 | Hagen-Stone, Guilford Co. |
| GEL | 11/03 | Cowan's Ford, Mecklenburg, Co. |
| U4F7 | 11/06 | Woodard's, Northampton Co. |
| U3F8 | 11/06 | Woodard's, Northampton Co. |
| U3F1 | 11/08 | Woodard's, Northampton Co. |
| U5F4 | 11/08 | Woodard's, Northampton Co. |
| SKT | 11/12 | 20/20, Northampton Co. |
| U1F9 | 11/14 | Woodard's, Northampton Co. |
| U5F6 | 11/14 | Woodard's, Northampton Co. |
| U4F2 | 11/14 | Woodard's, Northampton Co. |
| AF0 | 11/19 | Pendleton, Northampton Co. |
| 7UA4 | 11/22 | Cowan's Ford, Mecklenburg Co. |
| AF4 | 11/25 | Pendleton, Northampton Co. |
| AF6 | 11/25 | Pendleton, Northampton Co. |
| AF+ | 11/25 | Pendleton, Northampton Co. |
| AXV | 11/25 | Pendleton, Northampton Co. |
| AF3 | 12/01 | Pendleton, Northampton Co. |
| 8UC6 | 12/07 | Wheatmore Dairy, Randolph Co. |
| Y26U | 12/08 | Ahoskie, Hertford Co. |
| AXR | 12/09 | Pendleton, Northampton Co. |
| AFV | 12/09 | Pendleton, Northampton Co. |
| NA1 | 12/09 | 20/20, Northampton Co. |
| SKK | 12/09 | 20/20, Northampton Co. |
| NAU | 12/09 | 20/20, Northampton Co. |
| NA9 | 12/09 | 20/20, Northampton Co. |
| AFJ | 12/13 | Pendleton, Northampton Co. |

Appendix C continued. Arrival dates of individual geese winter banded Piedmont, North Carolina.

| | Earliest obs. date | Banding Location |
|---|---|---|
| Collar code | | |
| SGG | 12/13 | Furr Farm, Cabarrus Co. |
| GJG | 12/13 | Furr Farm, Cabarrus Co. |
| Y4M3 | 12/18 | Hagen-Stone, Guilford Co. |
| 7UC8 | 12/18 | Wheatmore Dairy, Randolph Co. |
| U41R | 12/18 | Wheatmore Dairy, Randolph Co. |
| 1UC2 | 12/21 | Cowan's Ford, Mecklenburg Co. |
| Y1M5 | 12/22 | Wheatmore Dairy, Randolph Co. |
| 8UC9 | 01/04 | Wheatmore Dairy, Randolph Co. |
| U05R | 01/05 | Seven Lakes, Moore Co. |
| GA3 | 01/05 | Sharpe Site, Davidson Co. |
| 9UC5 | 01/09 | Wheatmore Dairy, Randolph Co. |
| Y88U | 01/09 | Woodard's, Northampton Co. |
| M=C | 01/19 | Beville, Rockingham Co. |
| RM1 | 01/20 | Glovers, Northampton Co. |
| GF9 | 01/25 | Cowan's Ford, Mecklenburg Co. |
| AFZ | 02/09 | Pendleton, Northampton Co. |
| AXG | 02/09 | Pendleton, Northampton Co. |
| 1UC7 | 02/16 | Cowan's Ford, Mecklenburg Co. |
| 1UC8 | 02/16 | Cowan's Ford, Mecklenburg Co. |
| 2UA1 | 02/16 | Cowan's Ford, Mecklenburg Co. |
| 2UC2 | 02/16 | Cowan's Ford, Mecklenburg Co. |