# *COMMONWEALTH OF PENNSYLVANIA*
# *PENNSYLVANIA GAME COMMISSION*
# *BUREAU OF WILDLIFE MANAGEMENT*
# *GAME BIRD SECTION*

**11910 State Hwy. 285 Conneaut Lake, PA 16316 • 814-382-3061 • kjacobs@state.pa.us**


## *MEMORANDUM*

**DATE:** July 15, 2010

**SUBJECT:** 2010 Atlantic Flyway Breeding Waterfowl Survey Results in Pennsylvania.

**TO:** All Participants

**FROM:** Kevin J. Jacobs, Wildlife Biologist 2

We have recently completed the 2010 cooperative Atlantic flyway breeding waterfowl survey in Pennsylvania. The objective of the survey is to provide breeding waterfowl population estimates for the portion of the Atlantic Flyway from Virginia to New Hampshire. Prior years (1989-2009) of the survey have proven reasonably accurate breeding population estimates can be obtained through these ground counts. Population estimates are utilized in the Atlantic Flyway Adaptive Harvest Management process to determine waterfowl hunting season frameworks.

Survey participants included Biologists from the Research Division of the Bureau of Wildlife Management and PGC Region Biologists and Wildlife Management Supervisors. A total of 346 $km^2$ plots were part of this survey across six physiographic regions (figure 1) of Pennsylvania using a stratified random design. Of these, 106 plots were not field checked because they did not contain habitat for breeding waterfowl. Surveys were conducted from 15 April to 5 May 2010.

Habitat and weather conditions were slightly drier than average across most of Pennsylvania during spring, and without any major fluctuations. Temperatures during the survey were above average. First hatches of Canada goose and mallard broods appeared to be slightly earlier than normal. Precipitation has been less than average across the state since the survey period ended. We expect average to slightly above average production in 2010 from the birds that attempted to nest.

Survey results are presented in Tables 1 and 2. Please note that breeding pair estimates presented have large confidence intervals on the strata and state level; the survey is designed to yield $\leq$ 20% coefficient of variation on the mean over the entire Northeast United States region. In most instances, breeding pair trends over several years are more useful to follow than individual year estimates. Table 2 summarizes complete 2010 survey results with comparison to the 1993 to 2009 average for ducks, mergansers and Canada goose pairs. The Canada goose total is averaged from 2003 to 2009 due to a methods change in recording and calculating total birds observed.

The number of indicated mallard breeding pairs (78,677) was statistically similar to the average of 95,462 pairs although numerically 18% below average (Table 1). We've observed some evidence of declining trends in other indices of statewide mallard abundance (the North American Breeding Bird Survey and the number of preseason-banded mallards). A decline in mallard abundance was expected following liberalized hunting frameworks adopted in 1996 through Adaptive Harvest Management (Atlantic Flyway Mallard Committee, personal communication). Managers expect this trend to stabilize. Stratum 10 in southeastern Pennsylvania had the highest density of breeding mallards (1.24 pairs/km$^2$), while stratum 243 and stratum 13 in northeastern and central Pennsylvania had the next highest densities of breeding mallards, (0.85 and 0.76 pairs/km$^2$ respectively). American black ducks were observed on one survey plot in stratum 10 in southeastern Pennsylvania and resulted in a statewide estimate of 269 pairs. Black ducks have been observed at very low densities since the survey was initiated in 1989. Numbers of black ducks banded pre-season in Pennsylvania has also been declining since the mid-1990's. There were 56,265 wood duck breeding pairs estimated in 2010, which was 10% above the average of 51,398 pairs. However, the 2010 estimate was not significantly above average and falls within expected sampling variation. Trends in wood duck abundance have indicated stable to slightly increasing populations across all years of the survey. Wood duck densities were highest in northwestern, southwestern and northeastern Pennsylvania with 1.0, 0.8 and 0.75 pairs/km$^2$, respectively. The estimate of total blue-winged teal (4,186) and American green-winged teal numbers (2,063) were slightly below average in 2010. Teal abundance in this survey can vary dramatically from year to year due to weather related impacts on teal migration. Teal migration appeared to be earlier than average in 2010. We don't believe these estimates are indicative of true breeding populations of teal in Pennsylvania as many migrating teal are encountered during the survey period. Estimates of total hooded mergansers (2,620) and common mergansers (14,053) were near average. The trends for both breeding merganser species appear stable since 1993.

The 2010 Pennsylvania Canada goose indicated breeding pairs was estimated at 88,845 which is similar to the average of 91,711. Pairs were most abundant in the southeast (1.65 pairs/km$^2$) and northwest (1.4 pairs/km$^2$). The 2010 total population estimate of 231,780 was statistically similar to the recent 7-year average of 280,371 geese (Table 1). As expected, the highest densities of total geese were observed in southeastern (5.69 geese/km$^2$) and northwestern (3.97 geese/km$^2$) portions of Pennsylvania. The Pennsylvania Canada goose spring breeding population appears to have stabilized near 250,000 birds following the rapid growth observed during the 1990's. This is a result of significant expansion of hunting seasons and other lethal and non-lethal programs implemented to control Canada goose numbers. This population remains well above the Resident Population management plan goal of 150,000 spring birds.

An electronic file of survey results has been forwarded to the Atlantic Flyway Coordinator for inclusion into the Atlantic Flyway population estimates. Thank you once again for your assistance with this survey. Your continued support and participation are greatly appreciated.

cc: DuBrock, Dunn, Roe, Regional Directors, Bish, Binder

Table 1. Estimates of waterfowl breeding pairs and standard error by physiographic strata in Pennsylvania, 2010.

| Strata | Mallard | | Black duck | | Wood duck | | Canada goose | | Canada goose | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pairs | SE | Pairs | SE | Pairs | SE | Pairs | SE | Total | SE |
| 10 | 16,397 | 4,080 | 269 | 268 | 4,565 | 2,185 | 21,749 | 5,117 | 74,914 | 23,364 |
| 13 | 23,686 | 7,658 | 0 | 0 | 14,630 | 5,597 | 16,023 | 4,296 | 32,046 | 8,593 |
| 22 | 13,318 | 7,416 | 0 | 0 | 10,654 | 3,813 | 11,986 | 4,913 | 27,968 | 11,172 |
| 241 | 5,372 | 1,802 | 0 | 0 | 9,896 | 2,530 | 13,854 | 3,059 | 39,301 | 11,239 |
| 242 | 8,850 | 3,193 | 0 | 0 | 6,726 | 2,548 | 14,159 | 6,981 | 32,212 | 15,432 |
| 243 | 11,073 | 2,740 | 0 | 0 | 9,795 | 2,156 | 11,073 | 2,934 | 25,339 | 7,666 |
| 2010 PA Total | 78,677 | 12,298 | 269 | 268 | 56,265 | 8,257 | 88,845 | 11,640 | 231,780 | 34,172 |
| 1993 –2009 avg. | 95,462 | 14,538 | 639 | 612 | 51,398 | 8,436 | 91,711 | 12,313 | 280,371[a] | 39,114 |
| % Change | - 18 % | | - 58 % | | + 10 % | | - 3 % | | - 17 % | |

[a] 2003 to 2009, 7-year average.

Table 2. Pennsylvania waterfowl population estimates from 2001 to 2010 and the 1993-2009 averages.

| Species Estimate | 2010 | 93-09 average | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 | 2003 | 2002 | 2001 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mallard pairs | 78,677 | 95,462 | 92,509 | 65,739 | 90,237 | 80,667 | 95,685 | 84,806 | 82,302 | 84,534 | 89,030 |
| Mallard total | 161,675 | 196,947 | 187,697 | 131,477 | 181,504 | 174,374 | 197,975 | 177,715 | 170,067 | 171,752 | 189,711 |
| Black duck pairs | 269 | 953 | 639 | 269 | 1,716 | - | - | - | 622 | 2,010 | 2,026 |
| Black duck total | 537 | 1,906 | 1,278 | 537 | 3,433 | - | - | - | 1,245 | 4,020 | 4,052 |
| Wood duck pairs | 56,265 | 51,398 | 63,118 | 42,791 | 56,671 | 61,014 | 60,536 | 47,368 | 46,855 | 65,684 | 56,276 |
| Wood duck total | 114,797 | 109,211 | 128,060 | 87,924 | 127,847 | 128,009 | 132,552 | 94,736 | 93,711 | 132,858 | 116,298 |
| Canada goose pairs | 88,845 | 91,711 | 88,617 | 100,174 | 100,741 | 88,478 | 115,291 | 122,857 | 101,564 | 85,192 | 96,468 |
| Canada goose total | 231,780[a] | 280,371[b] | 289,879[a] | 246,499[a] | 255,924[a] | 245,689[a] | 311,171[a] | 338,230[a] | 275,207[a] | 234,754 | 246,859 |
| Bl-wing teal total | 4,186 | 7,625 | 7,814 | 1,840 | 12,650 | 1,979 | 2,746 | 8,041 | 1,273 | 7,842 | 8,373 |
| Gr-wing teal total | 2,063 | 4,571 | 5,569 | 1,979 | 5,064 | 7,172 | 7,089 | 9,138 | 5,266 | 4,131 | 4,664 |
| Hooded merg. total | 2,620 | 3,586 | 2,975 | 3,031 | 2,972 | 7,646 | 9,625 | 1,272 | 4,318 | 4,205 | 1,417 |
| Common merg. total | 14,053 | 15,038 | 12,377 | 18,773 | 17,429 | 15,167 | 12,916 | 14,671 | 14,335 | 14,371 | 14,020 |
| Mute swan total | 2,268 | 1,314 | 1,276 | 3,921 | 6,064 | 2,102 | 2,245 | 2,528 | 709 | 426 | 354 |

- No black ducks observed.

[a] Total estimate calculated using new formula 2x(pairs + singles) + groups.

[b] Average from 2003 to 2008 using new formula for total.
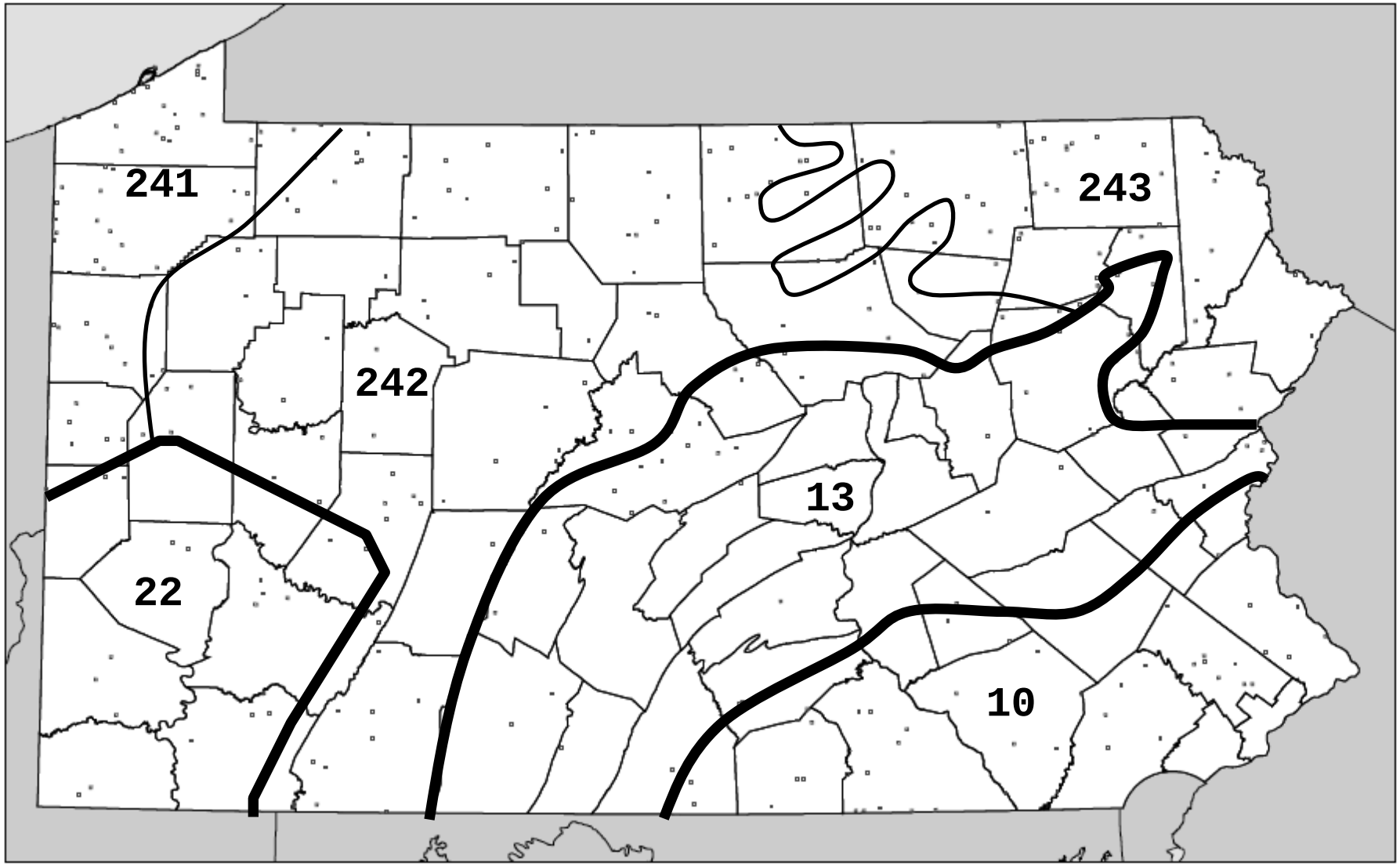
Figure 1. Location of Atlantic Flyway breeding waterfowl survey plots within major physiographic provinces in Pennsylvania. Physiographic Provinces are Piedmont (10), Ridge and Valley (13), Pittsburgh Plateau (22), Glaciated NW (241), Allegheny Mountain/Plateau (242), and Pocono/Low Plateau (243).