

**PENNSYLVANIA GAME COMMISSION  
BUREAU OF WILDLIFE MANAGEMENT  
PROJECT ANNUAL JOB REPORT**

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**TITLE:** Waterfowl Research/Management

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**TITLE:** Waterfowl Banding

**PERIOD COVERED:** 1 July 2012 to 30 June 2013

**COOPERATING AGENCIES:** U.S. Fish and Wildlife Service; U.S. Geological Survey, Biological Resources Division, Bird Banding Laboratory; Pennsylvania Department of Conservation and Natural Resources, Bureau of Forestry and Bureau of State Parks

**WORK LOCATION(S):** Statewide

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**ABSTRACT** The objective of this project is to band representative samples of wild waterfowl as part of cooperative efforts by state, provincial, and federal agencies in the Atlantic Flyway that provide crucial data for management of the waterfowl resource. All work is permitted through the United States Geological Survey, Bird Banding Laboratory. During June 2012, 3,000 resident Canada geese (>100% of the state quota) were banded at 33 locations across 20 counties in Pennsylvania. Gosling production as measured by the statewide percentage (35%) of goslings in the banded sample was below the 1988 to 2011 average. The use of multiple goose-banding crews has achieved aggregate banding quotas for all 6 individual physiographic strata for the period 2002 to 2012. During the August-September 2012 pre-season duck banding period, bandings occurred in 12 locations statewide with 4 of the 6 Pennsylvania Game Commission Regions participating. The 2,709 total new ducks banded were down 30% from the 1989 to 2011 average and similar to 2010. Ducks banded included 1,343 mallards, 830 wood ducks, 14 American black ducks, and 522 individuals of 7 other species (blue-winged teal, green-winged teal, northern pintail, northern shoveler, hooded merganser, gadwall, and canvasback, plus mallard x black duck hybrids). Atlantic Flyway banding quotas were met for total and juvenile mallards and total and juvenile wood ducks, but missed for adult mallards and wood ducks (80% and 84% attained respectively) and adult and juvenile black ducks (14% of respective quotas). The proportion of juvenile mallards and wood ducks in the banded sample was 15% and 19% below average respectively. The fourth year of the Black Duck Joint Venture winter banding initiative was successful in banding 363 black ducks, exceeding statewide numbers from the first 3 years of the initiative. Results to date indicate winter black duck banding will improve

management for this important species. Waterfowl banding should continue during 2013 in support of Atlantic Flyway banding program goals. We will continue efforts increase the geographic distribution of waterfowl bandings across the Commonwealth.

## **OBJECTIVE**

To band representative samples of wild waterfowl as part of cooperative efforts by state, provincial, and federal agencies to achieve banding goals set in the Atlantic Flyway. This provides data (survival and harvest rates, migration timing, distribution and derivation, population changes, and production by local waterfowl) for waterfowl harvest management (e.g., Adaptive Harvest Management), habitat conservation programs (e.g., North American Waterfowl Management Plan), and other aspects for the stewardship of the waterfowl resource at state and flyway levels.

## **METHODS**

During June 2012, resident Canada goose banding was conducted by Pennsylvania Game Commission (PGC) Bureau of Wildlife Management staff, regional personnel, and other volunteers that were organized into 3 banding crews (Northwest/Southwest/Northcentral, Southcentral, and Northeast/Southeast). The multi-crew approach is used to band a representative number of geese in the 6 physiographic strata (Fig. 1) in which banding quotas were set using 1% of the 2010-12 average breeding population estimates within each stratum. Flightless geese (goslings and molting adults) were captured by driving them onto land and surrounding them with a temporary corral of portable panels (Costanzo et al. 1995). Age and sex were determined for each goose using plumage characteristics and cloacal examination, respectively (Hanson 1962). Following determination of sex and age, geese were banded with standard Bird Banding Laboratory (BBL) butt-end aluminum leg bands.

Pre-season (August through September) duck banding was conducted by Bureau of Wildlife Management biologists and biologist aides, regional personnel (biologists, food and cover employees, and wildlife conservation officers), and banding volunteers at 12 sites in Erie, Crawford, Mercer, Dauphin, York, Pike, Berks, and Lancaster counties. Ducks were captured in shallow-water swim-in traps baited with shelled corn. Age and sex of captured ducks were determined primarily from plumage characteristics (Bellrose 1976, Carney 1992), with cloacal examination (Dimmick and Pelton 1994) used to verify sex and age of individuals with questionable plumage. Following determination of sex and age, ducks were banded with standard BBL butt-end aluminum leg bands.

Winter banding targeted for American black ducks in coordination with the Black Duck Joint Venture (BDJV) was conducted 20 January through 15 March 2013 by Bureau of Wildlife Management staff, regional personnel, and biologist aides. Trapping locations included: (Northwest Region) Enterline Farm, Pymatuning Wildlife Management Area, Presque Isle State Park, (Southcentral Region) Haldeman Island, (Northeast Region) Near Hawley, (Southeast Region) Middle Creek Wildlife Management Area and Lake Ontelaunee. Black ducks were captured by shallow swim-in traps baited with corn. Sex was determined by presence of mottling on the bill and confirmed by cloacal examination. Black ducks, mallards and hybrids were

assigned to either “after second year” (ASY) or “second year” (SY) based on the presence of edging and shape of the primary coverts 5-9, and the shape and wear of the tertial covert 5 (Ashley et al. 2006). Any ducks captured that were not conclusive were assigned to the age class “after hatch year” (AHY). We followed the BDJV classification protocol for hybrids based on wing characteristics and body plumage. Hybrids were categorized as “black duck like” (ABDX), intermediate (MBDX) and “mallard like” (MALX). Although mallards were not the targeted species, they were also banded, along with other species incidentally captured. Following species code, age, and sex determination, all ducks were banded with standard BBL butt-end aluminum leg bands (band type 41) and released.

Following trapping efforts, banding data was compiled using Bandit 3.1 software. Electronic files of banding schedules were submitted to the BBL following the conclusion of field banding efforts.

## RESULTS

### Canada goose banding

Bureau of Wildlife Management staff, Regional personnel and volunteers were organized into banding crews operating in multiple regions (Regions 1, 2 and 3, Region 4, Regions 5 and 6). The multi-crew approach is used to band a representative number of geese in the 6 physiographic strata (Fig. 1) in which banding goals are set using 1% of the 2010-12 average total spring population estimates for each stratum. During June 2012, 3,000 Canada geese were banded at 33 locations across 20 counties in Pennsylvania (Tables 1 and 2). The geese banded in 2012 were 7% more than banded in 2011 and 29% more than the state goal of 2,322. Individual stratum quotas were exceeded by 6% to 77% in all 6 strata. Since 2002, when we began using multiple-crews, aggregate 11-year banding accomplishments have exceeded the aggregate stratum quotas by 1% to 34%, and have exceeded the aggregate statewide quota by 17%. The multi-crew approach has greatly improved the distribution of the statewide banding sample than previously achieved using a single banding crew.

Juvenile (includes both “local” or unfledged and “hatch year” or fledged) geese comprised 35% of the total banded sample in 2012, below the 1988-2011 average of 45% indicating below average gosling recruitment in spring 2012. In addition, the statewide index of 1.08 juveniles per new adult female banded was 37% lower than the 1988-2011 average of 1.71, again indicating below average gosling recruitment. Age ratios varied across strata from 0.32 in stratum 22 to 2.13 in stratum 241. There was a widespread and extended period of cold and wet weather that included significant snow accumulation in higher elevations from 22-24 April. This coincided with an above average number of goose nest hatches due to the very early spring advancing nesting chronology. These combined events could have resulted in higher than normal gosling mortality due to exposure. Low age ratios in some strata can also be an artifact of banding locations that are primarily molting areas with few goslings, which occurred at 4 locations in 2012. We normally experience 4 to 8 sites per year with few or no goslings present. Conversely, high age ratios in specific strata can be an artifact of preferential selection of banding sites with high numbers of goslings, or preferential banding of goslings over adults when the number of geese captured exceeds the number needed for a specific area or the number of bands available. While we acknowledge that our measures of gosling recruitment are

relatively crude, especially at the individual stratum level, we believe year-to-year comparisons of the statewide figures are informative. More rigorous calculations of productivity would be possible, but the additional effort involved in data collection and analysis would probably not be justified because this demographic parameter is not a crucial information need for resident goose management.

A total of 286 geese banded in previous years were recaptured during banding operations with 95% of these recaptures occurring in the same 10-minute block of latitude and longitude as the original banding (Table 1). Fifteen recaptures were banded in a different 10-minute block than banded and are considered a foreign recapture. Of these, 10 were originally banded outside of Pennsylvania. These recapture histories are provided in Table 3.

### **Pre-season duck banding**

Pennsylvania's duck banding quotas as outlined in the North American Banding Program Document (U.S. Fish and Wildlife Service [USFWS] 1989) are 1,200 mallards (600 adult, 300 immature male and female each), 750 wood ducks (400 adult, 175 immature male and female each), and 100 black ducks (50 adult, 25 immature male and female each). Habitat conditions during 2012 pre-season banding period were generally drier than average for much of Pennsylvania.

Bandings occurred in 12 locations statewide with 4 of the 6 PGC Regions participating. The 2,709 total new ducks banded were down 30% from the 1989 to 2011 Long Term Average (LTA) and similar to 2011 (Tables 4 and 5). Atlantic Flyway banding quotas were met for total and juvenile mallards and total and juvenile wood ducks, but missed for adult mallards and wood ducks (80% and 84% attained respectively) and adult and juvenile black ducks (14% of respective quotas).

As usual, mallards made up the largest species proportion of the total with 1,343 individuals banded (Table 4), down 50% from the LTA. The 2012 mallard juvenile to adult age ratio of 1.78 was 15% below the LTA of 2.1. Mallard age ratios, since 1989, have ranged from 1.4 to 3.23 juveniles per adult. Wood duck bandings were down 20% from the LTA with 830 banded this year. The wood duck age ratio of 1.46 juveniles per adult was 19% below average of 1.8 (range 1.17 to 2.76). Only 14 American black ducks were banded which is down 76% from average. Pre-season black duck bandings continue to fall short of flyway quotas and well below average. The PGC was again awarded a grant from the BDJV Northeast States Black Duck Banding Project Fund for banding efforts for black ducks in Pennsylvania. These grant monies are directed towards winter black duck banding efforts.

From 1989-2011 Pymatuning Wildlife Management Area (WMA) accounted for 73% of the total statewide duck bandings each year. In 2012, the ducks banded at Pymatuning accounted for 50% of the total Pennsylvania duck bandings. Numbers of mallards and wood ducks banded at Pymatuning has declined since 2002 despite efforts to capture ducks in new areas. Pymatuning remains the top banding location for mallards in the Commonwealth with 60% of the statewide total. This was lower than the LTA in 2012 as maintenance work on pond 2, which has historically produced the highest mallard trapping success in the Commonwealth, limited trapping efforts at this location. Wood duck bandings at Pymatuning accounted for 10% of the state total. Presque Isle (Erie County) accounted for 13% of the total duck bandings in 2012 and

was similar to the LTA for this location. Presque Isle accounted for 12.4% of state mallard bandings and 22.4% of state wood duck bandings. Two banding locations in Mercer County accounted for 6% and 5.6% of statewide mallard and wood duck bandings respectively. Middle Creek WMA accounted for 16.2% of total statewide duck bandings. The Middle Creek total was below the LTA for this location. Middle Creek was the third highest producer of mallards and first in wood duck bandings in the state with 11% and 28% of the respective totals for each species.

Haldeman Island (Dauphin County) accounted for 6.2% of the statewide banding total in 2012 and bandings of wood ducks accounted for 18.7% of the state totals. The 4 Northeast Region banding locations collectively accounted for 3.9% of all duck bandings and 11.7% of all wood duck bandings.

Important numbers of pre-season ducks were obtained from the remaining 3 banding locations in Berks (4.4% of statewide and 7.3% of total mallard bandings) and York counties. One important component of pre-season duck banding is to mark representative proportions of our statewide waterfowl population as financially and logistically feasible. Therefore, we strive to maintain and increase our efforts where possible throughout the commonwealth. This reduces potential bias in estimated population parameters (i.e. survival and harvest rates) that would otherwise occur from banding at relatively few locations. We will continue efforts to support and maintain operational banding stations in PGC regions with relatively few waterfowl bandings compared with the rest of Pennsylvania.

In the Southeast Region most of the trapping and banding is conducted by regional wildlife personnel at the Middle Creek Wildlife Management Area in Lancaster and Lebanon counties. This year a strong and very successful effort was put into trapping and banding ducks at Lake Ontelaunee in Berks County. A total of 556 ducks were banded in the Southeast Region in 2012 (Tables 4 and 5). This was the second highest overall total for the past eight years and well above the average for that time period of 463 (Fig. 2). Over the years mallards and wood ducks generally account for over 95% of the ducks banded. This year because of the large number of blue-winged teal banded, mallards and wood ducks only accounted for 89% of the ducks banded. In addition to 52 blue-winged teal banded this year we also banded 1 green-winged teal, 3 black ducks, 1 black duck x mallard hybrid, 2 gadwalls, and 1 canvasback.

The number of mallards trapped and banded had dropped for several years after 2007 (Fig. 3). However they rebounded last year and continued increasing this year above the average for the past eight years of 195. The number of wood ducks trapped and banded has also increased the past couple of years and this year was right at the eight year average of 255 (Fig. 4). Some of the variation in the number of ducks banded is certainly weather related. There have been very dry years where many of the ponds at Middle Creek are low or dry, making it difficult for us to trap if there are even ducks present. In 2011 a tropical storm came through in September and the water was so high we couldn't get into the area. Effort also plays a role. At Middle Creek the effort is the same every year but over the years other staff have been trapping on and off at various locations affecting totals for those years. This year a strong effort was put in at Lake Ontelaunee. That catch accounted for 21% of our banding effort in the Region.

Because duck species other than mallards, black ducks, and wood ducks breed only in limited numbers in Pennsylvania or their forage preference is not provided in traps (i.e. mergansers), bandings of these species can include a higher percentage of migrants relative to locally breeding or produced birds, and thus tend to be more variable from year to year due to the effects of weather conditions and food availability on migration patterns. An additional 522 individual blue-winged teal, green-winged teal, northern shoveler, northern pintail, mallard/black duck hybrid, gadwall, canvasback and hooded merganser were banded in 2012 (Table 5). The teal totals were new record high numbers for Pennsylvania and likely reflect excellent continental teal populations and reproduction in 2012.

### **Winter American Black Duck banding**

The winter of 2013 marked the fourth year of the 5-year post season black duck banding study. A total of 363 black ducks were banded (Northwest-243, Southcentral-5, Northeast-1, Southeast-114) (Table 6) exceeding statewide banding distribution goals. Of the 363 black ducks banded, 233 were males (64%) and 130 (36%) were females. The age ratio of SY to ASY black ducks was 1.11. We also banded 45 hybrids including 26 ABDX, 15 MALX and 4 MBDX. The additional training and classification system has greatly improved bander identification and proper classification of trapped birds; a few birds that may have been previously classified as mallard/black duck hybrid in prior years, were now classified as American black duck due to the allowance of some “buff or gray” in the greater secondary coverts.

Although mallards were not the targeted species, 729 were banded in 2013. As outlined by the operating protocols for winter banding operations, a continental total > 3,000 post season mallards was determined to be adequate to allow statistical assessment of vital rates similar to black ducks. Of the 729 mallards banded, 453 were males (62%) and 276 were females (38%). The age ratios of SY to ASY mallards was 1.2. Both mallard and black duck winter age ratios were lower than the observed preseason age ratios in Pennsylvania (mallard average 2.16 - 6.74, black duck 1.73-30.25). However, since the annual survival of juvenile birds is lower than adults, observed age ratios should decrease as the season progresses. In addition to black ducks, mallards and hybrids, 7 additional species were banded including: redhead (43), American wigeon (25), ring-necked duck (12), wood duck (4), Northern pintail (2), canvasback (1), and Northern shoveler (1).

In southeast Pennsylvania, Middle Creek WMA accounted for 12% of black ducks and 6% of mallards. Lake Ontelaunee in Berks County accounted for 19% of black ducks and 12% of mallards. In northwest Pennsylvania, the Enterline Farm in Mercer County accounted for 35% of black ducks and 62% of mallards while Presque Isle in Erie County accounted for 32% of black ducks and 17% of mallards. Considerable effort was expended to capture ducks across all four regions of Pennsylvania. Field staff are benefitting from experience and training obtained through the first 3 years of the project. Focusing efforts during below average temperatures with snow and ice cover has resulted in greater capture rates. We anticipate post-season black duck banding will continue in these same areas through 2014. We've identified additional sites in the southwest and northcentral regions of Pennsylvania that could increase capture success if additional resources are available to commit to this important project.

## RECOMMENDATIONS

1. Continue waterfowl banding efforts during Fiscal Year 2013 in support of the Atlantic Flyway cooperative banding program. Continue efforts to distribute Canada goose bandings proportionally in each physiographic stratum, to increase the number of black ducks banded, and to improve the geographic distribution of mallard and wood duck bandings.
2. Participate as needed with the BBL, USFWS and Atlantic Flyway Migratory Game Bird Technical Section banding needs assessment, bander training and other banding related activities affecting populations of waterfowl important to Pennsylvania.
3. Continue using Bandit 3.1 software with updates to manage banding database. Continue to support agency banding staff on electronic entry and submission of banding data for the 2013 field season.
4. Acquire and distribute bands and equipment to field biologists in advance of all waterfowl banding programs.
5. Conduct post-season winter duck banding in support of the pilot black duck banding study and seek financial support from the Northeast U.S. BDJV grant.

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Table 1. Numbers of resident Canada geese, by age and sex category, banded in Pennsylvania during 2012, plus recaptures of previously banded geese.

Location name or nearest town	Code	Adult		Juvenile		New Total	Local	Recaptures		Total
		Male	Female	Male	Female			Local	Foreign	
<b>Stratum 10 (Stratum goal = 650)</b>										
1 mile North of Wrightstown	BUCK04	52	62	0	1	115	8	1	9	<b>124</b>
3 miles East of Honey Brook	CHES01	20	13	6	12	51	0	0	0	<b>51</b>
Chambers Lake-Wagontown	CHES03	13	8	12	19	52	6	0	6	<b>58</b>
Near St. Peters	CHES10	15	22	8	12	57	0	0	0	<b>57</b>
Near Mount Alto	FRAN02	17	11	13	22	63	4	0	4	<b>67</b>
Near Scotland	FRAN03	31	36	32	42	141	7	0	7	<b>148</b>
Middle Creek WMA	LANC01	79	91	11	7	188	51	2	53	<b>241</b>
Near Lebanon	LEBA02	91	89	24	40	244	6	1	7	<b>251</b>
<b>Totals (140% of goal)</b>		<b>318</b>	<b>332</b>	<b>106</b>	<b>155</b>	<b>911</b>	<b>82</b>	<b>4</b>	<b>86</b>	<b>997</b>
<b>Stratum 13 (Stratum goal = 339)</b>										
Beltzville Lake	CARB01	32	20	11	17	80	26	0	26	<b>106</b>
Bald Eagle State Park	CENTR02	30	37	24	11	102	11	0	11	<b>113</b>
Weir Lake	MONR07	25	25	17	19	86	0	0	0	<b>86</b>
Near Lewisburg	UNION01	15	10	7	17	49	4	0	4	<b>53</b>
New Berlin	UNION03	9	5	16	12	42	6	0	6	<b>48</b>
<b>Totals (106% of goal)</b>		<b>111</b>	<b>97</b>	<b>75</b>	<b>76</b>	<b>359</b>	<b>47</b>	<b>0</b>	<b>47</b>	<b>406</b>
<b>Stratum 22 (Stratum goal = 346)</b>										
Restlawn Cemetery	ALLE03	59	72	2	10	143	23	0	23	<b>166</b>
Ethel Springs Lake	WEST05	75	95	5	9	184	10	0	10	<b>194</b>
Lower Twin Lakes Cty Park	WEST11	5	6	11	18	40	0	1	1	<b>41</b>
<b>Totals (106% of goal)</b>		<b>139</b>	<b>173</b>	<b>18</b>	<b>37</b>	<b>367</b>	<b>33</b>	<b>1</b>	<b>34</b>	<b>401</b>

Table 1. Cont.

Location name or nearest town	Code	Adult		Juvenile		New Total	Recaptures			Total
		Male	Female	Male	Female		Local	Foreign	Total	
<b><u>Stratum 241 (Stratum goal = 356)</u></b>										
Pymatuning WMA	CRAW01	34	32	86	99	251	46	4	50	<b>301</b>
Near Erie, PA	ERIE01	20	15	6	5	46	0	0	0	<b>46</b>
Edinboro	ERIE05	30	38	8	10	86	1	0	1	<b>87</b>
Near Waterford	ERIE09	23	17	26	24	90	0	0	0	<b>90</b>
Near Sharon	MERC02	57	47	29	25	158	3	2	5	<b>163</b>
<b>Totals (177% of goal)</b>		<b>164</b>	<b>149</b>	<b>155</b>	<b>163</b>	<b>631</b>	<b>50</b>	<b>6</b>	<b>56</b>	<b>687</b>
<b><u>Stratum 242 (Stratum goal = 327)</u></b>										
Dubois Reservoir	CLEAR02	10	13	15	11	49	6	0	6	<b>55</b>
Dubois	CLEAR10	10	10	16	18	54	0	1	1	<b>55</b>
Buzzard Swamp	FORE01	30	17	13	11	71	29	2	31	<b>102</b>
Near Tionesta	FORE02	4	5	4	7	20	0	0	0	<b>20</b>
Near Shanksville	SOME08	47	45	31	36	159	0	1	1	<b>160</b>
Near Franklin	VENA02	6	7	1	2	16	0	0	0	<b>16</b>
Near Ligonier	WEST04	14	13	2	2	31	5	0	5	<b>36</b>
<b>Totals (122% of goal)</b>		<b>121</b>	<b>110</b>	<b>82</b>	<b>87</b>	<b>400</b>	<b>40</b>	<b>4</b>	<b>44</b>	<b>444</b>
<b><u>Stratum 243 (Stratum goal = 304)</u></b>										
Near Shawnee	MONR03	81	80	28	20	209	0	0	0	<b>209</b>
Stillwater Lake <sup>a</sup>	SUSQ05	0	0	0	1	1	0	0	0	<b>1</b>
Duck Harbor Pond	WAYN02	15	17	9	4	45	17	0	17	<b>62</b>
Near Lake Ariel <sup>b</sup>	WAYN05	11	10	10	11	42	0	0	0	<b>42</b>
Paupackan Lake	WAYN06	7	8	8	12	35	2	0	2	<b>37</b>
<b>Totals (109% of goal)</b>		<b>114</b>	<b>115</b>	<b>55</b>	<b>48</b>	<b>332</b>	<b>19</b>	<b>0</b>	<b>19</b>	<b>351</b>
<b>Grand Total</b>		<b>967</b>	<b>976</b>	<b>491</b>	<b>566</b>	<b>3000</b>	<b>271</b>	<b>15</b>	<b>286</b>	<b>3286</b>

<sup>a</sup> Master location for 10-minute block is in Susquehanna County; actual 2012 banding location in Wayne County portion of this block.

<sup>b</sup> Master location for 10-minute block is in Wayne County; actual 2012 banding location in Lackawanna County portion of this block.

Table 2. 2012 Canada goose bandings and recaptures by Pennsylvania Game Commission region and county.

<b>Region</b>	<b>County</b>	<b>Total New Bandings</b>	<b>Total Recaptures</b>
<b>NW</b>	Crawford	251	50
	Mercer	158	5
	Forest	91	31
	Venango	16	0
	Erie	222	1
	<b>NW Region Total</b>	<b>738</b>	<b>87</b>
<b>SW</b>	Allegheny	143	23
	Westmoreland	255	16
	Somerset	159	1
	<b>SW Region Total</b>	<b>557</b>	<b>40</b>
<b>NC</b>	Centre	102	11
	Clearfield	103	7
	Union	91	10
	<b>NC Region Total</b>	<b>296</b>	<b>28</b>
<b>SC</b>	Franklin	204	11
	<b>SC Region Total</b>	<b>204</b>	<b>11</b>
<b>NE</b>	Carbon	80	26
	Lackawanna	42	0
	Monroe	295	0
	Wayne	81	19
	<b>NE Region Total</b>	<b>498</b>	<b>45</b>
<b>SE</b>	Bucks	115	9
	Chester	160	6
	Lancaster	188	53
	Lebanon	244	7
	<b>SE Region Total</b>	<b>707</b>	<b>75</b>

Table 3. Banding histories of Canada geese recaptured during 2012 banding and previously banded in another location.

<b>Recapture Location</b>	<b>Original Banding Location</b>	<b>Banding Date</b>	<b>Number of Birds</b>
Pymatuning WMA	Woodcock Reservoir, Crawford Co.	2010	2
Pymatuning WMA	Lake Wilhelm, Mercer Co.	2002	1
Pymatuning WMA	Leonore, Illinois (also recaptured in 2011)	2008	1
Lower Twin Lakes	Pymatuning WMA	2010	1
Shanksville	Hoyes, Maryland	2010	1
Shenango Reservoir	Columbiana Co., Ohio	2010	1
Shenango Reservoir	Harpers Ferry, Virginia	2003	1
Buzzard Swamp	Churchill, Manitoba	2004	1
Buzzard Swamp	Clayton, Ontario	2005	1
Dubois	Buzzard Swamp	2009	1
Middle Creek WMA	Newton, New Jersey	2006	1
Middle Creek WMA	Alton, Virginia	2003	1
Lebanon	Wooster, Ohio	2009	1
Wrightstown	Washington, New Jersey	2009	1

Table 4. Numbers of mallards, wood ducks and American black ducks banded in Pennsylvania during the 2012 pre-season banding period.

Banding Location	Mallard					Wood Duck					Black Duck				Total	
	<sup>a</sup> AHY M	AHY F	HY M	HY F	Total	AHY M	AHY F	HY M	HY F	Total	AHY M	AHY F	HY M	HY F		Total
<b><u>NW Region</u></b>																
Pymatuning WMA	134	136	295	236	<b>801</b>	23	9	26	21	<b>79</b>	2	2	5	0	<b>9</b>	<b>889</b>
Presque Isle	17	16	78	55	<b>167<sup>b</sup></b>	68	20	59	39	<b>186</b>	0	1	0	0	<b>1</b>	<b>354</b>
Mercer	4	12	35	35	<b>86</b>	12	14	18	3	<b>47</b>	0	0	1	0	<b>1</b>	<b>134</b>
<b><u>SC Region</u></b>																
Haldeman Island	3	1	8	1	<b>13</b>	8	19	63	65	<b>155</b>	0	0	0	0	<b>0</b>	<b>168</b>
Hokes Mill, York Co.	2	1	16	4	<b>23</b>	0	0	0	0	<b>0</b>	0	0	0	0	<b>0</b>	<b>23</b>
Lake Marburg, York Co.	0	0	0	0	<b>0</b>	2	2	5	5	<b>14</b>	0	0	0	0	<b>0</b>	<b>14</b>
<b><u>NE Region</u></b>																
Shohola Lake, SGL 180	0	0	0	0	<b>0</b>	9	13	8	7	<b>37</b>	0	0	0	0	<b>0</b>	<b>37</b>
Pecks Pond	0	0	0	0	<b>0</b>	12	3	2	1	<b>18</b>	0	0	0	0	<b>0</b>	<b>18</b>
Decker Pond, SGL 183	0	0	1	2	<b>3</b>	12	4	3	5	<b>24</b>	0	0	0	0	<b>0</b>	<b>27</b>
Promised Land S.P.	0	4	1	1	<b>6</b>	7	2	7	1	<b>18<sup>d</sup></b>	0	0	0	0	<b>0</b>	<b>24</b>
<b><u>SE Region</u></b>																
Middle Creek WMA	40	42	28 <sup>c</sup>	36	<b>146</b>	33	52	90 <sup>e</sup>	58 <sup>f</sup>	<b>233</b>	1	0	1	0	<b>2</b>	<b>381</b>
Lake Ontelaunee	38	33	11	16	<b>98</b>	9	3	4	3	<b>19</b>	1	0	0	0	<b>1</b>	<b>118</b>
<b>Statewide Total</b>	<b>238</b>	<b>245</b>	<b>473</b>	<b>386</b>	<b>1,343</b>	<b>195</b>	<b>141</b>	<b>285</b>	<b>208</b>	<b>830</b>	<b>4</b>	<b>3</b>	<b>7</b>	<b>0</b>	<b>14</b>	<b>2,187</b>
PA quota <sup>g</sup>	<b>600</b>	<b>AHY</b>	<b>300</b>	<b>300</b>	<b>1200</b>	<b>400</b>	<b>AHY</b>	<b>175</b>	<b>175</b>	<b>750</b>	<b>50</b>	<b>AHY</b>	<b>25</b>	<b>25</b>	<b>100</b>	

<sup>a</sup> AHYM = after hatch year male, AHYF = after hatch year female, HYM = hatch year male, HYF = hatch year female.

<sup>b</sup> Includes 1 unknown sex HY.

<sup>c</sup> Includes 2 local male mallards.

<sup>d</sup> Includes 1 unknown age/sex wood duck.

<sup>e</sup> Includes 2 local male wood ducks.

<sup>f</sup> Includes 3 local female wood ducks.

<sup>g</sup> Set by Atlantic Flyway banding needs document.

Table 5. Numbers of other ducks banded in Pennsylvania during the 2012 pre-season banding period.

Banding Location	Species								Total	
	Blue-winged teal	Green-winged teal	Northern pintail	Northern shoveler	Hooded merganser	Gadwall	MALL X ABDU hybrid	Canvasback		
<b>NW Region</b>										
Pymatuning WMA	261	178	4	14	2	0	4	0	<b>463</b>	
Presque Isle	1	0	0	0	0	0	0	0	<b>1</b>	
<b>NE Region</b>										
Pecks Pond	0	0	0	0	0	0	1	0	<b>1</b>	
<b>SE Region</b>										
Middle Creek WMA	52	1	0	0	0	2	1	1	<b>57</b>	
<u>Statewide Total</u>	<b>314</b>	<b>179</b>	<b>4</b>	<b>14</b>	<b>2</b>	<b>2</b>	<b>6</b>	<b>1</b>	<b>522</b>	

Table 6: Number of ducks banded in Pennsylvania during the 2013 winter black duck banding period.

Species	Age	Sex	BERK06	CRAW01	DAUP01	ERIE01	LANC01	MERC09	PIKE03	Total
American black duck	<sup>a</sup> AHY	M						1	1	2
	AHY Total							1	1	2
	ASY	F	9			14	10	14		47
		M	32	1	1	31	23	36		124
	ASY Total		41	1	1	45	33	50		171
	SY	F	11		1	27	10	34		83
		M	17		3	44	2	41		107
	SY Total		28		4	71	12	75		190
<b>Black duck total</b>			<b>69</b>	<b>1</b>	<b>5</b>	<b>116</b>	<b>45</b>	<b>126</b>	<b>1</b>	<b>363</b>
Black duck like hybrid	ASY	F				1	1			2
		M	1			3	4	7		15
	ASY Total		1			4	5	7		17
	SY	F				1		2		3
		M	1			3		2		6
	SY Total		1			4		4		9
<b>ABDX Total</b>			<b>2</b>			<b>8</b>	<b>5</b>	<b>11</b>		<b>26</b>
American widgeon	AHY	F					9			9
		M					12			12
	AHY Total						21			21
	ASY	F						1		1
	ASY Total							1		1
	SY	F						2		2
		M						1		1
	SY Total							3		3
<b>AMWI Total</b>							<b>21</b>	<b>4</b>		<b>25</b>
Canvasback	SY Total							1		1
<b>CANV Total</b>								<b>1</b>		<b>1</b>
Mallard	SY	F						1		1
	SY Total							1		1

Table 6 Cont.

Species	Age	Sex	BERK06	CRAW01	DAUP01	ERIE01	LANC01	MERC09	PIKE03	Total
Mallard	AHY	F						6	3	9
		M						4	7	11
	AHY Total							10	10	20
	ASY	F	13		2	16	10	56		97
		M	52	1	7	21	13	132		226
	ASY Total		65	1	9	37	23	188		323
	SY	F	9	1	2	46	9	102		169
		M	9		1	44	8	154		216
	SY Total		18	1	3	90	17	256		385
	<b>MALL Total</b>			<b>83</b>	<b>2</b>	<b>12</b>	<b>127</b>	<b>40</b>	<b>455</b>	<b>10</b>
Mallard like hybrid	ASY	F				2		1		3
		M						3		3
	ASY Total					2		4		6
	SY	F				1	1			2
		M	4			3				7
SY Total		4			4	1				9
<b>MALX Total</b>			<b>4</b>			<b>6</b>	<b>1</b>	<b>4</b>		<b>15</b>
Intermediate mallard - black duck hybrid	ASY	F						1		1
	ASY Total							1		1
	SY	F				2				2
		M				1				1
	SY Total					3				
<b>MBDX Total</b>						<b>3</b>		<b>1</b>		<b>4</b>
Northern pintail	AHY	M				1				1
	AHY Total					1				1
	SY	F						1		1
	SY Total							1		1
<b>NOPI Total</b>						<b>1</b>		<b>1</b>		<b>2</b>
Northern shoveler	AHY	M					1			1
	AHY Total						1			1
<b>NSHO Total</b>							<b>1</b>			<b>1</b>

Table 6 Cont.

Species	Age	Sex	BERK06	CRAW01	DAUP01	ERIE01	LANC01	MERC09	PIKE03	Total	
Redhead	ASY	F						6		6	
		M						8		8	
	ASY Total							14		14	
	SY	F							12		12
		M							17		17
	SY Total								29		29
<b>REDH Total</b>								<b>43</b>		<b>43</b>	
Ring-necked duck	AHY	F					2			2	
		M				10				10	
	AHY Total						12			12	
<b>RNDU Total</b>						<b>12</b>				<b>12</b>	
Wood duck	ASY	M	4							4	
	ASY Total		4							4	
<b>WODU Total</b>			<b>4</b>							<b>4</b>	
Grand Total			162	3	17	261	125	646	11	1225	

<sup>a</sup> ASYM = after second year male, ASYF = after second year female, SYM = second year male, SYF = second year female, AHYM = after hatch year male, AHYF = after hatch year female.

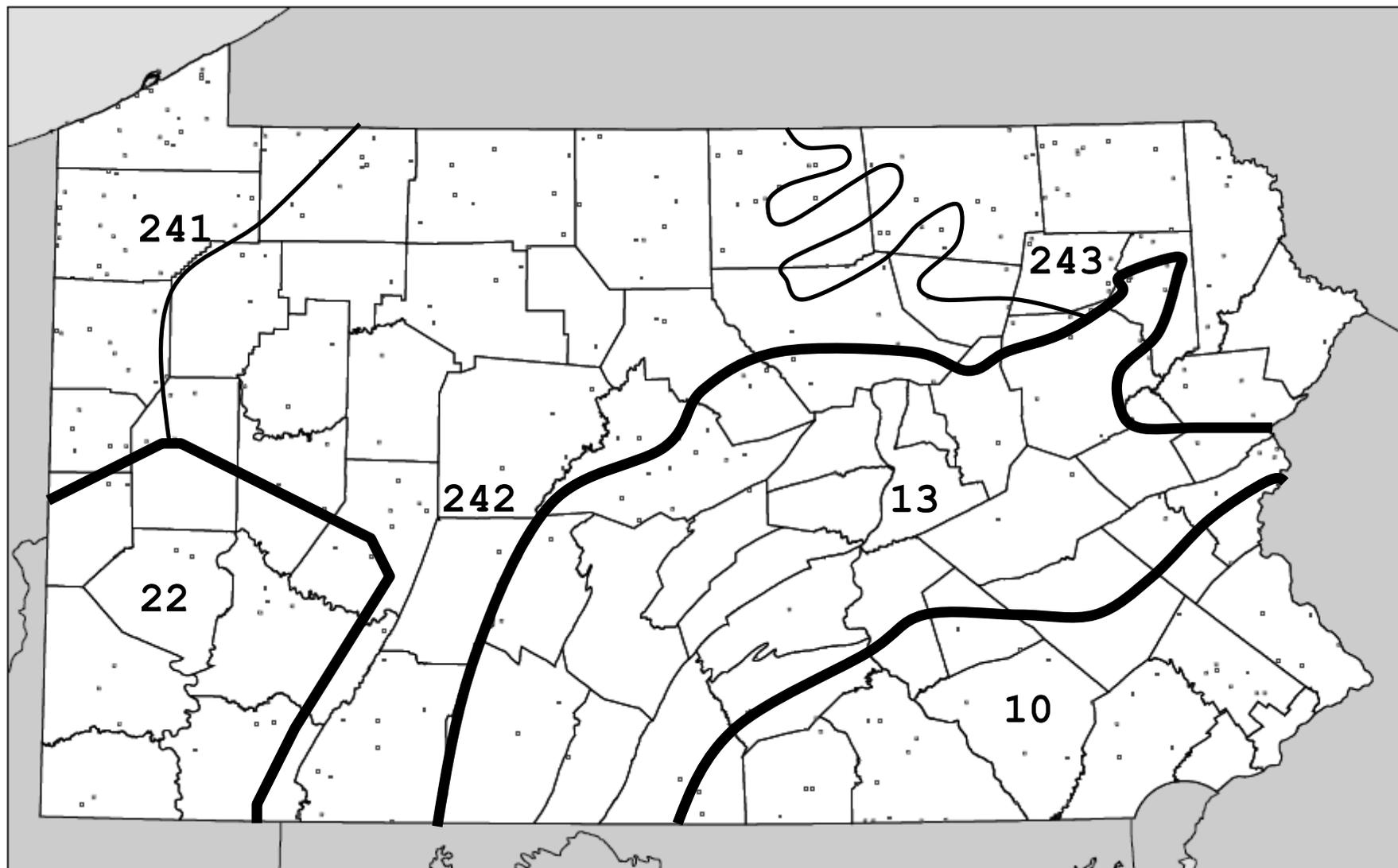


Figure 1. Location of Atlantic Flyway breeding waterfowl survey plots within major physiographic provinces in Pennsylvania. Physiographic Provinces are Piedmont (10), Ridge and Valley (13), Pittsburgh Plateau (22), Glaciated NW (241), Allegheny Mountain/Plateau (242), and Pocono/Low Plateau (243).

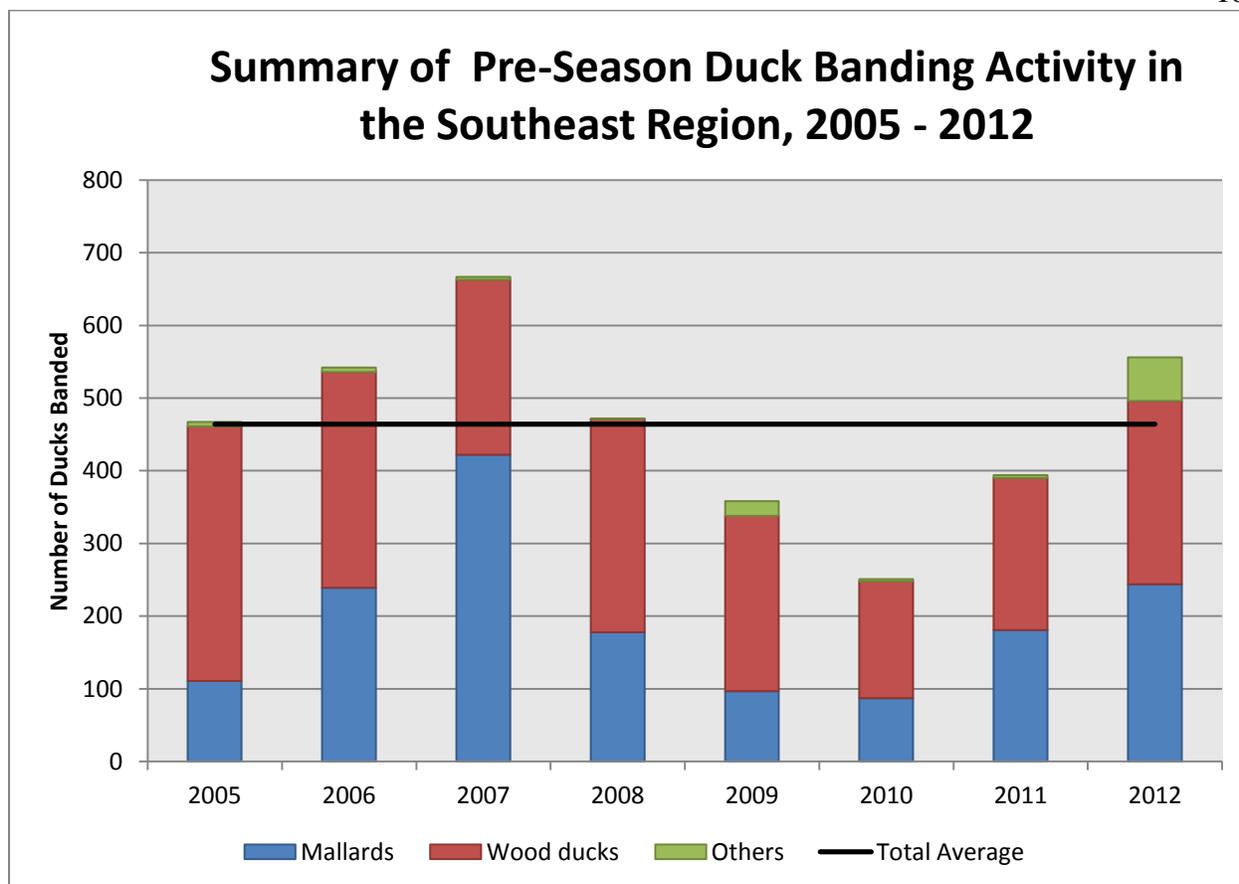


Figure 2. Summary of pre-season duck banding activity in the Southeast Region, 2005 – 2012.

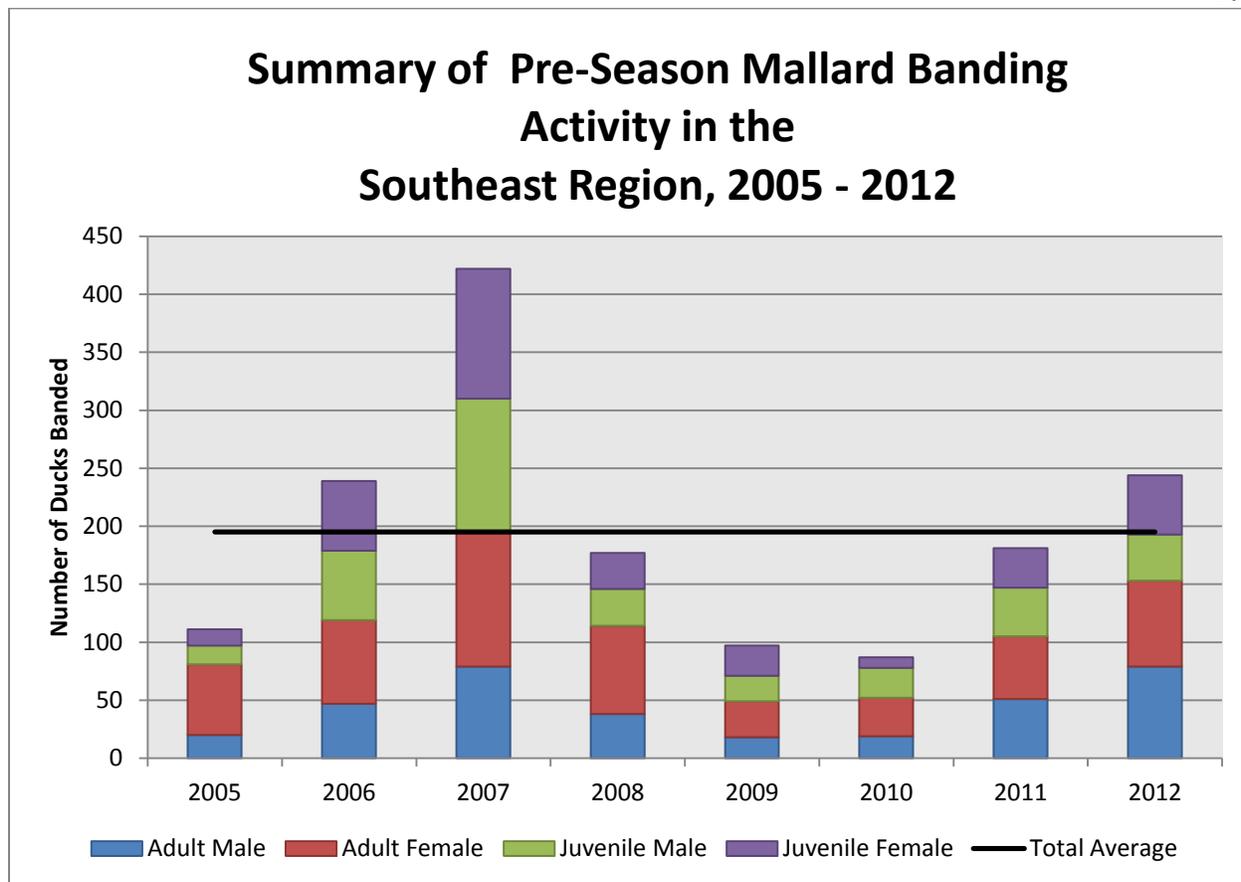


Figure 3. Summary of pre-season mallard banding activity in the Southeast Region, 2005 – 2012.

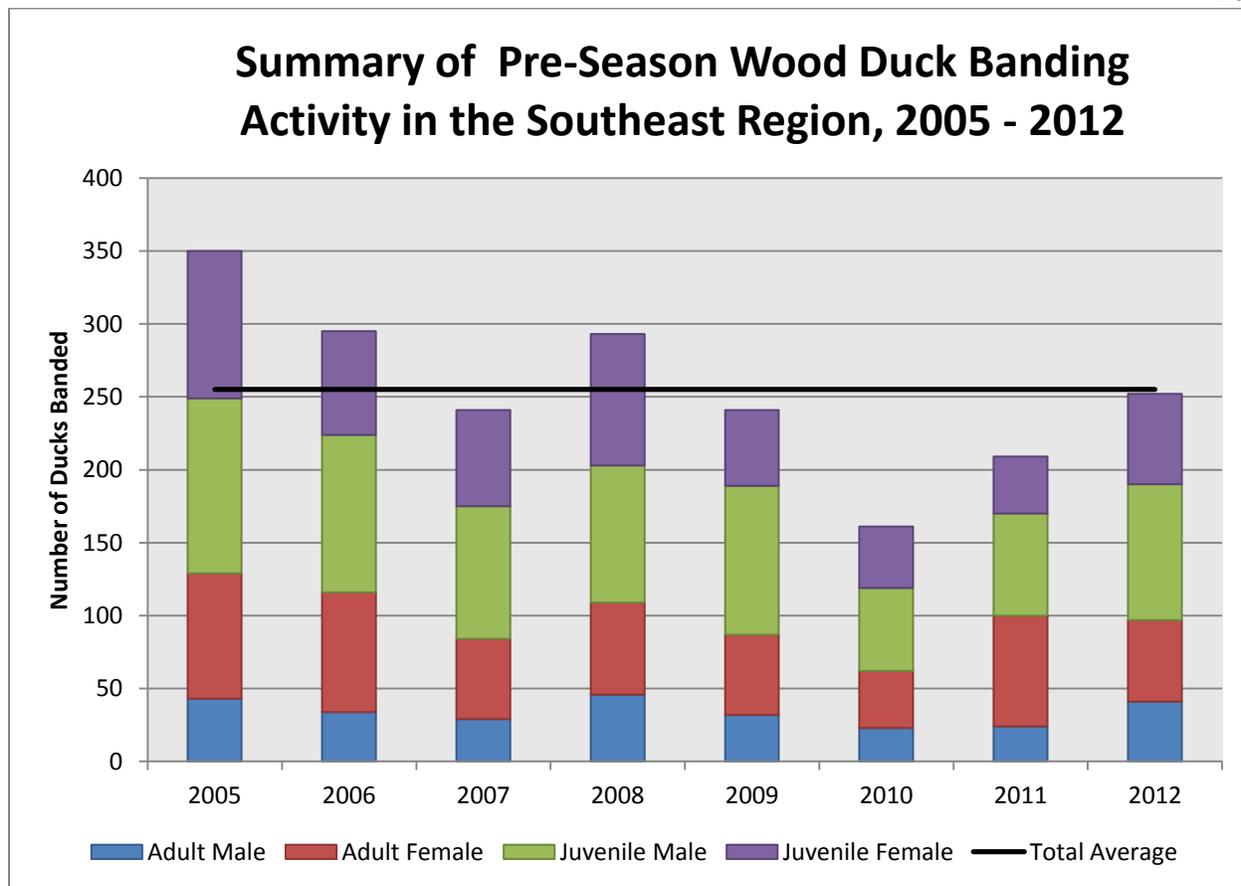


Figure 4. Summary of pre-season wood duck banding activity in the Southeast Region, 2005 – 2012.