

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

PROJECT CODE NO.: 06550

TITLE: Mourning Dove Research/Management

JOB CODE NO.: 55001

TITLE: Mourning Dove Banding

PERIOD COVERED: 1 July 2014 through 30 June 2015

COOPERATING AGENCIES: U.S. Fish and Wildlife Service; U.S. Geological Survey, Biological Resources Division, Bird Banding Laboratory

WORK LOCATION(S): Statewide

PREPARED BY: Lisa M. Williams

DATE: 24 June 2015

ABSTRACT The objective of this project is to band a representative sample of mourning doves (*Zenaida macroura*) as part of a cooperative effort by state and federal agencies to collect data needed for management of this migratory game bird. During summer 2014, 27 individuals banded 1,099 doves at 37 locations in 24 counties and in 18 of 23 Wildlife Management Units throughout Pennsylvania. Of 1,099 doves banded, 403 were adults, 590 were juveniles, and 106 were of unknown age. Adult birds included 273 males, 110 females, and 20 of unknown sex. The ratio of known-age birds was 1.46 juveniles per adult, which was similar to that of 2012 and 2013, and 23% greater than that of 2011. All Bird Conservation Region level quotas for both adults and juveniles were met. I recommend we continue dove banding efforts during Fiscal Year 2015 in support of the national cooperative management program.

OBJECTIVE

1. To band a representative sample of mourning doves as part of a cooperative effort by state and federal agencies to produce estimates of age-specific harvest and survival rates, and recruitment rates, in each dove management unit. This data is used in demographic models that are integral to the implementation of the Mourning Dove Harvest Strategy (U.S. Fish and Wildlife Service 2014).

2. Secondary objectives are to provide information on geographic patterns of migration and harvest, and estimates of breeding site fidelity.

METHODS

Levels and distribution of banding effort generally followed those in the Mourning Dove Banding Needs Assessment (Otis 2009), which assigns banding goals for Pennsylvania of 145 adults and 130 juveniles, with effort to be weighted approximately 0.08 to Bird Conservation Region (BCR) 13, 0.66 to BCR 28, and 0.26 to BCR 29 (Fig. 1). Stratum weights are derived from a combination of dove population density based on Breeding Bird Survey data, and the area of the BCR. Due to large within-BCR differences in dove habitat and harvest, banding only the minimum number of doves needed to meet goals would likely produce biased estimates of demographic parameters. To obtain the geographic diversity necessary for a more representative sample, total band allocations were increased proportionally for each BCR, and further stratified by Wildlife Management Units (WMUs). Allocations for individual WMUs were based on a combination of the WMU's proportional contribution to Pennsylvania's dove harvest and logistical considerations.

Dove bands were distributed to various personnel from the Pennsylvania Game Commission (PGC) Bureau of Wildlife Management, PGC regions, temporary employees and volunteers. Bands were allocated for use in 18 of the 23 WMUs in Pennsylvania and in all 6 PGC regions (Table 1). The largest allocation was in the Southeast Region (300 bands), followed by the Southwest (254), Southcentral (250 bands), Northwest (185), Northeast (100), and Northcentral (68) regions. The resulting total allocation was 1,157 bands.

Statewide banding occurred between 30 June and 22 August 2014. Following 1-3 weeks of pre-baiting with small grain, doves were captured in baited Kniffin modified funnel traps (Reeves et al. 1968), and banded with standard U.S. Geological Survey, Biological Resources Division Bird Banding Laboratory (BBL) butt-end metal bands inscribed with a toll-free number for reporting via telephone, as well as an internet website address for online reporting. Research conducted during 2008-2010 indicated that web-address bands have a higher reporting probability than toll-free bands, and a national reporting rate adjustment factor (nationally $P = 1.081$, $SE = 0.027$) has been calculated (Sanders and Otis 2012).

Age and gender were determined for each bird using plumage characteristics (Petrides 1950, Reeves and Amend 1970). Banded birds were assigned an age [hatching year (HY), after hatching year (AHY), or unknown (UNK)] and sex [male (M), female (F), or UNK]. All HY birds were classified as unknown sex. Beginning in 2012, all birds exhibiting a complete molt (i.e. no clearly dropped or re-growing primaries) were classified as unknown age. Previously, wear on P9 and P10 was used to make an age classification for these birds, with worn outer primaries triggering an 'adult' classification. Current thinking is that outer primary wear is influenced by habitat, so this portion of age assessment has been dropped (B. Dukes, South Carolina Department of Natural Resources, personal communication). A primary feather molt score was also recorded for each bird; in previous years, this data was used to develop a calibration factor to account for unknown-age wings in the U.S. Fish and Wildlife Service (USFWS) Dove Parts Collection Survey, and it continues to provide state banding coordinators with a quality control check on accuracy of aging. However, molt data are not reported here. Following trapping efforts, banding data was compiled using Bandit software. Electronic files of banding schedules were submitted to the BBL within 2 weeks of the conclusion of field banding efforts, so capture data would be available before

the start of the September dove season. All recaptures of doves banded in prior years were also recorded and reported to the BBL.

As an outcome of this ongoing project, a review article summarizing the findings of the first 10 years of the banding program was published in the September 2014 edition of the *Pennsylvania Game News*. Additionally, eleven years of dove recapture data for Pennsylvania was provided to a graduate-level Population Estimation and Modeling class at Penn State University taught by the Fish and Wildlife Coop Unit leader. At PGC request, students assessed survival and reporting rate differences between southeast Pennsylvania and the rest of the Commonwealth in order to test the assumption that harvest rates are higher in the Southeast region than in the remainder of the Commonwealth.

RESULTS

Capture and banding work was carried out at 37 locations in 24 counties and in 18 of 23 WMUs throughout Pennsylvania between 30 June and 22 August of 2014. Thirty-five unused bands were returned to the project coordinator immediately after the banding season and will be re-allocated in 2015. Twenty-two allocated bands were neither returned nor placed on birds: 16 were lost by bander; 3 were lost in mail upon return, and 3 out-of-sequence bands that survived that ill-fated mailing were destroyed at BBL request. Twenty-seven individuals banded 1,099 doves (Table 1). These included 403 adults, 590 juveniles and 106 of unknown age. Adult birds included 273 males, 110 females, and 20 of unknown sex. The ratio of known-age birds was 1.46 juveniles per adult, which was similar to that of 2012 and 2013 and 23% greater than that of 2011 (1.19 juveniles per known adult). However, it should be noted that 2011 was the last year in which wear on the outer primaries of completely-molted birds was used to make an age assessment. These birds are now considered unknown for age. This has resulted in the 'unknown' age proportion of annual samples increasing from 3% in 2011, to an average of 10% in 2012 through 2014 (range 8.9% to 12.2%), so a difference in the ratio of juveniles to known adults between 2011 and more recent years may be an artifact of this change in procedure.

All Bird Conservation Region (BCR) level quotas for both adults and juveniles were met (Table 2). BCR 13 accounted for twice its recommended stratum weight; BCR 28 and BCR 29 fell slightly short of the recommended stratum weights. Recent changes in banding effort in BCR 28 and BCR 29 have resulted in sampling effort between BCRs that now more-closely approximates USFWS recommended strata weight goals than in previous years. These allocation changes resulted from the fact that BCR 28 was consistently under-represented in the statewide sample relative to USFWS goals. Addressing this under-representation was a priority in 2013-14. Actions taken to adjust sampling intensity have served to more-closely achieve desired goals and will be maintained in 2015 if staffing permits.

The Penn State analysis of recapture data from 2003 through 2013 revealed no differences in harvest rate or "reporting rate" between the Piedmont region and the remainder of Pennsylvania. Additionally, the analysis found no evidence for differences in survival rate or "reporting rate" by sex. It should be noted that while banding analysis literature conventionally uses "reporting rate" to refer to the probability that an encountered bird will be reported, the Penn State report uses this terminology (sometimes interchangeably with the more conventional "recovery rate") to refer to

the probability that a bird will be encountered and reported. They did find that survival among hatch year birds was lower than among adult birds, which is consistent with national findings. National estimates based on the same 11 years of data indicated that annual harvest rate was higher for HY individuals compared to AHY individuals, with HY rate 42% greater than AHY harvest rate (Seamans and Sanders 2014). Additional interpretation of the Pennsylvania data was limited by the extremely small recovery data set for Pennsylvania compared to national figures. The full report is attached as Appendix 1 of this annual report.

RECOMMENDATIONS

1. Continue operational dove banding efforts during Fiscal Year 2015 in support of the national cooperative research and management program. Continue to allocate band numbers, weighted for dove harvest density, by WMU to meet BCR quotas and to obtain a representative sample and approximate recommended strata weight goals.

2. Acquire and distribute bands and equipment to field personnel for 2015 banding effort by 1 July 2015.

3. Participate as needed with USFWS, Eastern Management Unit (EMU) Dove Technical Committee, and Atlantic Flyway Migratory Game Bird Technical Section in analysis of banding data and in ongoing evaluation and attainment of EMU banding goals.

4. Analyze harvest distribution and derivation of doves banded and recovered in Pennsylvania.

LITERATURE CITED

- Otis, D. L. 2009. Mourning dove banding needs assessment. U.S. Geological Survey Iowa Cooperative Fish and Wildlife Research Unit, Ames, Iowa, USA.
- Petrides, G. A. 1950. Notes on determination of sex and age in the woodcock and mourning dove. *Auk* 67(3):357-360.
- Reeves, H. M., A. D. Geis, and F. C. Kniffin. 1968. Mourning dove capture and banding. U.S. Fish and Wildlife Service Special Scientific Report 117, Washington, D.C., USA.
- Reeves, H. M., and S. R. Amend. 1970. External age and sex determination of mourning doves during the pre-season banding period. U.S. Fish and Wildlife Service Mimeograph, Washington, D.C., USA.
- Sanders, T. A., and D. L. Otis. 2012. Mourning dove reporting probabilities for web-address versus toll-free bands. *The Journal of Wildlife Management* 76:480-488.
- Seamans, M. E. and Sanders, T. A. 2014. Mourning dove population status, 2014. U.S. Department of the Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Washington, D.C., USA.

U.S. Fish and Wildlife Service. 2014. Mourning dove harvest strategy. U. S. Department of the Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Washington, D.C., USA.

Table 1. Numbers of mourning doves banded, by age, sex and Wildlife Management Unit, in Pennsylvania during the 2014 banding season.

| WMU ^a | Region(s) | Bands Allocated | Doves Banded | | | | | Total |
|------------------|-----------|--------------------|-----------------|-----|----|-----|-----|-------|
| | | | AM ^b | AF | AU | JUV | UNK | |
| 1A | NW | 100 | 4 | 5 | 12 | 78 | 1 | 100 |
| 1B | NW | 60 | 7 | 0 | 0 | 51 | 2 | 60 |
| 2A | SW | 50 | 3 | 1 | 0 | 46 | 0 | 50 |
| 2B | SW | 54 | 7 | 2 | 0 | 44 | 1 | 54 |
| 2C | SW | 50 | 3 | 1 | 0 | 46 | 0 | 50 |
| 2D ^c | NW,SW | 125 | 22 | 16 | 0 | 44 | 37 | 119 |
| 3B | NC | 25 | 10 | 1 | 0 | 13 | 1 | 25 |
| 3C | NE | 25 | 8 | 0 | 1 | 4 | 6 | 19 |
| 3D | NE | 25 | 11 | 0 | 1 | 15 | 4 | 31 |
| 4A ^d | SC | 75 | 6 | 4 | 0 | 1 | 10 | 21 |
| 4B ^e | SC | 25 | 3 | 1 | 0 | 4 | 1 | 9 |
| 4C | NE,SE | 50 | 21 | 2 | 0 | 16 | 11 | 50 |
| 4D ^f | NC,SC | 68 | 38 | 21 | 4 | 58 | 12 | 133 |
| 4E | NE | 25 | 5 | 2 | 0 | 14 | 4 | 25 |
| 5A | SC | 100 | 26 | 19 | 2 | 52 | 1 | 100 |
| 5B ^g | SE | 150 | 30 | 15 | 0 | 30 | 5 | 80 |
| 5C | SE | 125 | 69 | 17 | 0 | 52 | 10 | 148 |
| 5D | SE | 25 | 0 | 3 | 0 | 22 | 0 | 25 |
| Total | | 1,157 | 273 | 110 | 20 | 590 | 106 | 1,099 |

^a No bands allocated or used in WMUs 2E, 2F, 2G, 3A, or the recently-created 2H

^b AM = adult male, AF = adult female, AU = adult unknown sex, JUV = juvenile, UNK = unknown age

^c Six bands destroyed or lost from allocation

^d 50 bands re-allocated to WMU 4D

^e Sixteen bands lost by bander

^f Returned bands placed on birds as opportunities arose

^g Unused bands will be allocated in 2015; 23 bands were re-allocated to WMU 5C

Table 2. Numbers of adult and juvenile mourning doves banded, by Bird Conservation Region, in Pennsylvania during the 2014 banding season, and comparison to BCR banding goals.

| BCR | Adults | | Juveniles | | BCR Proportion of Total ^a | Stratum Weight |
|-----|--------|------|-----------|------|--|-------------------|
| | Banded | Goal | Banded | Goal | | |
| 13 | 28 | 12 | 129 | 11 | 0.16 | 0.08 |
| 28 | 241 | 95 | 357 | 85 | 0.60 | 0.66 |
| 29 | 134 | 38 | 104 | 34 | 0.24 | 0.26 |

^a calculations based on known-age birds only

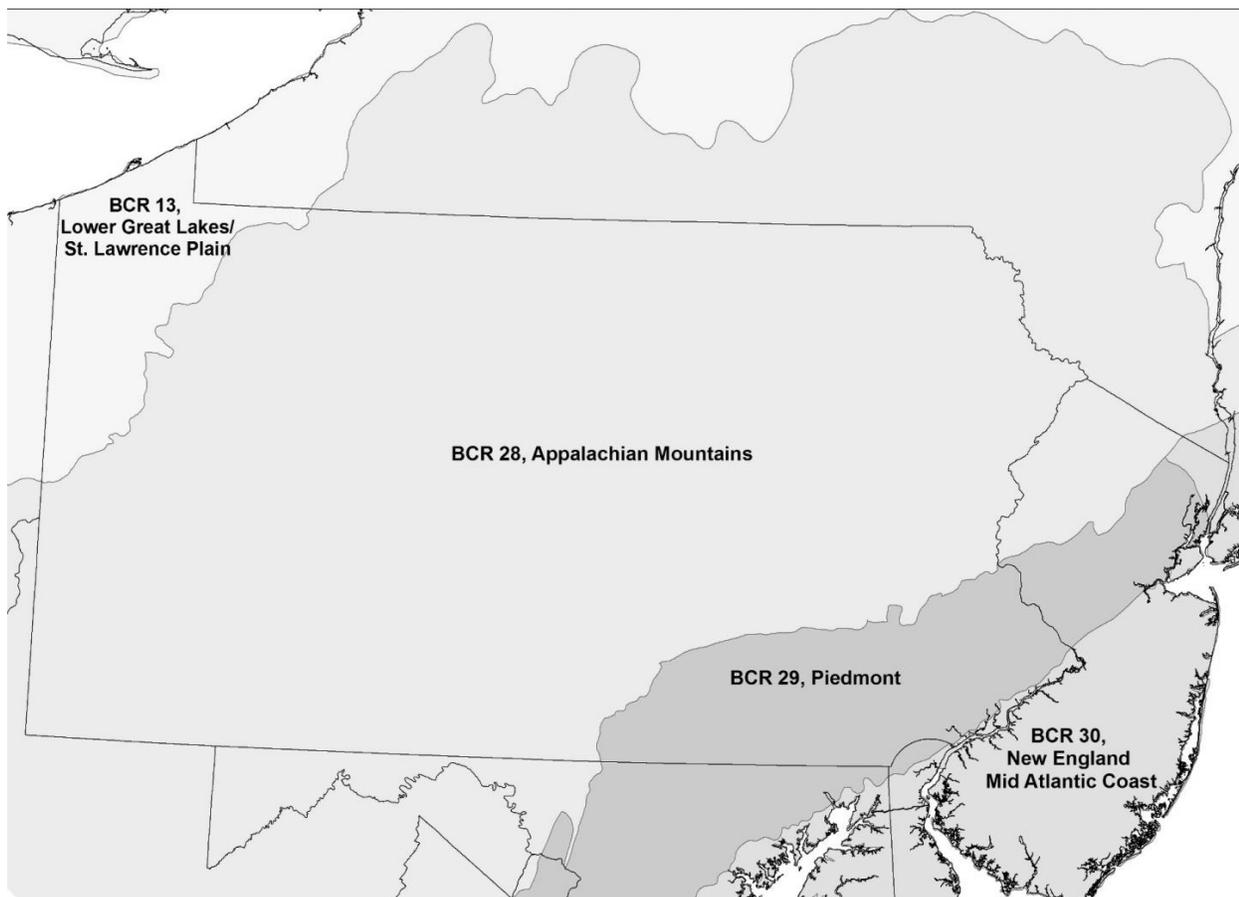


Figure 1. Bird Conservation Regions in Pennsylvania.