

**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 2015 through 30 June 2016

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

WORK LOCATION(S): Statewide

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DATE: 14 June 2016

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 2015, 27 individuals banded 878 doves at 28 locations in 23 counties and in 16 of 23 Wildlife Management Units throughout Pennsylvania. Of 878 doves banded, 394 were adults, 402 were juveniles, and 82 were of unknown age. Adult birds included 245 males, 114 females, and 35 of unknown sex. The ratio of known-age birds was 1.02 juveniles per adult, which was roughly 30% less than that of recent years (2012-2014). All Bird Conservation Region level quotas for both adults and juveniles were met. I recommend we continue dove banding efforts during Fiscal Year 2016 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 Bureau of Wildlife Management, Game Commission regions and volunteers. Bands were allocated for use in 17 of the 23 WMUs in Pennsylvania and in all 6 Game Commission regions (Table 1). The largest allocation was in the Southcentral Region (275 bands), followed by the Southeast Region (225 bands), Southwest (150), Northwest (100), Northeast (100), and Northcentral (85) regions. The resulting total allocation was 935 bands.

Statewide banding occurred between 29 June and 14 August 2015. 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 sex 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. Additionally, those molting primaries #8-10 were classified as unknown age unless a retained juvenile covert was observed. Previously, wear on P9 and P10 was used to make an age classification for these birds, with worn outer primaries triggering an 'adult' classification. It is now believed 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.

RESULTS

Capture and banding work was carried out at 28 locations in 23 counties and in 16 of 23 WMUs throughout Pennsylvania between 29 June and 14 August of 2015. Fifty-five unused bands were returned to the project coordinator immediately after the banding season and will be re-allocated in 2016. Two allocated bands were neither returned nor placed on birds: 1 was lost and 1 was destroyed. Twenty-seven individuals banded 878 doves (Table 1). These included 394 adults, 402 juveniles and 82 of unknown age. Adult birds included 245 males, 114 females, and 35 of unknown sex. The ratio of known-age birds was 1.02 juveniles per adult, which was 30% less than that of 2014 through 2012 (approximately 1.46 juveniles per known adult each year in 2012-14). The proportion of completely molted birds (Unknown age/Unknown sex) was 8.9% of the sample. This is comparable with the 3 prior years since the methodology changed for assessing age of these birds (range 8.9% to 12.2%).

All Bird Conservation Region (BCR) quotas for both adults and juveniles were met (Table 2). Bird Conservation Region 13 and BCR 28 banding effort approximated recommended stratum weights; BCR 29 fell slightly short of its recommended stratum weight, primarily due to the loss of a biologist in the Southeast Region. Recent changes in banding effort in BCR 28 and BCR 29 have generally 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 2016 if staffing permits.

RECOMMENDATIONS

1. Continue operational dove banding efforts during Fiscal Year 2016 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 2016 banding effort by 1 July 2016.
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

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Table 1. Numbers of mourning doves banded, by age, sex and Wildlife Management Unit (WMU), in Pennsylvania during the 2015 banding season.

WMU ^a	Region(s)	Bands Allocated	Doves Banded					Total
			AM ^b	AF	AU	JUV	UNK	
1A	NW	50	0	0	18	32	0	50
1B	NW	50	17	1	0	29	3	50
2B ^{c,d}	SW	25	1	0	0	3	0	4
2C ^c	SW	25	0	0	0	0	0	0
2D	NW,SW	100	9	21	0	50	20	100
3B	NC	25	11	2	0	12	0	25
3C	NE	25	7	0	3	10	5	25
3D	NE	25	11	0	1	7	6	25
4A ^{c,e}	SC	50	1	0	0	0	0	1
4B ^d	SC	25	4	12	2	2	4	24
4C ^e	NE,SE	50	8	6	1	23	2	40
4D ^f	NC,SC	135	74	23	4	114	30	245
4E	NE	25	3	1	0	20	1	25
5A	SC	100	27	28	5	33	7	100
5B ^c	SE	85	4	3	0	7	2	16
5C ^{e,f}	SE	115	68	13	0	40	2	123
5D	SE	25	0	4	1	20	0	25
Total		935	245	114	35	402	82	878 ^e

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

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

^c unused bands re-allocated to WMU 4D and/or 5C

^d 1 band lost or damaged

^e Unused bands will be allocated in 2016

^f Several unused bands from other WMUs reallocated to this WMU

Table 2. Numbers of adult and juvenile mourning doves banded, by Bird Conservation Region (BCR), 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	36	12	61	11	0.12	0.08
28	265	95	274	85	0.68	0.66
29	93	38	67	34	0.20	0.26

^a calculations based on known-age birds only

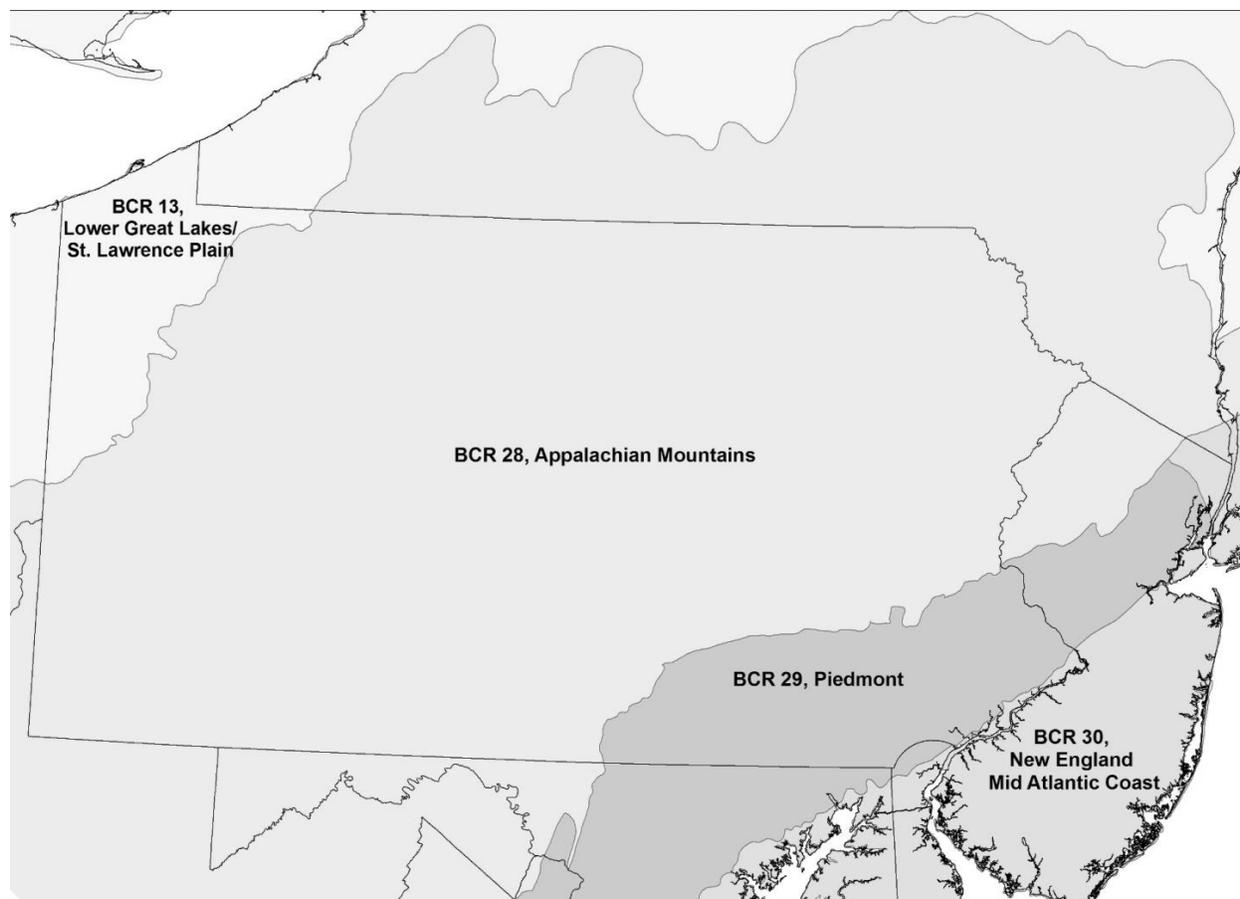


Figure 1. Bird Conservation Regions in Pennsylvania.