



U.S. Fish & Wildlife Service

Mourning Dove

Population Status, 2023



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U.S. Fish and Wildlife Service
Division of Migratory Bird Management
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This report contains annual estimates of migratory bird abundance, harvest, and hunter participation and activity. Due to the large volume of data, the number of years, and geographic areas involved, data tables may be large and complex. Readers that may need help reading and interpreting the data, or that may need data presented in an alternative format to facilitate reading and interpretation, should contact the author at mark_seamans@fws.gov.

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MOURNING DOVE POPULATION STATUS, 2023

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Abstract: This report summarizes information collected annually in the U.S. on survival and recruitment rates, abundance and harvest of mourning doves. Information is provided for three management units: the Eastern (EMU), Central (CMU) and Western (WMU). Absolute abundance estimates based on band recovery and harvest data are reported, and harvest and hunter activity are estimated from the Migratory Bird Harvest Information Program (HIP). Estimates of absolute abundance are available since 2003 and indicate that there were approximately 161 million doves in the U.S. as of 1 September 2022. Abundance (in millions of birds) varied among management units in 2022: EMU 41.9 (SE=2.3); CMU 92.6 (SE=6.8); and WMU 26.2 (SE=2.4). In 2022 HIP estimates for mourning dove total harvest, active hunters, and total days afield in the U.S. were 8,254,600 (SE= 287,200) birds, 625,000 hunters, and 1,362,000 (SE=36,200) days afield. In 2022 harvest and hunter activity at the management unit level were: EMU, 3,268,500 (SE=146,800) birds, 272,600 hunters, and 544,600 (SE=20,600) days afield; CMU, 4,038,600 (SE=239,400) birds, 281,100 hunters, and 659,200 (SE=28,700) days afield; and WMU, 947,500 (SE=60,000) birds, 71,200 hunters, and 158,200 (SE=8,000) days afield.

The mourning dove (*Zenaida macroura*) is one of the most abundant bird species in North America and is familiar to millions of people. Authority and responsibility for management of this species in the U.S. is vested in the Secretary of the Interior. This responsibility is conferred by the Migratory Bird Treaty Act of 1918 which, as amended, implements migratory bird treaties between the U.S. and other countries. Mourning doves are included in the treaties with Great Britain (for Canada) and Mexico (U.S. Department of the Interior 2013). These treaties recognize hunter hunting as a legitimate use of the renewable migratory bird resource.

Maintenance of dove populations in a healthy, productive state is a primary management goal. Management activities include population assessment, harvest regulation, and habitat management. Each year, tens of thousands of doves are banded and thousands of wings from harvested doves are analyzed to estimate annual survival, harvest rates, recruitment, and abundance. The resulting information is used by wildlife managers in setting annual hunting regulations (USFWS 2017). Past federal frameworks for hunting mourning doves in the U.S. are in Appendix A.

DISTRIBUTION

Mourning doves breed from southern Canada throughout the U.S. into Mexico, and in Bermuda, the Bahamas and Greater Antilles, and in scattered locations in Central America (Peterjohn et al. 1994, Fig. 1). Although mourning doves winter throughout much of their breeding range, the majority winter in the southern U.S., Mexico, and south through Central America to western Panama (Aldrich 1993, Mirarchi and Baskett 1994).

POPULATION MONITORING

Within the U.S., three zones contain mourning dove populations that are largely independent of each other (Kiel 1959; Fig. 2). These zones encompass the principal breeding, migration, and U.S. wintering areas for each population. As suggested by Kiel (1959), these three zones were established as separate management units in 1960 (Kiel 1961). Since that time, management decisions have been made within the boundaries of the Eastern (EMU), Central (CMU), and Western (WMU) Management Units (Fig. 2). The EMU was further

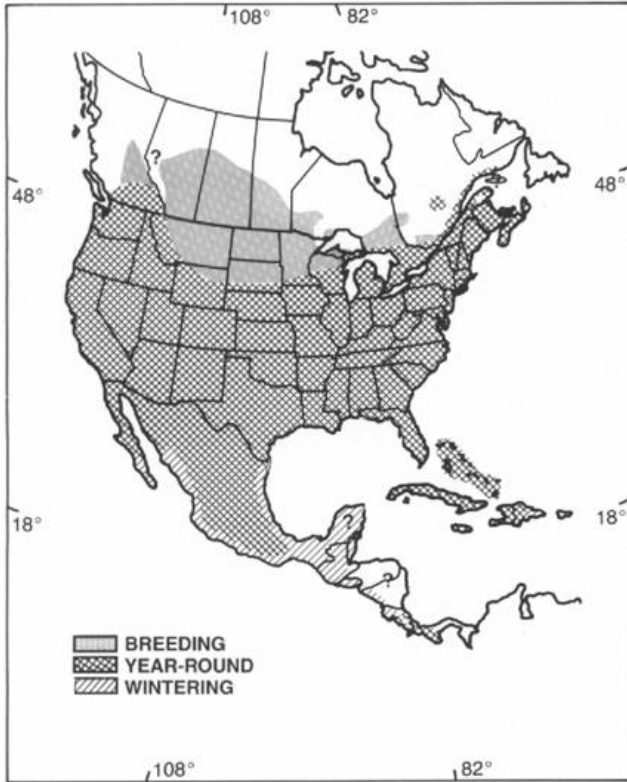


Figure 1. Breeding and wintering ranges of the mourning dove (adapted from Mirarchi and Baskett 1994).

divided into two groups of states for some analyses: states permitting dove hunting were combined into one group (hunt) and those prohibiting dove hunting into another (non-hunt). Additionally, some states were grouped to increase sample sizes. Maryland and Delaware were combined; Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont were combined to form a North Atlantic group. Even though Rhode Island is a hunt state, due to its small size and geographic location its data was included in this non-hunt group of states for analysis.

Breeding Bird Survey

The North American Breeding Bird Survey (BBS; Robbins et al. 1986) is completed in June and is based on routes that are 24.5 miles (39.4 km) long. Each route consists of 50 stops or point count locations at 0.5-mile (805 m) intervals. At each stop, a 3-minute count is conducted whereby every bird seen or heard within a 0.25-mile (402 m) radius is recorded. Surveys start one-

half hour before local sunrise and take about 5 hours to complete. Data for birds heard and seen at stops are combined for BBS analyses (Link et al. 2020, Sauer et al. 2020).

Although the BBS is not used to inform annual mourning dove harvest management decisions, it is still of interest because it provides independent estimates of trends in abundance. Consequently, the 1966–2022 BBS trend information is included in this report. Current-year BBS data could not be analyzed in time for this report.

Banding Program

A national banding program was initiated in 2003 to improve our understanding of mourning dove population biology and to help estimate the effect of harvest on mourning dove populations. Doves are banded in July and August in most of the lower 48 states. Band recoveries occur almost exclusively during the U.S. hunting seasons which occur between 1 September and 31 January (Appendix A).

Banding goals for each state (specified by Bird Conservation Region [BCR]) are based on a power analysis that estimated sample sizes necessary to achieve a desired precision in estimates of population growth rate at the management unit level (Otis 2009). A weighting factor based on the median BBS index during 1966–2008 was used to determine banding goals for each state within the management units. Within states, the amount of area in each BCR and associated median BBS indices were used to determine sample size allocation. Placement of banding stations is left to the judgment of each state’s dove banding coordinator.

Harvest Survey

The Harvest Information Program (HIP) was cooperatively developed by the U.S. Fish and Wildlife Service (USFWS) and state wildlife agencies to provide reliable annual estimates of hunter activity and harvest for all migratory game birds (Elden et al. 2002). The HIP sampling frame consists of all migratory game bird hunters. Under this program, state wildlife agencies collect the name, address, and additional information from each migratory bird hunter in their state and send that information to the USFWS. The USFWS then selects stratified random samples of those hunters and

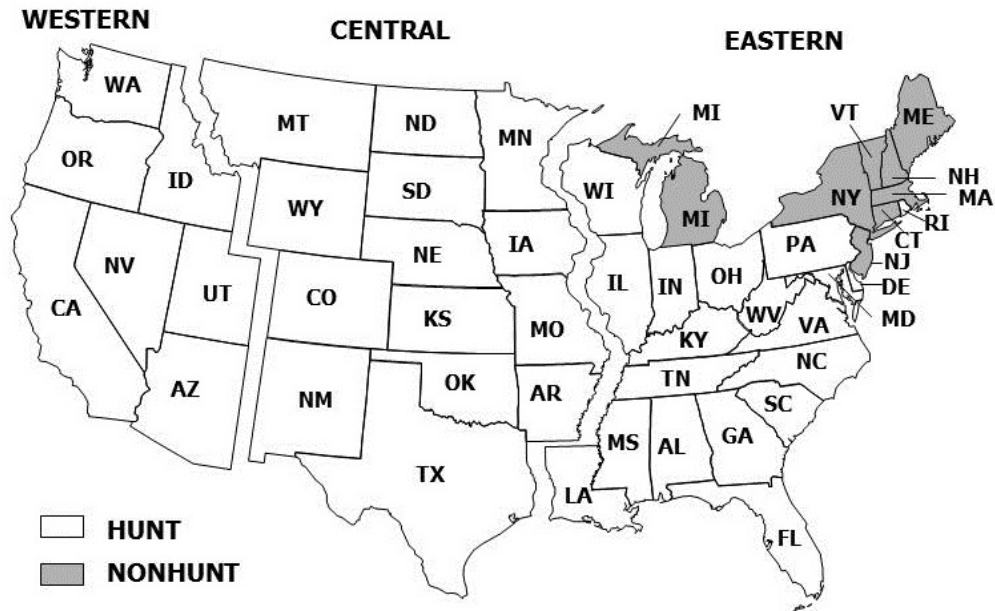


Figure 2. Mourning dove management units with 2022-23 hunt and non-hunt states.

asks them to voluntarily provide detailed information about their hunting activity. For example, hunters selected for the mourning dove harvest survey are asked to complete a daily diary about their mourning dove hunting and harvest during the current year’s hunting season. Their responses are then used to develop nationwide mourning dove harvest estimates. HIP survey estimates of mourning dove harvest have been available since 1999. Although estimates from 1999–2002 have been finalized, the estimates from 2003–2022 should be considered preliminary as refinements are still being made in the sampling frame and estimation techniques.

Parts Collection Survey

Age of individual doves can be determined by examination of their wings (Ruos and Tomlinson 1967, Braun 2014). Mourning dove wings are obtained during the hunting season and provide estimates of recruitment (number of young per adult in the population), which can be used to inform harvest management. From 2005–2009 some states collected wings for use in estimating age ratios in the fall populations. In 2007, the USFWS initiated the national Mourning Dove Parts Collection Survey, which expanded the geographical scope of the earlier state-based surveys.

The survey design for mourning dove wing collection follows that of waterfowl (Raftovich et al. 2022). The sampling frame is defined by hunters who identify themselves as dove hunters when purchasing a state hunting license and who were active dove hunters the previous year.

Each year, state and federal biologists classify wings during a 2-day wingbee hosted by the Missouri Department of Conservation in Lee’s Summit, Missouri. Wings of harvested mourning doves are classified as juveniles (hatch-year birds [HY]) or adults (after-hatch-year birds [AHY]). A significant portion of wings are classified as unknown age where molt has progressed to a late stage. These harvest age ratios (HY/AHY) are used to estimate recruitment rates (population age ratio) after accounting for uncertainty related to unknown-age wings and age-specific vulnerability to harvest (Miller and Otis 2010).

Call-count Survey

The Mourning Dove Call Count Survey (CCS) was conducted from 1966 to 2013. The CCS was developed to provide an annual index of abundance specifically for mourning doves (Dolton 1993). The CCS was discontinued because the harvest strategy adopted for mourning doves in 2013 does not make use of data from the CCS, but rather relies on estimates of absolute abundance. However, state and federal biologists

conducted a national study from 2015 to 2017 using a subset of the historical CCS routes to determine if point count surveys that use distance sampling methods (Buckland et al. 2001) can produce absolute abundance estimates. Those interested in historic CCS information can access the 2013 status report for mourning doves (available online at: <https://www.fws.gov/media/mourning-dove-population-status-report-2013>).

METHODS

Estimating Survival, Harvest, Recruitment Rates, and Absolute Abundance

Band recovery models were used to estimate annual survival. A Seber parameterization (Seber 1970) with both direct and indirect dead recoveries was used to estimate survival rates. To estimate harvest rates, only direct recoveries (bands recovered during the hunting season immediately following banding) were used and data were adjusted using band-reporting rates (Sanders and Otis 2012, Seamans unpublished data) prior to analysis.

Age-specific annual harvest and survival rates were estimated by state and management unit. Many states lacked sufficient sample sizes of banded birds to estimate annual survival rates; therefore, data were pooled over years to obtain mean annual estimates. Updated reporting rates (probability of a hunter reporting a banded, harvested dove to the Bird Banding Laboratory) were used to estimate annual harvest rates. Reporting rates for 2018 to present were estimated from a national reward band study conducted 2018–2022. Annual harvest rates for management units were based on state-weighted harvest rate estimates. Each state's weight was the product of its habitat area (area within state presumed to be dove habitat) and average dove abundance estimated by the CCS index of doves heard during 2009–2013 (the CCS was discontinued after 2013). It should be possible to update the CCS portion of the weighting factor once analysis of the 2015–2017 CCS-distance sampling study is complete (*see* “Call-Count Survey” above).

For estimating survival rates, a model was formulated that allowed recovery rate to vary by state with an additive age effect (HY vs. AHY) and allowed survival to vary by state and age. This model was used for

inference regarding age and state-specific survival rates.

The approach of Miller and Otis (2010) was used to estimate annual recruitment rates. Samples were limited to wings collected during the first two weeks of September to minimize the proportion of unknown age wings and maximize the proportion of local birds in samples. Unknown age wings were assigned to an age-class based on previously estimated probabilities that adults will be in late stages of molt (Miller and Otis 2010). Band recovery data were used to adjust age-ratio estimates for differential vulnerability to harvest.

A simple Lincoln-type estimator was used to estimate abundance from annual harvest and harvest rates (Otis 2006). Abundance for each year was estimated at the management unit level separately for juvenile and adult doves by dividing age-specific total harvest (from the USFWS Harvest Information Program [Table 3] and Parts Collection Survey [Table 6]) by age-specific harvest rates estimated from direct (first hunting season after banding) recoveries of banded birds.

RESULTS

Breeding Bird Survey

The BBS results indicated that dove abundance increased in the EMU hunt and non-hunt states during the last 57 years (Table 1). Over the last 10 years abundance remained unchanged in the EMU non-hunt states, declined in the hunt states, and declined in the entire EMU. The BBS suggested that doves decreased in abundance in the CMU over the last 57 years, and the most recent 10 years (Table 1). The BBS suggested that dove abundance decreased in the WMU over the last 57 years, but remained unchanged during the most recent 10 years (Table 1).

Harvest Survey

Preliminary results of mourning dove harvest and hunter activity from HIP for the 2021–22 and 2022–23 hunting seasons are presented in Tables 2 and 3, respectively. Current (2022–2023 season) HIP estimates indicate that in the U.S. about 8.3 million mourning doves were harvested by about 625 thousand hunters who spent about 1.4 million days afield. The EMU and CMU total harvest represented 40% and 49%,

respectively, of the national harvest of doves while the WMU represented 11% (Table 3). In all management units mourning dove harvest and hunter activity (days afield) decreased in the 2022–23 season from the previous year (Fig. 3; Tables 2 and 3). Additional information about HIP, survey methodology, and results can be found in annual reports located at: <https://www.fws.gov/library/collections/migratory-bird-hunting-activity-and-harvest-reports>.

Survival and Harvest Rates

During July and August over the past 20 years 367,892 known age doves were banded in the EMU, 320,021 in the CMU, and 154,601 in the WMU (Table 4). There have been 23,028, 16,022, and 5,754 recoveries of known-age banded birds in the EMU, CMU, and WMU, respectively.

Mean annual HY survival was similar between the CMU and EMU but higher in the WMU (Table 5). Mean annual AHY survival was similar between the CMU and WMU, whereas it was lower in EMU. Mean annual harvest rate was higher for HY individuals compared to AHY individuals in all the management units (Fig. 3, Table 5). This relationship was more pronounced in the EMU (HY harvest rate 47% greater than AHY harvest rate) than the CMU (30% greater) and WMU (18% greater). Mean annual harvest rates by age-class (HY and AHY) were greater in the EMU than in the other management units (Table 5). Within the EMU, the harvest rate of birds banded in the North Atlantic states (predominantly non-hunt states) was much lower than that of most hunt states (Table 5).

Recruitment Rates

A total of 243,842 wings were obtained from 2007 to 2022 from birds harvested prior to September 15th. Overall recruitment rates were highest in the east and northwest and lowest in the Great Plains states and the southwest (Table 6). At the management unit scale, the EMU typically had higher annual recruitment compared to the CMU and WMU (Fig. 4). In 2022, age ratio was higher than the long-term average in each management unit (Table 6).

Mean population age ratios for all states and years are provided in Table 6. There was great variation in the sample sizes for individual states. However, sample

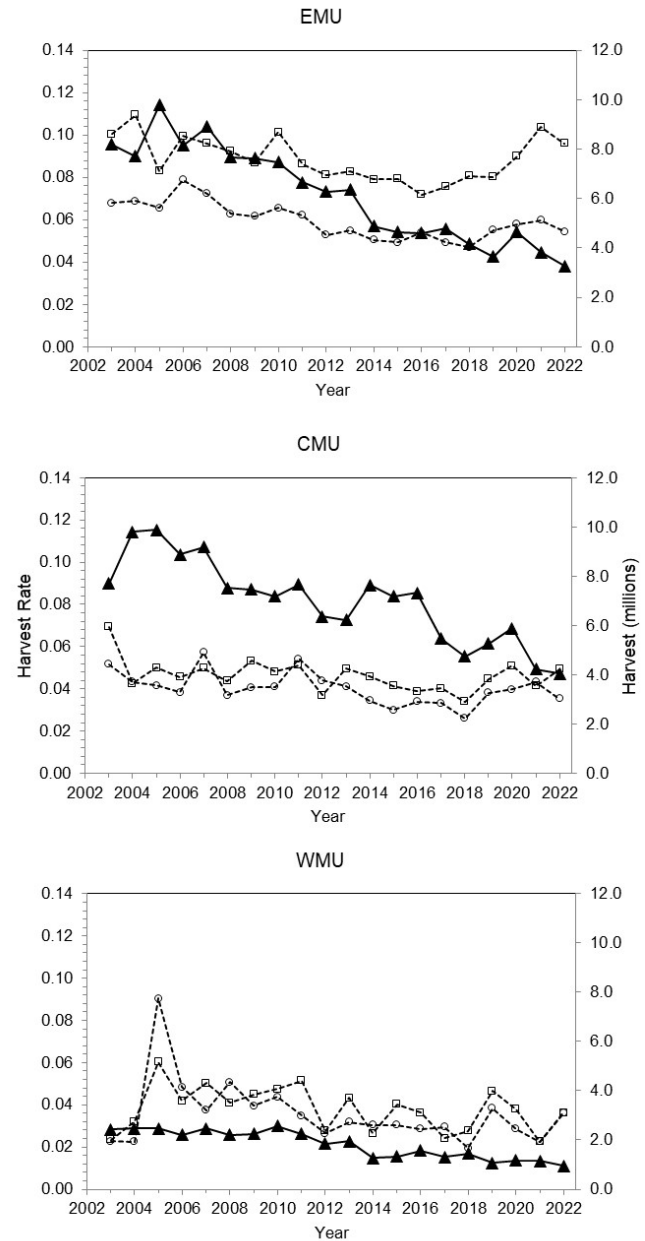


Figure 3. Estimated mourning dove total annual harvest (▲) and harvest rates for hatch-year (□) and after-hatch-year (○) age-classes in the Eastern (EMU), Central (CMU), and Western (WMU) Management Units, 2003–2022.

sizes were sufficient to calculate precise estimates of recruitment rate for all states. Age ratios for Florida are not estimated because hunting seasons there do not start until late September each year. At this late date most wings cannot be aged due to molt progression, precluding accurate estimates of age ratio.

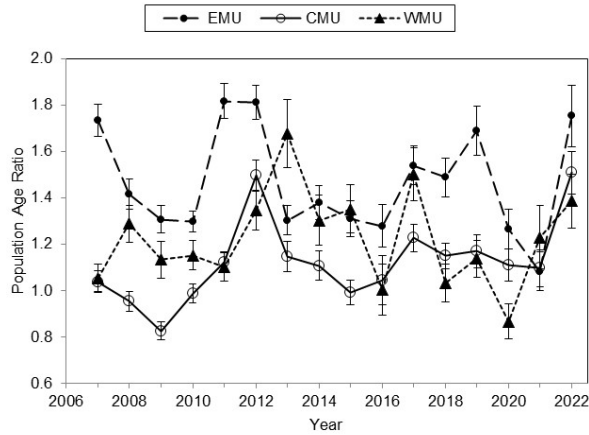


Figure 4. Estimated mourning dove fall population age ratios for each management unit, 2007–2022. Error bars represent 95% confidence intervals.

Absolute Abundance

Estimates of absolute abundance are available since 2003 (Fig. 5, Table 7). Estimates during the first 1 or 2 years may be biased in association with startup of the national mourning dove banding program when coordinators were gaining experience and some states were not yet participants. In addition, age ratio information was not available for the first 4 years (the annual averages from later years were used for estimating abundance during this period). The most recent estimates indicate that there were 161 million mourning doves in the U.S. immediately prior to the 2022–23 hunting season. Abundance estimates were lower in each management in 2022 compared to 2021.

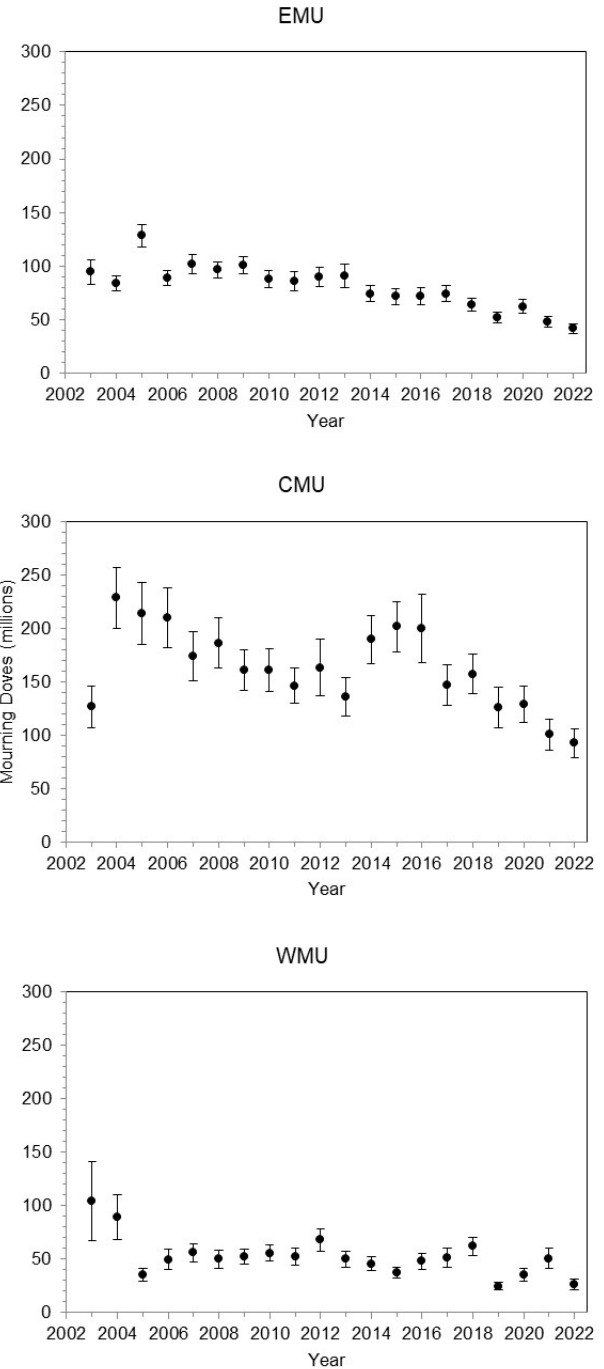


Figure 5. Estimates and 95% confidence intervals of mourning dove absolute abundance by management unit and year, 2003–2022. Estimates based on band recovery and harvest data.

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Table 1. Estimated trend^a (percent change per year and lower and upper 95% credible intervals or CI) in mourning dove abundance indices based on Breeding Bird Survey data for management units and states during 57-year (1966–2022) and 10-year (2013–2022) periods. ‘N’ is the number of routes with ≥ 1 mourning dove detection in at least one year.

Management Unit & State	57-year N	57-year Trend	57-year Lower CI	57-year Upper CI	10-year N	10-year Trend	10-year Lower CI	10-year Upper CI
Eastern	1,806	0.3	0.2	0.4	1,433	-1.0	-1.4	-0.7
Hunt states	1,467	0.2	0.1	0.3	1,188	-1.1	-1.5	-0.8
AL	104	-0.6	-1.0	-0.3	89	-0.8	-2.0	0.4
DE-MD	90	0.4	0.1	0.6	70	1.2	0.2	2.4
FL	103	1.8	1.3	2.3	74	-3.2	-4.7	-1.6
GA	107	-0.2	-0.6	0.1	96	-0.1	-1.1	0.9
IL	104	0.4	0.0	0.8	101	0.2	-0.9	1.3
IN	65	-0.3	-0.7	0.1	58	-0.6	-2.0	0.7
KY	58	0.6	0.3	1.0	41	-1.4	-2.9	0.0
LA	97	1.3	0.7	1.8	66	-3.5	-5.4	-1.6
MS	54	-0.9	-1.5	-0.3	37	-5.2	-8.1	-2.5
NC	95	0.0	-0.3	0.4	80	-2.3	-3.3	-1.3
OH	78	0.7	0.3	1.0	55	0.4	-1.1	1.9
PA	128	1.1	0.8	1.5	99	-0.6	-1.6	0.4
SC	47	-0.3	-0.8	0.2	38	-0.7	-2.4	1.0
TN	32	-0.4	-0.9	0.0	25	-1.2	-3.1	0.6
VA	61	-0.2	-0.6	0.2	50	0.2	-1.2	1.6
WI	96	1.2	0.9	1.6	91	-0.4	-1.7	0.8
WV	57	3.2	2.6	3.7	50	-0.7	-2.7	1.3
Non-hunt states	429	1.1	0.9	1.3	315	0.6	-0.1	1.3
MI	91	0.5	0.1	1.0	68	-0.7	-2.1	0.7
New England ^b	169	1.7	1.3	2.1	126	-0.7	-1.9	0.5
NJ	44	-0.1	-0.6	0.4	28	0.8	-0.9	2.6
NY	126	1.6	1.2	1.9	91	1.1	-0.2	2.4
Central	1,269	-0.6	-1.0	-0.5	1,080	-1.3	-1.8	-0.9
AR	55	-0.7	-1.2	-0.2	48	-5.9	-7.8	-3.9
CO	148	-0.7	-1.2	-0.2	126	-2.3	-3.7	-0.8
IA	38	0.0	-0.4	0.4	32	-2.1	-3.8	-0.4
KS	67	-0.2	-0.6	0.1	63	-0.3	-1.7	1.1
MN	79	-0.8	-1.2	-0.4	71	-1.3	-2.7	0.3
MO	94	-0.8	-1.2	-0.4	80	0.2	-1.1	1.5
MT	96	-0.4	-0.9	0.2	88	1.7	-0.2	3.7
NE	71	-0.4	-0.8	0.0	64	-1.3	-2.9	0.2
NM	85	-0.5	-3.3	0.4	65	2.7	0.6	4.9
ND	51	0.3	-0.2	0.7	46	0.3	-1.3	1.8
OK	60	-1.4	-1.8	-1.0	49	-2.9	-4.5	-1.3
SD	58	0.2	-0.2	0.6	46	0.2	-1.4	1.8
TX	237	-1.1	-1.4	-0.8	198	-3.4	-4.4	-2.4
WY	130	-0.7	-1.4	-0.1	104	0.7	-0.9	2.4
Western	720	-1.1	-1.5	-0.8	525	0.2	-0.9	1.2
AZ	88	-0.9	-1.7	-0.2	63	0.6	-1.5	2.8
CA	253	-0.9	-1.3	-0.4	165	0.4	-1.1	1.9
ID	49	-1.7	-2.6	-0.6	39	-1.4	-4.9	2.1
NV	45	-1.9	-3.0	-0.8	32	-1.4	-6.8	4.4
OR	116	-1.0	-1.7	-0.3	92	3.6	1.4	5.8
UT	102	-2.0	-2.9	-1.1	81	-2.8	-5.0	-0.6
WA	79	-0.1	-0.7	0.6	63	0.7	-1.0	2.6

^a There is evidence of a positive trend if the lower CI > 0 and there is evidence of negative trend if the upper CI < 0. If the CI contains 0, then there is inconclusive evidence about trend in abundance.

^b New England consists of CT, ME, MA, NH, RI, and VT; RI is a hunt state but was included in this group for purposes of analysis.

Table 2. Preliminary estimates and their standard errors (SE) of mourning dove harvest and hunter activity during the 2021–22 hunting season^a. Data rounded to nearest 100.

Management Unit & State	Harvest	Harvest SE	Active hunters	Active Hunters SE	Hunter days afield	Hunter days afield SE	Harvest per hunter ^b	Harvest per hunter SE
Eastern	3,822,100	156,700	256,800	† ^c	624,300	28,500	† ^c	† ^c
AL	456,200	61,100	32,500	3,200	65,800	7,000	14.0	2.3
DE	21,500	4,600	1,600	200	4,500	1,000	13.2	3.4
FL	110,200	27,800	7,200	1,600	21,200	4,400	15.2	5.1
GA	620,300	59,000	37,000	3,000	84,600	7,000	16.8	2.1
IL	150,600	25,300	11,800	1,700	23,800	3,300	12.8	2.8
IN	176,000	30,100	9,000	1,400	29,100	5,000	19.7	4.6
KY	376,100	42,700	12,100	500	41,800	4,000	31.0	3.7
LA	110,300	19,200	7,500	900	19,200	2,900	14.7	3.1
MD	89,200	15,800	6,000	1,000	13,000	2,300	14.9	3.7
MS	130,400	23,000	10,900	1,400	19,900	3,000	12.0	2.6
NC	549,300	60,600	37,100	4,000	81,400	8,400	14.8	2.3
OH	154,500	27,800	12,800	2,000	32,400	5,900	12.0	2.9
PA	54,500	12,900	9,200	2,800	38,100	18,200	5.9	2.3
RI	1,000	500	300	100	1,400	500	3.4	2.3
SC	347,600	62,900	20,900	3,400	50,100	9,100	16.6	4.0
TN	204,400	54,700	18,400	3,700	36,700	7,900	11.1	3.7
VA	208,000	19,400	15,900	1,700	37,000	4,000	13.1	1.9
WI	51,500	10,200	5,800	1,300	21,500	4,500	8.9	2.6
WV	10,400	1,700	1,000	100	2,700	400	10.6	2.2
Central	4,236,600	234,500	303,500	† ^c	874,700	50,300	† ^c	† ^c
AR	181,300	29,400	15,500	2,100	31,200	4,700	11.7	2.5
CO	122,900	13,900	9,800	800	25,700	3,000	12.6	1.7
IA	61,400	10,000	7,500	1,000	20,900	4,000	8.2	1.7
KS	400,200	44,000	25,500	2,500	64,600	6,900	15.7	2.3
MN	22,600	6,500	4,200	2,000	9,700	2,800	5.4	3.0
MO	259,700	39,700	19,800	2,000	51,300	6,300	13.1	2.4
MT	18,400	4,400	2,100	400	4,700	1,200	8.8	2.8
NE	148,000	15,800	10,400	1,100	27,000	3,000	14.3	2.2
NM	151,800	26,600	11,500	1,400	33,700	5,000	13.2	2.8
ND	91,500	15,800	5,500	900	20,100	3,400	16.5	3.9
OK	212,900	35,500	14,800	2,100	38,100	4,800	14.4	3.1
SD	88,200	16,900	5,400	900	12,300	1,800	16.2	4.1
TX	2,467,700	218,000	170,300	13,100	532,500	48,100	14.5	1.7
WY	10,000	2,600	1,200	300	2,900	800	8.1	2.7
Western	1,143,300	72,600	82,500	† ^c	211,000	12,900	† ^c	† ^c
AZ	308,600	24,400	17,900	800	50,500	3,200	17.2	1.6
CA	660,400	64,100	42,400	3,400	108,500	11,400	15.6	1.9
ID	83,000	21,200	8,600	1,600	17,600	3,600	9.7	3.0
NV	19,600	5,100	1,900	400	4,300	800	10.3	3.4
OR	20,300	6,800	3,400	700	11,200	2,600	6.0	2.3
UT	20,300	4,800	4,900	800	9,300	1,800	4.2	1.2
WA	31,100	5,000	3,400	500	9,700	1,800	9.1	1.9
United States	9,202,100	291,200	642,800	† ^c	1,710,000	59,200	† ^c	† ^c

^aHunter number estimates at the management unit and national levels may be biased high because the HIP sample frames are state specific; therefore, hunters are counted more than once if they hunt in >1 state. Variance is inestimable.

^bSeasonal harvest per hunter.

^cNo estimate available.

Table 3. Preliminary estimates and their standard errors (SE) of mourning dove harvest and hunter activity during the 2022–23 hunting season^a. Data rounded to nearest 100.

Management Unit & State	Harvest	Harvest SE	Active hunters	Active Hunters SE	Hunter days afield	Hunter days afield SE	Harvest per hunter ^b	Harvest per hunter SE
Eastern	3,268,500	146,800	272,600	† ^c	544,600	20,600	† ^c	† ^c
AL	371,700	44,900	30,400	2,300	54,500	5,800	12.2	1.7
DE	19,600	13,500	2,000	0	2,800	600	9.6	6.6
FL	84,700	21,200	8,900	1,600	14,500	3,300	9.5	2.9
GA	423,200	48,300	40,300	2,700	67,000	6,400	10.5	1.4
IL	117,900	19,700	10,800	1,200	21,500	4,200	11.0	2.2
IN	91,400	17,900	8,600	1,100	17,700	3,100	10.6	2.5
KY	216,900	30,800	14,900	1,200	31,100	3,800	14.6	2.4
LA	124,000	34,300	8,100	1,300	14,800	3,600	15.3	4.9
MD	48,500	14,000	5,800	1,300	10,400	3,000	8.3	3.0
MS	104,000	18,100	10,300	1,400	14,500	2,400	10.1	2.3
NC	388,300	46,400	39,800	2,800	76,600	7,700	9.8	1.4
OH	175,200	30,400	11,100	1,100	33,100	6,100	15.8	3.1
PA	124,700	23,100	14,900	1,600	32,200	4,800	8.4	1.8
RI	† ^d	† ^d	† ^d	† ^d	† ^d	† ^d	† ^d	† ^d
SC	466,100	77,500	22,800	2,400	58,800	8,500	20.5	4.0
TN	307,000	48,100	21,700	1,900	47,500	6,300	14.2	2.5
VA	174,000	35,200	13,300	1,500	28,700	4,700	13.1	3.0
WI	25,400	7,800	7,500	1,100	17,000	3,700	3.4	1.2
WV	5,800	2,500	1,500	300	2,000	600	3.8	1.8
Central	4,038,600	239,400	281,100	† ^c	659,200	28,700	† ^c	† ^c
AR	123,500	24,100	10,000	1,500	20,400	4,400	12.4	3.0
CO	112,700	12,700	8,700	700	17,800	1,600	13.0	1.8
IA	58,300	10,700	6,300	700	9,300	1,400	9.2	2.0
KS	375,600	44,300	22,000	1,600	57,000	7,300	17.1	2.4
MN	65,800	18,500	7,200	1,300	14,800	3,000	9.1	3.0
MO	182,600	30,800	15,600	1,600	34,900	5,300	11.7	2.3
MT	17,900	6,700	1,600	600	4,000	2,000	11.5	6.0
NE	131,000	28,000	10,000	1,200	24,500	4,100	13.1	3.2
NM	77,800	10,700	5,300	400	14,400	1,500	14.6	2.3
ND	33,600	15,400	2,700	700	4,900	1,500	12.7	6.7
OK	149,600	38,000	14,200	1,800	30,500	6,500	10.5	3.0
SD	50,500	17,700	4,000	800	9,600	2,600	12.7	5.1
TX	2,640,600	224,100	172,200	6,100	412,800	25,200	15.3	1.4
WY	19,200	8,000	1,400	300	4,400	1,600	13.5	6.3
Western	947,500	60,000	71,200	† ^c	158,200	8,000	† ^c	† ^c
AZ	308,700	24,900	18,900	800	47,000	3,000	16.4	1.5
CA	464,900	45,300	32,600	1,700	64,500	4,900	14.2	1.6
ID	97,500	28,700	6,800	1,000	22,000	4,900	14.3	4.8
NV	14,400	3,200	2,300	500	3,200	700	6.3	1.9
OR	15,800	4,900	3,000	500	5,700	1,100	5.2	1.8
UT	12,700	4,600	3,100	500	5,300	1,100	4.1	1.6
WA	33,500	6,800	4,500	600	10,600	2,200	7.5	1.8
United States	8,254,600	287,200	625,000	† ^c	1,362,000	36,200	† ^c	† ^c

^aHunter number estimates at the management unit and national levels may be biased high because the HIP sample frames are state specific; therefore, hunters are counted more than once if they hunt in >1 state. Variance is inestimable.

^bSeasonal harvest per hunter.

^cNo estimate available.

^dNo HIP respondents in RI reported hunting during the 2022–23 season.

Table 4. Number of mourning doves banded in each management unit, state, and year, 2003–2022. Only known-age birds banded in July or August are included in the table and used in analysis of survival and harvest rates.

Management Unit & State	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Eastern	15,652	17,454	20,142	20,862	21,717	19,461	21,309	20,475	18,946	19,525	19,411
AL	1,130	1,112	991	961	889	117	1,147	1,026	942	1,010	1,097
DE	0	0	0	0	0	68	111	133	103	205	107
FL	830	960	916	858	773	1,027	799	865	736	968	805
GA	1,424	1,161	1,396	1,136	1,234	1,332	1,450	1,670	1,244	1,498	1,258
IL	6	6	47	1,163	1,267	1,378	1,877	1,833	2,034	1,501	1,276
IN	6	1,175	1,211	1,253	1,261	963	1,008	1,312	1,162	1,418	1,136
KY	1,444	1,566	1,454	1,637	1,608	1,867	2,391	2,232	1,786	1,299	1,553
LA	1,205	655	2,412	2,581	3,516	2,347	1,955	1,826	1,738	1,362	1,729
MD	472	482	719	571	708	322	334	312	377	346	366
MI	39	26	0	2	6	2	4	0	2	10	0
MS	1,071	994	1,008	656	690	822	928	448	462	605	666
North Atl. ^a	20	4	19	34	12	12	460	1,176	1,286	967	974
NC	1,283	1,539	1,662	1,299	1,307	1,736	1,685	1,198	795	1,847	1,734
OH	1,984	2,712	2,020	1,976	1,993	1,958	2,007	955	1,264	1,393	1,300
PA	1,564	1,590	1,658	1,838	1,748	942	903	899	827	899	1,007
RI	0	2	0	0	0	0	14	22	0	0	13
SC	1,041	863	1,484	1,461	1,761	1,720	1,875	1,953	1,911	1,795	1,902
TN	938	1,277	1,154	1,275	866	1,199	653	854	635	651	785
VA	474	546	804	585	642	603	599	554	496	522	420
WI	7	18	561	973	836	725	761	838	807	926	895
WV	714	768	626	603	600	321	348	369	339	303	388
Central	10,491	12,562	10,960	11,355	10,499	16,230	19,595	17,380	18,710	18,219	18,868
AR	782	975	1,085	914	822	711	514	0	424	222	297
CO	7	12	11	20	467	753	670	953	984	940	1,254
IA	1,940	2,191	2,458	1,099	987	1,694	1,238	1,078	2,216	2,089	1,649
KS	1,230	1,426	1,412	1,457	1,099	2,377	3,388	2,445	3,211	3,385	3,739
MN	0	4	0	0	363	529	700	1,164	853	1,026	1,390
MO	1,983	2,063	1,739	2,219	1,729	2,512	2,861	2,903	2,296	2,168	2,453
MT	0	0	0	0	0	0	0	322	270	296	223
NE	926	1,237	721	753	799	1,057	1,014	997	1,316	1,454	1,345
NM	3	11	14	4	0	463	1,059	625	114	717	829
ND	745	1,293	1,072	976	703	782	1,135	1,666	1,741	1,433	1,344
OK	391	447	528	715	826	1,513	2,746	1,520	1,661	1,488	1,182
SD	1,506	1,303	851	1,768	1,456	1,713	1,693	1,771	1,356	1,430	1,370
TX	978	1,600	1,069	1,430	1,237	2,078	2,575	1,936	2,268	1,502	1,702
WY	0	0	0	0	11	48	2	0	0	69	91
Western	3,261	3,658	4,494	4,559	6,495	6,253	9,059	9,348	7,552	8,634	8,961
AZ	1,653	1,574	1,582	2,436	2,562	2,544	3,831	3,599	3,818	3,362	3,718
CA	252	157	819	1,160	1,870	1,706	2,693	3,468	1,422	2,458	2,269
ID	440	854	837	730	615	594	466	453	355	677	511
NV	0	0	0	0	0	120	431	488	642	729	200
OR	0	0	0	0	0	173	245	219	243	319	734
UT	0	0	0	233	722	398	685	553	323	319	770
WA	916	1,073	1,256	0	726	718	708	568	749	770	759
United States	29,404	33,674	35,596	36,776	38,711	41,944	49,963	47,203	45,208	46,378	47,240

^aCombined total for North Atlantic non-hunt states: CT, ME, MA, NH, NJ, NY, and VT.

Table 4 (continued).

Management Unit & State	2014	2015	2016	2017	2018	2019	2020	2021	2022
Eastern	17,993	18,448	16,772	16,069	16,876	16,221	17,500	15,446	17,613
AL	1,149	987	1,133	942	1,010	1,323	1,347	1,125	1,247
DE	202	38	94	92	30	169	109	135	91
FL	906	772	759	642	716	689	759	705	912
GA	954	1,336	1,152	1,132	1,466	1,650	1,810	1,410	1,514
IL	1,988	2,048	1,810	2,211	2,039	1,538	2,338	2,395	2,468
IN	1,237	977	653	1,171	982	689	764	0	632
KY	1,430	1,759	1,324	1,516	1,321	1,100	1,158	1,064	884
LA	1,066	1,769	1,596	1,232	1,759	1,346	1,761	771	1,599
MD	279	306	221	283	361	348	336	369	386
MI	0	0	0	0	0	0	0	0	1
MS	791	675	448	666	546	564	591	724	579
North Atl. ^a	141	118	159	191	10	3	6	24	8
NC	1,326	1,163	1,199	1,004	1,023	1,367	1,421	1,423	1,811
OH	1,336	1,312	1,316	1,314	1,072	1,300	921	1,138	1,349
PA	993	795	737	824	808	784	812	881	811
RI	0	55	0	0	0	15	29	39	46
SC	1,831	1,990	1,918	1,566	1,484	967	1,115	1,243	1,138
TN	677	611	540	609	530	730	769	756	603
VA	525	580	442	492	555	540	446	235	354
WI	789	800	887	746	798	873	773	768	764
WV	373	357	384	378	366	228	235	241	416
Central	21,545	19,516	19,982	18,357	15,417	16,379	15,552	13,254	15,150
AR	342	300	359	413	233	280	275	273	228
CO	1,335	1,011	1,419	923	1,017	1,125	1,236	1,221	1,331
IA	1,960	2,027	1,906	2,201	1,878	2,058	1,907	1,907	2,132
KS	3,233	3,332	2,868	3,403	2,451	2,457	2,218	2,218	2,889
MN	782	388	357	490	327	604	43	43	179
MO	2,997	1,966	1,983	1,465	1,635	1,242	984	984	1,211
MT	417	439	283	330	330	549	393	393	481
NE	1,505	1,357	1,718	1,458	1,101	1,094	1,007	1,007	1,447
NM	661	701	682	855	1,131	866	645	645	572
ND	1,675	1,620	1,647	1,685	614	1,356	1,116	1,116	1,239
OK	1,561	1,604	1,402	1,154	740	971	401	401	154
SD	1,872	2,052	2,329	1,278	1,197	916	828	828	837
TX	2,770	2,391	2,645	2,115	2,022	2,123	1,614	1,614	2,121
WY	435	328	384	587	741	739	587	587	329
Western	10,139	10,951	9,110	9,098	10,195	8,529	7,733	8,750	7,822
AZ	3,319	2,983	3,032	3,388	3,532	3,445	2,987	2,368	2,105
CA	3,510	4,535	3,293	3,265	3,877	2,384	1,811	2,960	2,105
ID	756	770	685	657	646	657	652	731	1,117
NV	600	401	498	415	458	636	444	549	533
OR	1,122	1,057	737	697	886	860	961	722	681
UT	349	282	59	73	13	52	306	226	0
WA	483	923	806	603	783	495	572	1,194	1,281
United States	49,677	48,915	45,864	43,524	42,488	41,133	40,785	37,450	40,585

^aCombined total for North Atlantic non-hunt states: CT, ME, MA NH., NJ, NY, and VT.

Table 5. Estimates of mean annual survival and harvest rate of mourning doves by management unit and state that banded doves, 2003–2022. Estimates by age-class: hatch-year (HY) and after-hatch-year (AHY).

Management Unit & State	HY Survival	HY Survival SE	AHY Survival	AHY Survival SE	HY Harvest Rate	HY Harvest Rate SE	AHY Harvest Rate	AHY Harvest Rate SE
Eastern	0.270	0.006	0.411	0.004	0.084	0.001	0.057	0.001
AL	0.256	0.018	0.410	0.015	0.100	0.008	0.061	0.004
DE-MD ^a	0.291	0.023	0.376	0.019	0.118	0.007	0.082	0.006
FL	0.299	0.031	0.436	0.022	0.035	0.005	0.028	0.004
GA	0.260	0.015	0.405	0.012	0.123	0.005	0.074	0.005
IL	0.280	0.016	0.395	0.015	0.064	0.002	0.042	0.004
IN	0.264	0.023	0.403	0.013	0.077	0.006	0.071	0.004
KY	0.320	0.018	0.422	0.012	0.071	0.005	0.056	0.004
LA	0.302	0.011	0.440	0.013	0.096	0.006	0.050	0.005
MS	0.233	0.017	0.409	0.017	0.127	0.007	0.078	0.005
North Atlantic ^b	0.302	0.085	0.564	0.065	0.005	0.008	0.004	0.003
NC	0.206	0.013	0.373	0.013	0.099	0.007	0.062	0.003
OH	0.274	0.020	0.400	0.015	0.049	0.003	0.035	0.004
PA	0.236	0.023	0.417	0.024	0.041	0.005	0.020	0.003
SC	0.283	0.014	0.415	0.011	0.094	0.005	0.060	0.003
TN	0.204	0.016	0.387	0.017	0.125	0.006	0.080	0.004
VA	0.368	0.038	0.437	0.023	0.029	0.005	0.039	0.004
WI	0.315	0.026	0.470	0.023	0.048	0.005	0.029	0.004
WV	0.401	0.048	0.463	0.040	0.024	0.004	0.019	0.003
Central	0.270	0.007	0.450	0.004	0.060	0.001	0.046	0.001
AR	0.215	0.023	0.415	0.020	0.081	0.010	0.057	0.005
CO	0.539	0.043	0.465	0.022	0.011	0.001	0.024	0.003
IA	0.243	0.015	0.465	0.013	0.042	0.006	0.030	0.006
KS	0.305	0.016	0.461	0.010	0.054	0.004	0.051	0.003
MN	0.365	0.035	0.555	0.023	0.029	0.004	0.017	0.003
MO	0.153	0.008	0.372	0.009	0.135	0.010	0.113	0.008
MT	0.314	0.062	0.533	0.050	0.019	0.004	0.011	0.002
ND	0.437	0.031	0.572	0.018	0.015	0.002	0.010	0.001
NE	0.339	0.029	0.452	0.016	0.028	0.002	0.035	0.003
NM	0.475	0.071	0.560	0.047	0.012	0.002	0.008	0.001
OK	0.260	0.017	0.417	0.017	0.066	0.006	0.055	0.007
SD	0.425	0.018	0.487	0.013	0.037	0.004	0.028	0.003
TX	0.335	0.020	0.460	0.013	0.049	0.004	0.035	0.004
WY	0.353	0.113	0.494	0.061	0.010	0.001	0.007	0.001
Western	0.302	0.012	0.440	0.007	0.040	0.001	0.034	0.001
AZ	0.304	0.022	0.422	0.015	0.022	0.003	0.016	0.001
CA	0.308	0.017	0.439	0.010	0.056	0.005	0.057	0.006
ID	0.328	0.043	0.496	0.025	0.022	0.003	0.018	0.002
NV	0.246	0.037	0.478	0.030	0.037	0.007	0.033	0.004
OR	0.341	0.036	0.417	0.025	0.029	0.006	0.035	0.005
UT	0.256	0.048	0.487	0.052	0.023	0.004	0.015	0.003
WA	0.291	0.021	0.430	0.023	0.049	0.005	0.034	0.006

^aData combined for Delaware and Maryland.

^bData combined for North Atlantic states: CT, ME, MA, NH, NJ, NY, RI, and VT.

Table 6. Estimated age ratios (juveniles per adult) by management unit and state based on the Parts Collection Survey, 2007–2022. Age ratios are corrected for unknown age wings and differential vulnerability. Sample size is the number of wings examined.

Management Unit & State	Age Ratio 2007 ^a	Age Ratio SE 2007	Age Ratio 2008	Age Ratio SE 2008	Age Ratio 2009	Age Ratio SE 2009	Age Ratio 2010	Age Ratio SE 2010	Age Ratio 2011	Age Ratio SE 2011	Age Ratio 2012	Age Ratio SE 2012
Eastern	1.73	0.04	1.42	0.03	1.31	0.03	1.30	0.02	1.82	0.04	1.81	0.04
AL	3.79	2.69	1.25	0.17	1.95	0.29	1.35	0.10	2.14	0.19	2.74	0.27
DE	1.15	0.16	1.88	0.23	0.89	0.18	1.60	0.24	3.21	0.45	1.47	0.17
GA	3.13	0.40	1.70	0.24	1.43	0.18	1.77	0.20	3.51	0.48	2.09	0.18
IL	1.85	0.11	1.21	0.08	1.47	0.11	1.29	0.08	1.51	0.12	2.50	0.21
IN	1.62	0.07	1.80	0.15	1.54	0.11	1.15	0.06	2.00	0.12	1.60	0.12
KY	1.68	0.14	1.18	0.17	1.58	0.17	1.77	0.14	1.65	0.12	1.69	0.14
LA	1.09	0.13	1.61	0.25	2.26	0.31	2.30	0.26	2.94	0.58	1.60	0.25
MD	2.07	0.21	1.52	0.19	1.24	0.13	1.39	0.12	1.45	0.14	1.93	0.15
MS	1.42	0.14	1.57	0.16	1.81	0.17	1.07	0.07	1.38	0.13	1.70	0.24
NC	1.80	0.14	1.67	0.14	1.40	0.09	1.04	0.05	1.73	0.13	1.45	0.09
OH	2.06	0.19	2.26	0.29	1.42	0.16	0.87	0.07	1.75	0.15	2.36	0.29
PA	1.35	0.14	1.03	0.11	0.93	0.10	1.03	0.11	1.91	0.24	1.62	0.18
RI ^b	----	----	----	----	----	----	----	----	----	----	----	----
SC	1.91	0.12	1.39	0.09	1.17	0.08	1.55	0.09	2.37	0.16	1.50	0.10
TN	1.82	0.28	1.34	0.20	1.13	0.11	1.51	0.14	2.13	0.21	3.25	0.36
VA	1.79	0.11	1.23	0.07	0.88	0.07	1.19	0.06	1.38	0.08	1.58	0.08
WI	1.00	0.18	1.58	0.17	1.24	0.18	2.04	0.23	1.27	0.19	2.04	0.27
WV	1.93	0.24	2.56	0.58	1.16	0.19	1.62	0.25	2.09	0.32	1.39	0.22
Central	1.04	0.02	0.95	0.02	0.82	0.02	0.99	0.02	1.12	0.02	1.50	0.03
AR	1.09	0.10	2.77	0.35	1.27	0.11	1.19	0.10	1.52	0.14	2.54	0.27
CO	1.12	0.06	1.09	0.07	0.83	0.06	1.43	0.09	1.37	0.10	1.12	0.11
IA	† ^c	†	†	†	†	†	†	†	2.07	0.59	1.54	0.16
KS	1.32	0.07	0.99	0.07	0.89	0.07	1.11	0.07	1.10	0.07	1.46	0.11
MN	1.26	0.90	0.54	0.33	2.51	0.72	6.41	3.83	0.98	0.10	2.06	0.18
MO	1.62	0.12	0.93	0.07	0.94	0.06	1.21	0.10	1.58	0.11	1.96	0.13
MT	1.30	0.16	0.68	0.09	1.45	0.23	1.49	0.17	1.85	0.26	1.27	0.16
ND	1.07	0.15	0.92	0.11	1.39	0.26	0.65	0.09	0.99	0.10	1.56	0.16
NE	0.68	0.04	0.83	0.06	0.80	0.09	1.02	0.07	0.82	0.05	1.49	0.11
NM	0.55	0.08	0.35	0.04	0.48	0.04	0.59	0.04	0.71	0.07	0.68	0.06
OK	1.41	0.17	1.35	0.10	1.15	0.07	1.05	0.06	1.76	0.14	1.72	0.16
SD	1.07	0.09	0.89	0.07	1.08	0.11	1.05	0.10	1.18	0.11	1.73	0.15
TX	0.78	0.05	1.24	0.07	0.67	0.04	0.86	0.04	1.21	0.05	1.47	0.07
WY	1.32	0.16	0.90	0.10	0.75	0.10	1.68	0.16	1.51	0.14	1.05	0.13
Western	1.05	0.03	1.29	0.04	1.13	0.04	1.15	0.03	1.10	0.03	1.34	0.04
AZ	0.52	0.03	0.85	0.04	0.72	0.04	0.74	0.04	0.74	0.04	0.72	0.05
CA	1.22	0.08	1.45	0.08	1.23	0.10	1.15	0.06	1.15	0.06	1.35	0.07
ID	1.12	0.10	0.88	0.17	1.52	0.16	1.56	0.18	1.45	0.25	1.56	0.15
NV	1.13	0.11	1.09	0.21	0.97	0.13	0.96	0.08	1.14	0.11	1.28	0.13
OR	1.75	0.29	1.42	0.60	1.10	0.18	2.24	0.28	0.98	0.16	0.98	0.13
UT	1.19	0.16	0.73	0.09	0.69	0.14	0.79	0.09	1.17	0.11	1.36	0.19
WA	1.50	0.10	1.62	0.12	1.55	0.15	1.41	0.12	1.53	0.13	1.66	0.15

^a Standard errors for estimates only incorporate sampling error for the proportion of young in the sample and do not incorporate additional uncertainty from correction factors for unknown age wings and differential vulnerability.

^b Insufficient data to estimate age ratio for RI in most years.

^c Iowa did not have a hunting season until 2011.

Table 6 (continued).

Management Unit & State	Age Ratio 2013 ^a	Age Ratio SE 2013	Age Ratio 2014	Age Ratio SE 2014	Age Ratio 2015	Age Ratio SE 2015	Age Ratio 2016	Age Ratio SE 2016	Age Ratio 2017	Age Ratio SE 2017	Age Ratio 2018	Age Ratio SE 2018
Eastern	1.30	0.03	1.38	0.04	1.31	0.04	1.28	0.05	1.54	0.04	1.49	0.04
AL	1.67	0.18	1.10	0.10	1.56	0.17	1.86	0.26	1.57	0.23	1.62	0.23
DE	1.97	0.37	1.30	0.21	0.42	0.11	0.96	0.26	29.34	18.61	1.28	0.44
GA	1.45	0.11	1.70	0.16	1.30	0.12	1.69	0.16	1.63	0.12	1.70	0.13
IL	1.36	0.11	1.48	0.12	1.15	0.12	0.93	0.12	1.28	0.13	1.70	0.16
IN	1.49	0.12	1.28	0.12	1.05	0.09	0.93	0.13	1.41	0.14	2.21	0.21
KY	1.23	0.10	1.41	0.12	1.18	0.15	1.29	0.18	1.49	0.12	1.46	0.13
LA	1.82	0.29	1.01	0.76	5.29	2.89	0.86	0.26	1.28	0.28	1.47	0.23
MD	1.64	0.18	1.78	0.25	1.69	0.29	2.76	0.58	2.50	0.40	1.82	0.29
MS	1.19	0.12	1.38	0.15	1.50	0.18	0.96	0.18	1.96	0.23	0.79	0.11
NC	1.12	0.08	1.01	0.09	0.97	0.08	0.83	0.10	1.81	0.16	1.58	0.16
OH	1.35	0.15	2.14	0.22	0.95	0.10	1.59	0.26	1.40	0.18	1.92	0.31
PA	1.27	0.17	1.30	0.23	1.57	0.26	1.04	0.19	0.93	0.14	1.28	0.18
RI ^b	----	----	0.76	0.76	----	----	0.67	0.61	----	----	----	----
SC	1.28	0.12	1.88	0.18	1.94	0.23	2.85	0.35	1.80	0.19	1.23	0.12
TN	1.38	0.16	2.01	0.25	1.36	0.16	1.19	0.31	1.44	0.20	1.82	0.25
VA	0.98	0.09	1.16	0.15	2.35	0.31	0.92	0.11	1.55	0.19	1.11	0.12
WI	1.64	0.20	1.39	0.19	2.78	0.55	3.14	0.84	1.34	0.28	2.35	0.45
WV	0.95	0.32	3.98	1.19	2.74	0.71	0.94	0.23	1.13	0.17	0.89	0.17
Central	1.14	0.03	1.11	0.03	0.99	0.03	1.04	0.05	1.23	0.03	1.15	0.03
AR	1.51	0.15	0.82	0.10	1.27	0.15	1.15	0.17	1.21	0.16	0.99	0.15
CO	1.62	0.15	1.48	0.14	0.92	0.07	1.09	0.17	1.35	0.12	0.84	0.06
IA	1.26	0.21	1.16	0.13	0.78	0.09	0.88	0.19	1.38	0.10	1.37	0.15
KS	1.37	0.20	1.50	0.13	1.00	0.08	1.00	0.17	1.32	0.09	1.25	0.11
MN	1.24	0.16	1.45	0.25	1.05	0.21	1.15	0.41	1.57	0.36	2.11	0.53
MO	1.07	0.12	1.93	0.26	2.41	0.31	1.17	0.23	1.42	0.11	2.19	0.15
MT	1.40	0.26	1.42	0.26	0.98	0.12	0.53	0.14	1.62	0.22	0.78	0.10
ND	1.23	0.13	1.24	0.13	1.32	0.11	1.00	0.23	2.12	0.22	1.28	0.10
NE	0.82	0.08	0.77	0.10	0.81	0.09	1.21	0.23	1.17	0.11	0.73	0.06
NM	0.52	0.07	0.41	0.06	0.77	0.14	0.84	0.21	0.46	0.06	0.61	0.10
OK	1.75	0.19	0.89	0.10	1.32	0.15	1.78	0.29	1.81	0.20	1.84	0.30
SD	1.07	0.10	0.93	0.08	0.91	0.09	0.97	0.20	1.15	0.13	1.29	0.10
TX	1.40	0.11	1.56	0.10	1.14	0.10	1.22	0.16	0.99	0.06	1.32	0.09
WY	2.06	0.33	0.89	0.10	0.81	0.08	2.27	1.74	1.03	0.15	0.71	0.12
Western	1.67	-0.07	1.30	-0.05	1.35	0.05	1.00	0.06	1.50	0.06	1.03	0.04
AZ	1.38	0.13	0.75	0.05	0.97	0.06	0.79	0.06	1.03	0.06	0.65	0.05
CA	1.62	0.16	1.54	0.12	1.41	0.12	1.44	0.20	1.71	0.14	1.30	0.10
ID	1.64	0.17	1.58	0.17	1.68	0.21	1.06	0.15	1.61	0.18	0.91	0.12
NV	1.30	0.23	0.93	0.15	1.57	0.23	0.58	0.26	1.17	0.18	0.85	0.11
OR	1.52	0.18	1.77	0.39	1.43	0.26	1.35	0.34	1.07	0.27	2.06	0.42
UT	1.27	0.21	1.70	0.25	0.85	0.12	0.76	0.20	1.85	0.33	1.71	0.30
WA	2.20	0.26	2.30	0.48	1.87	0.25	0.68	0.16	2.37	0.27	1.12	0.15

^a Standard errors for estimates only incorporate sampling error for the proportion of young in the sample and do not incorporate additional uncertainty from correction factors for unknown age wings and differential vulnerability.

^b Insufficient data to estimate age ratio for RI in most years.

Table 6 (continued).

Management Unit & State	Age Ratio 2019 ^a	Age Ratio SE 2019	Age Ratio 2020	Age Ratio SE 2020	Age Ratio 2021	Age Ratio SE 2021	Age Ratio 2022	Age Ratio SE 2022	All Years Sample Size	All Years Mean	All Years SE
Eastern	1.69	0.05	1.27	0.04	1.08	0.04	1.75	0.07	101,019	1.48	0.01
AL	2.06	0.35	1.12	0.30	1.42	0.19	1.62	0.22	4,829	1.63	0.05
DE	3.71	1.89	1.32	0.25	1.30	0.38	1.52	0.57	2,164	1.48	0.06
GA	2.01	0.18	0.90	0.10	1.25	0.15	1.82	0.27	7,029	1.68	0.04
IL	1.72	0.19	1.21	0.18	0.73	0.14	1.71	0.29	8,744	1.45	0.03
IN	1.47	0.15	1.66	0.18	1.06	0.17	2.07	0.25	11,120	1.51	0.03
KY	2.45	0.23	1.60	0.14	1.34	0.13	1.48	0.14	8,189	1.54	0.03
LA	1.29	0.26	0.71	0.18	2.06	0.74	1.67	1.09	2,079	1.64	0.07
MD	2.60	0.48	1.79	0.29	1.30	0.19	1.91	0.28	4,694	1.65	0.05
MS	1.46	0.22	1.37	0.20	1.14	0.35	1.36	0.25	5,238	1.33	0.04
NC	1.89	0.22	1.00	0.12	0.91	0.11	1.84	0.23	9,767	1.31	0.03
OH	0.95	0.29	1.26	0.21	0.49	0.12	1.23	0.18	4,880	1.44	0.04
PA	0.85	0.18	1.56	0.22	1.03	0.24	1.65	0.40	3,551	1.19	0.04
RI ^b	----	----	----	----	----	----	----	----	35	----	----
SC	1.89	0.19	1.22	0.17	1.09	0.17	1.89	0.41	9,487	1.62	0.03
TN	1.36	0.23	1.12	0.26	0.91	0.14	1.41	0.22	4,108	1.57	0.05
VA	1.15	0.11	1.14	0.12	0.97	0.15	3.24	0.51	10,436	1.30	0.03
WI	2.07	0.36	2.35	0.56	1.46	0.46	3.47	0.78	2,749	1.68	0.07
WV	1.29	0.23	0.85	0.18	1.58	0.36	1.64	0.41	1,955	1.44	0.07
Central	1.17	0.04	1.11	0.04	1.10	0.04	1.51	0.05	94,132	1.10	0.01
AR	1.85	0.47	1.38	0.25	1.29	0.25	1.86	0.34	4,827	1.37	0.04
CO	1.12	0.10	1.05	0.11	1.20	0.12	1.29	0.11	10,204	1.15	0.02
IA	1.10	0.11	1.05	0.10	1.31	0.15	1.58	0.16	4,018	1.20	0.04
KS	1.05	0.14	0.91	0.12	0.97	0.13	1.37	0.15	9,518	1.15	0.02
MN	0.90	0.20	1.57	0.26	1.12	0.27	1.04	0.25	2,151	1.29	0.06
MO	1.46	0.13	1.09	0.12	0.80	0.10	1.98	0.22	8,852	1.41	0.03
MT	1.72	0.27	1.44	0.26	1.61	0.47	1.90	0.33	3,045	1.23	0.04
ND	1.43	0.14	1.14	0.14	0.97	0.16	1.55	0.18	5,254	1.25	0.03
NE	0.94	0.09	1.13	0.10	0.92	0.10	1.14	0.10	8,850	0.90	0.02
NM	0.59	0.10	0.53	0.10	1.07	0.33	0.50	0.12	4,596	0.56	0.02
OK	0.94	0.12	0.77	0.08	1.33	0.18	3.38	0.51	7,255	1.33	0.03
SD	1.73	0.17	1.17	0.13	1.41	0.17	1.53	0.15	7,131	1.16	0.03
TX	1.25	0.12	1.09	0.11	1.01	0.11	2.02	0.19	14,808	1.11	0.02
WY	2.40	0.61	1.58	0.30	2.90	0.63	0.50	0.15	3,623	1.15	0.04
Western	1.14	0.04	0.87	0.04	1.23	0.07	1.39	0.06	48,691	1.21	0.01
AZ	0.75	0.04	0.52	0.04	0.60	0.06	0.76	0.05	16,664	0.69	0.01
CA	1.38	0.08	1.03	0.08	1.90	0.16	1.75	0.13	13,917	1.35	0.02
ID	0.81	0.16	2.27	0.82	1.58	0.50	1.63	0.53	3,901	1.38	0.04
NV	1.40	0.27	----	----	----	----	2.45	0.72	3,237	1.11	0.04
OR	2.19	0.48	1.36	0.28	1.52	0.54	1.01	0.24	2,057	1.46	0.07
UT	0.88	0.14	1.26	0.25	1.70	0.61	0.72	0.23	2,762	1.07	0.04
WA	2.26	0.37	1.74	0.28	1.35	0.24	2.48	0.31	6,153	1.65	0.04

^a Standard errors for estimates only incorporate sampling error for the proportion of young in the sample and do not incorporate additional uncertainty from correction factors for unknown age wings and differential vulnerability.

^b Insufficient data to estimate age ratio for RI in most years.

^d Insufficient data to estimate age ratio for NV in 2020–21.

Table 7. Estimates of absolute abundance and their standard error (SE) of mourning doves on 1 September each year based on band recovery and harvest data by year and management unit (Eastern=EMU, Central=CMU, and Western=WMU) in the U.S., 2003–2022.

Year	EMU Abundance	EMU SE	CMU Abundance	CMU SE	WMU Abundance	WMU SE	U.S. Abundance	U.S. SE
2003	94,881,464	5,919,370	126,652,524	9,963,666	104,481,880	18,767,576	326,015,868	22,057,549
2004	84,557,834	3,559,256	228,707,924	14,495,791	89,370,312	10,771,725	402,636,069	18,407,236
2005	128,716,724	5,410,369	213,754,637	14,756,199	35,737,130	3,152,275	378,208,490	16,029,795
2006	89,358,743	3,612,681	209,906,682	14,268,806	49,901,731	4,715,402	349,167,155	15,455,915
2007	101,976,066	4,586,983	174,153,485	11,633,612	56,002,423	4,141,996	332,131,974	13,173,362
2008	96,677,219	3,981,960	186,193,535	12,070,189	50,214,812	4,222,236	333,085,566	13,393,011
2009	100,972,774	4,150,615	161,096,503	9,848,872	52,489,867	3,673,152	314,559,145	11,301,324
2010	88,453,847	4,095,377	161,028,300	10,378,069	55,760,146	3,947,119	305,242,293	11,834,533
2011	86,125,206	4,496,586	146,098,882	8,361,515	52,366,880	4,177,823	284,590,968	10,372,484
2012	89,714,340	4,607,949	163,064,593	13,526,588	67,963,057	5,396,790	320,741,990	15,275,049
2013	91,138,811	5,804,453	136,249,143	9,218,402	49,992,835	3,773,781	277,380,789	11,528,748
2014	74,223,966	3,850,400	189,663,622	11,580,768	45,636,066	3,402,041	309,523,653	12,669,398
2015	71,662,949	3,822,903	201,636,017	12,078,037	37,002,519	2,574,480	310,301,485	12,927,548
2016	71,976,469	4,167,422	200,145,362	16,326,555	47,992,646	3,700,158	320,114,478	17,251,521
2017	74,372,604	3,914,998	146,936,780	9,753,861	51,212,526	4,509,286	272,521,910	11,436,725
2018	64,145,834	3,270,855	157,137,953	9,484,914	62,228,457	4,263,408	283,512,244	10,901,318
2019	52,023,779	2,557,809	126,067,633	9,830,061	24,713,214	1,684,265	202,804,626	10,296,078
2020	62,344,173	3,248,248	128,616,448	8,729,723	35,570,475	3,043,374	226,531,095	9,799,046
2021	48,041,185	2,521,364	100,544,132	7,438,790	50,776,994	4,952,546	199,362,310	9,285,504
2022	41,920,959	2,266,917	92,638,587	6,769,952	26,235,978	2,415,740	160,795,525	7,537,039

Appendix A. Federal framework dates, season length, and daily bag limit for mourning dove hunting in the U.S. by management unit (Eastern=EMU, Central=CMU, and Western=WMU), 1918–2022.

Year	EMU Dates ^a	EMU Days	EMU Bag	CMU Dates	CMU Days	CMU Bag	WMU Dates	WMU Days	WMU Bag
1918	Sep 1–Dec 31	107	25	Sep 1–Dec 15	106	25	Sep 1–Dec 15	106	25
1919–22	Sep 1–Jan 31	108	25	Sep 1–Dec 15	106	25	Sep 1–Dec 15	106	25
1923–28	Sep 1–Jan 31	108	25	Sep 1–Dec 31	106	25	Sep 1–Dec 15	106	25
1929	Sep 1–Jan 31	106	25	Sep 1–Dec 31	106	25	Sep 1–Dec 15	106	25
1930	Sep 1–Jan 31	108	25	Sep 1–Dec 15	106	25	Sep 1–Dec 15	106	25
1931	Sep 1–Jan 31	106	25	Sep 1–Dec 15	106	25	Sep 1–Dec 15	106	25
1932–33	Sep 1–Jan 31	106	18	Sep 1–Dec 15	106	18	Sep 1–Dec 15	106	18
1934	Sep 1–Jan 31	106	18	Sep 1–Jan 15	106	18	Sep 1–Dec 15	106	18
1935	Sep 1–Jan 31	107	20	Sep 1–Jan 16	106	20	Sep 1–Jan 05	107	20
1936	Sep 1–Jan 31	77	20	Sep 1–Jan 16	76	20	Sep 1–Nov 15	76	20
1937 ^b	Sep 1–Jan 31	77	15	Sep 1–Nov 15	76	15	Sep 1–Nov 15	76	15
1938	Sep 1–Jan 31	78	15	Sep 1–Nov 15	76	15	Sep 1–Nov 15	76	15
1939	Sep 1–Jan 31	78	15	Sep 1–Jan 31	77	15	Sep 1–Nov 15	76	15
1940	Sep 1–Jan 31	77	12	Sep 1–Jan 31	76	12	Sep 1–Nov 15	76	12
1941	Sep 1–Jan 31	62	12	Sep 1–Oct 27	42	12	Sep 1–Oct 12	42	12
1942	Sep 1–Oct 15	30	10	Sep 1–Oct 27	42	10	Sep 1–Oct 12	42	10
1943	Sep 1–Dec 24	30	10	Sep 1–Dec 19	42	10	Sep 1–Oct 12	42	10
1944	Sep 1–Jan 20	58	10	Sep 1–Jan 20	57	10	Sep 1–Oct 25	55	10
1945	Sep 1–Jan 31	60	10	Sep 1–Jan 31	60	10	Sep 1–Oct 30	60	10
1946	Sep 1–Jan 31	61	10	Sep 1–Jan 31	60	10	Sep 1–Oct 30	60	10
1947–48 ^c	Sep 1–Jan 31	60	10	Sep 1–Dec 3	60	10	Sep 1–Oct 30	60	10
1949	Sep 1–Jan 15	30	10	Sep 1–Nov 14	45	10	Sep 1–Oct 15	45	10
1950	Sep 1–Jan 15	30	10	Sep 1–Dec 3	45	10	Sep 1–Oct 15	45	10
1951	Sep 1–Jan 15	30	8	Sep 1–Dec 24	42	10	Sep 1–Oct 15	45	10
1952	Sep 1–Jan 10	30	8	Sep 1–Nov 6	42	10	Sep 1–Oct 12	42	10
1953	Sep 1–Jan 10	30	8	Sep 1–Nov 9	42	10	Sep 1–Oct 12	42	10
1954 ^d	Sep 1–Jan 10	40	8	Sep 1–Nov 9	40	10	Sep 1–Oct 31	40	10
1955	Sep 1–Jan 10	45	8	Sep 1–Nov 28	45	10	Sep 1–Dec 31	45	10
1956 ^e	Sep 1–Jan 10	55	8	Sep 1–Jan 10	55	10	Sep 1–Jan 10	50	10
1957	Sep 1–Jan 10	60	10	Sep 1–Jan 10	60	10	Sep 1–Jan 10	50	10
1958–59	Sep 1–Jan 15	65	10	Sep 1–Jan 15	65	10	Sep 1–Jan 15	50	10
1960–61 ^f	Sep 1–Jan 15	70 ^g	12	Sep 1–Jan 15	60	15	Sep 1–Jan 15	50	10
1962	Sep 1–Jan 15	70 ^g	12	Sep 1–Jan 15	60	12	Sep 1–Jan 15	50	10
1963	Sep 1–Jan 15	70 ^g	10	Sep 1–Jan 15	60	10	Sep 1–Jan 15	50	10
1964–67	Sep 1–Jan 15	70 ^g	12	Sep 1–Jan 15	60	12	Sep 1–Jan 15	50	12
1968	Sep 1–Jan 15	70 ^g	12	Sep 1–Jan 15	60	12	Sep 1–Jan 15	50	10
1969–70	Sep 1–Jan 15	70 ^g	18 ^h	Sep 1–Jan 15	60	10	Sep 1–Jan 15	50	10
1971–79	Sep 1–Jan 15	70 ^g	12	Sep 1–Jan 15	60	10	Sep 1–Jan 15	50	10
1980	Sep 1–Jan 15	70	12	Sep 1–Jan 15 ⁱ	60	10	Sep 1–Jan 15	70 ^j	10 ^k
1981	Sep 1–Jan 15	70	12	Sep 1–Jan 15 ⁱ	45 ^l	15 ^l	Sep 1–Jan 15	70 ^j	10 ^k
1982	Sep 1–Jan 15	45 ^m	15 ^m	Sep 1–Jan 15 ⁱ	45 ^m	15 ^m	Sep 1–Jan 15	45 ^m	15 ^m
1983–86	Sep 1–Jan 15	60 ^m	15 ^m	Sep 1–Jan 15 ⁱ	60 ^m	15 ^m	Sep 1–Jan 15	60 ^m	15 ^m
1987–07 ⁿ	Sep 1–Jan 15	60 ^m	15 ^m	Sep 1–Jan 15 ⁱ	60 ^m	15 ^m	Sep 1–Jan 15	60 ^o	10
2008	Sep 1–Jan 15	70	15	Sep 1–Jan 15 ⁱ	60 ^m	15 ^m	Sep 1–Jan 15	60 ^o	10
2009–13	Sep 1–Jan 15	70	15	Sep 1–Jan 15 ⁱ	70	15	Sep 1–Jan 15	60 ^o	10
2014	Sep 1–Jan 15	90	15	Sep 1–Jan 15 ⁱ	70	15	Sep 1–Jan 15	60 ^o	15
2015	Sep 1–Jan 15	90	15	Sep 1–Jan 15 ⁱ	70	15	Sep 1–Jan 15	60	15 ^p
2016–17	Sep 1–Jan 15	90	15	Sep 1–Jan 15 ⁱ	90	15	Sep 1–Jan 15	60	15 ^p
2018–22	Sep 1–Jan 31	90	15	Sep 1–Jan 15 ⁱ	90	15	Sep 1–Jan 15	60	15 ^p

^a From 1918–1947, seasons for doves and other “webless” species were selected independently and the dates were the earliest opening and latest closing dates chosen. Dates were inclusive. There were different season lengths in various states with some choosing many fewer days than others. Only bag and possession limits, and season dates were specified.

^b Beginning in 1937, the bag and possession limit included white-winged doves in selected states.

^c From 1948–1953, states permitting dove hunting were listed by waterfowl flyway. Only bag and possession limits, and season dates were specified.

^d In 1954–1955, states permitting dove hunting were listed separately. Only bag and possession limits, and season dates were specified.

Appendix A. Continued.

^e From 1956–1959, states permitting dove hunting were listed separately. Framework opening and closing dates for seasons (but no maximum days for season length) were specified for the first time along with bag and possession limits.

^f In 1960, states were grouped by management unit for the first time. Maximum season length was specified for the first time.

^g Half days.

^h More liberal limits allowed in conjunction with an Eastern Management Unit hunting regulations experiment.

ⁱ The framework extended to January 25 in Texas.

^j 50–70 days depending on state and season timing.

^k Arizona was allowed 12.

^l States had the option of a 60-day season and daily bag limit of 12.

^m States had the option of a 70-day season and daily bag limit of 12.

ⁿ Beginning in 2002, the limits included white-winged doves in all states in the Central Management Unit. Beginning in 2006, the limits included white-winged doves in all states in the Eastern Management Unit.

^o 30–60 days depending on state (30 in Idaho, Nevada, Oregon, Utah, Washington; 60 in Arizona and California).

^p In Idaho, Nevada, Oregon, and Utah daily limit is 15 mourning and white-winged doves in the aggregate. In Arizona and California daily limit is 15 mourning and white-winged doves in the aggregate, of which no more than 10 can be white-winged doves.

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