



U.S. Fish & Wildlife Service

Mourning Dove

Population Status, 2024



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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, 2024

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Abstract: This report summarizes information collected annually in the United States (US) on survival, fecundity, abundance, and harvest of mourning doves. Information is provided for three management units: the Eastern (EMU), Central (CMU) and Western (WMU). An integrated population model (IPM) was used to estimate absolute abundance, survival, and fecundity. Harvest and hunter activity were estimated from the Migratory Bird Harvest Information Program (HIP). Estimates of absolute abundance are available since 2007 and indicate that there were approximately 346 million doves in the US as of 1 September 2023. Abundance (in millions of birds) varied among management units in 2023: EMU 88.5 (SD=5.1); CMU 201.9 (SD=18.7); and WMU 55.1 (SD=7.9). In 2023 HIP estimates for mourning dove total harvest, active hunters, and total days afield in the US were 16,759,700 (SE=319,800) birds, 1,018,100 hunters, and 3,262,000 (SE=57,600) days afield. In 2023 harvest and hunter activity at the management unit level were: EMU, 5,981,800 (SE=178,700) birds, 430,200 hunters, and 1,240,400 (SE=36,600) days afield; CMU, 9,243,400 (SE=254,500) birds, 487,900 hunters, and 1,714,700 (SE=38,200) days afield; and WMU, 1,534,500 (SE=74,800) birds, 100,000 hunters, and 306,800 (SE=22,900) 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 United States (US) 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 US and other countries. Mourning doves are included in the treaties with Great Britain (for Canada) and Mexico (US Department of the Interior 2013). These treaties recognize 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 US are in Appendix A.

DISTRIBUTION

Mourning doves breed from southern Canada throughout the continental US into Mexico, 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 US, Mexico, and south through Central America to western Panama (Aldrich 1993, Mirarchi and Baskett 1994).

POPULATION MONITORING

Within the US, 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 US 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

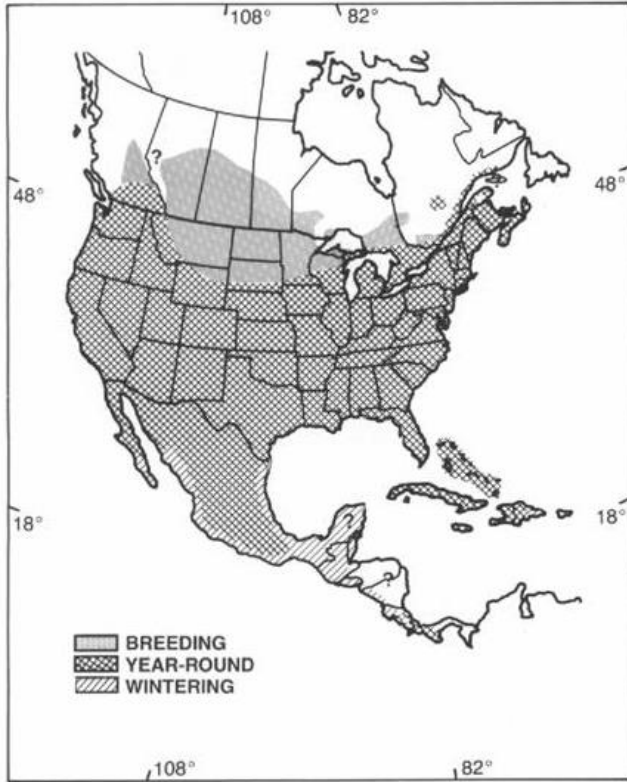


Figure 1. Breeding and wintering ranges of the mourning dove (adapted from Mirarchi and Baskett 1994).

divided into two groups of states for analysis of the North American Breeding Bird Survey (BBS; Robbins et al. 1986) data: 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 for BBS data analysis: Maryland and Delaware were combined; and 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 BBS 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).

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 US 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 (MU) 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 MUs. 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 US 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 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–

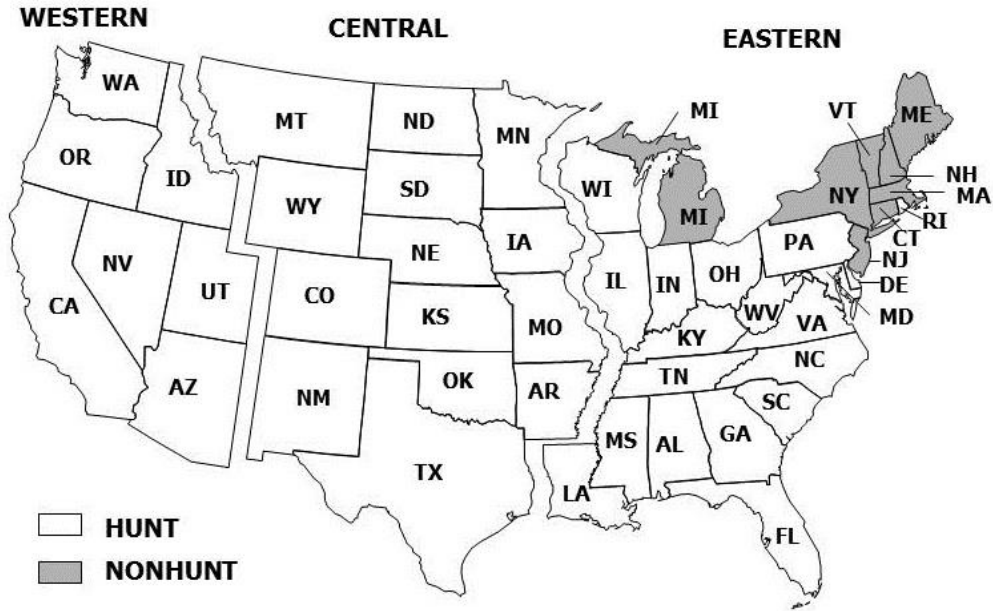


Figure 2. Mourning dove management units with 2023-24 hunt and non-hunt states.

2002 have been finalized, the estimates from 2003–2021 from the paper survey and 2022 and after for the online survey 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. In 2007, the USFWS initiated the national Mourning Dove Parts Collection Survey, which expanded the geographical scope of earlier state-based surveys.

The survey design for mourning dove wing collection follows that of waterfowl (Raftovich et al. 2023). 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 (Miller and Otis 2010) and age-specific vulnerability to harvest.

METHODS

Estimating Survival, Harvest, Recruitment Rates, and Abundance

Integrated population models (IPMs; Besbeas et al. 2002, Schaub and Abadi 2011) were used to estimate time-varying demographic rates and abundance of doves in each MU (Koons et al. *In Revision*). An IPM was developed for each MU. The demographic process model started 1 September and ended 31 August of the next year. The general model structure was as follows: the population (abundance) 1 September declined to a post-harvest population based on harvest mortality; the post-harvest population grew or declined to 31 August in the subsequent year based on annual non-hunting mortality and fecundity.

The IPMs jointly analyzed multiple datasets within a Bayesian framework to model harvest and harvest rates, abundance, population growth rates, mortality unrelated to harvest, and recruitment. The IPMs used

random effects alongside spatial fixed effects to account for heterogeneity in demographic parameters across US states in each MU. This approach permits scaling of inference to the MU scale. Each IPM subcomponent (e.g., mortality, recruitment, direct recovery rates) started with a base model that allowed age-specific independent spatial and temporal estimates of demographic parameters. While holding other model subcomponents constant, each subcomponent was constrained, based on biological hypotheses, to examine spatial (constant, latitude, longitude) and temporal (constant, linear time trends) effects. Bayesian model selection was used to select the best fit for these spatial and temporal model structures for each MU. Statistical support for individual spatial and temporal effects was evaluated based on the fraction of its posterior distribution that was greater or lesser than zero.

Capture-recovery (CR) data was used in the IPMs to inform annual estimates of survival, harvest rate, and differential vulnerability of age classes to harvest. Only known age doves (HY or AHY) banded and released in July or August 2007–23 were used in the analysis. Encounters were restricted to hunter-shot recoveries during the legal hunting season. For each MU the base model allowed for age-specific (AHY versus HY) differences in non-hunting mortality that were the same in each state. An overall annual mean non-hunting mortality estimate for an MU was modeled by weighting each state’s non-hunting mortality estimates. Weights were a function a state’s BBS indices between 2015-2019 and the amount of dove habitat in a state relative to the cumulative weight of other states in the MU. The same base parameterization with weighted estimation was used to model harvest mortality. Band recovery probabilities were derived by multiplying harvest rates by pertinent estimates of band reporting rates (Sanders and Otis 2012, Seamans unpublished data).

Parts collection survey (PCS) data from the first 14 days of September during the years 2007–23 were used to inform recruitment (number of chicks recruited into the hunting season per adult) in each MU. Wing samples scored as an unknown age during the survey were assigned age based on molt progression if the wing sample allowed (*see* Miller and Otis 2010). The approach for modeling spatio-temporal variation in recruitment did not consider an age effect because it was assumed HY birds did not breed. PCS data were also adjusted for differential vulnerability to harvest for

modeling of recruitment. Differential vulnerability was estimated as the ratio of HY to AHY direct recovery rates. Direct recovery rates were modeled as constant over time, allowed to vary spatially (among states), and the overall mean for an MU was modeled as a weighted estimate (weighting approach was the same as for estimates of estimating non-hunting mortality).

To estimate absolute annual abundance, the IPMs made use of a Lincoln index that relied on annual harvest rate estimates and harvest. Harvest rates were estimated within the IPM while estimates of harvest and their uncertainty were from the HIP. The annual abundance estimates provided a look at population dynamics over time in each MU. Within the IPMs, absolute abundance and BBS indices were integrated via common realized population growth rates between consecutive years.

RESULTS

Breeding Bird Survey

Annual BBS indices were used in the IPMs, however, BBS trend estimates calculated outside of the IPMs are presented in Table 1. The BBS results indicated that dove relative abundance increased in the EMU hunt and non-hunt states during the last 58 years (Table 1). Over the last 10 years indices of relative abundance remained unchanged in the EMU non-hunt states, declined in the hunt states, and declined in the entire EMU. The BBS indicated that relative abundance of doves decreased in the CMU over the last 58 years but exhibited no trend over most recent 10 years (Table 1). The BBS suggested that relative abundance decreased in the WMU over the last 58 years but increased during the most recent 10 years (Table 1).

Harvest Survey

Preliminary results of mourning dove harvest and hunter activity from HIP for the 2022–23 and 2023–24 hunting seasons are presented in Tables 2 and 3, respectively. Current (2023–24 season) HIP estimates indicate that in the US about 16.8 million mourning doves were harvested by about 1 million hunters who spent about 3.3 million days afield. The EMU and CMU total harvest represented 36% and 55%, respectively, of the national harvest of doves while the WMU represented 9% (Table 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 from 2007 to 2023, 310,024 known age doves were banded in the EMU, 289,393 in the CMU, and 147,084 in the WMU (Table 4). There have been 16,504, 13,826, and 6,720 recoveries of known-age birds banded in July or August 2007 to 2023 that were reported shot during the hunting season in the EMU, CMU, and WMU, respectively.

Mean annual survival and harvest rates were estimated with the IPMs. Annual survival of HY and AHY doves was higher in the CMU than the other two MUs (Table 5). Mean annual harvest rate was higher for HY individuals than AHY individuals in all EMU and CMU (Fig. 3, Table 5). This relationship was more pronounced in the EMU. Mean annual harvest rates by age-class (HY and AHY) were greater in the EMU than in the other MUs (Fig. 3, Table 5).

Recruitment Rates

A total of 249,227 wings were obtained from 2007 to 2023 from doves harvested prior to September 15th. Recruitment rates were estimated with the IPMs. Overall recruitment rates were similar among the MUs (Table 6). Recruitment rates were higher in the EMU than the other two MUs in the earlier years, and the rates in the WMU were lower in some years than the other two MUs. In 2023, the age ratio estimates in the CMU and EMU were higher than their long-term average (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 sizes were sufficient to calculate precise estimates of recruitment rate for all states, except Rhode Island. 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.

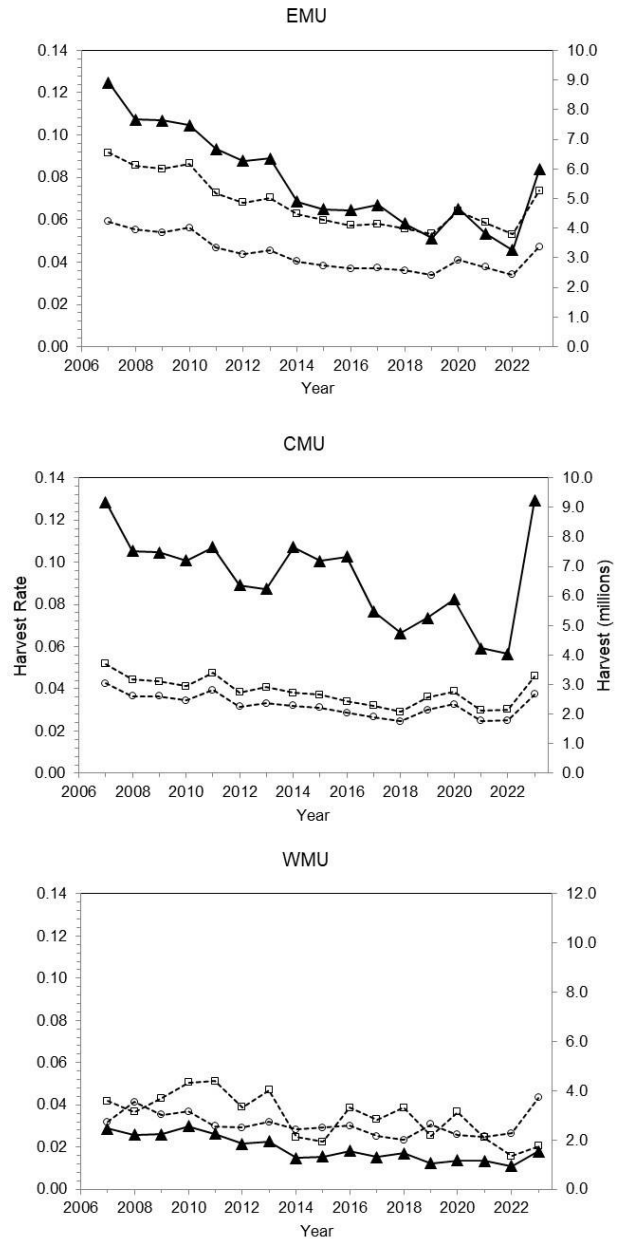


Figure 3. Estimated mourning dove total annual harvest (▲) and harvest rates for hatch-year (□) and after-hatch-year (○) age-classes in the Eastern (EMU), Central (CMU), and Western (WMU) Management Units, 2007–23.

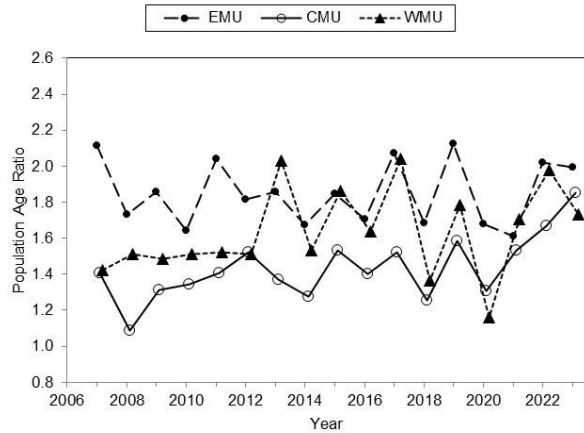


Figure 4. Estimated mourning dove fall population age ratios for each management unit, 2007–23.

Absolute Abundance

Estimates of absolute abundance from the IPMs are available beginning in 2007 (Fig. 5, Table 7). The most recent estimates indicate that there were 346 million mourning doves in the US immediately prior to the 2023–24 hunting season. Abundance estimates were higher in each MU in 2023 compared to 2022.

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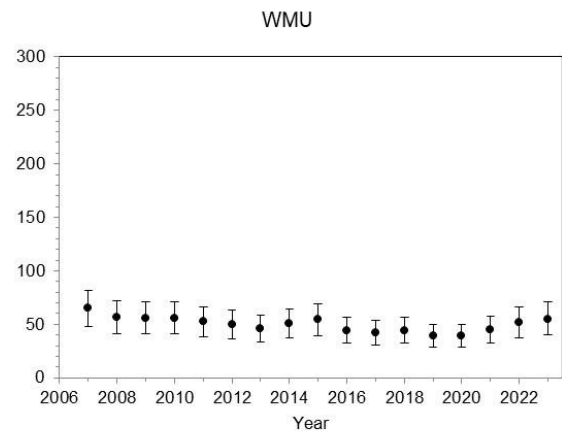
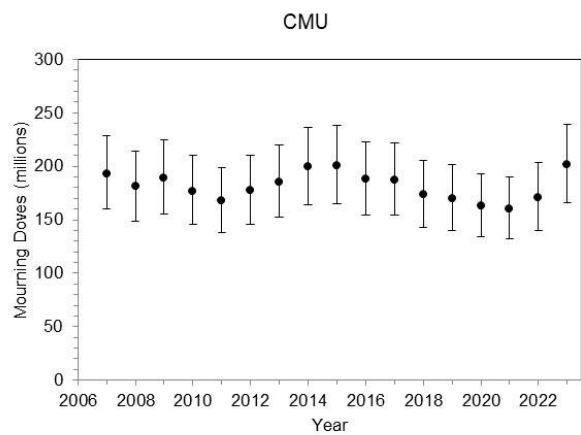
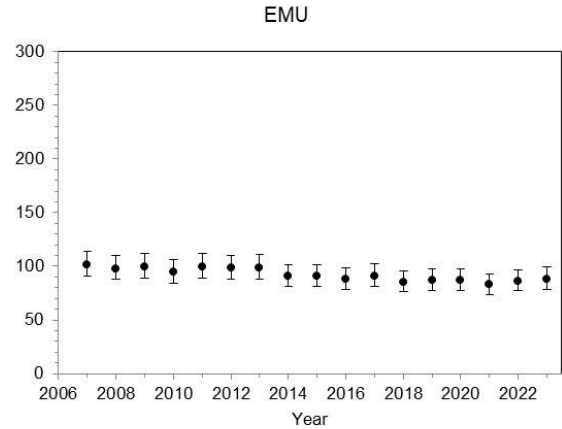


Figure 5. Estimates and 95% confidence intervals of mourning dove absolute abundance by management unit and year, 2003–23.

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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 58-year (1966–2023) and 10-year (2014–2023) periods. ‘N’ is the number of routes with ≥ 1 mourning dove detection in at least one year.

Management Unit & State	58-year N	58-year Trend	58-year Lower CI	58-year Upper CI	10-year N	10-year Trend	10-year Lower CI	10-year Upper CI
Eastern	1,824	0.2	0.1	0.3	1,457	-1.1	-1.4	-0.8
Hunt states	1,394	0.1	0.0	0.2	1,138	-1.2	-1.5	-0.9
AL	104	-0.6	-0.9	-0.3	104	-0.8	-1.9	0.3
DE-MD	90	0.5	0.2	0.7	70	1.7	0.7	2.6
FL	103	1.7	1.3	2.2	103	-3.0	-4.4	-1.5
GA	108	-0.2	-0.6	0.1	108	-0.2	-1.1	0.7
IL	104	0.3	-0.1	0.7	104	-0.2	-1.2	0.8
IN	65	-0.4	-0.8	-0.1	65	-1.5	-2.8	-0.2
KY	58	0.7	0.3	1.0	58	-1.1	-2.5	0.3
LA	97	1.4	0.9	1.9	97	-2.3	-3.9	-0.6
MS	54	-1.0	-1.6	-0.4	54	-5.1	-7.5	-2.8
NC	95	0.0	-0.3	0.4	95	-2.0	-3.0	-1.1
OH	78	0.4	0.0	0.8	78	-1.0	-2.3	0.4
PA	128	1.1	0.8	1.5	128	-0.3	-1.2	0.7
SC	47	-0.4	-0.8	0.1	47	-1.0	-2.6	0.5
TN	48	-0.4	-0.7	0.0	48	-0.7	-2.1	0.6
VA	62	-0.2	-0.6	0.1	62	-0.1	-1.3	1.1
WI	96	1.3	0.9	1.6	96	0.0	-1.1	1.1
WV	57	3.2	2.6	3.8	57	0.1	-1.8	2.0
Non-hunt states	430	0.9	0.7	1.1	319	-0.4	-1.0	0.3
MI	91	0.4	0.0	0.8	91	-1.2	-2.5	0.0
New England ^b	169	1.6	1.2	1.9	131	-1.0	-2.1	0.1
NJ	44	0.0	-0.5	0.5	44	1.1	-0.4	2.9
NY	126	1.5	1.2	1.8	126	0.8	-0.3	1.9
Central	1,276	-0.4	-0.8	-0.2	1,101	0.2	-0.2	0.6
AR	55	-0.6	-1.1	-0.1	55	-4.4	-6.1	-2.7
CO	148	-0.3	-0.8	0.2	148	-0.2	-1.6	1.2
IA	38	-0.1	-0.5	0.4	38	-2.4	-4.0	-0.8
KS	67	-0.1	-0.5	0.3	67	0.6	-0.8	2.0
MN	80	-0.6	-1.0	-0.2	80	0.0	-1.4	1.4
MO	95	-0.8	-1.2	-0.4	95	0.4	-0.7	1.5
MT	97	-0.1	-0.6	0.4	97	3.0	1.3	4.9
NE	73	-0.2	-0.6	0.2	73	-0.1	-1.4	1.4
NM	85	-0.5	-3.7	0.4	85	2.5	0.8	4.2
ND	51	0.7	0.3	1.1	51	2.6	1.1	4.1
OK	60	-1.1	-1.5	-0.7	60	-1.3	-2.8	0.2
SD	58	0.4	0.0	0.9	58	1.6	0.1	3.2
TX	237	-0.7	-1.0	-0.4	237	-0.9	-1.8	0.1
WY	132	-0.4	-1.0	0.2	132	2.2	0.7	3.9
Western	736	-0.8	-1.1	-0.4	563	2.0	1.0	3.1
AZ	88	-0.7	-1.5	0.0	88	1.5	-0.7	3.9
CA	254	-0.6	-1.0	-0.2	254	1.7	0.2	3.2
ID	49	-1.5	-2.4	-0.5	49	-0.5	-3.2	2.1
NV	45	-0.4	-1.4	0.5	45	7.0	2.7	11.5
OR	118	-0.8	-1.5	-0.1	118	4.2	2.1	6.4
UT	102	-1.4	-2.2	-0.5	102	0.6	-1.5	2.6
WA	80	-0.1	-0.8	0.4	80	0.2	-1.4	1.8

^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 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 3. Preliminary estimates and their standard errors (SE) of mourning dove harvest and hunter activity during the 2023–24 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	5,981,800	178,700	430,200	† ^c	1,240,400	36,600	† ^c	† ^c
AL	533,400	48,200	35,500	1,900	86,600	5,800	15.0	1.6
DE	50,100	5,400	2,500	100	8,600	800	19.7	2.4
FL	390,900	70,000	21,500	2,500	84,600	12,700	18.2	3.9
GA	871,600	65,800	56,500	3,000	151,800	9,400	15.4	1.4
IL	226,600	24,400	18,600	1,400	50,900	4,900	12.2	1.6
IN	152,800	16,900	12,400	1,000	42,800	5,300	12.4	1.7
KY	386,300	30,000	20,000	1,000	58,900	3,900	19.3	1.8
LA	320,300	34,800	21,800	1,600	66,900	6,100	14.7	1.9
MD	91,500	17,100	6,600	1,100	20,400	3,900	14.0	3.5
MS	415,000	44,800	33,300	2,700	74,400	7,200	12.4	1.7
NC	759,100	93,300	60,200	3,200	165,600	24,300	12.6	1.7
OH	140,000	16,400	13,100	1,000	46,100	5,200	10.7	1.5
PA	127,000	15,000	18,900	1,600	71,600	9,000	6.7	1.0
RI	900	600	200	100	700	200	4.5	3.2
SC	658,900	59,700	38,600	2,500	107,000	7,800	17.1	1.9
TN	454,400	43,700	32,100	2,300	88,000	8,900	14.2	1.7
VA	294,300	9,800	22,400	400	58,900	1,900	13.1	0.5
WI	96,600	16,300	14,200	1,500	51,500	6,700	6.8	1.4
WV	12,100	2,300	1,700	400	5,000	1,000	6.9	2.0
Central	9,243,400	254,500	487,900	† ^c	1,714,700	38,200	† ^c	† ^c
AR	256,900	33,700	15,600	1,400	46,100	5,300	16.5	2.6
CO	177,700	21,900	10,900	700	31,400	3,000	16.4	2.3
IA	102,900	12,600	8,400	700	26,400	3,800	12.3	1.8
KS	638,400	47,800	32,100	1,600	110,100	7,300	19.9	1.8
MN	135,300	24,800	13,400	1,700	37,900	5,800	10.1	2.3
MO	313,900	36,800	24,700	1,800	68,100	7,000	12.7	1.8
MT	38,800	4,100	3,200	200	10,000	800	12.3	1.5
NE	270,100	28,400	12,900	900	46,100	3,900	20.9	2.6
NM	72,600	15,700	6,600	900	18,100	2,900	11.0	2.8
ND	175,500	8,800	9,600	300	32,800	1,400	18.2	1.0
OK	359,800	43,700	23,000	2,000	75,400	8,200	15.7	2.3
SD	197,500	27,100	9,800	1,100	31,100	3,800	20.2	3.6
TX	6,485,800	234,400	316,000	7,000	1,176,200	34,100	20.5	0.9
WY	18,300	1,800	1,800	100	4,900	500	10.0	1.1
Western	1,534,500	74,800	100,000	† ^c	306,800	22,900	† ^c	† ^c
AZ	623,600	44,500	29,800	1,600	98,700	10,500	20.9	1.9
CA	730,900	57,400	45,700	2,000	121,800	7,200	16.0	1.4
ID	59,900	3,700	6,500	200	19,700	1,200	9.3	0.7
NV	12,700	3,600	2,200	500	5,700	1,800	5.8	2.1
OR	11,200	3,000	3,600	700	25,800	18,300	3.1	1.0
UT	27,300	5,200	5,800	600	17,900	3,400	4.7	1.0
WA	68,800	16,000	6,500	1,000	17,100	3,000	10.7	3.0
United States	16,759,700	319,800	1,018,100	† ^c	3,262,000	57,600	† ^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 4. Number of mourning doves banded in each management unit, state, and year, 2003–23. Only known-age birds banded in July or August are included and used in the 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	2023
Eastern	17,993	18,448	16,772	16,069	16,876	16,221	17,500	15,446	17,613	16,242
AL	1,149	987	1,133	942	1,010	1,323	1,347	1,125	1,247	996
DE	202	38	94	92	30	169	109	135	91	147
FL	906	772	759	642	716	689	759	705	912	866
GA	954	1,336	1,152	1,132	1,466	1,650	1,810	1,410	1,514	1,783
IL	1,988	2,048	1,810	2,211	2,039	1,538	2,338	2,395	2,468	1,720
IN	1,237	977	653	1,171	982	689	764	0	632	643
KY	1,430	1,759	1,324	1,516	1,321	1,100	1,158	1,064	884	890
LA	1,066	1,769	1,596	1,232	1,759	1,346	1,761	771	1,599	1,105
MD	279	306	221	283	361	348	336	369	386	419
MI	0	0	0	0	0	0	0	0	1	3
MS	791	675	448	666	546	564	591	724	579	579
North Atl. ^a	141	118	159	191	10	3	6	24	8	8
NC	1,326	1,163	1,199	1,004	1,023	1,367	1,421	1,423	1,811	1,432
OH	1,336	1,312	1,316	1,314	1,072	1,300	921	1,138	1,349	1,312
PA	993	795	737	824	808	784	812	881	811	791
RI	0	55	0	0	0	15	29	39	46	184
SC	1,831	1,990	1,918	1,566	1,484	967	1,115	1,243	1,138	939
TN	677	611	540	609	530	730	769	756	603	893
VA	525	580	442	492	555	540	446	235	354	491
WI	789	800	887	746	798	873	773	768	764	639
WV	373	357	384	378	366	228	235	241	416	402
Central	21,545	19,516	19,982	18,357	15,417	16,379	15,552	13,254	15,150	14,740
AR	342	300	359	413	233	280	275	273	228	410
CO	1,335	1,011	1,419	923	1,017	1,125	1,236	1,221	1,331	1,161
IA	1,960	2,027	1,906	2,201	1,878	2,058	1,907	1,907	2,132	2,304
KS	3,233	3,332	2,868	3,403	2,451	2,457	2,218	2,218	2,889	3,147
MN	782	388	357	490	327	604	43	43	179	68
MO	2,997	1,966	1,983	1,465	1,635	1,242	984	984	1,211	1,123
MT	417	439	283	330	330	549	393	393	481	429
NE	1,505	1,357	1,718	1,458	1,101	1,094	1,007	1,007	1,447	612
NM	661	701	682	855	1,131	866	645	645	572	549
ND	1,675	1,620	1,647	1,685	614	1,356	1,116	1,116	1,239	1,293
OK	1,561	1,604	1,402	1,154	740	971	401	401	154	396
SD	1,872	2,052	2,329	1,278	1,197	916	828	828	837	761
TX	2,770	2,391	2,645	2,115	2,022	2,123	1,614	1,614	2,121	2,172
WY	435	328	384	587	741	739	587	587	329	315
Western	10,139	10,951	9,110	9,098	10,195	8,529	7,733	8,750	7,822	8,455
AZ	3,319	2,983	3,032	3,388	3,532	3,445	2,987	2,368	2,105	3,607
CA	3,510	4,535	3,293	3,265	3,877	2,384	1,811	2,960	2,105	1,587
ID	756	770	685	657	646	657	652	731	1,117	1,187
NV	600	401	498	415	458	636	444	549	533	421
OR	1,122	1,057	737	697	886	860	961	722	681	713
UT	349	282	59	73	13	52	306	226	0	2
WA	483	923	806	603	783	495	572	1,194	1,281	938
United States	49,677	48,915	45,864	43,524	42,488	41,133	40,785	37,450	40,585	39,437

^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, 2007–23. Estimates by age-class: hatch-year (HY) and after-hatch-year (AHY). SD is the standard deviation of the posterior probability distribution for an estimate.

Management Unit & State	HY Survival	HY Survival SD	AHY Survival	AHY Survival SD	HY Harvest Rate	HY Harvest Rate SD	AHY Harvest Rate	AHY Harvest Rate SD
Eastern	0.260	0.065	0.410	0.035	0.076	0.039	0.050	0.023
AL	0.261	0.043	0.409	0.038	0.088	0.025	0.050	0.015
DE	0.309	0.106	0.385	0.096	0.169	0.044	0.105	0.029
FL	0.290	0.059	0.428	0.050	0.034	0.021	0.021	0.014
GA	0.287	0.048	0.405	0.046	0.104	0.018	0.055	0.010
IL	0.294	0.039	0.414	0.034	0.059	0.023	0.035	0.014
IN	0.176	0.082	0.408	0.086	0.074	0.026	0.060	0.021
KY	0.273	0.049	0.400	0.046	0.074	0.013	0.051	0.009
LA	0.331	0.091	0.436	0.091	0.075	0.018	0.039	0.009
MD	0.245	0.095	0.397	0.096	0.085	0.022	0.064	0.015
MS	0.250	0.046	0.401	0.043	0.111	0.031	0.067	0.020
NC	0.214	0.075	0.359	0.084	0.092	0.033	0.058	0.021
OH	0.217	0.043	0.415	0.040	0.048	0.030	0.030	0.020
PA	0.224	0.098	0.404	0.102	0.033	0.011	0.020	0.006
SC	0.297	0.045	0.407	0.043	0.093	0.018	0.056	0.011
TN	0.214	0.048	0.397	0.051	0.128	0.016	0.067	0.008
VA	0.163	0.063	0.415	0.065	0.030	0.036	0.035	0.042
WI	0.335	0.161	0.443	0.145	0.025	0.028	0.012	0.015
WV	0.255	0.080	0.434	0.070	0.040	0.032	0.027	0.023
Central	0.334	0.110	0.477	0.072	0.040	0.032	0.031	0.023
AR	0.288	0.080	0.418	0.072	0.082	0.023	0.052	0.015
CO	0.321	0.095	0.490	0.083	0.012	0.005	0.025	0.010
IA	0.217	0.051	0.428	0.054	0.067	0.032	0.050	0.024
KS	0.271	0.051	0.450	0.050	0.058	0.014	0.049	0.012
MN	0.422	0.093	0.530	0.074	0.036	0.012	0.023	0.008
MO	0.153	0.038	0.357	0.047	0.121	0.045	0.090	0.033
MT	0.431	0.118	0.602	0.084	0.017	0.012	0.009	0.007
ND	0.433	0.099	0.592	0.079	0.015	0.007	0.012	0.005
NE	0.296	0.066	0.461	0.058	0.029	0.008	0.031	0.008
NM	0.454	0.117	0.516	0.095	0.010	0.006	0.007	0.004
OK	0.257	0.057	0.418	0.055	0.060	0.024	0.050	0.021
SD	0.475	0.051	0.495	0.040	0.044	0.013	0.032	0.009
TX	0.361	0.119	0.467	0.112	0.047	0.019	0.033	0.013
WY	0.407	0.144	0.542	0.094	0.007	0.005	0.006	0.004
Western	0.288	0.077	0.446	0.035	0.035	0.015	0.034	0.014
AZ	0.321	0.093	0.427	0.102	0.024	0.012	0.016	0.006
CA	0.277	0.068	0.441	0.046	0.055	0.015	0.053	0.018
ID	0.315	0.129	0.473	0.125	0.026	0.010	0.020	0.010
NV	0.271	0.142	0.463	0.119	0.045	0.024	0.039	0.021
OR	0.249	0.130	0.431	0.108	0.036	0.025	0.037	0.022
UT	0.313	0.388	0.449	0.119	0.016	0.034	0.015	0.006
WA	0.286	0.067	0.444	0.085	0.053	0.017	0.043	0.020

Table 6. Estimated age ratios (juveniles per adult) by management unit and state based on the Parts Collection Survey, 2007–23. Age ratios are corrected for unknown age wings and differential vulnerability. Sample size is the number of wings examined. SD is the standard deviation of the posterior probability distribution for an estimate.

Management Unit & State	Age Ratio 2007 ^a	Age Ratio SD 2007	Age Ratio 2008	Age Ratio SD 2008	Age Ratio 2009	Age Ratio SD 2009	Age Ratio 2010	Age Ratio SD 2010	Age Ratio 2011	Age Ratio SD 2011	Age Ratio 2012	Age Ratio SD 2012
Eastern	2.11	0.15	1.73	0.12	1.86	0.13	1.64	0.11	2.04	0.13	1.82	0.12
AL	1.89	0.55	2.29	0.69	2.38	0.52	2.31	0.37	2.41	0.39	2.03	0.30
DE	1.35	0.29	2.97	0.88	2.10	0.47	1.64	0.26	2.12	0.37	1.56	0.27
GA	2.04	0.45	1.78	0.60	1.62	0.35	1.93	0.31	2.29	0.39	1.93	0.31
IL	1.37	0.26	2.27	0.70	1.81	0.38	1.69	0.27	1.79	0.29	1.93	0.28
IN	2.16	0.42	3.69	1.14	2.54	0.56	1.96	0.31	2.66	0.45	2.00	0.28
KY	2.07	0.41	1.91	0.55	1.83	0.36	2.32	0.38	1.89	0.32	1.48	0.21
LA	1.91	0.39	3.66	1.30	1.80	0.36	1.97	0.32	2.23	0.39	1.68	0.25
MD	1.31	0.26	1.97	0.62	1.81	0.37	1.72	0.28	1.70	0.30	1.55	0.23
MS	1.79	0.36	0.90	0.32	1.71	0.35	1.80	0.31	1.80	0.31	1.77	0.29
NC	1.74	0.37	2.03	0.81	1.94	0.39	1.42	0.26	1.71	0.33	1.72	0.29
OH	1.92	0.41	11.23	7.72	2.10	0.41	1.93	0.33	2.15	0.39	1.98	0.29
PA	1.41	0.31	1.74	0.75	1.56	0.31	2.00	0.34	2.43	0.44	1.48	0.22
RI ^b	----	----	----	----	----	----	----	----	----	----	----	----
SC	2.13	0.49	4.32	2.66	2.46	0.51	2.22	0.39	2.29	0.42	2.77	0.45
TN	1.48	0.37	1.69	0.56	1.26	0.27	1.84	0.34	2.23	0.41	2.12	0.32
VA	1.61	0.35	2.57	1.07	1.70	0.36	1.62	0.32	1.88	0.37	1.69	0.26
WI	1.86	0.39	2.31	1.08	2.01	0.45	1.94	0.36	2.61	0.50	1.96	0.30
WV	1.84	0.38	2.68	1.55	2.03	0.50	1.99	0.42	2.12	0.46	2.20	0.37
Central	1.41	0.10	1.09	0.07	1.31	0.08	1.35	0.08	1.41	0.08	1.52	0.09
AR	1.46	0.25	0.92	0.14	0.83	0.14	1.66	0.25	1.51	0.23	1.05	0.17
CO	2.18	0.50	2.21	0.52	2.16	0.49	2.17	0.51	2.37	0.43	2.28	0.22
IA	----	----	----	----	----	----	----	----	1.58	0.17	2.25	0.24
KS	1.51	0.21	1.27	0.15	1.58	0.26	1.00	0.14	1.24	0.14	1.75	0.20
MN	2.17	0.41	1.84	0.30	1.91	0.31	1.55	0.24	2.35	0.39	1.87	0.32
MO	1.65	0.13	1.80	0.13	1.51	0.11	1.65	0.11	1.95	0.12	2.10	0.14
MT	2.26	0.37	3.72	0.70	2.40	0.40	2.13	0.34	2.66	0.44	3.37	0.59
ND	2.06	0.68	1.71	0.52	2.77	0.70	3.07	1.15	1.42	0.18	2.54	0.28
NE	1.83	0.22	0.99	0.12	1.92	0.29	1.96	0.22	2.27	0.31	1.64	0.20
NM	1.80	0.38	1.37	0.29	1.37	0.30	1.57	0.33	1.45	0.31	1.70	0.37
OK	1.17	0.10	1.32	0.12	1.25	0.15	1.44	0.13	1.17	0.10	1.93	0.19
SD	2.61	0.31	1.53	0.18	1.78	0.20	2.00	0.25	2.48	0.29	2.57	0.30
TX	0.87	0.14	0.54	0.08	0.74	0.09	0.83	0.09	0.94	0.12	0.85	0.11
WY	1.61	0.23	1.51	0.22	1.25	0.18	1.94	0.28	1.85	0.27	1.51	0.24
Western	1.42	0.08	1.51	0.08	1.49	0.08	1.51	0.08	1.52	0.08	1.51	0.08
AZ	0.84	0.09	1.25	0.13	1.16	0.13	1.22	0.12	1.22	0.12	1.12	0.13
CA	2.02	0.13	1.92	0.11	1.96	0.15	1.80	0.09	1.82	0.09	1.82	0.10
ID	1.45	0.20	1.28	0.23	1.76	0.26	1.76	0.27	1.67	0.29	1.78	0.25
NV	1.63	0.17	1.49	0.22	1.43	0.17	1.46	0.13	1.56	0.15	1.69	0.17
OR	2.22	0.34	1.86	0.45	1.59	0.23	2.68	0.34	1.48	0.22	1.42	0.18
UT	1.59	0.29	1.00	0.17	0.97	0.21	0.97	0.16	1.44	0.23	1.62	0.30
WA	1.84	0.20	1.97	0.22	1.89	0.23	1.76	0.21	1.88	0.22	2.03	0.24

^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 SD 2013	Age Ratio 2014	Age Ratio SD 2014	Age Ratio 2015	Age Ratio SD 2015	Age Ratio 2016	Age Ratio SD 2016	Age Ratio 2017	Age Ratio SD 2017	Age Ratio 2018	Age Ratio SD 2018
Eastern	1.86	0.12	1.68	0.12	1.85	0.13	1.71	0.12	2.07	0.14	1.69	0.12
AL	1.45	0.37	3.17	0.87	2.02	0.41	2.37	0.36	2.37	0.43	2.40	0.55
DE	1.61	0.42	1.89	0.51	1.89	0.37	1.88	0.29	2.35	0.46	1.53	0.35
GA	2.04	0.53	2.04	0.54	2.56	0.51	2.13	0.30	1.97	0.37	1.65	0.38
IL	2.37	0.61	1.86	0.48	1.58	0.29	1.49	0.20	1.29	0.22	1.71	0.39
IN	2.10	0.58	2.11	0.56	1.78	0.34	2.09	0.30	2.03	0.36	2.52	0.60
KY	1.71	0.45	1.94	0.50	2.06	0.44	1.62	0.23	1.95	0.36	2.01	0.46
LA	2.08	0.57	2.54	0.69	1.87	0.37	1.85	0.27	2.07	0.39	1.95	0.47
MD	1.96	0.71	2.11	0.60	1.76	0.35	1.49	0.23	2.26	0.42	1.50	0.38
MS	2.29	0.85	2.42	0.71	2.14	0.44	1.74	0.26	1.39	0.25	2.43	0.63
NC	1.60	0.48	3.23	1.07	1.23	0.29	1.58	0.26	2.06	0.43	1.87	0.47
OH	1.79	0.50	3.37	1.05	2.67	0.57	2.71	0.43	2.14	0.41	1.53	0.37
PA	1.57	0.41	2.08	0.60	1.09	0.23	1.96	0.31	2.25	0.48	1.65	0.39
RI ^b	----	----	----	----	----	----	----	----	----	----	----	----
SC	1.79	0.49	3.33	1.07	2.02	0.45	2.66	0.47	1.76	0.42	1.46	0.39
TN	1.55	0.45	1.91	0.55	1.96	0.44	1.47	0.25	2.19	0.47	2.02	0.49
VA	2.18	0.77	1.88	0.53	1.68	0.47	1.57	0.27	1.48	0.35	1.88	0.51
WI	1.57	0.53	2.97	0.88	1.87	0.44	2.41	0.43	1.77	0.35	2.19	0.61
WV	2.36	1.05	2.17	0.71	2.70	0.81	1.97	0.35	2.13	0.50	2.25	0.68
Central	1.37	0.09	1.28	0.08	1.53	0.10	1.40	0.11	1.52	0.09	1.26	0.08
AR	1.91	0.39	0.87	0.14	0.80	0.12	1.56	0.76	1.07	0.19	0.74	0.15
CO	2.02	0.27	2.06	0.22	1.61	0.19	2.06	0.32	2.37	0.18	2.28	0.24
IA	1.63	0.18	1.33	0.14	1.49	0.17	1.50	0.26	1.73	0.21	1.56	0.15
KS	1.67	0.19	1.48	0.17	1.76	0.18	1.46	0.27	2.55	0.31	1.58	0.15
MN	2.88	0.54	1.31	0.24	2.15	0.40	2.84	0.64	2.62	0.49	2.07	0.44
MO	2.29	0.21	1.84	0.14	2.19	0.22	2.28	0.30	2.05	0.15	1.94	0.16
MT	2.84	0.48	1.34	0.24	2.62	0.48	2.23	0.44	2.51	0.47	1.70	0.34
ND	2.00	0.28	1.99	0.33	1.80	0.33	2.15	0.56	2.24	0.46	2.71	0.64
NE	1.82	0.31	1.94	0.34	1.38	0.17	0.95	0.22	2.10	0.28	1.13	0.14
NM	1.59	0.37	1.59	0.35	1.46	0.31	1.50	0.35	1.85	0.40	1.41	0.31
OK	1.28	0.14	1.17	0.15	1.44	0.17	1.71	0.28	1.66	0.18	1.10	0.11
SD	1.84	0.27	2.46	0.39	3.57	0.59	1.71	0.34	2.46	0.30	2.82	0.33
TX	0.70	0.11	0.76	0.12	1.31	0.23	1.24	0.28	0.71	0.10	0.73	0.12
WY	2.22	0.36	1.87	0.29	1.28	0.19	1.53	0.29	1.81	0.28	1.14	0.17
Western	2.03	0.13	1.53	0.09	1.86	0.11	1.64	0.11	2.04	0.12	1.36	0.08
AZ	1.87	0.25	1.02	0.12	1.59	0.18	1.40	0.17	1.59	0.18	0.88	0.10
CA	2.40	0.23	1.97	0.15	2.26	0.18	2.20	0.27	2.73	0.23	1.79	0.14
ID	1.81	0.26	1.78	0.26	1.96	0.31	1.45	0.24	1.92	0.29	1.26	0.21
NV	1.80	0.26	1.37	0.19	1.98	0.28	1.56	0.31	1.75	0.23	1.34	0.18
OR	1.98	0.22	2.15	0.39	2.00	0.31	1.89	0.36	1.78	0.34	2.49	0.45
UT	1.64	0.33	2.04	0.39	1.14	0.21	1.06	0.26	2.16	0.47	1.91	0.41
WA	2.54	0.37	2.47	0.47	2.26	0.34	1.32	0.30	2.75	0.38	1.55	0.24

^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 SD 2019	Age Ratio 2020	Age Ratio SD 2020	Age Ratio 2021	Age Ratio SD 2021	Age Ratio 2022	Age Ratio SD 2022	Age Ratio 2023	Age Ratio SD 2023	All Years Sample Size	All Years Mean	All Years SD
Eastern	2.12	0.15	1.68	0.12	1.61	0.12	2.02	0.14	2.00	0.14	102,719	1.88	0.25
AL	2.21	0.39	2.18	0.40	2.59	0.41	1.71	0.51	2.28	0.59	5,082	1.71	0.48
DE	1.44	0.25	1.83	0.30	1.61	0.25	1.89	0.51	2.00	0.54	2,178	2.22	3.10
GA	1.66	0.30	1.62	0.26	1.55	0.26	1.76	0.50	1.83	0.46	7,115	1.85	0.53
IL	1.67	0.29	1.91	0.29	1.52	0.23	2.21	0.59	1.98	0.50	8,788	1.87	0.41
IN	2.20	0.39	2.13	0.34	1.84	0.29	1.77	0.50	1.80	0.45	11,178	2.09	0.49
KY	1.38	0.24	2.34	0.39	1.89	0.29	1.95	0.53	1.71	0.43	8,460	1.82	0.43
LA	1.70	0.32	1.88	0.30	1.70	0.29	2.17	0.59	1.74	0.50	2,091	1.77	0.67
MD	1.78	0.34	1.85	0.29	1.72	0.33	1.83	0.51	2.29	0.71	4,749	2.21	0.92
MS	2.14	0.43	1.87	0.30	3.07	0.63	2.79	0.89	2.23	0.68	5,298	1.87	0.61
NC	2.81	0.59	1.91	0.35	1.56	0.29	2.71	0.91	1.72	0.47	9,992	1.85	0.50
OH	2.28	0.45	2.04	0.34	2.44	0.47	1.97	0.59	1.67	0.42	4,954	1.94	0.51
PA	1.57	0.30	1.84	0.30	1.52	0.27	2.39	0.72	1.36	0.39	3,598	1.83	0.59
RI ^b	----	----	----	----	----	----	----	----	----	----	35	----	----
SC	2.41	0.47	1.95	0.33	2.03	0.36	2.43	0.72	1.87	0.48	9,607	1.77	0.56
TN	1.21	0.25	1.81	0.33	1.56	0.28	2.42	0.76	1.64	0.44	4,213	1.88	0.36
VA	1.40	0.30	1.73	0.30	1.46	0.30	1.86	0.60	1.90	0.52	10,622	1.80	0.70
WI	2.02	0.49	1.94	0.33	3.43	0.77	2.75	0.89	1.99	0.56	2,799	2.05	0.75
WV	1.69	0.39	1.73	0.31	2.56	0.55	2.00	0.63	2.04	0.71	1,960	1.82	0.58
Central	1.59	0.10	1.31	0.09	1.54	0.12	1.67	0.12	1.86	0.20	96,524	1.74	0.23
AR	1.92	0.51	1.45	0.32	2.33	0.58	0.60	0.17	0.80	0.30	4,901	1.12	0.59
CO	2.09	0.21	1.88	0.17	2.32	0.25	2.81	0.31	2.65	0.47	10,554	2.17	0.44
IA	2.35	0.28	1.54	0.18	1.86	0.24	2.14	0.25	2.17	0.31	4,120	1.70	0.41
KS	1.86	0.21	1.58	0.20	1.31	0.20	1.94	0.24	2.30	0.41	9,910	1.59	0.43
MN	1.83	0.35	0.89	0.16	2.32	0.47	4.65	1.05	2.95	0.81	2,190	2.09	0.95
MO	2.43	0.26	2.17	0.23	2.21	0.25	3.34	0.40	2.36	0.26	9,068	2.04	0.45
MT	3.07	0.83	1.85	0.40	2.33	0.52	3.18	0.72	3.73	1.06	3,145	2.49	0.86
ND	1.55	0.32	2.08	0.34	1.95	0.42	1.89	0.39	1.50	0.38	5,390	1.99	0.69
NE	2.19	0.33	1.95	0.34	1.98	0.47	2.32	0.38	0.89	0.17	9,062	1.77	0.54
NM	1.59	0.36	1.48	0.33	1.47	0.33	1.84	0.41	1.91	0.43	4,602	1.56	0.39
OK	1.44	0.15	1.72	0.18	1.41	0.16	1.81	0.19	1.11	0.15	7,342	1.37	0.30
SD	2.61	0.34	1.75	0.25	1.36	0.20	3.18	0.47	2.76	0.47	7,365	2.31	0.68
TX	1.02	0.17	0.72	0.13	1.40	0.36	0.91	0.18	3.04	1.40	15,235	0.84	0.67
WY	1.56	0.25	1.56	0.25	1.62	0.26	1.99	0.31	1.03	0.17	3,640	1.60	0.40
Western	1.79	0.10	1.16	0.07	1.71	0.12	1.98	0.13	1.73	0.12	49,984	1.74	0.25
AZ	1.35	0.14	0.56	0.06	0.91	0.12	1.41	0.16	1.29	0.16	17,314	1.21	0.34
CA	2.32	0.15	1.45	0.11	2.77	0.23	2.92	0.23	2.33	0.23	14,282	2.05	0.43
ID	1.35	0.26	1.98	0.46	1.90	0.41	1.91	0.42	1.81	0.33	3,995	1.68	0.38
NV	1.94	0.30	----	----	----	----	2.30	0.51	2.08	0.42	3,278	1.66	0.41
OR	2.60	0.49	1.96	0.34	2.22	0.51	1.78	0.34	2.32	0.56	2,082	1.97	0.52
UT	1.28	0.25	1.66	0.37	2.01	0.64	1.12	0.31	0.80	0.23	2,808	1.36	0.53
WA	2.63	0.45	2.19	0.36	1.90	0.33	2.91	0.43	2.89	0.65	6,225	1.44	0.58

^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 deviation (SD; the standard deviation of the posterior probability distribution for an estimate) of mourning doves on 1 September each year for each management unit (Eastern=EMU, Central=CMU, and Western=WMU) in the US, 2007–23.

Year	EMU Abundance	EMU SD	CMU Abundance	CMU SD	WMU Abundance	WMU SD	US Abundance	US SD
2007	101,832,780	5,783,514	193,614,975	17,427,708	64,794,224	8,564,561	360,241,979	20,261,435
2008	98,195,508	5,687,879	181,314,648	16,550,515	56,383,080	7,591,244	335,893,237	19,076,124
2009	99,556,190	5,809,677	189,763,104	17,420,934	56,016,320	7,527,051	345,335,614	19,846,858
2010	94,521,946	5,484,725	177,116,921	16,322,309	55,680,128	7,433,754	327,318,995	18,755,284
2011	99,599,448	5,770,615	167,885,220	15,399,379	52,359,868	7,141,684	319,844,536	17,928,874
2012	98,623,150	5,723,307	177,854,029	16,346,915	50,139,847	6,812,712	326,617,027	18,611,581
2013	98,993,839	5,765,863	185,699,626	17,103,495	46,121,091	6,254,494	330,814,556	19,102,183
2014	90,603,954	5,239,633	199,874,821	18,424,416	50,893,639	6,872,372	341,372,414	20,350,488
2015	90,746,399	5,244,897	200,856,611	18,513,130	54,394,835	7,440,399	345,997,846	20,630,183
2016	87,955,282	5,092,872	188,220,905	17,363,836	44,302,993	6,063,311	320,479,180	19,084,127
2017	91,480,025	5,340,061	186,933,566	17,183,582	41,794,265	5,757,847	320,207,856	18,892,976
2018	85,314,738	4,950,712	173,884,135	15,947,716	44,414,552	6,040,084	303,613,426	17,757,303
2019	86,886,232	5,044,588	170,094,240	15,690,014	39,470,973	5,395,172	296,451,445	17,341,634
2020	86,917,625	5,031,038	163,157,130	15,132,644	39,049,698	5,371,651	289,124,453	16,827,445
2021	83,138,487	4,834,071	160,389,839	14,915,703	45,092,964	6,251,509	288,621,289	16,879,805
2022	86,479,029	5,022,945	170,894,691	16,057,433	51,863,931	7,222,058	309,237,651	18,309,267
2023	88,507,444	5,130,120	201,932,294	18,699,166	55,132,978	7,885,638	345,572,716	20,932,277

Appendix A. Federal framework dates, season length, and daily bag limit for mourning dove hunting in the US by management unit (Eastern=EMU, Central=CMU, and Western=WMU), 1918–2023.

Year	EMU Dates ^a	EMU Days	EMU Bag	CMU Dates ^a	CMU Days	CMU Bag	WMU Dates ^a	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
2018–23	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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