U.S. Fish & Wildlife Service

Mourning Dove

Population Status, 2013

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U.S. Fish and Wildlife Service
Division of Migratory Bird Management
Population and Habitat Assessment Branch
11510 American Holly Drive
Laurel, MD 20708-4002

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MOURNING DOVE POPULATION STATUS, 2013

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Abstract: This report summarizes information collected annually in the United States on survival, recruitment, abundance and harvest of mourning doves. We report on trends in the number of doves heard per route from the Mourning Dove Call-count Survey (CCS), doves seen per route from the CCS, birds heard and seen per route from the all-bird North American Breeding Bird Survey (BBS), and provide absolute abundance estimates based on band recovery and harvest data. Harvest and hunter participation are estimated from the Migratory Bird Harvest Information Program (HIP). The CCS-heard data suggested that abundance of doves decreased in all three dove management units (Eastern [EMU], Central [CMU], and Western [WMU]) over the long term (1966–2013); within the EMU, however, there is evidence that abundance decreased in hunt states but increased in nonhunt states. In the recent 10 years there was no evidence for a change in mourning dove abundance in the EMU, but there was evidence of a decline in the CMU and WMU. Over the most recent two years there was no evidence for a change in abundance in any of the management units. Over the long term, trends based on CCS-heard and CCS-seen data were consistent in the CMU and WMU, but inconsistent in the EMU; CCS-seen data indicated that abundance increased in the EMU. BBS data suggested that the abundance of mourning doves over the long-term increased in the EMU and decreased in the CMU and WMU. Thus, over the long term, the three data sets provided consistent results for the CMU and WMU but not the EMU. Estimates of absolute abundance are available only since 2003 and indicate that there are about 349 million doves in the United States, and annual abundance during the recent 5 years appears stationary in the EMU and WMU, but may be declining in the CMU. However, abundance appeared to increase between 2011 and 2012 in the CMU and WMU. Based on a composite trend (weighted trend estimate using information from the CCS, BBS, and absolute abundance), the EMU and WMU populations were stationary over the previous 5 and 10 years whereas the population in the CMU declined. Current (2012) HIP estimates for mourning dove total harvest, active hunters, and total days afield in the U.S. were 14,490,800 ± 532,700 (estimate ± SE) birds, 828,900 hunters, and 2,538,000 ± 75,300 days afield. Harvest and hunter participation at the unit level were: EMU, 6,279,900 ± 243,400 birds, 349,600 hunters, and 1,015,600 ± 37,900 days afield; CMU, 6,361,600 ± 468,300 birds, 338,700 hunters, and 1,108,700 ± 63,200 days afield; and WMU, 1,849,400 ± 71,800 birds, 140,700 hunters, and 413,700 ± 15,500 days afield.

The mourning dove (*Zenaida macroura*) is one of the most abundant bird species in urban and rural areas of North America, and is familiar to millions of people. Authority and responsibility for management of this species in the United States 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 United States and other countries. Mourning doves are included in the treaties with Great Britain (for Canada) and Mexico (U.S. Department of the Interior 1988). These treaties recognize sport hunting as a legitimate use of a 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, counts of mourning doves heard and seen are conducted by state, federal, tribal, and other biologists in the 48 conterminous states to monitor populations. In addition, each year 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. Past federal frameworks for dove hunting in the United States are in Appendix A.

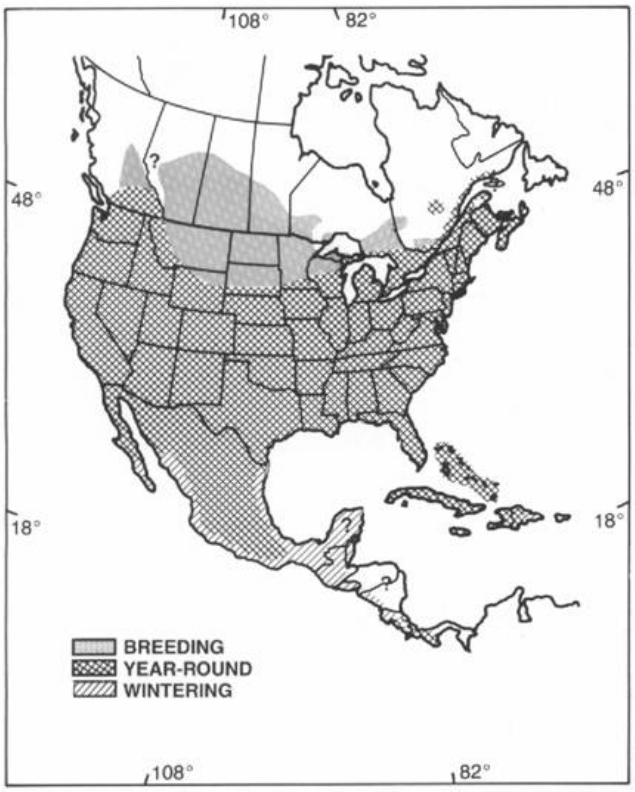

Figure 1. Breeding and wintering ranges of the mourning dove (adapted from Mirarchi and Baskett 1994).

DISTRIBUTION

The mourning dove is one of the most widely distributed and abundant birds in North America (Peterjohn et al. 1994, Fig. 1). Mourning doves breed from southern Canada throughout the United States into Mexico, Bermuda, the Bahamas and Greater Antilles, and in scattered locations in Central America (Fig. 1). Although mourning doves winter throughout much of their breeding range, the majority winter in the southern United States, Mexico, and south through Central America to western Panama (Aldrich 1993, Mirarchi and Baskett 1994).

POPULATION MONITORING

Call-count Survey

The Mourning Dove Call-count Survey (CCS) was developed to provide an annual index of abundance specifically for mourning doves (Dolton 1993). This survey is based on work by McClure (1939) in Iowa. In the United States, the survey currently includes more than 1,000 randomly selected routes, stratified by Bird Conservation Regions (Dolton 1993, Sauer et al. 2010).

CCS routes are located on secondary roads and have 20 listening stations spaced at 1-mile intervals. At each stop, the number of individual doves heard calling, the number of doves seen, and the level of disturbance (noise) that impairs the observer's ability to hear doves are recorded during a 3-minute period. Observers also record the number of doves seen while driving between stops.

Counts begin one-half hour before sunrise and take about 2 hours to complete. Routes are run once between 20 May and 5 June. Surveys are not conducted when wind velocities exceed 12 miles per hour or at times of precipitation.

The number of doves heard and seen during the CCS are recorded and analyzed separately. The total number of doves heard on each route is used to determine annual indices of abundance during the breeding season. Subsequently, trends in abundance over time are determined from these annual indices. A similar assessment is completed based on doves seen and results are also presented in this report, but only as supplemental information for comparison with indices and trends of doves heard.

Within the United States, there are three zones that contain mourning dove populations that are largely independent of each other (Kiel 1959). These zones encompass the principal breeding, migration, and U.S. wintering areas for each population. As suggested by Kiel (1959), these three areas 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 divided into two groups of states for analyses. States permitting dove hunting were combined into one group (hunt) and those prohibiting dove hunting into another (nonhunt). Wisconsin became a hunt state for the first time in 2003, Minnesota in 2004, and Iowa in 2011. Additionally, some states were grouped to increase sample sizes. Maryland and Delaware were combined; Vermont, New Hampshire, Maine, Massachusetts, Connecticut, and Rhode Island were

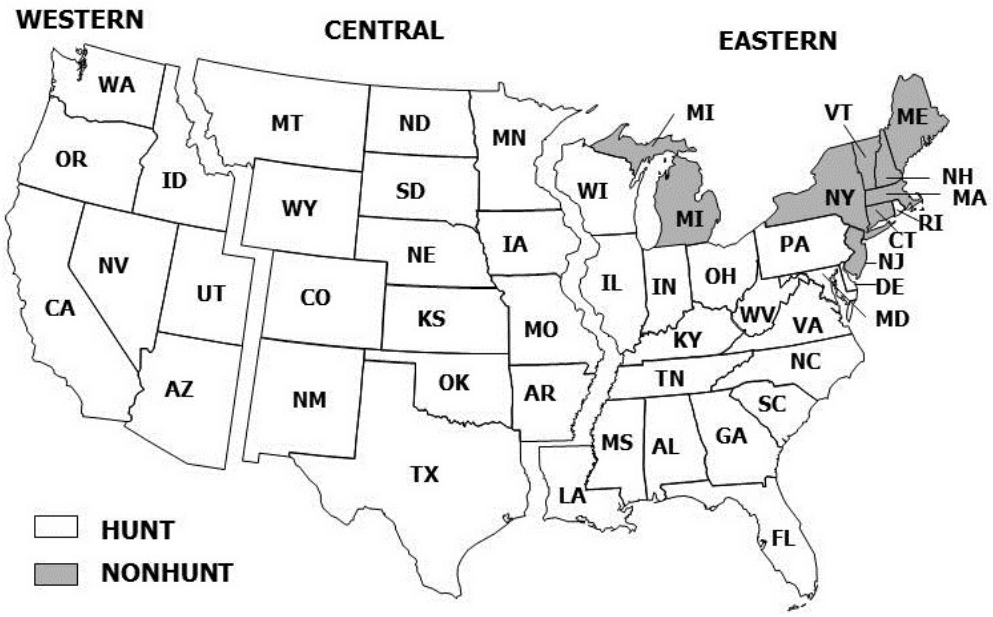

Figure 2. Mourning dove management units with 2012 hunt and nonhunt states.

combined to form a New England group. Even though Rhode Island is a hunt state, due to its small size and geographic location its data was included in this nonhunt group of states for analysis.

Breeding Bird Survey

The North American Breeding Bird Survey (BBS) is completed in June and is based on routes that are 24.5 miles long. Each route consists of 50 stops or point count locations at 0.5-mile intervals. At each stop, a 3-minute count is conducted whereby every bird seen within a 0.25-mile (400 m) radius or heard 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.

The BBS, CCS, and the estimate of absolute abundance (see below) are used to inform annual harvest management decisions. Consequently, we are including 1966–2012 BBS trend information in this report. Currently available BBS data is one year behind CCS data. Sauer et al. (1994) discussed the differences in the methodology of the two surveys. Current year BBS data are not available in time for use in regulations development during the same year. Research is currently underway to evaluate the causes of differences in estimated trends between the CCS and BBS results (e.g., Sauer et al. 2010).

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 15 January.

Banding goals for each state (specified by Bird Conservation Region [BCR]) are based on a power analysis to estimate sample size 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 unit while BCR area and associated median BBS index were used to determine sample size allocation within states. Placement of stations is left to judgment of the state banding coordinator.

Harvest Survey

Wildlife professionals have long recognized that reliable harvest estimates are needed to monitor the impact of hunting. In the past, the U.S. Fish and Wildlife Service (USFWS) estimated harvest of mourning doves from the Mail Questionnaire Survey (Martin and Carney 1977, Martin 1979). However, the sampling frame was primarily waterfowl hunters because it included only those people who bought Duck Stamps. The estimate of harvest from this survey was not the total estimate of dove harvest but rather the total estimate of dove harvest by hunters who purchased Duck Stamps. Therefore, it underestimated total dove harvest and dove hunter activity. Some states conducted dove harvest surveys, but the usefulness of these surveys in estimating dove harvest at larger scales was limited because of partial geographic coverage, the lack of consistent survey methodology, and thus an inability to compare survey results among states.

To remedy the limitations associated with the Mail Questionnaire Survey and using the results of state surveys, the USFWS initiated the Migratory Bird Harvest Information Program (HIP). The program was established in 1992 and became fully operational on a national scale in 1999. HIP is designed to enable the USFWS to conduct nationwide surveys that provide reliable annual estimates of the harvest of mourning doves and other migratory game bird species on state, management unit, and national levels. Under HIP, states provide the USFWS with the names and addresses of all licensed migratory bird hunters each year and then surveys are conducted to estimate harvest and hunter participation (i.e., number of active hunters, total days afield) in each state. All states except Hawaii participate in the program.

Parts Collection Survey

Age of individual doves can be determined by examination of their wings. Mourning dove wings are easily obtained during the hunting season and can potentially 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 survey.

The survey design for mourning dove wing collection follows that of waterfowl. 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 3-day wingbee hosted annually by the Missouri Department of Conservation in Lee's Summit, Missouri. Wings of harvested mourning doves are classified as juveniles (hatch-year birds) or adults (after-hatch-year birds). A significant portion of wings are classified as unknown age where molt has progressed to late stage. These harvest age ratios are used to estimate recruitment (population age ratio) after accounting for uncertainty related to unknown age wings and age-specific harvest vulnerability (Miller and Otis 2010).

METHODS

Estimation of Trends in Abundance Indices

CCS and BBS trends were estimated using a log-linear hierarchical model and Bayesian analytical framework (Sauer et al. 2008, Sauer et al. 2010). Prior to 2010 trends were estimated using a route regression approach (Link and Sauer 1994). Both methods provide trend and annual index values that are generally comparable. The hierarchical model, however, has a more rigorous and realistic theoretical basis than the weightings used in the route regression approach, and the indices and trends are directly comparable because trends are calculated directly from the indices. For the route regression approach, interval specific trend was estimated for each route then regional trends were estimated by a weighted average of these route trends.

With the hierarchical model, the log of the expected value of the counts is modeled as a linear combination of strata-specific intercepts and trends, a random effect for each unique combination of route and observer, a year effect, a start-up effect on the route for first year counts by new observers, and over-dispersion. Most of the parameters of interest are treated as random

effects and some parameters are hierarchical in that they are assumed to follow distributions that are governed by additional parameters. The model is fit using Bayesian methods. Markov-chain Monte Carlo methods are used to iteratively produce sequences of parameter estimates which can be used to describe the distribution of the parameters of interest. Once the sequences converge, medians and credible intervals (CI, Bayesian confidence intervals) for the parameters are determined from the subsequent replicates. Annual indices are defined as exponentiated year and trend effects, and trends are defined as ratios of the year effects at the start and end of the interval of interest, taken to the appropriate power to estimate a yearly change (Sauer et al. 2008). Trend estimates are expressed as the average percent change per year over a given time period, while indices are expressed as the number of doves heard, seen, or both heard and seen (BBS) per route.

Annual indices were calculated at the state, region (group of states), and dove management unit levels. Short- (recent 2-year period), intermediate- (recent 10-year period) and long-term (all years with data) trends were evaluated for each area. We present the median and 95th percentile CI for estimates. The extent to which trend credible intervals exclude zero can be interpreted as the strength of evidence for an increasing or decreasing trend. Thus, there is evidence of a positive trend if the CI > 0 and there is evidence of negative trend if the CI < 0. If the CI contains 0, then there is inconclusive evidence about trend in abundance. The reported sample sizes are the number of routes or sites on which trend estimates are based, which includes any route on which mourning doves were ever encountered in the region.

For the CCS-heard data, we estimated the trend, or average annual change, in dove abundance for each area over the last 2 and 10 years and for all years since survey implementation in 1966 (Table 1). Also we estimated the trend in dove abundance for each area from CCS-seen data over the same time periods, and present these as supplemental information for comparison with CCS-heard results (Table 2).

For the BBS, trends were calculated over the recent 10 years and for all years since survey implementation in 1966. Current year BBS data are not available at the time of publication of this report and consequently these data are one year behind the CCS data. BBS results are presented in Table 3.

We present estimated annual indices of mourning dove abundance since 1966 for management units and states based on CCS-heard data (Table 4) and CCS-seen data (Table 5). From these data, trend (point estimate) in dove abundance can be calculated for any time interval within this time period based on the ratio of the index values in the first and last year of the interval of interest.

Estimation of Survival, Harvest Rate, Recruitment and Absolute Abundance

Band recovery models were used to estimate annual survival and harvest rates. We used a Brownie parameterization (Brownie et al. 1985) and only birds shot during the U.S. hunting season to estimate annual harvest rates. Only direct recoveries were used to estimate harvest rates. Band recovery data were adjusted for reporting rate (Sanders and Otis 2012) prior to analysis; thus, recovery rates estimated from the Brownie parameterization were interpreted as harvest rates. We used a Seber parameterization (Seber 1970) and all dead recoveries to estimate survival rates. No adjustment was made to account for band reporting probabilities as it had no consequence in survival rate estimation, and both direct and indirect recoveries were used.

We were mostly interested in reporting age specific harvest and survival rates by state and management unit. Most states lacked sufficient sample sizes of banded birds to estimate harvest or survival rates annually; therefore, data were pooled over years to obtain mean annual estimates. For the Brownie parameterization we developed a single model for estimation where survival was allowed to vary by age (hatch-year versus after-hatch-year); while recovery rate was allowed to vary by state and age. We used this model for inference regarding state- and age-specific harvest rates. We used a similar approach for the Seber parameterization, formulating a model that allowed recovery rate to vary by state with an additive age effect, and allowed survival to vary by state and age. We used this model for inference regarding age and state specific survival rates.

We used the approach of Miller and Otis (2010) to estimate annual recruitment. We limited samples 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 age-classes based on previously estimated probabilities that adults will be in late stages of molt. Band recovery data was 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 7] and Parts Collection Survey [Table 10]) by harvest rate estimated from direct (first hunting season) band recoveries. Management unit level harvest rates were based on state weighted harvest rate estimates. The state weight was the product of state habitat area (area within state presumed to be dove habitat) and dove abundance estimated by the Call Count Survey-heard index during the most recent 5-year moving average.

Estimation of Composite Trends in Abundance

Composite trends in abundance were calculated that incorporate all four sources of information on mourning dove abundance including estimates from BBS, CCS doves heard and seen, and derived from band and harvest data. The BBS and CCS provide estimates of relative abundance during June while the band and harvest data provide an estimate of absolute abundance during late August.

A hierarchical model in a Bayesian analytical framework was used to produce a composite abundance index from the four data sources for each management unit and year. The index values are then used to calculate the trend in abundance over the most recent 5- or 10-year time interval for each management unit. Repeated sampling results in a posterior probability distribution (PPD) for the estimated trend, a natural and intuitive way to portray uncertainty in the trend point estimate. The time series is 1966–2013 for CCS and BBS data and 2003–2012 for absolute abundance data. We calculated trend estimates for recent 5 and 10-year intervals and for all data since 1966.

RESULTS

Call-Count Survey

Eastern Management Unit.—The EMU includes 27 states comprising 30% of the land area of the contiguous United States. Dove hunting is permitted in 19 states, representing 80% of the land area of the unit (Fig. 2).

Based on the mean of the 2 CCS-heard indexes from the last 2 years, North Carolina had the highest annual count in the EMU with a mean of 38 doves per route (Fig. 3). Alabama, Georgia, Indiana, Illinois, Kentucky, Mississippi, and South Carolina had 20–30 doves. West Virginia and the New England states had < 10 doves per route, and the rest of the EMU had 10–20 doves.

Based on CCS-heard data, there was no evidence that dove abundance changed in the EMU or in EMU hunt

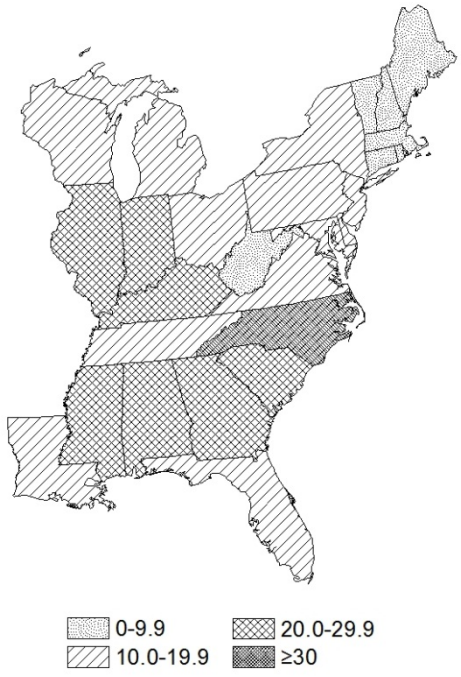

Figure 3. Mourning dove abundance in the Eastern Management Unit based on the mean of the 2 CCS-heard index values from the last 2 years (2012–2013).

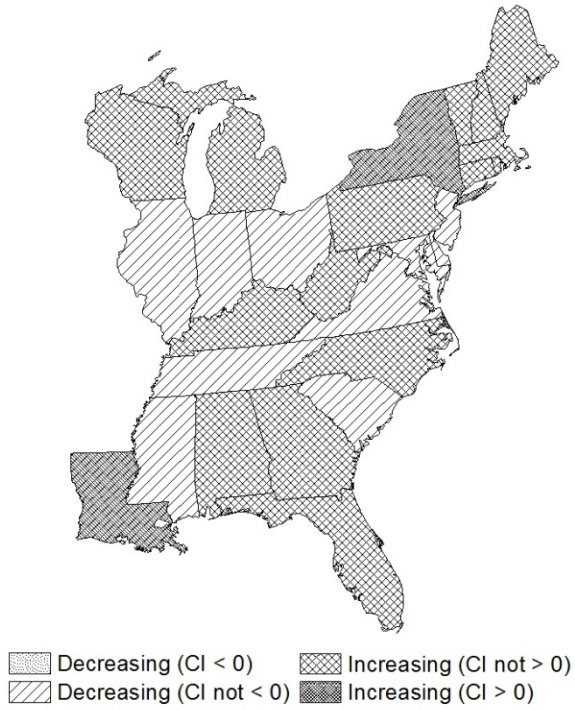

Figure 4. Trend in mourning dove abundance by state in the Eastern Management Unit over the last 10 years (2004–2013) based on CCS-heard data. Credible intervals (CI, 95%) that exclude zero provide evidence for an increasing or decreasing trend.

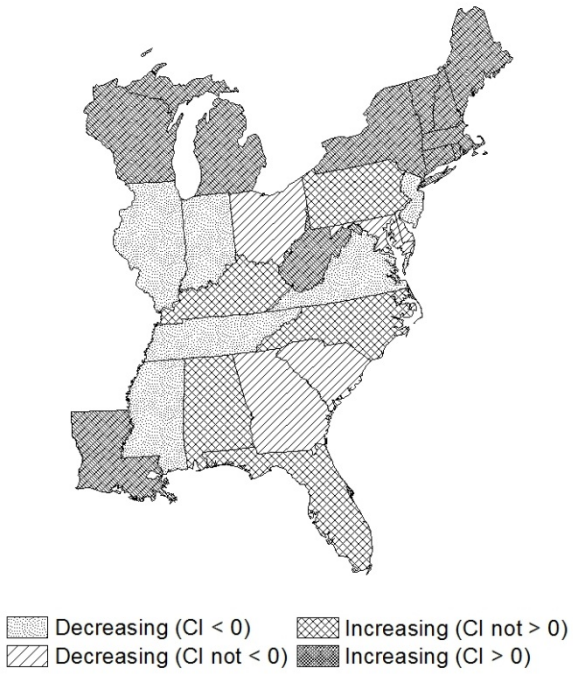

Figure 5. Trend in mourning dove abundance by state in the Eastern Management Unit over the last 48 years (1966–2013) based on CCS-heard data. Credible intervals (CI, 95%) that exclude zero provide evidence for an increasing or decreasing trend.

and nonhunt states during the recent 2 year interval (Table 1). At the state-level, no significant change was indicated over the 2-year time period (Table 1).

According to CCS-heard data, there was no evidence of change in dove abundance in the EMU or the EMU hunt or non-hunt states over the last 10 years (Table 1). The only EMU states that had evidence of a change in dove abundance during the 10-year time period were Louisiana and New York, (Table 1, Fig. 4). The trend was positive in both states.

For the 48-year time period, there was evidence that dove abundance decreased in the EMU and in EMU hunt states, but increased in EMU nonhunt states (Table 1, Fig. 5). At the state-level, there was evidence that doves in Louisiana, Michigan, New York, Wisconsin, West Virginia, and the New England states all increased in abundance while doves in Illinois, Indiana, Mississippi, New Jersey, Tennessee, and Virginia all decreased in abundance (Table 1, Fig. 5). There was no evidence of a trend in dove abundance in any of the other EMU states.

Trends from CCS-heard and CCS-seen data were opposite during the last 48 years for both the entire EMU and EMU hunt states (Tables 1 and 2, Fig. 6). Results from the two data sets were similar for EMU nonhunt states during both the 48-year period and the recent 10-year period (both increasing; Tables 1 and 2, Fig. 6).

Central Management Unit. —The CMU consists of 14 states, containing 46% of the land area of the contiguous United States. It has the highest population index of the 3 Units. Within the CMU, dove hunting is permitted in all 14 states (Fig. 2).

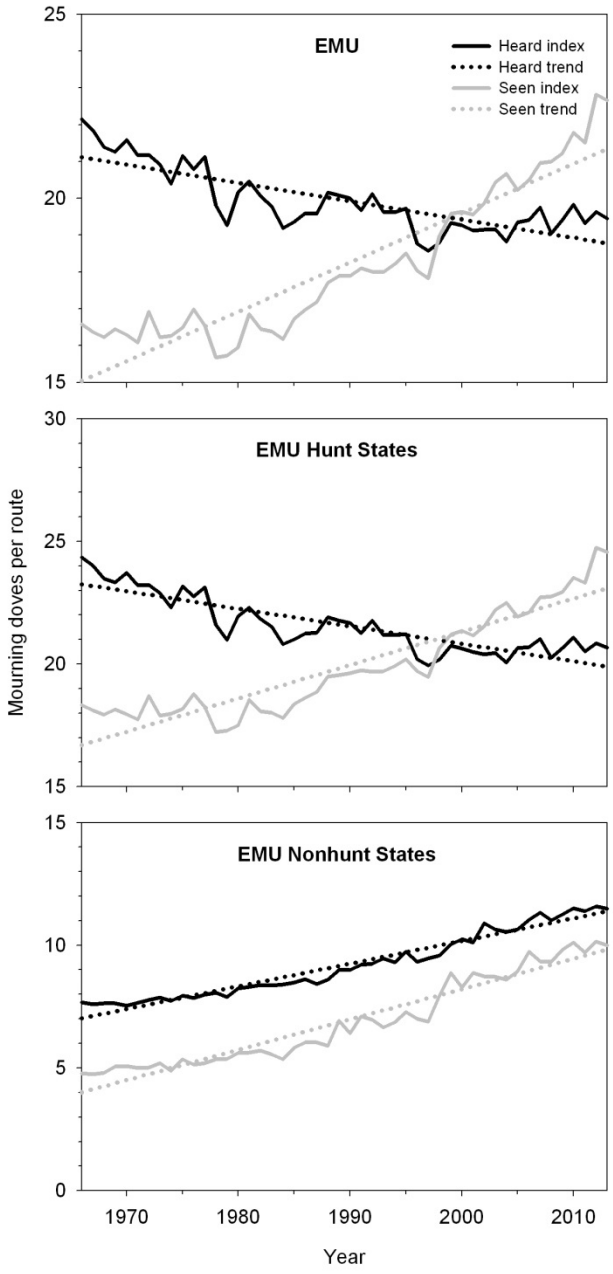

Figure 6. Mourning dove abundance indices and predicted trends in the Eastern Management Unit (EMU), EMU hunt states, and EMU nonhunt states based on CCS data, 1966–2013. Trend lines are predicted values from fitting a simple linear regression line through the annual indices.

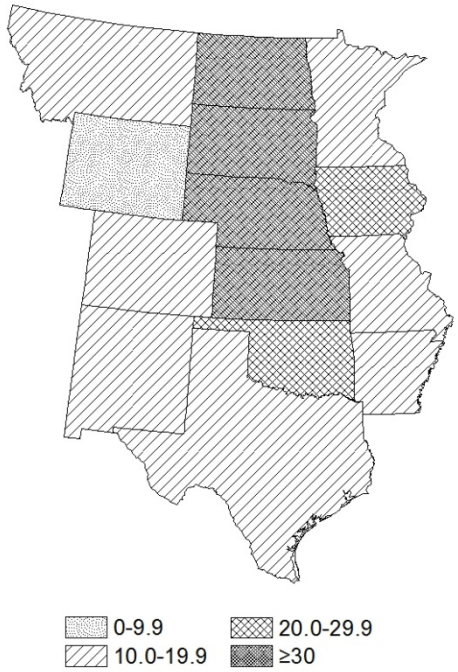

Figure 7. Mourning dove abundance in the Central Management Unit based on the mean of the 2 CCS-heard index values from the last 2 years (2012–2013).

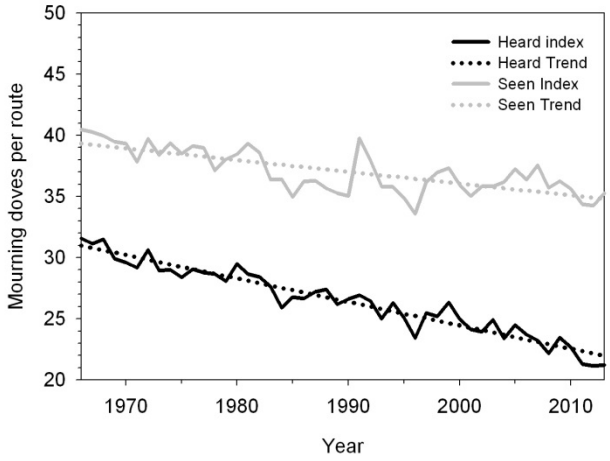

Figure 8. Mourning dove abundance indices and predicted trends in the Central Management Unit based on CCS data, 1966–2013. Trend lines are predicted values from fitting a simple linear regression line through the annual indices.

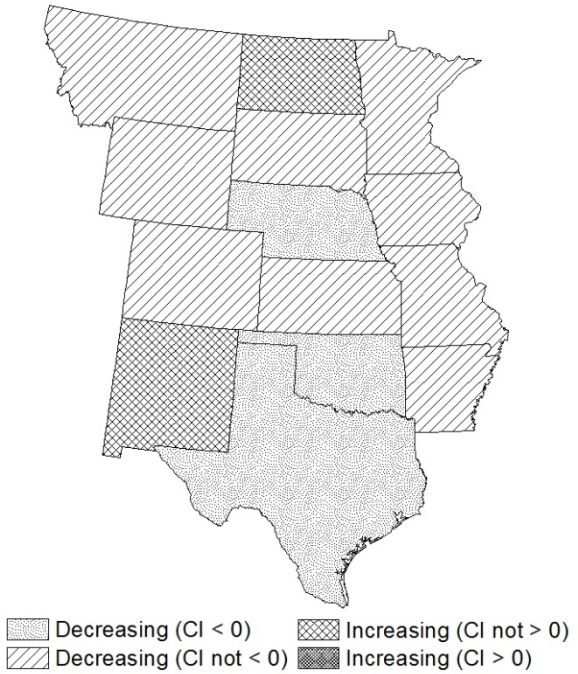

Figure 9. Trend in mourning dove abundance by state in the Central Management Unit over the last 10 years (2004–2013) based on CCS-heard data. Credible intervals (CI, 95%) that exclude zero provide evidence for an increasing or decreasing trend.

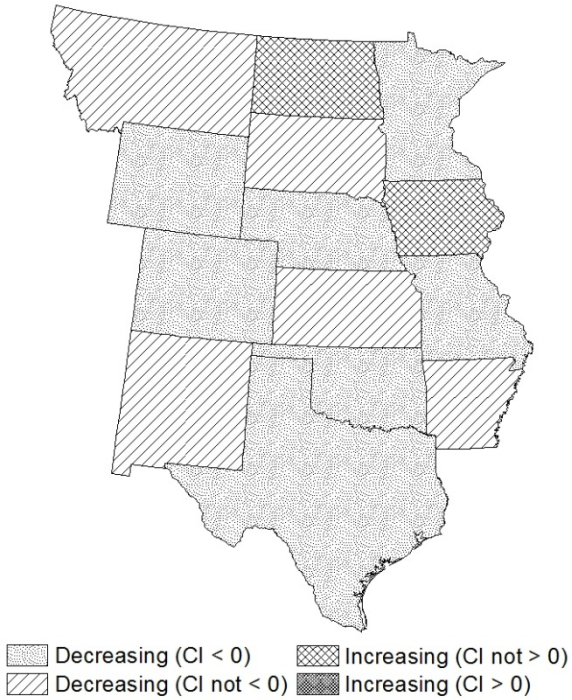

Figure 10. Trend in mourning dove abundance by state in the Central Management Unit over the last 48 years (1966–2013) based on CCS-heard data. Credible intervals (CI, 95%) that exclude zero provide evidence for an increasing or decreasing trend.

Kansas, Nebraska, North Dakota, and South Dakota had the most doves in the CMU based on the mean of the 2 CCS-heard index values from the last 2 years; values in these 4 states ranged from 37.6–47.8 doves per route (Fig. 7). Other states in the CMU were between 10.0 and 29.9 doves, with the exception of Wyoming, which had <10.

Based on CCS-heard data there was no evidence that dove abundance changed in the CMU over the last 2 years (Table 1). No states experienced significant declines or increases in the CMU (Table 1).

According to CCS-heard data from the CMU, there was evidence that dove abundance declined over the last 10 years, and the last 48 years (Table 1, Fig. 8). In the most recent 10-year period abundance decreased in Nebraska, Oklahoma and Texas (Table 1, Fig. 9). Considering the 48-year CCS-heard data, no state had evidence of an increase in dove abundance (Table 1, Fig. 10). However, CCS-heard data indicated that 7 states (Colorado, Minnesota, Missouri, Nebraska, Oklahoma, Texas, and Wyoming) experienced declines in dove abundance over the 48-year period (Table 1, Fig. 10).

Western Management Unit. —The WMU consists of 7 states and represents 24% of the land area of the contiguous United States. All states within the WMU permit mourning dove hunting (Fig. 2).

Based on the mean of the 2 CCS-heard index values from the last 2 years, Arizona had the highest number of doves per route in the WMU; 13.7 doves per route (Fig. 11). All other states had less than 10 doves per route.

There was no evidence of a change in dove abundance in the WMU during the last 2 years based on CCS-heard data (Table 1). No individual states experienced a change in abundance during this time. The precision of trend estimates for last 2 years was not great for any state (Table 1).

Figure 11. Mourning dove abundance in the Western Management Unit based on the mean of the 2 CCS-heard index values from the last 2 years (2012–2013).

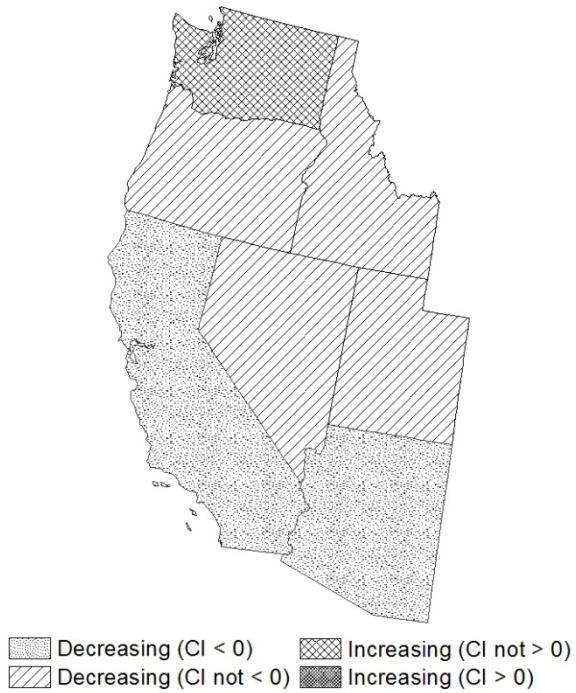

Figure 12. Trend in mourning dove abundance by state in the Western Management Unit over the last 10 years (2004–2013) based on CCS-heard data. Credible intervals (CI, 95%) that exclude zero provide evidence for an increasing or decreasing trend.

Based on CCS-heard data, there was evidence that the abundance of doves declined in the WMU and in Arizona and California over the last 10 years (Table 1, Fig. 12). Over the last 48 years, there was also evidence that dove abundance declined in the WMU (Table 1, Fig. 13). During this time period there was evidence of a decline in dove abundance in Arizona, California, Idaho, Oregon, and Utah (Table 1, Fig. 14).

At the WMU level, CCS trend results for doves heard and doves seen per route were similar during the 48-year period but not the 10 year period; 10-year CCS-seen indicated no change in abundance (Tables 1-2, Fig. 13)

Breeding Bird Survey

Here we compare 1966–2012 BBS (Table 3) and 1966–2013 CCS (Table 1, doves heard; and Table 2, doves seen) results. The time periods for these comparisons are off by 1 year, but this should be relatively inconsequential over long time periods (≥ 10 years), especially for time periods of 47 or 48 years where both intervals begin in 1966.

Eastern Management Unit.—The BBS provided evidence that dove abundance increased in the EMU and the EMU hunt and nonhunt states during the last 47 years (Table 3). Over the most recent 10 years there was evidence that abundance increased in the entire EMU and the EMU hunt states, but not the in EMU nonhunt states. Comparing results for the last 10 years, the BBS generally provided similar results to CCS seen for the entire EMU and EMU hunt states. The BBS did not agree with CCS-heard and seen for EMU nonhunt states over the last 47 years (Tables 1-3).

Central Management Unit.—In the CMU, the BBS provided evidence that doves decreased in abundance over the last 10 and 47 years (Table 3). Over the short term, BBS results were consistent with CCS-heard. Over the long term all 3 indices (BBS, CCS-heard, and CCS-seen) were in agreement, indicating a significant decline in mourning doves in the CMU (Tables 1–3).

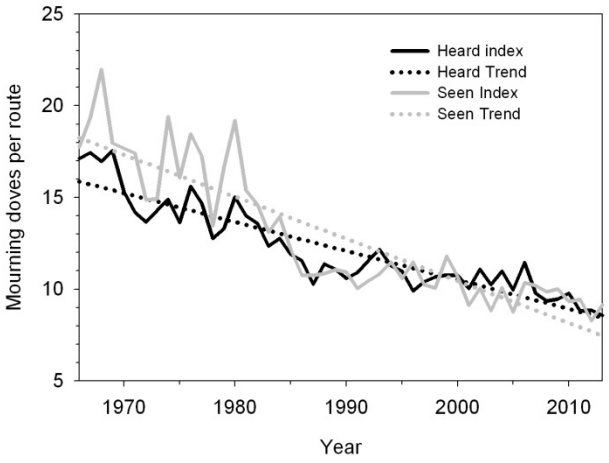

Figure 13. Mourning dove abundance indices and predicted trends in the Western Management Unit based on CCS data, 1966–2013. Trend lines are predicted values from fitting a simple linear regression line through the annual indices.

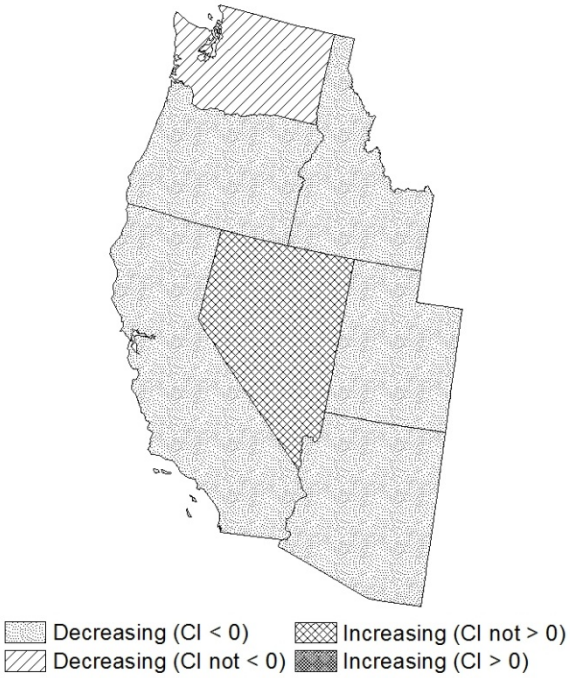

Figure 14. Trend in mourning dove abundance by state in the Western Management Unit over the last 48 years (1966–2013) based on CCS-heard data. Credible intervals (CI, 95%) that exclude zero provide evidence for an increasing or decreasing trend.

Western Management Unit.—The BBS provided evidence that dove abundance decreased in the WMU during the last 47-year interval and during the most recent 10 years (Table 3). For the 10-year time period, BBS results were consistent with CCS-seen results. For the 47 year interval, the BBS, CCS-heard, and CCS-seen all indicated declines in abundance in the WMU (Tables 1–3).

Harvest Survey

Preliminary results of mourning dove harvest and hunter participation from HIP for the 2011 and 2012 hunting seasons are presented in Tables 6 and 7, respectively. Current (2012) HIP estimates indicate that in the U.S. about 14.5 million birds were harvested by about 830,000 hunters that spent about 2.5 million days afield. The EMU and CMU total dove harvest represented 43% and 44%, respectively, of the national harvest of doves while the WMU represented 13% (Table 7). Considering the precision of estimates, mourning dove harvest and hunter participation declined between 2011 and 2012 seasons (Tables 6 and 7).

Additional information about HIP, survey methodology, and results can be found in annual reports located at http://www.fws.gov/migratorybirds/newreportspublications/hip/hip.htm.

Survival and Harvest Rate

Over the past 10 years, 195,543, 146,001, and 63,313 mourning doves have been banded during July and August in the EMU, CMU and WMU, respectively (Table 8). There have been 10,512, 6,359, and 2,021 recoveries of banded birds in the EMU, CMU, and WMU, respectively.

Mean annual survival was similar between the CMU and WMU for both hatch-year and after-hatch-year individuals (Table 9). Hatch-year survival in the EMU was similar to that in the CMU and WMU; however, survival of after-hatch-year birds was lower in the EMU than the other management units.

Mean annual harvest rate was higher for hatch-year individuals in all management units (Table 9).

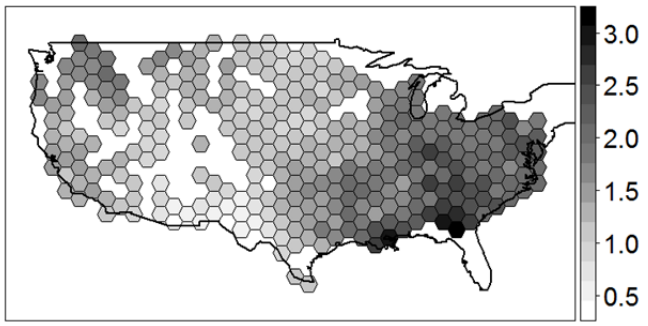

Figure 15. Estimated mourning dove fall population age ratios (juveniles per adult) from the Parts Collection Survey 2007–2012.

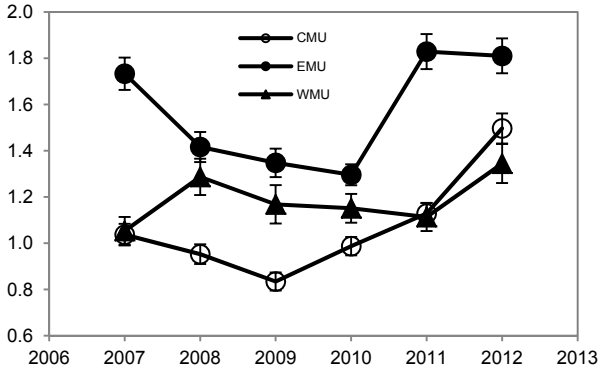

Figure 16. Estimated mourning dove fall population age ratios for each management unit, 2007–2012. Error bars represent 95% confidence intervals.

However, this relationship was more pronounced in the EMU (hatch-year harvest rate 38% greater than AHY harvest rate) and CMU (hatch-year harvest rate 28% greater) than in the WMU (hatch-year harvest rate 15% greater). Among management units, harvest rates of both hatch year and after hatch year individuals were highest in the EMU and lowest in the WMU (Table 9). Within the EMU, the harvest rate of birds banded in the non-hunt states was much lower than that of the hunt states (Table 9).

Recruitment

We obtained 133,307 wings during 2007–2012 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 (Fig. 15). At the management unit level, the EMU had higher recruitment and more annual variation compared to the other two units (Fig. 16). In 2012 the highest age ratios among the 6 sample years occurred in both the EMU (1.81 juveniles per adult) and CMU (1.50), while recruitment was near average in the WMU (1.34).

Mean population age ratios for all states are provided in Table 10. There was much variation in the sample sizes for individual states. However, sample sizes are now sufficient to calculate precise estimates of recruitment for all but a couple of states that recently initiated hunting seasons (i.e., Iowa and Minnesota). We do not estimate age ratios for Florida because hunting seasons there do not start until 1 October each year. At this late date most wings cannot be aged due to molt progression, precluding accurate estimates of age ratio.

Absolute Abundance

Estimates of absolute abundance are available only since 2003 (Fig. 17, Table 11). Estimates during the first 2 or 3 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. The most recent estimate indicates that there were 349 million doves in the United States preseason during 2012. Abundance during the recent 5 years appears stable in the EMU. Abundance appeared to increase in the CMU and WMU between 2011 and 2012. These estimates appear consistent with trends in abundance of doves heard from the CCS for the EMU and CMU, and inconsistent with doves seen in the EMU and CMU.

Composite trend in Abundance

The estimated composite trend (% annual change) and 95% credible intervals of mourning dove abundance during the recent past 10 years was 0.6 (0.0 to 1.2) in the EMU, and during the most recent 5 years was –1.4 (–2.9 to –0.3) in the CMU and –1.9 (–4.7 to 1.1) in the WMU (Fig. 18).

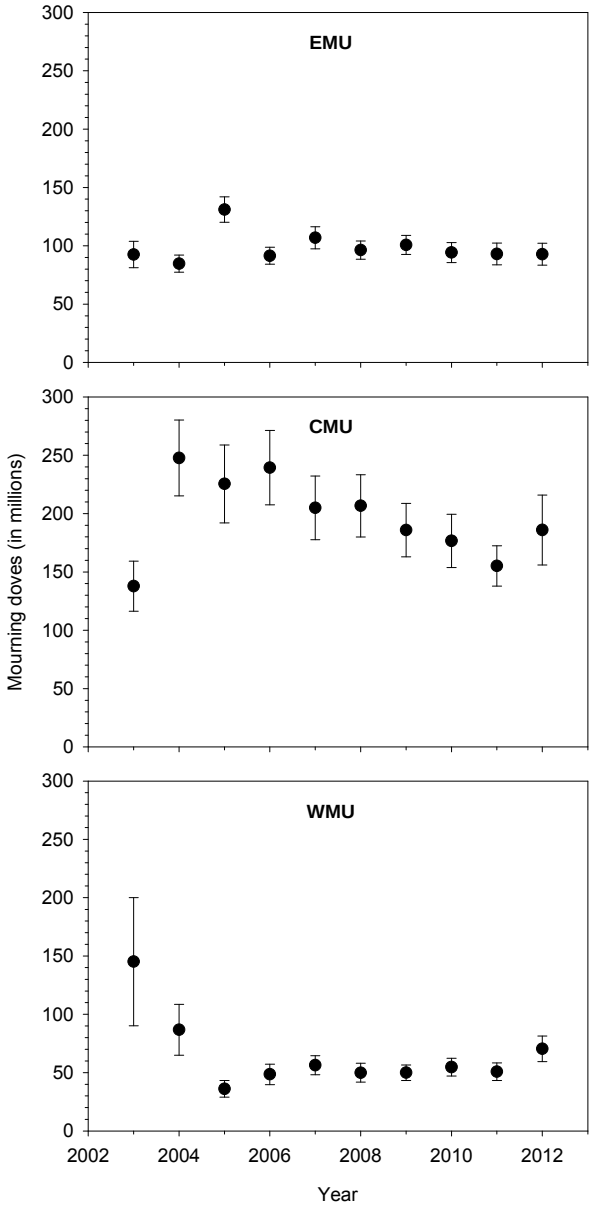

Figure 17. Estimates and 95% confidence intervals of mourning dove absolute abundance by management unit and year, 2003–2012. Estimates based on band recovery and harvest data.

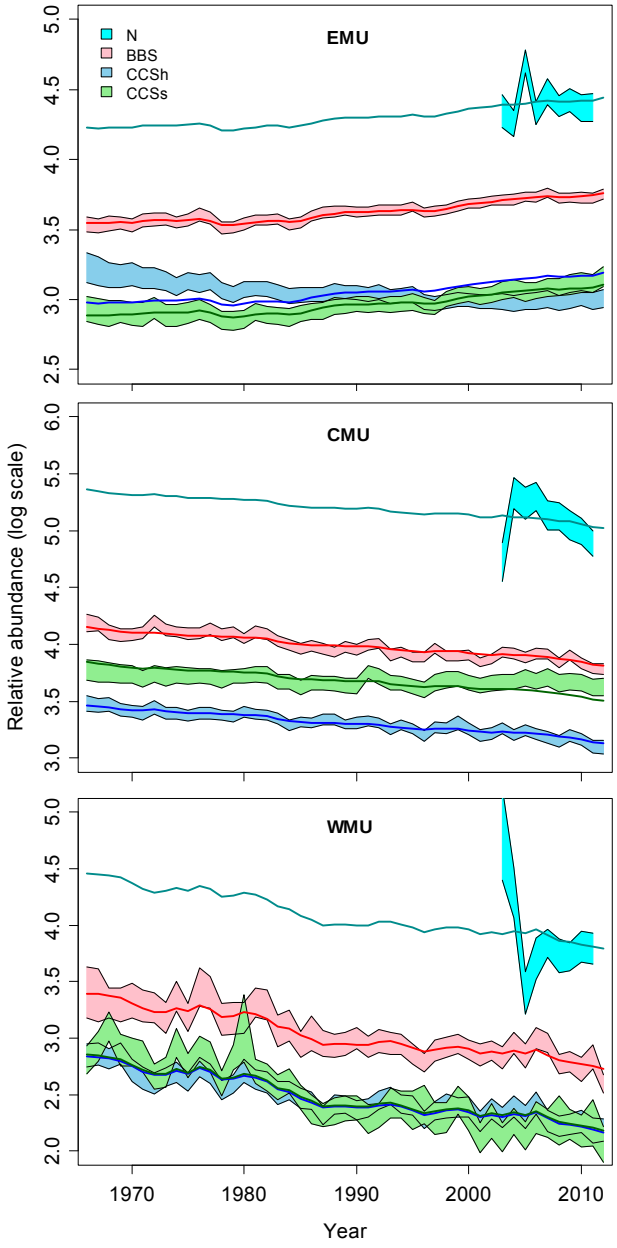

Figure 18. Composite trend of abundance (lines) and credibility intervals (95%) of mourning dove abundance (polygons) from each of four data sources (N=absolute abundance, BBS=Breeding Bird Survey, CCSh=Call Count Survey heard, and CCSs=Call Count Survey seen) used to compute the composite trend for each management unit, 1966–2012. The composite trend is shown four times, each median centered with each data source for comparison of relative agreement of each data source with the composite trend.

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Table 1. Estimated trend[a] (percent change per year and lower and upper 95% credible intervals) in mourning dove abundance based on Call-count Survey **heard** data for management units and states during 48-year (1966–2013), 10-year (2004–2013), and 2-year (2012–2013) periods.

Management Unit	48 year				10 year				2 year			
State	N	Trend	Lower	Upper	N	Trend	Lower	Upper	N	Trend	Lower	Upper
Eastern	629	-0.3	-0.5	-0.1	467	0.4	-0.1	0.8	467	-0.9	-4.6	2.9
Hunt states	511	-0.3	-0.6	-0.2	394	0.3	-0.2	0.8	394	-0.8	-4.7	3.1
AL	47	0.2	-0.4	0.8	30	0.6	-0.7	2.1	30	0.2	-10.2	11.9
DE-MD	22	-0.7	-1.6	0.2	14	-0.3	-2.5	1.9	14	0.8	-15.7	24.0
FL	33	0.2	-0.5	0.9	26	0.1	-1.9	2.3	26	-4.6	-20.7	13.5
GA	34	-0.6	-1.3	0.2	24	0.8	-1.4	3.6	24	-2.0	-18.3	18.1
IL	26	-1.0	-2.1	-0.1	22	-0.9	-3.3	1.3	22	-6.5	-24.5	12.0
IN	18	-1.2	-1.8	-0.6	15	-0.8	-2.5	1.1	15	-3.9	-18.9	12.8
KY	27	0.1	-0.6	0.7	19	0.5	-0.7	2.2	19	1.0	-9.5	14.0
LA	27	1.9	1.1	2.6	20	2.1	0.4	3.7	20	-0.5	-13.4	12.6
MS	32	-1.4	-2.0	-0.8	24	-0.3	-1.7	1.7	24	-5.0	-16.8	6.6
NC	25	0.1	-0.4	0.6	22	0.2	-1.1	1.4	22	-1.1	-11.0	8.7
OH	57	-0.5	-1.1	0.1	37	-0.1	-1.8	1.7	37	0.7	-13.4	16.9
PA	20	0.7	-0.1	1.6	19	2.4	-0.5	5.6	19	-1.0	-24.0	28.3
SC	28	-0.4	-1.0	0.1	20	-0.2	-1.5	1.3	20	-0.9	-11.9	10.8
TN	23	-1.8	-2.4	-1.2	15	-1.3	-2.9	0.5	15	0.3	-12.5	15.2
VA	34	-1.6	-3.0	-0.7	34	-0.5	-2.1	1.4	34	-4.9	-18.4	8.9
WI	23	0.8	0.1	1.6	22	0.9	-2.0	3.8	22	18.2	-7.0	50.5
WV	12	1.6	0.7	2.4	11	1.6	-0.3	3.6	11	0.1	-17.0	16.7
Nonhunt states	118	0.9	0.4	1.3	73	1.0	-0.3	2.1	73	-1.0	-11.1	9.3
MI	23	1.0	0.4	1.6	20	1.2	-0.4	2.9	20	-2.4	-17.1	11.2
N. England[b]	77	0.9	0.2	1.7	43	0.4	-1.6	2.0	43	-2.7	-17.0	12.2
NJ	17	-2.5	-3.5	-1.5	10	-2.3	-4.1	0.0	10	-1.6	-15.8	18.2
NY	24	1.8	1.1	2.5	20	2.0	0.1	3.7	20	1.1	-15.1	16.6
Central	559	-0.8	-1.0	-0.6	415	-1.1	-1.6	-0.5	415	0.4	-4.7	5.8
AR	21	-0.6	-1.4	0.2	17	-0.3	-2.1	1.9	17	1.6	-13.0	23.4
CO	21	-1.0	-1.8	-0.2	16	-2.3	-5.3	0.8	16	-18.2	-38.2	5.2
IA	19	0.0	-0.7	0.7	16	-0.1	-2.3	1.9	16	-3.0	-19.7	15.6
KS	36	-0.5	-1.0	0.1	28	-0.5	-2.4	1.1	28	0.6	-12.8	18.4
MN	14	-1.5	-2.2	-0.7	13	-1.6	-3.7	0.3	13	-5.6	-22.8	9.7
MO	28	-2.2	-2.9	-1.6	20	-1.4	-3.3	0.9	20	-2.6	-19.1	18.0
MT	32	-0.9	-1.8	0.0	24	-0.3	-3.8	3.5	24	8.7	-21.5	52.6
NE	29	-1.1	-1.6	-0.7	25	-1.4	-2.8	-0.3	25	-0.9	-10.0	9.6
NM	32	-0.5	-1.3	0.3	29	0.4	-2.5	3.6	29	6.6	-18.0	41.6
ND	33	0.5	-0.2	1.2	29	1.3	-0.9	3.6	29	12.5	-6.8	36.5
OK	28	-1.2	-2.1	-0.3	18	-4.3	-7.5	-1.3	18	2.2	-20.3	31.2
SD	29	-0.5	-1.1	0.2	22	-0.4	-1.8	0.9	22	-0.3	-10.6	11.2
TX	209	-1.1	-1.5	-0.7	138	-2.3	-3.5	-1.0	138	1.1	-9.5	13.1
WY	28	-1.7	-2.5	-0.8	20	-1.1	-3.2	1.3	20	3.1	-11.6	26.5
Western	292	-1.5	-1.8	-1.2	202	-2.7	-3.8	-1.7	202	-3.5	-12.1	6.1
AZ	73	-1.4	-1.9	-0.8	51	-3.6	-5.8	-1.3	51	-3.2	-21.4	17.7
CA	89	-2.2	-2.7	-1.7	60	-4.2	-6.0	-2.4	60	-7.3	-20.7	7.5
ID	32	-1.2	-1.9	-0.4	26	-1.9	-4.6	0.8	26	2.6	-18.4	32.0
NV	39	0.5	-0.8	1.8	22	-2.3	-6.6	2.5	22	-14.3	-42.5	25.5
OR	27	-1.5	-2.5	-0.6	22	-0.9	-4.0	2.2	22	12.0	-14.2	47.8
UT	20	-1.3	-2.2	-0.3	15	-1.0	-3.9	1.9	15	-5.4	-27.4	19.3
WA	12	-0.1	-1.7	1.4	6	1.0	-3.1	5.7	6	0.5	-32.7	43.8

[a] Trend estimated from annual indices derived from a log-linear hierarchical model fit using Bayesian methods. There is evidence of a positive trend if the CI > 0 and there is evidence of negative trend if the 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. Estimated trend[a] (percent change per year and lower and upper 95% credible intervals) in mourning dove abundance based on Call-count Survey **seen** data for management units and states during 48-year (1966–2013), 10-year (2004–2013), and 2-year (2012–2013) periods.

Management Unit	48 year				10 year				2 year			
State	N	Trend	Lower	Upper	N	Trend	Lower	Upper	N	Trend	Lower	Upper
Eastern	628	0.7	0.4	0.9	465	1.0	0.4	1.6	465	-0.7	-5.5	4.4
Hunt states	510	0.6	0.4	0.9	395	1.0	0.3	1.6	395	-0.6	-5.6	4.7
AL	47	0.4	-0.4	1.4	30	0.8	-1.0	3.1	30	0.3	-14.1	16.5
DE-MD	22	0.7	-0.5	1.8	15	-0.3	-3.8	3.0	15	-5.0	-29.0	24.5
FL	33	3.4	2.5	4.2	26	3.3	0.2	6.5	26	3.2	-20.1	33.5
GA	34	-0.8	-1.5	0.1	24	-0.3	-2.0	1.5	24	-0.6	-14.7	14.4
IL	26	0.6	-0.9	1.8	22	0.6	-2.3	3.7	22	1.1	-22.0	31.8
IN	18	-1.1	-1.9	-0.2	15	-1.1	-3.8	1.4	15	-2.1	-22.5	22.5
KY	26	1.2	0.3	2.2	19	1.3	-1.1	4.1	19	-1.6	-20.3	21.7
LA	27	2.6	1.6	3.5	20	2.9	0.7	5.3	20	1.7	-14.0	20.5
MS	32	-1.2	-1.9	-0.4	24	0.2	-1.9	2.7	24	1.1	-15.3	20.3
NC	25	0.4	-0.3	1.0	22	0.3	-1.3	1.6	22	0.3	-10.6	12.4
OH	57	1.3	0.5	2.1	37	-0.1	-2.6	2.4	37	4.3	-14.0	27.4
PA	20	1.5	0.2	2.6	19	1.6	-1.1	3.6	19	1.4	-16.6	22.9
SC	28	0.6	-0.2	1.3	20	0.5	-1.5	2.3	20	-4.6	-22.9	10.1
TN	23	0.2	-0.6	1.0	15	0.5	-1.4	2.4	15	-0.8	-17.1	14.6
VA	34	0.0	-0.9	0.8	34	0.5	-1.6	2.7	34	-2.9	-19.2	13.4
WI	23	2.7	1.8	3.6	22	2.4	-1.1	5.7	22	4.8	-19.8	38.3
WV	12	2.5	0.8	4.0	11	-0.1	-5.6	5.1	11	-42.6	-66.8	-6.1
Nonhunt states	118	1.6	0.5	2.3	70	1.7	-0.4	3.7	70	-1.6	-17.3	15.9
MI	23	2.4	1.6	3.2	20	2.4	-0.1	4.6	20	-1.9	-22.4	18.7
N. England[b]	77	1.2	-0.5	2.2	41	1.9	-0.3	4.0	41	0.5	-16.9	19.8
NJ	17	-0.9	-2.2	0.4	10	-0.9	-3.8	1.3	10	-5.8	-25.7	13.5
NY	24	3.3	2.2	4.5	19	2.0	-2.0	5.6	19	-2.5	-29.4	30.7
Central	557	-0.3	-0.5	-0.1	413	-0.3	-0.9	0.3	413	3.1	-2.2	8.5
AR	21	-0.5	-1.5	0.5	17	-0.6	-2.8	1.5	17	2.5	-15.2	22.2
CO	21	-0.7	-1.8	0.3	15	0.1	-2.9	2.8	15	10.2	-11.5	42.6
IA	19	0.8	0.0	1.5	16	0.8	-1.6	2.8	16	0.6	-16.0	19.2
KS	36	-0.1	-0.7	0.6	28	0.3	-1.3	1.8	28	0.4	-11.7	15.0
MN	14	-1.3	-2.5	-0.1	13	-0.9	-4.3	2.7	13	6.4	-21.1	45.7
MO	28	-1.7	-2.4	-1.0	20	-1.9	-4.0	-0.2	20	-4.3	-20.7	10.4
MT	32	-0.1	-1.1	1.0	24	0.6	-2.4	4.0	24	1.9	-23.4	38.1
NE	29	-0.2	-0.8	0.5	25	-0.1	-1.8	1.5	25	0.4	-13.0	15.2
NM	32	-0.7	-1.6	0.3	29	0.0	-3.6	3.7	29	1.5	-25.9	39.9
ND	33	0.3	-0.6	1.1	29	-1.5	-4.3	1.2	29	-10.7	-29.3	13.1
OK	27	-0.9	-1.7	-0.1	17	-1.2	-3.8	0.9	17	-1.6	-19.6	17.5
SD	29	-0.4	-1.1	0.4	22	-0.4	-2.2	1.4	22	-0.2	-13.6	16.3
TX	209	0.4	0.0	0.9	138	-0.2	-1.7	1.2	138	10.6	-1.4	23.7
WY	27	-3.2	-4.8	-1.8	20	-0.9	-5.0	3.9	20	12.4	-20.8	67.6
Western	287	-1.4	-1.8	-1.0	196	-1.1	-2.8	0.8	196	10.3	-5.0	28.9
AZ	73	-1.7	-2.6	-0.9	47	-3.8	-7.2	-0.5	47	28.0	-4.9	72.9
CA	88	-2.2	-2.9	-1.6	60	-2.7	-4.9	-0.4	60	-8.9	-25.4	10.9
ID	31	0.3	-0.7	1.4	24	2.4	-1.8	6.9	24	38.2	-2.2	95.6
NV	38	0.5	-1.0	2.3	22	2.7	-3.7	11.0	22	31.1	-25.6	143.5
OR	27	-2.2	-3.4	-1.1	23	-2.7	-6.3	1.2	23	-8.2	-34.1	25.0
UT	20	-2.7	-4.3	-1.2	14	-5.9	-11.4	-0.2	14	-15.8	-49.1	40.3
WA	10	0.9	-2.0	3.7	6	3.4	-6.4	12.0	6	-0.8	-56.3	83.6

[a] Trend estimated from annual indices derived from a log-linear hierarchical model fit using Bayesian methods. There is evidence of a positive trend if the CI > 0 and there is evidence of negative trend if the 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 3. Estimated trend[a] (percent change per year and lower and upper 95% credible intervals) in mourning dove abundance based on Breeding Bird Survey **heard and seen** data for management units and states during 47-year (1966–2012) and 10-year (2003–2012) periods.

Management Unit	47 year				10 year			
State	N	Trend	Lower	Upper	N	Trend	Lower	Upper
Eastern	1749	0.6	0.7	0.5	1473	0.5	0.8	0.2
Hunt states	1426	0.5	0.6	0.4	1211	0.6	0.9	0.2
AL	105	-0.9	-0.6	-1.4	93	-1.0	0.2	-2.2
DE-MD	82	0.1	0.4	-0.2	70	-0.1	0.7	-1.1
FL	96	2.6	3.2	2.1	80	1.5	2.8	0.1
GA	96	-0.6	-0.1	-0.9	86	-0.5	0.4	-1.4
IL	102	0.9	1.4	0.4	101	1.9	3.1	0.8
IN	63	-0.2	0.2	-0.6	57	-0.6	0.7	-1.9
KY	60	0.8	1.2	0.3	43	0.7	2.1	-0.6
LA	93	2.6	3.1	2.0	70	2.0	3.3	0.5
MS	53	-0.2	0.4	-0.9	43	0.2	1.8	-1.2
NC	93	0.4	0.8	0.0	79	0.9	1.7	0.1
OH	78	1.2	1.6	0.7	59	0.9	2.3	-0.5
PA	127	1.3	1.7	0.9	101	-0.1	0.9	-1.1
SC	47	0.0	0.5	-0.5	40	0.1	1.3	-1.3
TN	31	-0.4	0.1	-1.0	26	-0.6	0.5	-2.0
VA	58	-0.1	0.3	-0.5	50	0.0	0.9	-1.0
WI	97	1.6	2.0	1.2	93	1.4	2.7	0.1
WV	57	4.0	4.8	3.3	49	0.5	2.6	-1.7
Nonhunt states	405	1.2	1.5	1.0	332	-0.3	0.5	-1.0
MI	88	1.2	1.6	0.7	71	0.9	2.3	-0.6
N. England[b]	165	2.0	2.4	1.4	136	-0.8	0.5	-2.0
NJ	34	0.2	0.9	-0.5	24	0.1	1.3	-1.3
NY	124	1.6	2.0	1.2	102	0.0	1.4	-1.4
Central	1139	-0.8	-0.7	-1.0	1002	-0.9	-0.5	-1.3
AR	51	0.3	0.9	-0.4	45	0.3	2.3	-1.8
CO	142	-0.6	0.0	-1.1	133	-1.6	-0.3	-3.1
IA	39	0.4	0.9	-0.1	33	0.9	2.6	-0.5
KS	65	-0.5	0.0	-1.0	63	0.3	1.7	-1.0
MN	76	-1.0	-0.5	-1.4	68	-1.1	0.3	-2.5
MO	66	-1.3	-0.8	-1.8	53	-0.4	1.0	-1.5
MT	56	-1.3	-0.7	-1.9	52	-1.5	0.1	-3.1
NE	49	-0.5	0.0	-1.0	46	0.0	1.2	-1.2
NM	81	-0.6	0.1	-1.3	63	-0.3	1.4	-1.9
ND	48	-0.4	0.2	-1.0	46	-1.6	0.1	-3.2
OK	62	-1.5	-1.1	-2.0	54	-1.6	-0.2	-3.0
SD	58	-0.2	0.3	-0.8	52	-0.4	1.1	-2.1
TX	224	-1.3	-1.0	-1.6	204	-1.8	-0.9	-2.6
WY	122	-1.6	-0.9	-2.3	90	-3.5	-2.0	-5.1
Western	658	-1.6	-1.2	-1.9	533	-3.1	-2.1	-4.0
AZ	82	-1.9	-1.1	-2.7	63	-3.9	-1.9	-5.9
CA	245	-0.8	-0.3	-1.3	191	-0.5	1.2	-2.1
ID	47	-1.5	-0.6	-2.5	41	-3.5	-1.2	-5.8
NV	42	-2.3	-1.2	-3.4	30	-8.3	-4.7	-11.8
OR	113	-1.8	-0.9	-2.7	89	-2.7	-0.1	-5.2
UT	102	-2.1	-1.2	-3.0	94	-3.3	-1.5	-5.1
WA	27	0.4	1.9	-1.0	25	3.3	6.9	0.2

[a] Trend estimated from annual indices derived from a log-linear hierarchical model fit using Bayesian methods. There is evidence of a positive trend if the CI > 0 and there is evidence of negative trend if the 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 4. Estimated annual abundance indices[a] of mourning doves based on Call-count Survey **heard** data for management units and states, 1966–2013.

Management Unit	Year									
State	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Eastern	22.4	22.0	21.5	21.4	21.7	21.3	21.3	21.0	20.5	21.3
Hunt states	24.6	24.2	23.7	23.5	23.9	23.3	23.3	23.0	22.5	23.3
AL	24.0	24.2	23.1	23.6	23.6	22.8	24.0	23.7	22.7	24.2
DE-MD	20.9	21.9	18.3	18.6	19.6	19.9	19.3	19.4	20.2	18.0
FL	10.8	11.0	10.5	10.5	11.8	10.5	11.4	11.6	11.4	12.5
GA	30.6	30.8	29.0	30.7	33.0	29.1	28.5	30.4	30.0	31.2
IL	34.3	32.3	33.9	31.8	32.2	30.8	30.8	29.6	27.9	30.8
IN	44.7	43.2	42.9	41.8	40.9	43.5	42.5	41.9	40.5	39.8
KY	27.3	26.6	26.5	26.7	27.1	27.0	26.7	26.6	27.4	26.5
LA	5.7	5.8	5.6	5.8	5.7	5.9	6.0	5.9	6.1	6.4
MS	39.9	37.5	36.3	36.5	35.6	35.5	36.0	34.6	31.6	32.4
NC	36.3	35.5	35.6	35.5	35.8	35.6	35.3	36.2	35.3	35.1
OH	25.5	24.0	23.8	24.8	28.7	26.9	26.1	22.5	23.7	30.9
PA	9.7	10.4	9.7	9.5	8.3	8.4	8.9	8.1	8.5	8.3
SC	34.0	34.1	33.9	33.9	33.4	33.1	32.4	32.6	32.0	31.9
TN	35.3	33.3	32.8	31.9	33.0	29.8	32.5	29.7	28.6	27.5
VA	30.9	28.8	28.6	27.1	27.8	26.5	23.7	24.5	25.4	25.3
WI	15.1	18.1	17.0	15.1	14.3	16.3	17.2	17.2	15.0	16.4
WV	3.9	3.9	4.0	4.0	4.2	4.2	4.3	4.3	4.3	4.3
Nonhunt states	7.6	7.5	7.6	7.6	7.5	7.6	7.7	7.8	7.7	7.9
MI	11.3	11.6	10.9	11.4	11.4	12.1	12.1	11.8	11.9	12.1
N. England[b]	6.0	6.0	6.1	6.1	5.9	6.1	6.3	6.4	6.4	6.5
NJ	33.4	32.0	31.8	30.8	30.4	29.5	28.9	28.0	27.1	26.0
NY	6.1	6.1	6.2	6.3	6.5	6.6	6.6	6.8	6.9	7.3
Central	31.5	31.0	31.3	29.8	29.5	29.1	30.5	28.9	29.0	28.3
AR	21.1	20.8	20.6	20.5	20.2	20.3	20.3	20.1	19.9	19.6
CO	28.5	31.4	28.2	29.1	30.0	26.6	29.2	26.6	27.6	24.9
IA	24.8	25.0	24.6	23.6	21.5	23.2	24.6	24.6	22.3	23.1
KS	60.3	61.0	60.4	60.1	60.2	58.8	60.2	59.0	57.5	55.3
MN	27.8	27.5	27.4	25.9	24.9	25.8	25.7	24.5	24.7	24.8
MO	43.4	41.6	42.5	36.1	37.8	36.7	39.8	35.4	32.0	33.2
MT	19.9	20.5	17.4	19.3	17.1	18.8	17.6	14.2	15.4	17.8
NE	64.1	63.1	63.8	63.0	62.2	61.1	60.2	59.5	59.2	58.2
NM	14.8	11.2	14.9	12.9	12.8	12.2	14.3	12.8	12.3	15.0
ND	30.7	32.8	38.4	32.0	30.7	32.0	32.7	36.8	36.8	33.8
OK	37.5	44.5	45.8	41.3	38.9	37.4	36.9	35.5	38.2	37.9
SD	54.2	51.3	52.7	51.5	52.0	51.1	50.9	51.4	52.4	51.2
TX	26.9	24.3	25.3	22.7	23.9	23.2	27.9	24.6	25.1	22.2
WY	14.9	14.4	13.3	13.7	13.2	12.8	12.7	12.5	12.7	12.1
Western	17.5	17.6	17.0	17.5	15.4	14.3	13.7	14.3	14.9	13.7
AZ	25.7	26.6	23.8	26.5	21.2	16.6	16.2	23.9	21.9	21.2
CA	25.8	25.3	23.2	25.0	23.6	22.4	22.2	21.5	23.1	19.8
ID	16.0	15.9	14.9	15.4	14.8	13.2	12.9	12.7	12.9	12.4
NV	4.6	4.5	12.3	8.8	7.0	4.2	5.5	3.0	5.2	3.7
OR	12.3	10.7	10.6	10.8	8.7	8.2	8.1	9.0	9.7	9.1
UT	18.2	20.9	15.0	15.6	14.2	19.7	14.9	12.9	13.7	14.3
WA	6.1	6.1	5.9	5.8	5.8	5.6	5.5	5.5	5.4	5.5

[a] Annual indices are estimated from exponentiated year effects derived from a log-linear hierarchical model fit using Bayesian methods; 95% credible intervals for the annual indices are available upon request.

[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 4. Continued.

Management Unit	Year									
State	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Eastern	20.9	21.2	19.9	19.4	20.2	20.5	20.1	19.9	19.3	19.5
Hunt states	22.9	23.2	21.7	21.1	22.0	22.3	21.9	21.6	20.9	21.2
AL	24.0	24.4	25.0	25.2	25.3	25.4	25.6	26.0	24.3	25.9
DE-MD	18.5	19.8	18.6	18.6	19.2	19.1	19.2	17.2	17.4	18.3
FL	11.8	12.6	11.5	11.0	10.6	10.8	11.7	11.6	10.1	11.0
GA	27.1	27.4	28.0	26.8	28.3	29.0	28.8	28.0	27.4	27.9
IL	31.0	31.1	27.7	26.2	26.5	27.9	28.0	28.5	25.9	25.6
IN	40.6	40.7	33.7	33.3	36.1	37.0	35.3	31.9	32.5	31.0
KY	26.1	26.7	26.8	26.1	25.6	26.5	26.6	26.2	26.4	26.5
LA	6.5	6.4	6.8	6.6	7.2	7.3	7.4	7.4	7.5	7.4
MS	32.6	32.1	33.3	31.5	31.4	30.6	32.0	30.5	27.7	29.5
NC	35.2	37.0	35.9	36.1	36.6	36.0	36.5	36.3	36.7	36.8
OH	28.0	27.4	16.5	17.3	18.7	19.1	19.9	20.2	21.0	19.9
PA	8.1	8.0	8.1	8.4	8.8	9.5	9.5	9.2	9.1	9.4
SC	31.6	31.5	31.9	31.4	32.3	32.0	32.4	31.6	30.8	30.7
TN	27.8	28.0	28.1	25.5	25.7	24.8	25.3	23.8	23.1	23.6
VA	24.2	25.8	23.6	22.7	21.9	21.4	20.7	20.8	20.3	20.1
WI	18.0	18.2	14.8	13.7	20.2	21.5	13.6	15.0	14.0	13.9
WV	4.5	4.6	4.8	4.8	4.9	4.9	5.0	5.1	5.2	5.3
Nonhunt states	7.8	8.0	8.0	7.9	8.2	8.3	8.4	8.4	8.5	8.6
MI	12.3	12.4	12.6	12.3	13.1	13.3	13.1	13.1	13.4	13.5
N. England[b]	6.5	6.7	6.8	6.6	7.1	7.2	7.3	7.2	7.4	7.5
NJ	25.6	25.1	24.1	23.8	22.8	21.6	21.6	21.8	19.7	19.4
NY	7.2	7.3	7.5	7.5	7.8	8.0	8.1	8.4	8.4	8.5
Central	29.0	28.8	28.6	28.0	29.3	28.6	28.4	27.7	26.0	26.8
AR	19.9	19.0	18.4	17.8	18.7	18.7	18.9	17.9	17.3	16.9
CO	26.9	27.9	31.5	28.5	31.3	30.4	30.5	23.6	26.5	26.9
IA	24.1	23.5	24.5	22.1	25.1	25.7	23.2	21.4	22.9	24.0
KS	57.5	56.2	54.0	57.8	58.6	59.0	57.8	57.6	54.8	57.8
MN	24.3	24.7	24.2	23.9	23.8	23.5	22.7	22.4	21.1	21.0
MO	32.3	32.4	29.8	28.1	31.1	28.6	27.5	27.3	25.8	24.1
MT	14.4	17.5	16.4	15.8	15.7	15.9	17.8	19.9	15.0	15.6
NE	58.5	57.9	56.7	55.9	57.1	56.5	54.9	54.2	53.8	53.4
NM	14.0	13.4	13.7	10.2	12.7	13.4	10.5	13.7	15.0	13.8
ND	47.1	41.0	44.4	41.6	47.0	46.8	46.5	44.5	34.8	43.7
OK	38.3	47.5	39.7	31.7	33.0	30.8	37.1	36.5	29.1	29.3
SD	51.0	50.1	50.5	50.1	49.9	49.1	50.1	49.3	49.4	48.6
TX	22.9	20.8	21.6	25.0	25.4	23.4	22.4	20.9	19.7	21.1
WY	11.7	11.1	11.1	10.8	10.5	10.7	10.5	10.0	9.7	9.8
Western	15.6	14.8	12.8	13.3	15.0	14.0	13.6	12.3	12.8	11.9
AZ	24.2	19.5	22.6	26.1	22.5	22.9	23.2	23.3	22.9	22.5
CA	22.3	20.3	19.0	16.8	20.3	18.8	20.5	15.9	17.2	15.1
ID	13.5	15.7	11.2	11.3	12.2	12.2	12.2	11.1	11.9	11.4
NV	7.0	7.7	4.0	4.9	11.9	6.1	4.3	3.7	2.5	3.6
OR	8.9	9.4	6.8	6.6	8.4	8.0	7.8	6.5	7.4	7.4
UT	15.3	15.1	10.0	12.4	12.1	15.0	10.7	12.0	13.6	10.1
WA	5.3	5.4	5.0	5.3	5.0	5.0	5.1	4.9	4.8	4.8

[a] Annual indices are estimated from exponentiated year effects derived from a log-linear hierarchical model fit using Bayesian methods; 95% credible intervals for the annual indices are available upon request.

[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 4. Continued.

Management Unit	Year									
State	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Eastern	19.7	19.7	20.2	20.1	20.0	19.8	20.2	19.7	19.7	19.9
Hunt states	21.4	21.3	21.9	21.8	21.6	21.3	21.8	21.3	21.3	21.4
AL	25.1	24.5	25.5	23.9	24.0	23.9	24.5	25.0	25.3	25.8
DE-MD	20.1	17.0	17.0	18.2	16.1	17.8	18.4	15.9	16.7	17.2
FL	11.5	11.1	11.7	11.9	12.6	11.9	12.5	11.2	11.0	11.9
GA	26.7	26.7	25.9	25.5	26.7	25.2	28.6	25.0	24.3	26.2
IL	27.3	28.1	28.6	28.1	28.6	27.7	28.0	26.6	27.0	28.5
IN	33.1	32.5	34.7	32.3	32.4	32.3	31.6	31.6	32.7	30.5
KY	26.1	26.5	26.6	27.6	26.3	26.4	26.0	26.4	26.5	26.2
LA	7.5	8.0	7.9	8.4	8.1	8.7	9.0	8.7	9.1	9.4
MS	29.3	27.9	29.0	28.3	27.0	25.2	26.9	27.3	26.1	25.7
NC	36.7	37.6	37.2	37.6	36.9	37.0	37.1	37.8	37.9	38.3
OH	20.5	21.2	23.3	23.4	23.5	24.3	24.2	21.7	24.6	22.6
PA	9.4	10.0	8.8	9.3	9.7	10.0	10.3	10.9	10.0	10.6
SC	30.1	31.5	30.4	30.6	30.8	29.9	29.7	29.3	29.7	28.5
TN	22.1	22.8	22.3	21.6	21.2	21.2	20.1	20.2	20.8	19.4
VA	19.3	19.5	18.5	18.6	17.4	17.4	16.9	17.0	16.8	17.1
WI	15.6	14.2	18.5	19.0	17.9	18.0	19.5	18.2	16.5	15.9
WV	5.3	5.5	5.7	5.7	5.9	6.0	6.0	6.1	6.2	6.3
Nonhunt states	8.7	8.6	8.8	9.1	9.1	9.4	9.5	9.7	9.6	10.0
MI	14.1	14.1	14.8	15.2	14.9	14.7	14.8	15.0	15.0	15.3
N. England[b]	7.7	7.3	7.7	8.1	8.1	8.3	8.4	8.7	8.5	9.0
NJ	19.6	18.8	18.3	18.0	17.3	17.1	16.1	16.4	15.7	15.3
NY	8.6	8.9	9.0	9.4	9.4	9.8	9.9	10.0	10.2	10.6
Central	26.7	27.3	27.4	26.3	26.7	27.0	26.6	25.1	26.0	25.2
AR	17.4	17.4	17.2	18.0	17.4	17.0	17.4	17.3	17.2	17.0
CO	24.0	30.4	28.5	28.1	28.0	25.4	25.7	23.9	28.8	27.6
IA	24.4	22.6	24.6	25.0	25.5	23.0	26.5	24.5	24.6	24.1
KS	51.1	53.0	55.3	53.0	51.8	56.1	54.4	48.6	52.4	55.6
MN	21.2	21.3	21.3	20.4	19.8	20.1	19.5	18.8	19.1	19.0
MO	24.8	24.0	25.1	24.6	23.5	22.5	22.9	21.7	22.9	21.6
MT	17.2	16.3	17.1	16.9	17.8	13.9	14.0	11.7	11.8	12.1
NE	51.7	50.8	51.4	50.4	50.3	49.9	49.6	48.9	48.0	48.6
NM	14.1	16.5	13.6	12.7	15.1	12.7	10.7	11.4	12.3	12.4
ND	45.8	51.2	47.7	50.9	48.2	52.2	51.1	46.8	42.0	41.8
OK	28.5	29.7	30.6	25.1	30.7	28.9	30.2	27.1	30.2	28.9
SD	47.8	46.7	47.7	48.1	48.1	47.9	47.0	46.2	46.1	46.1
TX	22.6	21.5	22.6	19.4	20.0	24.9	23.7	23.1	24.5	20.3
WY	9.9	9.4	8.8	8.9	8.7	8.8	8.7	8.2	8.4	8.1
Western	11.6	10.2	11.4	11.2	10.8	11.0	11.5	11.9	11.3	11.0
AZ	20.8	16.2	16.2	18.3	15.9	20.2	23.5	25.7	20.6	21.3
CA	15.6	13.5	15.1	14.0	14.9	13.4	13.8	14.3	13.8	12.9
ID	9.9	10.4	11.7	10.9	12.1	11.7	10.1	10.1	10.5	9.7
NV	2.8	2.8	5.2	4.1	2.2	3.2	3.2	2.9	2.9	4.9
OR	7.2	6.6	7.2	6.5	7.7	6.3	6.2	6.4	7.1	6.4
UT	12.1	11.0	12.1	12.7	10.8	10.7	11.5	11.0	11.9	9.4
WA	4.9	5.0	5.1	5.0	5.1	4.8	5.0	4.9	5.0	5.1

[a] Annual indices are estimated from exponentiated year effects derived from a log-linear hierarchical model fit using Bayesian methods; 95% credible intervals for the annual indices are available upon request.

[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 4. Continued.

Management Unit	Year									
State	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Eastern	18.9	18.7	19.0	19.4	19.4	19.3	19.3	19.3	19.0	19.5
Hunt states	20.3	20.1	20.3	20.8	20.7	20.6	20.5	20.5	20.2	20.7
AL	24.3	24.1	24.7	24.5	25.0	24.8	25.5	24.4	24.8	25.1
DE-MD	15.7	14.7	15.8	14.8	14.5	14.6	14.3	15.0	15.4	14.9
FL	11.4	11.8	12.4	13.0	11.9	10.8	11.6	11.1	11.6	10.9
GA	23.2	22.4	21.8	22.3	20.8	23.9	20.0	22.0	20.8	22.2
IL	25.2	24.6	24.6	24.2	26.2	24.4	24.9	25.7	24.1	26.1
IN	29.8	29.1	28.8	28.8	28.3	28.3	26.8	27.1	27.1	28.2
KY	25.9	25.9	26.2	26.7	26.6	26.5	26.6	26.7	26.1	26.2
LA	9.4	9.5	10.1	10.3	10.7	11.1	10.9	11.4	11.3	11.8
MS	24.5	23.8	23.9	24.5	23.9	23.2	22.2	22.9	20.9	21.4
NC	38.7	38.2	38.4	38.8	39.0	39.5	39.9	39.0	39.1	39.0
OH	19.0	19.7	21.6	21.6	21.0	19.7	20.8	21.1	20.0	20.1
PA	10.7	9.9	10.4	9.8	11.2	10.8	11.3	10.2	10.3	10.5
SC	29.0	28.8	29.0	29.4	28.7	28.5	28.7	28.0	27.9	27.6
TN	18.9	18.8	18.4	18.3	18.0	16.9	16.7	16.6	16.2	15.6
VA	15.9	16.5	16.3	16.5	16.3	15.6	15.6	14.3	14.4	14.8
WI	15.0	14.2	14.0	18.1	17.4	18.4	17.7	18.9	19.2	21.1
WV	6.2	6.5	6.6	6.8	6.8	7.0	7.1	6.9	7.3	7.4
Nonhunt states	9.7	9.9	10.0	10.4	10.7	10.6	11.3	11.2	11.1	11.3
MI	15.4	15.4	16.1	16.5	16.8	16.3	17.6	17.1	17.0	17.9
N. England[b]	8.5	8.6	8.8	9.2	9.4	9.2	10.3	9.9	9.8	9.7
NJ	15.1	14.2	14.1	13.4	13.4	12.7	12.6	12.1	11.8	11.6
NY	10.6	10.9	11.1	11.6	12.1	12.1	12.5	12.7	12.8	13.3
Central	23.6	25.6	25.3	26.6	25.1	23.7	24.0	25.1	23.6	24.6
AR	17.0	17.0	16.8	16.9	16.2	16.2	15.7	16.3	15.9	16.0
CO	21.5	28.7	24.6	31.2	25.8	22.4	23.4	22.6	23.1	22.0
IA	27.8	25.6	25.6	24.7	25.3	24.1	24.3	27.1	26.3	25.9
KS	47.1	55.2	53.1	56.8	51.4	47.6	49.7	52.3	49.7	53.7
MN	18.4	18.7	18.0	17.5	17.4	16.8	17.3	16.3	16.6	16.0
MO	20.6	20.4	19.2	18.5	18.4	17.2	16.9	17.7	16.6	16.5
MT	12.8	13.3	14.6	16.2	15.8	11.7	13.9	13.9	14.1	12.7
NE	47.5	45.8	47.1	46.5	45.5	44.5	43.8	45.0	44.1	43.6
NM	10.5	13.9	12.3	13.7	12.8	13.7	11.4	12.9	11.7	13.2
ND	43.5	39.2	37.8	45.9	46.6	40.5	42.2	47.8	36.0	49.0
OK	25.8	26.4	31.7	31.2	27.0	26.5	25.2	29.5	30.9	30.0
SD	45.9	45.5	45.3	45.3	45.8	45.1	45.2	44.7	44.9	43.6
TX	18.1	23.2	23.1	23.0	21.1	21.9	22.0	22.9	19.8	22.0
WY	8.0	8.0	8.0	7.7	7.6	7.3	7.4	7.1	7.1	6.9
Western	9.8	10.6	10.8	10.9	10.8	9.6	10.7	9.9	10.9	9.9
AZ	13.4	18.3	22.4	20.9	19.9	18.2	18.9	17.0	18.8	20.1
CA	13.7	13.0	13.1	13.1	12.6	11.2	12.4	11.8	13.3	10.9
ID	9.4	10.4	8.9	9.8	9.5	8.9	10.3	9.2	10.5	8.7
NV	4.5	3.6	4.0	4.3	4.1	3.5	4.9	4.2	4.9	3.7
OR	6.5	6.4	5.6	5.8	6.6	6.2	7.0	6.9	6.6	6.0
UT	10.6	11.1	8.8	10.5	11.7	8.7	10.1	9.3	10.0	8.6
WA	4.6	4.7	5.2	4.7	4.9	5.1	5.3	6.0	5.3	6.2

[a] Annual indices are estimated from exponentiated year effects derived from a log-linear hierarchical model fit using Bayesian methods; 95% credible intervals for the annual indices are available upon request.

[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 4. Continued.

Management Unit	Year									
State	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Eastern	19.4	19.8	19.1	19.4	19.8	19.3	19.6	19.5		
Hunt states	20.7	21.0	20.3	20.6	21.1	20.5	20.8	20.7		
AL	25.2	25.2	25.8	25.8	26.2	26.7	26.3	26.4		
DE-MD	14.3	14.8	14.5	15.4	14.4	14.0	14.4	14.6		
FL	11.1	11.5	11.3	10.6	11.3	12.4	12.1	11.5		
GA	21.4	19.4	21.7	24.1	22.1	22.0	23.0	22.6		
IL	26.9	27.2	23.1	24.7	25.0	23.5	23.6	22.0		
IN	25.8	26.8	25.9	26.7	26.3	26.2	25.5	24.5		
KY	26.9	28.0	27.4	28.1	27.9	26.8	27.9	28.2		
LA	11.4	12.5	11.9	12.9	12.9	12.8	13.8	13.7		
MS	21.3	22.0	21.1	20.8	20.3	19.4	21.3	20.2		
NC	38.6	38.7	38.9	38.8	38.6	39.4	38.7	38.2		
OH	20.8	21.8	19.4	20.5	22.5	21.6	19.7	19.8		
PA	12.6	12.6	11.3	12.5	12.2	9.5	13.4	13.2		
SC	27.3	28.1	27.6	27.7	28.4	27.9	27.9	27.6		
TN	16.2	16.0	15.7	16.0	15.6	15.3	14.8	14.9		
VA	14.8	15.5	14.7	14.9	14.8	14.1	15.0	14.2		
WI	20.0	21.3	17.6	16.6	22.5	18.7	18.2	21.5		
WV	7.5	7.6	7.9	7.9	8.0	8.0	8.3	8.2		
Nonhunt states	11.0	11.3	11.0	11.2	11.5	11.4	11.6	11.5		
MI	18.2	18.1	18.4	17.7	18.3	18.6	18.9	18.4		
N. England[b]	9.5	9.8	9.2	9.6	9.7	9.7	9.9	9.6		
NJ	12.0	11.4	11.4	11.3	10.7	10.5	10.2	10.1		
NY	13.0	13.4	13.4	13.5	14.1	13.8	14.1	14.2		
Central	23.7	23.2	22.2	23.5	22.7	21.3	21.2	21.2		
AR	15.6	15.9	15.6	14.9	14.8	15.2	14.8	15.1		
CO	22.2	23.6	23.0	24.3	21.4	25.9	21.6	17.5		
IA	28.4	27.6	27.2	26.5	26.6	25.4	26.9	26.0		
KS	53.9	52.4	49.7	52.7	48.4	52.2	47.6	47.9		
MN	16.4	16.1	15.7	15.4	15.6	15.0	15.5	14.5		
MO	17.0	17.0	15.1	15.1	16.1	15.3	15.4	15.0		
MT	13.5	12.4	12.5	13.9	12.4	11.4	11.9	13.0		
NE	42.6	43.2	41.8	42.6	42.7	41.8	39.6	39.3		
NM	13.9	15.9	12.0	14.7	14.0	10.9	11.4	12.2		
ND	42.1	36.6	42.6	40.1	43.9	35.0	35.4	39.8		
OK	27.2	27.0	22.6	25.9	24.4	17.2	20.5	20.9		
SD	43.6	43.3	43.8	42.9	41.8	41.8	42.2	42.1		
TX	18.5	17.3	15.1	18.8	17.7	14.7	15.9	16.1		
WY	7.3	6.9	7.2	6.8	6.7	6.6	6.3	6.5		
Western	11.5	9.8	9.4	9.5	9.8	8.8	8.9	8.6		
AZ	21.1	16.3	16.6	16.1	20.1	14.0	14.0	13.5		
CA	10.5	10.3	10.4	10.2	10.0	9.6	9.8	9.1		
ID	12.0	10.9	10.0	9.2	9.9	8.7	8.9	9.1		
NV	8.8	4.7	4.1	5.3	3.9	5.7	4.8	4.2		
OR	6.2	7.4	6.2	6.3	5.4	5.1	5.4	6.1		
UT	10.9	9.0	8.6	9.4	9.3	9.4	10.0	9.4		
WA	5.1	5.5	5.0	5.0	5.2	5.3	5.8	5.8		

[a] Annual indices are estimated from exponentiated year effects derived from a log-linear hierarchical model fit using Bayesian methods; 95% credible intervals for the annual indices are available upon request.

[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 5. Estimated annual abundance indices[a] of mourning doves based on Call-count Survey **seen** data for management units and states, 1966–2013.

Management Unit	Year									
State	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Eastern	16.8	16.6	16.4	16.6	16.5	16.3	17.1	16.4	16.4	16.7
Hunt states	18.5	18.3	18.1	18.4	18.2	17.9	18.9	18.1	18.2	18.4
AL	19.2	19.5	18.8	19.1	18.9	18.6	20.9	20.1	18.5	19.0
DE-MD	13.1	15.4	13.0	14.4	16.0	14.4	15.6	15.6	15.5	14.7
FL	6.2	5.7	6.4	6.4	5.3	5.5	7.5	7.6	6.9	8.3
GA	20.2	19.7	19.2	19.2	19.1	18.8	18.8	18.3	18.1	18.2
IL	21.1	24.4	22.4	22.6	20.4	20.9	21.9	20.5	20.3	21.2
IN	46.1	45.0	44.6	46.2	45.5	42.0	42.7	41.8	44.8	41.5
KY	20.0	19.3	19.9	19.5	19.9	18.2	20.6	19.3	20.2	19.9
LA	7.2	6.9	6.6	7.1	6.8	7.1	7.2	7.3	7.4	7.7
MS	39.6	36.0	36.4	35.8	33.9	33.6	37.0	31.6	31.3	31.8
NC	34.0	33.8	33.6	33.3	34.1	34.4	33.9	33.9	34.1	33.7
OH	19.4	20.2	20.3	23.2	24.2	24.3	25.6	24.6	24.1	26.0
PA	9.3	9.2	9.2	9.6	9.4	9.7	9.8	10.2	10.4	10.6
SC	20.0	20.0	19.8	20.3	19.6	20.8	20.7	20.2	21.3	21.8
TN	27.0	26.7	26.5	26.3	26.5	26.9	26.8	25.9	26.0	25.8
VA	15.3	14.4	14.5	14.1	14.9	13.9	14.6	14.2	14.5	14.1
WI	4.9	4.6	4.9	4.8	5.6	5.2	6.9	5.5	6.2	6.5
WV	2.8	2.5	2.4	2.3	2.5	2.9	2.6	2.3	2.6	2.9
Nonhunt states	4.8	4.8	4.8	5.0	5.0	5.0	5.0	5.1	4.9	5.3
MI	6.6	6.5	6.8	6.6	7.0	7.2	7.5	7.5	7.7	8.3
N. England[b]	4.5	4.5	4.5	4.6	4.6	4.5	4.6	4.6	4.5	4.7
NJ	22.1	22.6	22.3	22.0	21.3	21.5	21.6	21.3	20.7	20.7
NY	2.5	2.6	2.7	3.0	3.3	3.3	3.2	3.5	3.2	4.0
Central	40.6	40.1	39.7	39.4	39.2	37.9	39.6	38.4	39.2	38.6
AR	23.5	24.6	23.8	23.4	22.9	22.6	23.2	22.9	22.5	22.2
CO	35.4	37.5	31.4	32.8	29.6	31.0	29.4	29.6	35.4	25.7
IA	18.3	18.9	18.5	18.1	17.9	18.4	19.5	18.5	18.8	18.5
KS	104.1	105.1	100.7	103.1	103.1	100.6	102.5	100.4	99.0	99.8
MN	17.9	17.2	17.0	16.5	16.2	16.4	16.9	15.0	15.4	15.0
MO	48.8	48.2	46.4	46.0	44.8	44.3	45.4	42.5	41.2	40.8
MT	11.3	13.8	12.9	12.6	13.5	13.1	13.1	12.8	13.4	11.9
NE	88.6	88.7	90.5	91.3	88.8	88.5	89.0	89.4	89.0	91.0
NM	14.1	12.9	12.7	12.5	12.8	11.3	17.5	10.7	18.5	15.1
ND	21.5	22.8	23.4	23.5	22.5	24.1	25.5	28.1	24.6	26.0
OK	95.3	101.5	100.7	98.0	97.5	95.0	92.2	90.8	93.2	93.8
SD	54.4	52.9	53.8	53.9	55.1	53.6	54.5	53.7	54.9	53.2
TX	40.9	37.8	41.6	39.8	42.1	35.8	42.1	40.6	40.1	40.7
WY	26.2	18.4	16.6	16.3	14.3	16.4	14.3	16.7	14.1	20.0
Western	17.3	19.5	22.1	18.2	17.8	17.8	15.0	15.0	19.7	16.1
AZ	12.0	14.8	25.9	17.8	20.1	12.6	10.6	23.7	17.1	17.3
CA	38.0	37.9	38.4	37.5	33.5	34.5	32.3	29.0	36.5	33.9
ID	17.9	28.3	16.8	13.3	11.0	16.3	15.1	10.4	16.4	12.8
NV	4.9	7.0	18.1	9.4	8.8	8.4	5.2	4.0	11.4	4.2
OR	11.6	11.3	11.3	10.1	9.8	9.7	10.0	8.8	9.4	8.9
UT	11.1	12.8	14.4	12.1	17.4	20.8	9.9	6.6	22.0	12.5
WA	2.0	1.3	2.2	1.3	1.8	1.0	2.3	1.2	0.9	1.6

[a] Annual indices are estimated from exponentiated year effects derived from a log-linear hierarchical model fit using Bayesian methods; 95% credible intervals for the annual indices are available upon request.

[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 5. Continued.

Management Unit	Year									
State	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Eastern	17.2	16.7	15.8	15.9	16.1	17.0	16.6	16.5	16.3	16.8
Hunt states	19.0	18.4	17.4	17.4	17.6	18.7	18.2	18.1	17.9	18.4
AL	19.5	19.4	19.4	20.3	20.0	19.4	20.1	20.3	19.6	20.4
DE-MD	15.8	15.9	15.6	14.4	16.4	17.0	14.0	15.1	17.6	17.0
FL	9.5	7.8	8.3	8.8	8.6	10.6	9.1	9.0	10.8	11.8
GA	17.7	17.9	17.8	17.7	17.1	17.5	16.6	16.3	16.8	17.0
IL	23.2	22.4	20.4	18.4	19.2	20.8	19.5	19.3	17.0	19.8
IN	42.2	38.3	30.3	31.2	33.3	37.2	33.1	33.5	33.5	32.2
KY	21.8	20.7	20.3	20.1	19.8	22.6	23.3	22.4	21.8	24.3
LA	7.5	8.4	8.5	8.7	8.9	9.0	9.5	9.7	9.9	9.3
MS	30.5	31.9	31.7	31.4	31.1	29.8	31.4	31.9	28.4	27.6
NC	34.8	34.4	35.1	35.2	34.9	35.6	34.8	34.4	35.8	35.5
OH	29.3	24.5	15.8	15.9	16.6	21.6	22.5	21.0	20.1	23.0
PA	10.6	10.2	10.4	10.8	11.3	11.2	11.5	11.8	11.5	12.3
SC	21.7	21.3	21.9	22.3	22.3	22.5	23.3	22.5	23.0	23.1
TN	26.2	26.8	26.2	26.2	26.0	26.2	26.3	25.3	25.9	25.9
VA	14.7	15.0	14.7	13.8	14.5	13.6	13.7	13.9	13.3	13.1
WI	6.8	6.7	5.4	7.1	7.2	9.1	7.3	7.9	7.8	7.2
WV	2.7	2.9	2.9	3.7	3.3	4.5	4.4	4.0	4.7	4.7
Nonhunt states	5.2	5.2	5.4	5.4	5.6	5.7	5.7	5.6	5.5	5.9
MI	8.2	8.4	8.4	8.4	9.0	9.7	9.1	9.4	9.4	10.2
N. England[b]	4.7	4.7	4.8	4.8	4.9	4.7	4.8	4.7	4.8	5.2
NJ	21.0	20.6	20.8	20.6	20.0	20.5	20.5	19.9	19.5	18.5
NY	3.5	3.7	4.0	4.1	4.5	4.9	4.9	4.8	4.4	5.2
Central	39.2	38.6	37.4	38.3	38.7	39.5	38.9	36.7	36.8	35.3
AR	22.9	21.7	21.3	21.4	21.8	21.7	21.4	21.8	20.1	20.0
CO	37.8	32.2	31.4	26.1	31.8	30.9	30.8	25.9	27.7	26.0
IA	18.9	19.7	19.5	19.1	20.3	19.9	20.1	19.2	20.0	20.1
KS	98.8	98.6	96.2	96.9	99.3	96.5	96.0	95.8	94.5	93.4
MN	15.9	16.4	14.8	15.1	14.9	15.1	13.7	14.1	13.5	13.2
MO	38.9	39.8	39.1	37.4	37.3	38.6	36.7	36.7	34.5	32.2
MT	12.1	13.3	11.5	11.9	12.2	13.4	12.6	11.1	11.7	12.5
NE	94.6	92.7	91.9	90.5	90.7	90.9	91.5	86.7	87.0	87.0
NM	13.8	11.7	9.0	10.7	13.2	12.9	12.4	11.2	18.4	12.7
ND	30.9	32.1	30.8	31.0	31.0	29.8	27.2	25.5	24.0	24.4
OK	92.0	86.1	100.3	94.6	96.0	88.9	93.1	92.6	85.4	83.8
SD	55.1	55.3	54.1	53.6	52.9	53.5	53.1	52.8	53.0	52.4
TX	38.9	38.6	36.8	43.8	40.9	48.5	46.5	41.1	41.1	38.1
WY	15.5	18.5	11.1	13.0	12.8	11.5	11.3	9.2	8.4	7.8
Western	18.7	17.4	13.6	16.6	19.6	15.4	14.5	13.2	14.1	12.2
AZ	15.4	13.0	21.0	33.6	20.4	11.6	17.9	20.4	12.2	13.9
CA	31.2	32.1	23.7	25.8	27.2	28.4	29.3	23.2	24.8	23.3
ID	16.7	15.8	11.9	11.8	13.0	16.1	14.7	12.5	14.7	11.2
NV	17.0	13.6	4.6	7.0	32.6	8.0	3.8	4.9	7.1	5.0
OR	9.2	10.2	7.0	7.1	7.8	9.1	8.1	6.6	6.9	6.6
UT	18.3	14.4	8.9	9.1	11.7	16.9	6.8	7.5	16.2	8.8
WA	2.6	1.1	1.1	1.3	1.3	1.1	2.0	1.0	2.5	1.1

[a] Annual indices are estimated from exponentiated year effects derived from a log-linear hierarchical model fit using Bayesian methods; 95% credible intervals for the annual indices are available upon request.

[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 5. Continued.

Management Unit	Year									
State	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Eastern	17.1	17.3	17.8	18.0	18.1	18.2	18.1	18.1	18.3	18.6
Hunt states	18.7	19.0	19.6	19.7	19.8	19.8	19.8	19.8	20.0	20.2
AL	21.2	19.1	19.5	19.7	19.6	19.7	20.2	20.5	20.8	20.9
DE-MD	18.0	15.7	18.5	18.5	16.6	19.0	18.1	16.9	17.4	17.2
FL	11.0	11.1	11.8	13.2	14.9	13.4	14.4	14.5	15.7	16.4
GA	16.1	16.2	16.7	16.4	16.0	15.7	15.5	14.9	15.4	15.7
IL	20.1	21.6	21.4	21.9	23.4	23.0	22.1	21.6	21.6	22.5
IN	32.7	35.4	33.7	33.8	33.7	31.5	30.2	30.2	29.9	29.4
KY	22.1	24.0	24.9	25.5	24.0	26.7	25.2	25.6	24.9	25.9
LA	10.5	10.0	11.3	10.8	11.5	11.9	11.8	12.1	12.7	13.4
MS	28.4	26.6	29.5	27.1	28.2	25.6	28.2	27.6	26.8	25.9
NC	36.4	36.0	36.0	35.8	36.0	36.7	36.8	37.4	37.6	36.9
OH	25.3	26.8	29.3	30.6	26.8	29.1	29.1	27.8	30.2	29.9
PA	12.7	12.7	13.3	13.0	13.3	13.7	13.5	14.4	14.5	14.7
SC	22.9	23.3	24.1	23.9	24.4	24.6	24.5	23.5	24.9	24.6
TN	25.7	26.3	26.2	26.3	26.4	26.5	26.5	26.9	27.1	27.2
VA	12.8	13.2	13.1	12.4	14.1	13.4	13.1	13.5	12.2	13.6
WI	8.7	9.8	9.7	10.1	10.8	10.6	10.0	10.7	9.4	10.2
WV	4.0	4.3	4.2	6.2	4.4	6.4	5.6	6.8	7.2	7.0
Nonhunt states	6.1	6.1	6.0	7.0	6.6	7.2	7.1	6.9	7.1	7.5
MI	10.8	11.1	11.2	11.3	12.1	12.0	12.0	12.3	12.6	12.9
N. England[b]	5.0	5.0	5.1	5.3	5.4	5.6	5.6	5.8	5.8	6.0
NJ	19.4	18.1	17.9	18.4	18.0	19.2	18.9	18.3	18.4	18.3
NY	5.7	6.0	5.6	7.5	6.5	7.7	7.5	6.7	7.3	8.0
Central	36.5	36.5	36.1	35.6	35.4	40.1	38.5	36.2	36.3	35.4
AR	20.5	20.5	19.8	20.6	20.3	19.6	20.2	20.1	20.0	19.9
CO	30.0	27.9	29.3	27.1	28.5	28.7	26.5	28.0	27.8	27.0
IA	19.9	20.2	20.5	21.3	21.0	20.9	21.3	20.8	21.3	21.4
KS	93.2	92.9	94.3	94.0	91.0	94.3	93.1	90.3	93.3	92.9
MN	12.7	12.9	12.6	12.5	12.1	12.4	11.6	11.2	10.7	10.7
MO	33.3	33.5	33.5	32.9	32.3	32.0	31.1	29.0	28.7	29.1
MT	11.2	11.4	13.4	12.1	12.5	10.9	10.9	10.5	10.9	11.0
NE	84.7	86.4	86.8	82.5	84.4	87.4	86.2	82.9	84.1	83.2
NM	13.7	10.6	11.3	12.1	11.3	12.9	9.8	10.6	10.8	9.9
ND	25.3	26.0	26.8	28.1	28.9	29.0	32.1	28.4	25.0	22.6
OK	87.4	84.3	86.1	83.5	85.1	87.5	87.7	83.6	85.6	85.4
SD	49.8	51.4	51.1	51.9	51.8	51.5	51.4	50.1	49.8	48.4
TX	42.6	43.9	39.4	40.2	38.3	60.0	54.4	47.8	46.9	44.5
WY	9.1	10.1	8.4	7.9	8.7	9.2	8.1	6.6	7.1	6.3
Western	10.9	10.8	11.0	11.2	11.3	10.1	10.5	11.1	11.4	10.5
AZ	9.7	6.5	8.0	7.7	7.6	11.2	12.3	17.0	10.8	13.7
CA	20.2	20.9	20.2	19.6	21.4	18.2	19.7	17.1	19.6	15.1
ID	11.8	15.2	16.5	13.5	15.8	12.8	12.4	11.1	15.2	13.1
NV	4.5	5.3	5.0	5.0	4.8	2.8	3.2	5.3	7.4	10.1
OR	7.1	7.2	5.9	6.6	6.8	5.6	5.7	4.9	5.5	5.0
UT	9.0	7.6	8.9	13.9	9.4	8.1	6.0	7.7	7.7	4.3
WA	2.0	1.2	1.2	1.6	2.2	1.9	1.6	4.8	2.1	1.6

[a] Annual indices are estimated from exponentiated year effects derived from a log-linear hierarchical model fit using Bayesian methods; 95% credible intervals for the annual indices are available upon request.

[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 5. Continued.

Management Unit	Year									
State	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Eastern	18.1	17.9	19.1	19.7	19.7	19.7	19.9	20.5	20.8	20.3
Hunt states	19.7	19.5	20.7	21.3	21.4	21.2	21.6	22.3	22.5	22.0
AL	19.5	20.0	20.3	20.9	21.2	20.4	21.8	21.9	21.3	21.2
DE-MD	18.0	16.0	17.8	18.7	17.5	17.3	15.9	17.3	19.4	19.1
FL	15.1	18.5	16.6	19.1	18.0	20.7	18.6	22.5	21.8	19.8
GA	15.1	15.1	15.0	14.8	15.0	14.9	15.1	14.2	14.7	14.6
IL	21.6	19.8	22.4	20.5	23.6	21.4	23.1	24.3	26.3	24.9
IN	30.9	27.8	30.3	30.6	29.8	28.4	28.2	29.4	30.1	29.2
KY	26.3	25.1	26.5	28.2	28.9	29.2	29.3	29.0	30.7	28.3
LA	12.7	13.5	13.9	15.6	15.6	15.4	16.8	16.9	17.2	17.5
MS	24.0	24.1	24.0	24.2	22.8	22.9	23.1	23.3	21.1	21.5
NC	37.4	36.7	36.8	37.7	38.0	37.9	38.2	39.0	39.5	39.2
OH	26.4	24.7	33.2	33.1	33.1	33.1	31.7	36.9	35.2	29.6
PA	15.2	15.4	15.9	17.2	16.4	16.8	17.3	17.3	17.7	17.4
SC	24.8	24.7	25.3	27.4	26.5	26.2	27.0	25.6	26.7	26.7
TN	26.9	27.3	27.6	27.4	27.9	27.8	27.5	27.9	28.3	28.2
VA	13.5	13.4	13.6	13.9	13.3	13.3	14.7	13.2	14.1	14.2
WI	10.3	9.4	11.9	11.6	12.1	11.3	12.7	13.9	13.7	15.1
WV	6.3	6.2	6.6	7.7	8.7	9.2	8.3	7.0	9.5	9.1
Nonhunt states	7.3	7.2	8.2	9.1	8.6	9.2	9.1	9.1	9.1	9.5
MI	13.2	13.3	14.8	15.2	16.1	16.0	16.2	16.8	16.8	18.2
N. England[b]	5.9	5.8	6.1	6.6	6.6	6.7	6.8	6.8	7.0	7.1
NJ	18.1	17.9	17.6	18.2	16.6	17.0	17.7	17.2	16.9	16.8
NY	7.6	7.6	9.8	11.3	10.2	11.6	11.1	11.1	10.8	11.6
Central	34.1	36.7	37.5	38.0	36.6	35.5	36.5	36.5	36.8	38.0
AR	19.1	19.5	19.3	19.5	19.0	19.3	18.6	19.1	19.3	18.7
CO	27.0	27.0	27.8	29.1	29.4	25.4	27.5	27.6	26.0	25.1
IA	21.9	21.2	22.7	22.0	23.5	22.8	23.5	23.7	24.9	24.8
KS	89.9	93.0	92.9	94.1	92.1	89.3	90.6	92.4	93.0	94.7
MN	10.5	11.0	11.5	10.4	10.9	10.3	9.7	9.6	10.2	9.3
MO	27.7	26.9	27.2	26.2	25.5	25.7	25.6	25.1	25.5	23.8
MT	11.0	12.7	11.0	11.8	10.6	9.9	11.8	11.3	10.8	10.6
NE	82.7	80.4	84.3	84.5	86.0	83.6	82.5	83.6	85.7	86.1
NM	10.8	12.8	11.2	11.6	11.4	10.1	10.6	11.8	10.6	13.3
ND	26.2	24.7	30.0	32.7	28.6	25.5	25.0	24.7	27.3	25.6
OK	79.8	80.7	85.3	85.7	84.3	80.5	79.3	81.4	82.7	86.5
SD	48.2	49.1	50.9	52.2	50.6	50.5	50.4	49.7	49.0	49.0
TX	40.2	50.0	50.7	51.5	46.7	47.9	51.1	50.1	51.1	55.8
WY	5.8	7.8	7.6	6.0	7.0	6.0	6.9	5.6	4.9	5.0
Western	11.4	10.3	10.0	11.8	10.6	8.6	9.8	8.6	10.0	8.7
AZ	7.2	8.0	15.3	13.3	11.3	10.1	6.9	11.2	10.3	10.8
CA	20.2	17.7	16.7	18.0	17.5	15.7	17.3	14.7	16.1	14.6
ID	16.4	13.6	10.5	13.4	15.5	12.1	13.8	11.4	16.5	13.1
NV	10.3	7.8	4.3	9.4	6.3	3.4	7.0	3.5	5.4	3.7
OR	5.7	6.0	5.2	6.5	5.5	4.4	4.6	4.2	5.0	4.6
UT	5.8	5.4	4.5	8.0	6.0	3.3	7.4	4.3	5.0	2.7
WA	1.6	3.4	2.3	1.6	1.8	2.2	1.8	2.3	2.4	3.3

[a] Annual indices are estimated from exponentiated year effects derived from a log-linear hierarchical model fit using Bayesian methods; 95% credible intervals for the annual indices are available upon request.

[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 5. Continued.

Management Unit	Year									
State	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Eastern	20.5	21.0	21.0	21.2	21.8	21.5	22.8	22.7		
Hunt states	22.1	22.7	22.8	22.9	23.5	23.3	24.7	24.6		
AL	21.9	22.3	22.2	24.0	23.9	23.0	23.8	23.9		
DE-MD	16.0	19.1	18.7	17.8	18.9	17.9	18.5	17.5		
FL	19.2	20.0	23.3	23.5	21.7	25.4	28.4	29.3		
GA	14.3	14.7	14.9	14.8	14.3	14.6	14.5	14.4		
IL	27.9	25.1	23.0	23.1	25.1	23.9	27.7	28.0		
IN	26.4	25.8	26.1	23.6	25.8	25.5	26.9	26.2		
KY	30.6	31.1	31.4	32.9	33.5	33.2	35.8	35.2		
LA	18.7	19.6	19.8	20.6	20.9	21.3	23.1	23.5		
MS	21.9	23.0	23.1	23.1	21.9	21.8	21.9	22.1		
NC	37.2	37.3	37.6	38.1	38.4	38.5	38.4	38.6		
OH	31.5	33.5	33.9	33.7	37.0	33.0	33.5	34.9		
PA	17.4	17.8	18.5	18.3	19.4	19.4	19.6	19.9		
SC	25.9	25.9	25.3	26.9	27.2	26.7	27.8	26.4		
TN	27.9	27.6	28.7	28.9	29.0	28.8	29.6	29.3		
VA	14.8	15.8	16.0	14.8	14.4	15.0	15.9	15.4		
WI	15.6	16.5	15.0	14.7	18.1	15.5	16.5	17.3		
WV	5.6	9.4	9.9	9.9	10.1	9.5	15.8	9.0		
Nonhunt states	9.7	9.3	9.3	9.8	10.1	9.7	10.2	10.0		
MI	18.0	19.9	18.1	19.1	18.9	20.0	21.2	20.8		
N. England[b]	7.2	7.1	7.0	7.4	7.6	7.2	7.8	7.8		
NJ	15.8	16.2	16.0	15.9	15.3	15.1	15.6	14.6		
NY	12.3	11.4	11.4	12.2	12.8	12.2	12.5	12.1		
Central	36.4	37.5	35.7	36.3	35.6	34.4	34.3	35.3		
AR	19.0	18.8	18.4	18.3	18.4	18.0	17.8	18.3		
CO	25.7	27.0	24.7	26.1	24.0	26.6	22.4	24.8		
IA	24.9	25.6	25.4	25.7	25.4	26.3	25.9	26.1		
KS	99.2	98.7	97.2	100.0	100.2	99.7	99.2	99.4		
MN	10.2	9.7	9.0	9.0	9.9	9.4	9.1	9.7		
MO	25.0	24.2	23.8	23.6	22.9	22.7	23.0	21.9		
MT	13.4	11.3	12.0	11.3	10.2	10.5	10.5	10.8		
NE	84.3	85.9	86.5	87.4	87.4	85.4	84.5	84.8		
NM	12.2	17.8	12.0	13.0	12.0	12.1	10.2	10.4		
ND	27.1	26.3	24.3	25.8	25.0	22.4	26.6	23.7		
OK	72.3	71.5	66.2	67.7	67.4	63.4	65.4	64.3		
SD	46.0	46.1	45.5	46.5	45.0	44.7	45.0	44.9		
TX	48.7	53.9	49.9	50.3	49.8	44.9	45.6	50.5		
WY	6.2	4.8	5.9	4.9	4.6	4.4	4.2	4.7		
Western	10.4	10.2	9.9	10.0	9.3	9.4	8.3	9.1		
AZ	11.8	7.5	9.1	10.1	13.3	7.2	5.8	7.4		
CA	13.5	16.6	12.4	14.4	12.0	13.0	14.1	12.9		
ID	20.5	19.5	20.0	18.3	18.2	15.7	15.0	20.7		
NV	6.4	6.2	9.9	5.7	4.6	9.1	5.2	6.9		
OR	5.7	5.1	4.5	5.0	4.3	3.8	4.2	3.9		
UT	4.5	4.9	3.4	6.7	3.1	7.4	3.6	3.0		
WA	2.8	4.0	2.4	2.5	2.8	3.1	3.2	3.1		

[a] Annual indices are estimated from exponentiated year effects derived from a log-linear hierarchical model fit using Bayesian methods; 95% credible intervals for the annual indices are available upon request.

[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 6. Preliminary estimates and 95% confidence intervals (CI, expressed as the interval half width in percent) of mourning dove harvest and hunter activity for management units and states during the 2011 hunting season[a].

Management Unit	Total harvest		Active hunters		Hunter days afield		Harvest per hunter[b]	
State	Estimate	CI	Estimate	CI	Estimate	CI	Estimate	CI
Eastern	6,666,900	8	378,600	†[c]	1,095,200	7	†	†
AL	796,400	19	42,600	11	108,300	17	18.7	22
DE	14,700	35	1,400	29	3,300	38	10.3	46
FL	245,700	26	13,700	29	37,200	26	17.9	39
GA	1,154,700	17	53,800	11	162,600	14	21.5	20
IL	467,700	22	25,400	15	77,000	21	18.4	27
IN	216,900	25	10,000	24	37,500	44	21.7	35
KY	380,700	26	18,500	38	61,700	38	20.6	46
LA	471,100	45	25,500	27	69,400	35	18.5	52
MD	92,600	36	6,400	24	16,600	32	14.4	43
MS	443,400	22	20,800	15	52,200	20	21.4	26
NC	719,800	33	49,700	24	142,300	34	14.5	41
OH	174,900	29	14,200	25	55,800	25	12.4	38
PA	158,800	26	13,500	26	53,600	23	11.7	37
RI	100	194	0	194	200	194	3.0	274
SC	701,900	27	35,700	21	100,900	24	19.7	34
TN	306,700	26	21,400	21	44,800	25	14.3	34
VA	245,900	19	16,400	15	46,400	20	15.0	24
WI	7,800	38	700	28	1,400	42	11.0	47
WV	67,000	64	8,800	33	24,200	32	7.6	72
Central	7,657,700	9	427,700	†	1,444,800	11	†	†
AR	519,300	43	25,300	25	63,800	34	20.5	50
CO	178,700	14	15,300	14	44,500	24	11.7	20
IA	56,800	21	5,800	11	19,000	17	9.7	24
KS	534,800	18	32,800	10	95,800	15	16.3	21
MN	57,300	40	9,400	49	25,100	51	6.1	63
MO	359,600	16	31,600	11	74,600	14	11.4	19
MT	14,400	61	2,200	37	5,900	47	6.7	71
NE	265,500	23	15,500	16	46,900	28	17.1	28
NM	76,900	42	6,700	39	24,600	49	11.4	57
ND	41,800	31	3,700	25	10,400	29	11.2	40
OK	379,400	33	17,100	15	54,200	25	22.1	36
SD	87,200	26	6,200	21	16,300	26	14.0	34
TX	5,061,100	13	253,200	11	958,600	16	20.0	17
WY	25,000	52	2,700	30	5,100	38	9.3	60
Western	2,256,300	8	149,400	†	465,700	7	†	†
AZ	784,600	15	35,400	12	123,300	15	22.2	19
CA	1,138,200	10	72,700	7	227,100	10	15.6	12
ID	147,500	45	11,000	21	38,600	35	13.4	50
NV	31,900	24	3,500	19	8,600	22	9.2	31
OR	63,000	23	12,900	18	38,000	25	4.9	29
UT	53,900	31	9,600	21	19,800	23	5.6	37
WA	37,200	25	4,300	23	10,200	25	8.7	34
United States	16,580,900	5	955,700	†	3,005,700	6	†	†

[a] Hunter 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.

[b] Seasonal harvest per hunter.

[c] No estimate available.

Table 7. Preliminary estimates and 95% confidence intervals (CI, expressed as the interval half width in percent) of mourning dove harvest and hunter activity for management units and states during the 2012 hunting season[a].

Management Unit	Total harvest		Active hunters		Hunter days afield		Harvest per hunter[b]	
State	Estimate	CI	Estimate	CI	Estimate	CI	Estimate	CI
Eastern	6,279,900	8	349,600	†[c]	1,015,600	7	†	†
AL	687,100	15	38,500	10	116,400	23	17.8	18
DE	39,900	28	2,400	21	7,200	30	16.5	36
FL	175,100	28	10,700	32	48,500	59	16.4	43
GA	735,700	15	35,600	11	94,600	14	20.7	19
IL	372,700	26	20,500	17	62,700	22	18.2	31
IN	263,300	34	14,100	23	40,700	26	18.7	41
KY	511,800	43	21,500	39	61,100	41	23.8	58
LA	354,100	50	17,800	29	60,400	43	19.9	58
MD	94,300	25	6,200	22	16,800	26	15.1	33
MS	286,900	28	11,800	15	32,300	23	24.3	32
NC	1,020,600	22	62,100	16	148,000	18	16.4	27
OH	136,000	33	8,600	23	33,500	35	15.8	41
PA	203,200	30	18,000	26	60,200	26	11.3	40
RI	500	77	100	47	400	61	7.9	91
SC	554,600	30	25,100	21	81,900	28	22.1	36
TN	464,400	26	27,000	18	71,300	25	17.2	31
VA	295,900	19	19,900	14	45,100	15	14.9	24
WI	10,300	33	1,000	24	1,900	42	10.7	41
WV	73,200	31	8,900	32	32,700	29	8.3	44
Central	6,361,600	14	338,700	†	1,108,700	11	†	†
AR	494,200	30	21,400	22	57,600	26	23.1	37
CO	204,300	26	17,000	18	43,800	26	12	32
IA	†[c]	†[c]	†[c]	†[c]	†[c]	†[c]	†[c]	†[c]
KS	244,800	62	12,200	39	49,100	52	20.1	73
MN	65,400	75	6,800	52	21,600	48	9.7	91
MO	296,600	81	23,800	29	51,400	50	12.4	86
MT	2,600	161	200	87	500	120	13.3	183
NE	223,400	20	13,200	17	39,000	17	16.9	26
NM	160,100	17	9,000	11	38,000	17	17.8	20
ND	78,900	37	4,900	30	17,400	36	16	48
OK	349,700	26	15,700	14	49,200	19	22.3	30
SD	65,500	28	4,500	22	14,700	28	14.4	36
TX	4,150,800	20	207,200	13	720,200	16	20	24
WY	25,300	40	2,700	32	6,300	38	9.3	51
Western	1,849,400	8	140,700	†	413,700	7	†	†
AZ	601,200	16	32,100	9	110,800	14	18.7	18
CA	900,000	10	65,200	7	192,200	10	13.8	12
ID	127,600	25	9,700	22	32,200	35	13.1	33
NV	26,900	36	3,600	26	7,400	26	7.5	44
OR	64,100	32	12,000	19	28,900	24	5.3	38
UT	78,000	43	13,200	22	30,800	31	5.9	48
WA	51,500	30	4,900	26	11,300	27	10.6	40
United States	14,490,800	7	828,900	†	2,538,000	6	†	†

[a] Hunter 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.

[b] Seasonal harvest per hunter.

[c] No estimate available.

Table 8. Number of mourning doves banded in each management unit, state, and year, 2003–2012. Only known age birds banded in July or August are included in the table and used in analysis of survival and harvest rates.

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

[a] Combined total for North Atlantic non-hunt states: CT, ME, MA, NJ, NH, NY, and VT.

Table 9. Estimates of mean annual survival and harvest rate of mourning doves by management unit and state that banded doves, 2003–2012. Estimates by age-class: hatch-year (HY) and after-hatch-year (AHY). Standard errors of estimates are in parentheses.

Management Unit	Annual Survival		Annual Harvest Rate	
State	HY (SE)	AHY (SE)	HY (SE)	AHY (SE)
Eastern	0.29 (0.01)	0.40 (0.01)	0.094 (0.001)	0.068 (0.001)
AL	0.29 (0.03)	0.39 (0.03)	0.118 (0.004)	0.076 (0.004)
DE-MD[a]	0.31 (0.03)	0.39 (0.03)	0.153 (0.006)	0.106 (0.006)
FL	0.25 (0.04)	0.43 (0.03)	0.054 (0.003)	0.054 (0.004)
GA	0.28 (0.02)	0.39 (0.02)	0.141 (0.004)	0.093 (0.004)
IL	0.34 (0.03)	0.37 (0.03)	0.082 (0.003)	0.069 (0.004)
IN	0.35 (0.04)	0.38 (0.02)	0.094 (0.005)	0.095 (0.004)
KY	0.34 (0.02)	0.39 (0.02)	0.060 (0.003)	0.054 (0.002)
LA	0.34 (0.01)	0.42 (0.02)	0.134 (0.003)	0.095 (0.006)
MS	0.25 (0.02)	0.41 (0.02)	0.172 (0.006)	0.112 (0.005)
North Atl[b]	0.49 (0.13)	0.42 (0.20)	0.010 (0.002)	0.004 (0.002)
NC	0.20 (0.02)	0.39 (0.02)	0.109 (0.004)	0.064 (0.003)
OH	0.30 (0.03)	0.36 (0.02)	0.069 (0.003)	0.063 (0.003)
PA	0.24 (0.03)	0.44 (0.03)	0.081 (0.003)	0.041 (0.003)
SC	0.30 (0.02)	0.42 (0.02)	0.094 (0.003)	0.062 (0.003)
TN	0.24 (0.02)	0.38 (0.02)	0.101 (0.004)	0.075 (0.004)
VA	0.34 (0.04)	0.49 (0.04)	0.052 (0.004)	0.039 (0.004)
WI	0.27 (0.04)	0.50 (0.04)	0.075 (0.004)	0.047 (0.004)
WV	0.49 (0.06)	0.43 (0.05)	0.029 (0.003)	0.022 (0.004)
Central	0.29 (0.01)	0.44 (0.01)	0.078 (0.001)	0.061 (0.001)
AR	0.20 (0.02)	0.40 (0.03)	0.128 (0.006)	0.071 (0.005)
CO	0.80 (0.06)	0.60 (0.06)	0.014 (0.002)	0.032 (0.004)
IA	0.36 (0.03)	0.53 (0.03)	0.038 (0.002)	0.029 (0.002)
KS	0.36 (0.03)	0.46 (0.02)	0.077 (0.003)	0.070 (0.002)
MN	0.35 (0.07)	0.51 (0.07)	0.040 (0.004)	0.027 (0.003)
MO	0.16 (0.01)	0.36 (0.01)	0.177 (0.003)	0.148 (0.004)
MT	0.66 (0.24)	0.56 (0.32)	0.021 (0.006)	0.019 (0.008)
ND	0.60 (0.04)	0.58 (0.03)	0.024 (0.002)	0.015 (0.002)
NE	0.38 (0.05)	0.47 (0.02)	0.042 (0.003)	0.045 (0.003)
NM	0.68 (0.13)	0.44 (0.11)	0.011 (0.003)	0.015 (0.003)
OK	0.26 (0.02)	0.40 (0.03)	0.103 (0.003)	0.085 (0.005)
SD	0.48 (0.03)	0.49 (0.02)	0.040 (0.002)	0.032 (0.002)
TX	0.42 (0.03)	0.46 (0.02)	0.060 (0.003)	0.053 (0.002)
Western	0.31 (0.02)	0.45 (0.01)	0.047 (0.001)	0.041 (0.001)
AZ	0.35 (0.03)	0.50 (0.02)	0.037 (0.002)	0.024 (0.001)
CA	0.29 (0.03)	0.40 (0.02)	0.070 (0.003)	0.088 (0.003)
ID	0.28 (0.06)	0.54 (0.04)	0.031 (0.004)	0.020 (0.002)
NV	0.30 (0.08)	0.60 (0.09)	0.053 (0.007)	0.033 (0.005)
OR	0.38 (0.11)	0.26 (0.25)	0.043 (0.008)	0.027 (0.007)
UT	0.29 (0.06)	0.45 (0.09)	0.027 (0.004)	0.024 (0.006)
WA	0.29 (0.03)	0.44 (0.03)	0.051 (0.003)	0.042 (0.005)

[a] Data combined for Delaware and Maryland.
[b] Data combined for northeastern states: CT, ME, MA, NJ, NH, NY, RI, and VT.

Table 10. Estimated age ratios (juvenile to adult) by state based on the Parts Collection Survey, 2007–2012. Age ratios are corrected for unknown age wings and differential vulnerability. Sample size is the number of wings examined.

Management Unit State	Sample Size	Population Age Ratio	SE[a]
Eastern	57,514	1.54	0.10
AL	2,347	1.81	0.08
DE	1,422	1.63	0.09
GA	2,112	2.16	0.10
IL	5,297	1.55	0.04
IN	7,091	1.58	0.04
KY	3,377	1.66	0.06
LA	1,375	1.80	0.10
MD	2,807	1.61	0.06
MS	2,982	1.38	0.05
NC	5,665	1.41	0.04
OH	2,732	1.55	0.06
PA	2,114	1.18	0.05
SC	6,253	1.63	0.04
TN	2,178	1.78	0.08
VA	7,253	1.35	0.03
WI	1,445	1.52	0.08
WV	1,064	1.70	0.11
Central	49,388	1.04	0.08
AR	2,826	1.50	0.06
CO	5,283	1.15	0.03
IA	462	1.59	0.15
KS	5,495	1.14	0.03
MN	1,106	1.42	0.09
MO	4,781	1.34	0.04
MT	1,507	1.25	0.06
ND	1,662	1.04	0.05
NE	4,739	0.88	0.03
NM	3,146	0.57	0.02
OK	4,457	1.31	0.04
SD	3,107	1.13	0.04
TX	8,778	1.03	0.02
WY	2,039	1.21	0.05
Western	26,405	1.17	0.04
AZ	8,259	0.68	0.02
CA	7,580	1.26	0.03
ID	1,889	1.35	0.06
NV	2,134	1.09	0.05
OR	1,012	1.42	0.09
UT	1,538	0.97	0.05
WA	3,993	1.55	0.05

[a] Standard errors for state 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. Standard errors for management unit estimates based on weighted mean of annual point estimates with weights being the inverse of annual standard errors.

Table 11. Estimates of absolute abundance of mourning doves based on band recovery and harvest data by year and management unit in the United States, 2003–2012.

	Management Unit							
	Eastern		Central		Western		Total (United States)	
Year	N	SE	N	SE	N	SE	N	SE
2003	92,490,254	5,767,968	137,774,201	10,957,899	145,200,897	28,031,571	375,465,352	30,644,967
2004	84,663,413	3,721,925	247,712,752	16,599,452	86,703,965	11,113,079	419,080,130	20,319,819
2005	131,058,409	5,568,435	225,502,464	17,038,142	36,112,604	3,648,595	392,673,478	18,292,566
2006	91,441,014	3,703,624	239,442,373	16,280,639	48,506,561	4,483,615	379,389,948	17,288,113
2007	106,828,739	4,818,445	204,949,338	13,887,012	56,383,511	4,140,087	368,161,588	15,271,112
2008	96,266,779	3,997,521	206,652,474	13,631,264	49,907,927	4,138,195	352,827,180	14,795,816
2009	100,738,558	4,154,001	185,839,469	11,702,537	49,926,556	3,388,639	336,504,584	12,871,984
2010	94,189,561	4,382,319	176,576,170	11,653,048	54,683,673	3,850,230	325,449,403	13,031,597
2011	92,951,310	4,779,940	155,125,048	8,873,029	50,835,228	3,852,332	298,911,585	10,789,761
2012	92,730,954	4,793,947	185,977,998	15,290,391	70,351,605	5,600,005	349,060,557	16,974,629

Appendix A. Federal framework dates, season length, and daily bag limit for mourning dove hunting in the United States by management unit, 1918–2012.

	Management Unit								
	Eastern			Central			Western		
Year	Dates[a]	Days	Bag	Dates	Days	Bag	Dates	Days	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
2009–12	Sep 1–Jan 15	70	15	Sep 1–Jan 15[i]	70	15	Sep 1–Jan 15	60[o]	10

[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 limits 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.

[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.

Appendix A. Continued.

[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).

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