U.S. Fish & Wildlife Service

American Woodcock

Population Status 2011

Suggested report citation:

Cooper, T.R., and K. Parker. 2011. American woodcock population status, 2011. U.S. Fish and Wildlife Service, Laurel, Maryland. 17 pp.

All Division of Migratory Bird Management reports are available at:
http://www.fws.gov/migratorybirds/NewsPublicationsReports.html

The cover photo is by Brett Pikula.

AMERICAN WOODCOCK POPULATION STATUS, 2011

THOMAS R. COOPER, U.S. Fish and Wildlife Service, Division of Migratory Bird Management, 5600 American Blvd. West, Suite 950, Bloomington, MN 55437-1458

KERI PARKER, U.S. Fish and Wildlife Service, Division of Migratory Bird Management, Patuxent Wildlife Research Center, 11510 American Holly Dr., Laurel, MD 20708-4002

Abstract: Singing-ground Survey data for 2011 indicate that indices for singing American woodcock (*Scolopax minor*) males in the Eastern and Central Management Regions are not significantly different from 2010. There was no significant 10-year trend for woodcock heard in the Eastern or Central Management Regions during 2001-11. This marks the eighth consecutive year that the 10-year trend estimate was not significant in the Eastern Region, while the 10-year trend in the Central Management Region returns to non-significance after being negative last year. Both regions have a long-term (1968-11) declining trend of -1.0% per year. The 2010 recruitment index for the U.S. portion of the Eastern Region (1.5 immatures per adult female) was 1.2% greater than the 2009 index and 10.2% below the long-term regional index, while the recruitment index for the U.S. portion of the Central Region (1.6 immatures per adult female) was 30.2% higher than the 2009 index and was 2.1% lower than the long-term regional index. Estimates from the Harvest Information Program indicated that U.S. woodcock hunters in the Eastern Region spent 146,700 days afield and harvested 99,800 woodcock during the 2010-11 season, while in the Central Region, hunters spent 392,400 days afield and harvested 233,100 woodcock.

INTRODUCTION

The American woodcock is a popular game bird throughout eastern North America. The management objective of the U.S. Fish and Wildlife Service (FWS) is to increase populations of woodcock to levels consistent with the demands of consumptive and non-consumptive users (U.S. Fish and Wildlife Service 1990). Reliable annual population estimates, harvest estimates, and information on recruitment and distribution are essential for comprehensive woodcock management. Unfortunately, this information is difficult and often impractical to obtain. Woodcock are difficult to find and count because of their cryptic coloration, small size, and preference for areas with dense vegetation. The Singing-ground Survey (SGS) was developed to provide indices to changes in abundance. The Wing-collection Survey (WCS) provides annual indices of woodcock recruitment. The Harvest Information Program (HIP) utilizes a sampling frame of woodcock hunters to estimate harvest and days spent afield.

This report summarizes the results of these surveys and presents an assessment of the population status of woodcock as of early June 2011. The report is intended to assist managers in regulating the sport harvest of woodcock and to draw attention to areas where management actions are needed. Historical woodcock hunting regulations are summarized in Appendix A.

The primary purpose of this report is to facilitate the prompt distribution of timely information. Results are preliminary and may change with the inclusion of additional data.

METHODS

Woodcock Management Regions

Woodcock are managed on the basis of two regions or populations, Eastern and Central, as recommended by Owen et al. (1977; Fig. 1). Coon et al. (1977) reviewed the concept of management units for woodcock and recommended the current configuration over several alternatives. This configuration was biologically justified because analysis of band recovery data indicated that there was little crossover between the regions (Krohn et al. 1974, Martin et al. 1969). Furthermore, the boundary between the two regions conforms to the boundary between the Atlantic and Mississippi Flyways. The results of the Wing-collection and Singing-ground surveys, as well as the Harvest Information Program, are reported by state or province, and management region. Although state and province level results are included in this report, analyses are designed to support management decisions made at the management region scale.

Singing-ground Survey

The Singing-ground Survey was developed to exploit the conspicuous courtship display of the male woodcock. Early studies demonstrated that counts of singing males provide indices to woodcock populations and could be used to monitor annual changes (Mendall and Aldous 1943, Goudy 1960, Duke 1966, and Whitcomb 1974). Before 1968, counts were conducted on non-randomly-located routes. Beginning in 1968, routes were relocated along lightly-traveled secondary roads in the center of randomly-chosen 10-minute

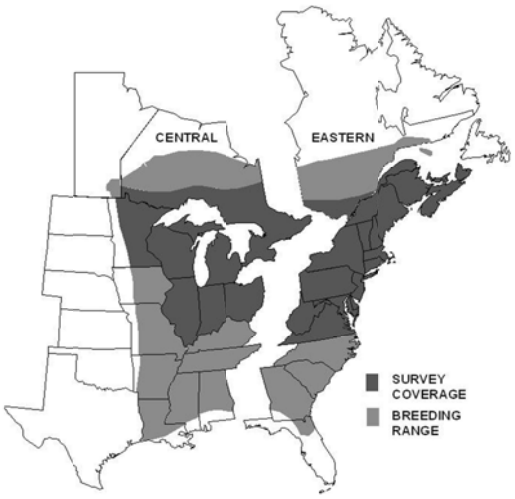


Fig. 1. Woodcock management regions, breeding range, and Singing-ground Survey coverage.

degree blocks within each state and province in the central and northern portions of the woodcock's breeding range (Fig. 1). Data collected prior to 1968 are not included in this report.

Each route was 3.6 miles (5.4 km) long and consisted of 10 listening points. The routes were surveyed shortly after sunset by an observer who drove to each of the 10 stops and recorded the number of woodcock heard peenting (the vocalization by displaying male woodcock on the ground). Acceptable dates for conducting the survey were assigned by latitude to coincide with peaks in courtship behavior of local woodcock. In most states, the peak of courtship activity (including local woodcock and woodcock still migrating) occurred earlier in the spring and local reproduction may have already been underway when the survey was conducted. However, it was necessary to conduct the survey during the designated survey dates in order to minimize the counting of migrating woodcock. Because adverse weather conditions may affect courtship behavior and/or the ability of observers to hear woodcock, surveys were only conducted when wind, precipitation, and temperature conditions were within prescribed limits.

The survey consists of about 1,500 routes. In order to avoid expending unnecessary resources and funds, approximately one half of these routes are surveyed each year. The remaining routes are carried as "constant zero" routes. Routes for which no woodcock are heard for 2 consecutive years enter this constant zero status and are not run for the next 5 years. If woodcock are heard on a constant zero route when it is next run, the route reverts to normal status and is run again each year. Data from constant zero routes are included in the analysis only for the years they were actually surveyed. Sauer and Bortner (1991) reviewed the implementation and analysis of the Singing-ground Survey in more detail.

Trends were estimated using a hierarchical model. Sauer et al. (2008) describe a hierarchical log-linear model for estimation of population change from SGS data. In practice, the hierarchical modeling approach provides trend and annual index values that are generally comparable to the estimates provided by the previously used route regression approach (see Link and Sauer 1994 for more information on the route regression approach). 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 as trends are calculated directly from the indices.

With the hierarchical model, the log of the expected value of the counts is modeled as a linear combination of strata-specific intercepts and year effects, a random effect for each unique combination of route and observer, a start-up effect on the route for first year counts of new observers, and overdispersion. In the hierarchical model, the parameters of interest are treated as random and are assumed to follow distributions that are governed by additional parameters. The hierarchical 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. After an initial "burn-in" period, means, medians, and credible (or Bayesian confidence) intervals for the parameters can be estimated from the replicates. Annual indices are defined as exponentiated year 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 percent change per year, while indices are expressed as the number of singing males per route. Annual indices were calculated for the 2 regions and each state and province, while short-term (2010-11), 10-year (2001-11) and long-term (1968-2011) trends were evaluated for each region as well as for each state or province.

Credible Intervals (CI) are used to describe uncertainty around the estimates when fitting hierarchical models using Bayesian methods. If the CI does not overlap 0 for a trend estimate, the trend is considered significant. We present the median and 95th percentile credible intervals of 10,000 estimates (i.e., we simulated 10,000 replicates and thinned by 2), which were calculated after an initial 20,000 iterations to allow the series to converge. Refer to Sauer et al. 2008) and Link and Sauer (2002) for a detailed description of the statistical model and fitting process.

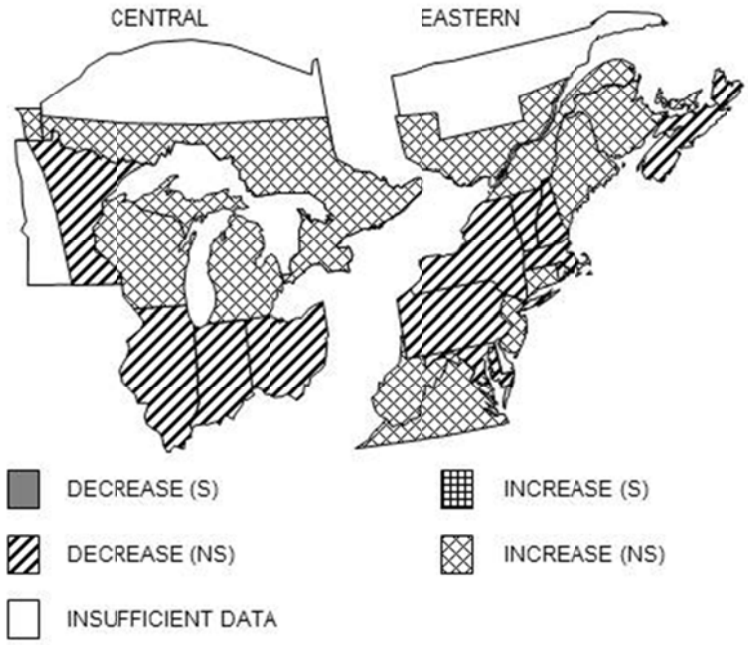


Fig. 2. Short-term trends in the number of American woodcock heard on the Singing-ground Survey, 2010-2011, as determined by the hierarchical modeling method. A significant trend (S) does not include zero in the 95% credible interval, while a non-significant (NS) trend does include zero. Note, no state or province had a significant short-term trend this year.

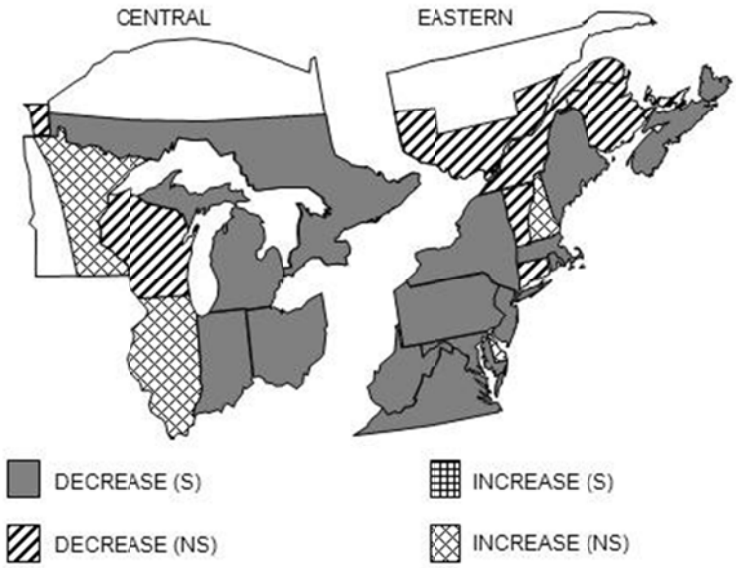


Fig. 3. Long-term trends in the number of American woodcock heard on the Singing-ground Survey, 1968-2011, as determined by the hierarchical modeling method. A significant trend (S) does not include zero in the 95% credible interval, while a non-significant (NS) trend does include zero. Note, no state or province had a significant long-term increase.

The reported sample sizes are the number of routes on which trend estimates are based, which includes any route on which woodcock were ever encountered. Each route was to be surveyed during the peak time of daily singing activity. For editing purposes, "acceptable" times were between 22 and 58 minutes after sunset (or, between 15 and 51 minutes after sunset on overcast evenings). Due to observer error, some stops on some routes were surveyed before or after the peak times of singing activity. Earlier analysis revealed that routes with 8 or fewer acceptable stops tended to be biased low. Therefore, only route observations with at least 9 acceptable stops were included in the analysis. Routes for which data were received after 8 June 2011 were not included in this analysis but will be included in future trend estimates.

Harvest Information Program

The Harvest Information Program (HIP) was cooperatively developed by the FWS and state wildlife agencies to provide reliable annual estimates of hunter activity and harvest for all migratory game birds (Elden et al. 2002). In the past, the annual FWS migratory bird harvest survey (Mail Questionnaire Survey) was based on a sampling frame that consisted solely of hunters who purchased a federal duck stamp. However, people that hunt only non-waterfowl species such as woodcock and doves were not required to purchase a duck stamp, and therefore were not included in that sampling frame. The HIP sampling frame consists of all migratory game bird hunters, thus providing more reliable estimates of woodcock hunter numbers and harvest than we have had in the past. Under this program, state wildlife agencies collect the name, address, and additional information from each migratory bird hunter in their state, and send that information to the FWS. The FWS then selects random samples of those hunters and asks them to voluntarily provide detailed information about their hunting activity. For example, hunters selected for the woodcock harvest survey are asked to complete a daily diary about their woodcock hunting and harvest during the current year's hunting season. Their responses are then used to develop nationwide woodcock harvest estimates. HIP survey estimates of woodcock harvest have been available for woodcock since 1999. Although estimates from 1999-2002 have been finalized, the estimates from 2003-10 should be considered preliminary as refinements are still being made in the sampling frame and estimation techniques. Canadian hunter and harvest estimates, which were obtained through the Canadian National Harvest Survey Program, are presented in Appendix B (Gendron and Collins 2009).

Wing-collection Survey

The primary objective of the Wing-collection Survey is to provide data on the reproductive success of woodcock. The survey is administered as a cooperative effort between woodcock hunters, the FWS, and state wildlife agencies. Participants in the 2010 survey included hunters who either: (1) participated in past surveys; (2) were a subset of hunters that indicated on the Harvest Information Program Survey that they hunted woodcock, or (3) contacted the FWS to volunteer to be included in the survey. Wing-collection Survey participants were provided with prepaid mailing envelopes and asked to submit one wing from each woodcock they bagged. Hunters were asked to record the date of the hunt and the state and county where the bird was shot. Hunters were not asked to submit envelopes for unsuccessful hunts. The age and gender of birds were determined by examining plumage characteristics (Martin 1964, Sepik 1994) during the annual woodcock wingbee conducted by state, federal, and private biologists.

The ratio of immature birds per adult female in the harvest provides an index to recruitment of young into the population. The 2010 recruitment index for each state with $\geq$ 125 submitted wings was calculated as the number of immatures per adult female. The regional indices for 2010 were weighted by the relative contribution of each state to the cumulative number of adult female and immature wings received during 1963-2009.

RESULTS AND DISCUSSION

Singing-ground Survey

Data for 792 routes were submitted by 8 June 2011 (Table 1). Due to adverse weather (cool temperatures and precipitation) this spring, a 5-day survey extension was granted for routes in Pennsylvania, Ohio, Indiana, Illinois, Vermont, Minnesota, and all Canadian provinces except Ontario. Short-term, 10-year, and long-term (1968-2011) trends were estimated using data from 722 routes in the Eastern Region and 712 routes in the Central Region. Short-term analysis indicated that the number of woodcock heard displaying during the 2011 Singing-ground Survey was not significantly different from last year for both Management Regions (Table 1, Fig. 2). Trends for individual states and provinces are reported in Table 1. Consistency in route coverage over time is a critical component of precision in estimation of population change. Low precision of 2-year change estimates reflect the low numbers of routes surveyed by the same observer in both years. Ensuring that observers participate for several years on the same route would greatly enhance the quality of the results.

The 10-year trends (2001-2011) were not significant for either Management Region (Table 1). This marks the eighth straight year the Eastern Region trend has remained stable. The 10-year trend for the Central Region returned to non-significance after indicating a significant decline last year.

There are significant long-term (1968-2011) declines in the breeding population throughout many states and provinces in the Eastern and Central Regions (Table 1, Fig. 3). The long-term trend estimates, rounded to the nearest percent, were the same (-1.0%/ year) for both management regions.

In the Eastern Region, the 2011 index was 2.7 singing-males per route, which was the same as the 2010 index of 2.7 (Fig. 4). In the Central Region, the 2011 index was 2.8 singing-males per route, which was slightly higher than the 2010 index of 2.7 singing-males per route (Fig. 4). Annual indices (1968-2011) by state, province, or region are available in Table 2.

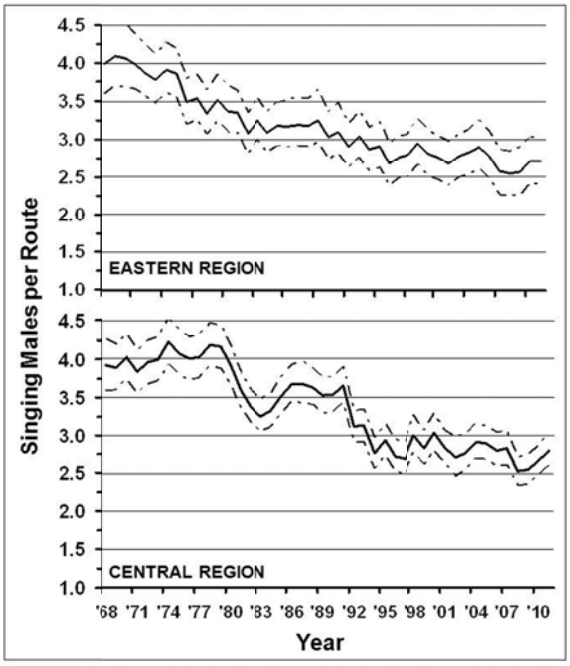


Fig. 4. Annual indices of the number of woodcock heard during the Singing-ground Survey, 1968-2011 as estimated using hierarchical modeling. The dashed lines represent the 95th percentile credible interval.

Wing-collection Survey

A total of 1,354 woodcock hunters (Table 3) from states with woodcock seasons sent in a total of 14,027 usable woodcock wings for the 2010 Wing-collection Survey (Table 4).

The 2010 recruitment index in the U.S. portion of the Eastern Region (1.5 immatures per adult female) was 1.2% greater than the 2009 index (1.5), and 10.2% lower than the long-term (1963-09) regional average (Table 4, Fig 5). In the Central Region, the 2010 recruitment index (1.6 immatures per adult female) was 30.2% greater than the 2009 index (1.2) and was 2.1% lower than the long-term regional average (Table 4, Fig 5). Percent change for all comparisons was calculated using unrounded recruitment indices.

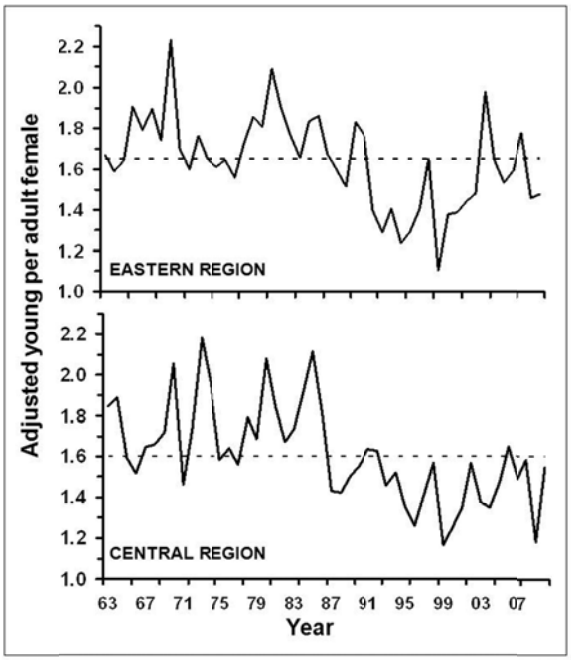


Fig. 5. Weighted annual indices of recruitment (U.S.), 1963-2010. The dashed line is the 1963-2009 average.

Harvest Information Program

Estimates of woodcock harvest, number of active hunters, days afield, and seasonal hunting success from the 2010-11 HIP survey are provided in Table 5. In the Eastern Management Region, woodcock hunters spent approximately 146,700 days afield (Figure 6) and harvested 99,800 birds (Figure 7) during the 2010-11 hunting season. Harvest in 2010 was 13.6% greater than the long-term (1999-2010) average and 57.7% greater than last year in the Eastern Region. Woodcock hunters in the Central Region spent 392,400 days afield (Figure 6) and harvested 233,100 birds (Figure 7) during the 2010-11 hunting season. Harvest in 2010 was 2.2% greater than the long-term (1999-2010) average and 33.1% greater than last year in the Central Region. Although HIP provides statewide estimates of woodcock hunter numbers, it is not possible to develop regional estimates due to the occurrence of some hunters being registered for HIP in more than one state. Therefore, regional estimates of seasonal hunting success rates cannot be determined on a per hunter basis. All HIP estimates from 1999-2002 are final, while those from 2003-2010 are preliminary.

Data from Canada show a long-term decline in both the number of successful woodcock hunters and harvest (Appendix B). The most recent data available from 2009 indicate that ≈2,400 successful hunters harvested ≈ 17,000 woodcock (Appendix B).

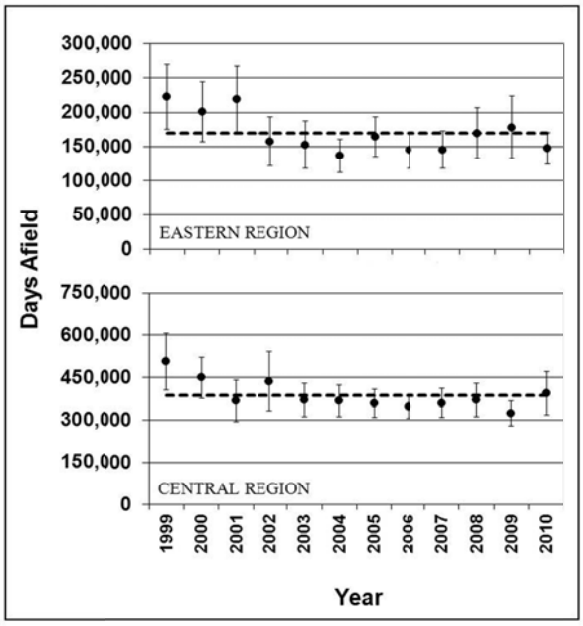


Fig. 6. Harvest Information Program Survey estimates of days spent afield by U.S. woodcock hunters, 1999-2010. The dashed line represents the 1999-2010 average and error bars represent the 95% C.I. of the point estimate.

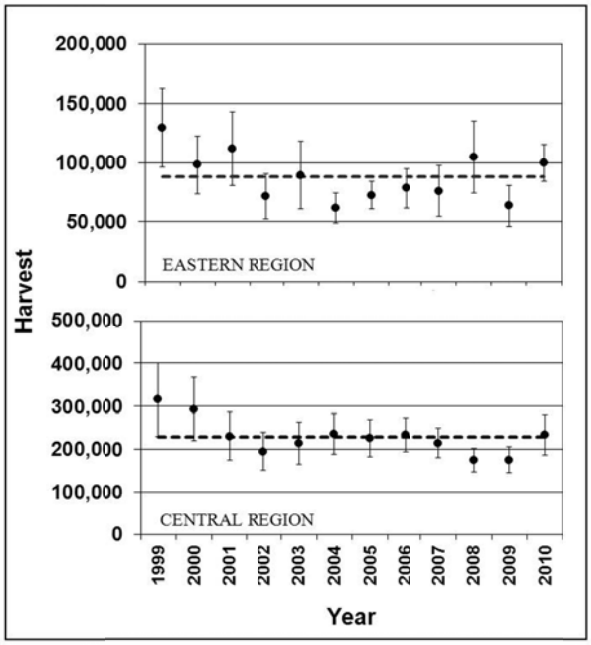


Fig. 7. Harvest Information Program Survey estimates of U.S. woodcock harvest, 1999-2010. The dashed line represents the 1999-2010 average and error bars represent the 95% C.I. of the point estimate.

Acknowledgements

Personnel from the FWS, Canadian Wildlife Service (CWS), U. S. Geological Survey (USGS), Bird Studies Canada (BSC), and many state and provincial agencies and other individuals assisted with collecting Singing-ground Survey data and processing wings at the woodcock wingbee. Special thanks to K. Connor (NB), B. Crenshaw (VT), B. Crose (OH), R. Dibblee (PE), M. DiBona (DE), T. Engelmeyer (VA), V. Frawley (MI), J. Garris (NJ), B. Harvey (MD), J. Hayden (ON), M. Huang (CT), R. Marshalla (IL), G. Parsons (NS), E. Robinson (NH), D. Scarpitti (MA), A. Stewart (MI), N. Stricker (OH), T. Sutter (NY), B. Tefft (RI), B. Veverka (IN), M. Weaver (PA), S. Wilson (WV), D. Badzinski and E. Van Stam (BSC), M. Gendron, A. Hicks, J. Hughes, A. MacFarlane, J. B. Pollard, E. Reed, J. Rodrigue, and M. Schuster (CWS), and C. Dwyer, S. Kelly, and M. Mills (FWS), for providing state, provincial, and regional Singing-ground Survey coordination. Special appreciation is extended to Ian Gregg and Lisa Williams (PA) for coordinating local logistics and hosting the 2011 wingbee held at Bald Eagle State Park, PA. Other individuals that participated in the wingbee were: N. Thomas, J. Dunn and J. Stempka (PA), K. Daly (U of MN), A. Weik (Ruffed Grouse Society), D. Sullins (SFASU), Sutter (NY), M. Olinde (LA-retired), J Dugay (LA), E. Johnson, (MN-retired), V. Frawley and A. Stewart (MI), E. Harper (KY), D. McAuley and D. Krementz (USGS), B. Allen, W. Brininger, R. Brown, T. Cooper, T. Edwards, L. Mills, C. Mitchell, K. Parker, R. Rau, and K. Sturm (USFWS). We especially thank all woodcock hunters that sent in wings. The Branch of Harvest Surveys within the Division of Migratory Bird Management (USFWS) mailed Wing-collection Survey materials, organized wing submissions, assisted with data management, and provided Harvest Information Program estimates (special thanks to H. Spriggs, K. Wilkins, and B. Raftovich). R. Maruthalingam (USFWS) assisted in maintaining the website and developing data management applications for the Singing-ground Survey. K. Magruder (USFWS) provided invaluable assistance with data management and entry. R. Rau (USFWS) developed and maintained the data entry website, provided guidance and historical perspective regarding Singing-ground Survey implementation, and provided assistance with data screening and management. J. Sauer (USGS) developed computer programs for calculating trends and indices from Singing-ground Survey data and conducted this year's analyses. R. Rau, G. Zimmerman, J. Kelley, K. Richkus, K. Wilkins, and J. Sauer reviewed a draft of parts or all of this report and provided helpful comments.

Literature Cited

Coon, R. A., T. J. Dwyer, and J. W. Artmann. 1977. Identification of harvest units for the American woodcock. Proceedings of the American Woodcock Symposium. 6:147-153.

Duke, G. E. 1966. Reliability of censuses of singing male woodcock. Journal of Wildlife Management 30:697-707.

Elden, R.C., W.V. Bevill, P.I. Padding, J.E. Frampton, and D.L. Shroufe. 2002. Pages 7-16 *in* J.M. Ver Steeg and R.C. Elden, compilers. Harvest Information Program: Evaluation and recommendations. International Association of Fish and Wildlife Agencies, Migratory Shore and Upland Game Bird Working Group, Ad Hoc Committee on HIP, Washington, D. C.

Gendron, M.H., and B.T. Collins. 2009. National Harvest Survey web site Version 1.2. Migratory Bird Populations Division, National Wildlife Research Centre, Canadian Wildlife Service, Ottawa, Ontario. <http://www.cws-scf.ec.gc.ca/harvest/default_e.cfm>.

Goudy, W. H. 1960. Factors affecting woodcock spring population indexes in southern Michigan. M. S. Thesis. Michigan State University, E. Lansing, MI.

Krohn, W. B., F. W. Martin, and K. P. Burnham. 1974. Band recovery distribution and survival estimates of Maine woodcock. 8pp. *In* Proceedings of the Fifth American Woodcock Workshop, Athens, GA.

Link, W. A., and J. R. Sauer. 2002. A hierarchial model of population change with application to Cerulan Warblers. Ecology 83:2832-2840.

Link, W. A., and J. R. Sauer. 1994. Estimating equations estimates of trends. Bird Populations 2:23-32.

Martin, F. W. 1964. Woodcock age and sex determination from wings. Journal of Wildlife Management 28:287-293.

Martin, F. W., S. O. Williams III, J. D. Newsom, and L. L. Glasgow. 1969. Analysis of records of Louisiana-banded woodcock. Proceedings of the 3rd Annual Conference of the Southeastern Association of Game and Fish Commissioners 23:85-96.

Mendall, H. L., and C. M. Aldous. 1943. The ecology and management of the American woodcock. Maine Cooperative Wildlife Research Unit, University of Maine, Orono.

Owen, R. B., Jr., J. M. Anderson, J. W. Artmann, E. R. Clark, T. G. Dilworth, L. E. Gregg, F. W. Martin, J. D. Newsom, and S. R. Pursglove, Jr. 1977. American woodcock (*Philohela minor* = *Scolopax minor* of Edwards 1974), Pages 149-186 *in* G. C. Sanderson, editor. Management of migratory shore and upland game birds in North America. International Association of Fish and Wildlife Agencies, Washington, D. C.

Sauer, J. R., and J. B. Bortner. 1991. Population trends from the American Woodcock Singing-ground Survey, 1970-88. Journal of Wildlife Management 55:300-312.

Sauer, J. R., W. A. Link, W. L. Kendall, J.R. Kelley, and D. K. Niven. 2008. A hierarchial model for estimating change in American woodcock populations. Journal of Wildlife Management, 72 (1):204-214.

Sepik, G. F. 1994. A woodcock in the hand. Ruffed Grouse Society, Coraopolis, PA.

U. S. Fish and Wildlife Service. 1990. American woodcock management plan. U. S. Fish and Wildlife Service. Washington, D. C.

Whitcomb, D. A. 1974. Characteristics of an insular woodcock population. Michigan Department of Natural Resources, Wildlife Division Report 2720.

Table 1. Short-term (2010-11), 10-year (2001-2011), and long-term (1968-2011) trends (% change per year[a]) in the number of American woodcock heard during the Singing-ground Survey as determined by using the hierarchical log-linear modeling technique (Sauer et al. 2008).

State, Province, or Region	Number of routes[b]	2010-2011				2001-2011			1968-2011		
		n[c]	% change	95%	CI[d]	% change	95%	CI[d]	% change	95%	CI[d]
CT	5	11	7.47	-24.61	108.99	-0.97	-5.14	7.57	-2.15	-4.18	0.22
DE[e]	0	3	-----	--------	--------	------	-------	------	0.40	-4.75	6.99
ME	50	70	4.93	-12.98	28.00	0.40	-1.57	2.69	-1.01	-1.52	-0.48
MD	9	25	-5.50	-32.10	17.52	-4.12	-8.07	-1.78	-3.48	-5.12	-2.30
MA	9	21	-1.98	-28.08	32.25	-1.60	-4.46	1.84	-1.68	-2.75	-0.78
NB	49	69	1.58	-15.93	22.95	0.28	-1.96	2.57	-0.67	-1.52	0.06
NH	15	18	-9.22	-34.91	15.50	-0.09	-3.21	2.72	0.14	-0.79	1.05
NJ	11	19	14.97	-25.41	130.83	-5.81	-10.44	-0.34	-5.56	-6.87	-4.05
NY	71	115	-5.48	-19.01	9.64	0.13	-1.53	2.18	-1.01	-1.45	-0.51
NS	36	63	-4.79	-22.54	12.77	-0.79	-2.81	1.11	-0.85	-1.46	-0.34
PA	33	77	-10.30	-32.33	10.19	-1.08	-3.48	1.56	-1.19	-1.98	-0.43
PEI	9	13	2.57	-24.85	51.38	-0.73	-4.43	3.71	-0.75	-2.45	0.75
QUE	21	60	3.19	-21.35	45.84	-0.15	-2.87	3.17	-0.45	-1.53	0.43
RI	2	3	-10.00	-62.82	122.85	-9.97	-18.10	-2.10	-9.61	-12.89	-7.20
VT	22	23	-3.35	-32.45	36.81	-0.51	-4.16	3.25	-0.42	-1.41	0.67
VA	12	75	2.18	-29.06	65.21	-4.33	-7.74	0.59	-5.15	-6.33	-4.14
WV	23	57	0.92	-17.85	35.89	-2.12	-4.18	0.90	-2.45	-3.16	-1.61
Eastern	**377**	**722**	**-0.24**	**-9.77**	**11.95**	**-0.18**	**-1.22**	**1.02**	**-0.88**	**-1.24**	**-0.55**
IL	32	45	-15.27	-60.01	72.89	-1.62	-9.49	6.11	1.27	-1.10	3.76
IN	13	60	-16.21	-54.49	36.23	-5.26	-11.01	-0.54	-4.40	-5.76	-3.21
MB[f]	11	28	17.82	-12.63	73.60	1.23	-1.94	5.28	-0.18	-1.42	1.29
MI	103	149	12.10	-1.71	28.31	0.39	-1.16	1.99	-0.77	-1.18	-0.35
MN	73	120	-1.99	-16.29	14.33	0.82	-0.88	2.61	0.35	-0.25	1.00
OH	29	72	-1.11	-23.03	27.13	-0.83	-3.28	2.43	-1.57	-2.29	-0.86
ON	87	149	6.55	-9.99	26.17	-1.19	-3.12	0.77	-1.08	-1.55	-0.59
WI	67	117	8.52	-8.91	29.90	0.67	-1.22	2.77	-0.38	-0.90	0.16
Central	**415**	**712**	**4.87**	**-3.18**	**13.36**	**-0.14**	**-1.05**	**0.79**	**-0.76**	**-0.99**	**-0.53**
Continent	**792**	**1434**	**2.28**	**-3.99**	**9.68**	**-0.16**	**-0.84**	**0.59**	**-0.82**	**-1.04**	**-0.61**

[a] Median of route trends estimated used hierarchical modeling. To estimate the total percent change over several years, use: $(100((\%\ change/100)+1)^{y})-100$, where y is the number of years. Note: extrapolating the estimated trend statistic (% change per year) over time (e.g., 30 years) may exaggerate the total change over the period.

[b] Total number of routes surveyed in 2011 for which data was received by 8 June, 2011.

[c] Number of routes with at least one year of non-zero data between 1968 and 2011.

[d] 95% credible interval, if the interval overlaps zero, the trend is considered non-significant.

[e] Short-term and 10-year trends not estimated since all routes were in CZ status during 2011.

[f] Manitoba began participating in the Singing-ground Survey in 1992.

Table 2. Breeding population indices (singing-males per route) for American woodcock from the Singing-ground Survey, 1968-2011. These indices are based on 1968-2011 trends that were estimated using hierarchical modeling techniques. Blanks indicate no data were available for that year.

State, Province, or Region	Year															
	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Eastern Region																
CT		2.67	2.82	2.49	2.67	2.45	2.49	2.51	2.01	2.06	1.73	1.85	1.83	1.82	2.03	1.82
DE	0.70	0.59	0.76	0.51	0.66	0.85	0.77	1.74	0.40	0.61	0.42	0.50	0.70	0.69	0.70	1.21
ME	5.60	5.52	6.10	5.53	5.47	5.66	5.89	6.10	5.67	4.80	4.63	5.10	4.38	5.05	3.90	4.33
MD	1.83	1.83	1.71	1.68	1.61	1.56	1.50	1.46	1.34	1.33	1.29	1.24	1.24	1.19	1.13	1.05
MA		3.17	3.23	3.26	2.94	3.24	3.06	2.68	2.66	2.69	2.61	2.73	2.45	2.60	2.37	2.24
NB		8.50	8.24	7.62	7.42	6.91	7.45	7.98	6.07	7.32	5.62	6.02	4.98	5.70	5.33	5.36
NH		3.33	3.56	3.19	3.65	3.10	3.55	3.37	3.35	3.41	3.34	3.27	3.60	3.50	3.07	3.17
NJ	5.06	4.76	4.85	5.89	4.46	5.25	4.85	4.08	3.18	3.15	2.60	3.03	2.37	2.19	2.05	2.19
NY	4.09	4.21	3.71	4.03	3.87	3.93	3.98	3.58	3.60	3.58	3.24	3.52	3.80	3.61	3.31	3.53
NS	3.93	3.63	3.27	3.66	3.45	3.60	3.68	3.54	3.46	3.44	3.58	3.29	3.28	3.12	3.03	3.18
PA	2.14	2.03	2.19	2.12	2.06	2.07	1.84	1.87	1.88	1.85	1.79	1.87	1.69	1.67	1.63	1.66
PEI		4.42	4.45	4.94	4.13	4.12	4.31	5.06	4.45	4.27	4.11	4.21	3.62	3.48	3.57	3.94
QUE			6.55	6.53	6.38	6.08	6.42	6.24	5.53	5.80	6.30	6.59	6.77	6.14	5.85	6.36
RI		2.42	2.22	2.51	2.03	1.86	1.56	1.36	1.24	1.11	0.92	0.88	0.79	0.69	0.71	0.59
VT		2.92	3.60	3.21	3.69	3.16	3.61	3.93	4.04	4.19	3.08	3.26	3.08	2.70	1.98	2.73
VA		1.61	1.61	1.37	1.27	1.10	1.33	1.18	1.13	1.08	0.93	0.90	0.78	0.84	0.83	0.75
WV	1.61	1.62	1.49	1.44	1.51	1.42	1.37	1.37	1.30	1.24	1.11	1.20	1.14	1.21	1.13	1.10
Region	**4.00**	**4.10**	**4.07**	**3.99**	**3.87**	**3.78**	**3.92**	**3.86**	**3.50**	**3.55**	**3.34**	**3.52**	**3.37**	**3.35**	**3.07**	**3.25**
Central Region																
IL			0.41	0.60	0.55	0.46	0.55	0.64	0.46	0.55	0.67	0.48	0.40	0.60	0.41	1.00
IN	1.83	1.28	1.22	0.97	1.39	1.25	1.11	0.94	0.99	0.91	0.91	1.10	0.87	0.99	0.69	0.75
MB																
MI	6.73	6.61	6.66	6.25	6.31	6.55	7.26	7.27	6.95	6.48	6.93	6.84	6.49	5.79	6.06	5.16
MN		3.32	3.30	3.66	3.40	3.83	4.41	3.94	4.00	4.11	4.30	3.93	4.52	4.02	3.91	3.58
OH			1.85	1.73	1.72	1.57	1.71	1.52	1.70	1.65	1.49	1.41	1.43	1.53	1.34	1.40
ON	8.21	9.13	9.58	8.77	9.54	9.27	9.32	8.87	9.01	9.21	9.48	9.71	9.01	8.13	6.90	6.82
WI	3.43	3.46	3.96	3.70	3.69	3.86	3.94	4.00	3.65	4.04	4.15	4.31	3.51	3.00	3.16	3.05
Region	**3.91**	**3.88**	**4.02**	**3.83**	**3.96**	**3.99**	**4.22**	**4.08**	**4.00**	**4.02**	**4.18**	**4.15**	**3.91**	**3.57**	**3.36**	**3.25**
Continent	**3.96**	**3.99**	**4.05**	**3.91**	**3.91**	**3.89**	**4.07**	**3.97**	**3.74**	**3.78**	**3.76**	**3.84**	**3.64**	**3.46**	**3.22**	**3.25**

Table 2. Continued

State, Province, or Region	Year															
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Eastern Region																
CT	1.69	1.71	1.78	1.58	1.82	1.46	1.47	1.49	1.39	1.26	1.33	1.40	1.40	1.26	1.23	1.31
DE	0.56	0.63	0.72	0.73	0.75	0.74	1.17	0.52	0.58	0.77	0.77	0.77	0.86	0.87	1.43	0.69
ME	4.36	4.48	4.78	5.05	4.63	4.79	3.81	4.29	3.75	4.00	3.71	3.79	3.22	3.45	3.42	3.73
MD	1.03	0.99	0.94	0.91	0.88	0.86	0.83	0.79	0.74	0.74	0.71	0.68	0.67	0.64	0.60	0.59
MA	2.38	2.36	2.29	2.27	2.24	2.12	2.09	2.09	1.97	1.92	1.92	1.91	1.86	1.90	1.83	2.05
NB	4.87	5.11	4.27	4.72	5.45	6.49	5.50	5.11	4.93	5.93	6.04	5.65	4.91	5.53	5.46	6.28
NH	3.13	3.27	4.04	3.53	3.50	3.47	3.32	3.60	3.36	3.38	3.43	3.81	3.75	3.72	3.70	3.99
NJ	2.15	2.01	1.81	1.99	1.58	1.51	1.43	1.36	1.19	1.07	0.95	1.06	1.00	0.83	0.87	0.89
NY	3.13	3.47	3.21	3.14	3.34	2.98	3.32	3.34	3.10	3.03	2.71	2.81	2.68	2.72	2.74	2.80
NS	3.05	3.15	3.21	2.95	3.11	3.08	2.92	3.07	3.06	3.08	2.86	2.96	2.98	2.85	2.89	3.09
PA	1.69	1.62	1.67	1.61	1.57	1.53	1.63	1.77	1.51	1.57	1.38	1.53	1.48	1.44	1.56	1.46
PEI	3.96	3.90	4.10	3.56	3.95	4.08	3.68	3.63	3.60	3.46	3.29	3.45	3.71	3.60	3.45	3.26
QUE	5.86	6.30	6.48	6.50	6.19	6.48	5.89	6.10	5.94	6.12	5.80	5.87	5.33	5.53	5.63	5.82
RI	0.54	0.47	0.42	0.39	0.35	0.31	0.28	0.25	0.23	0.21	0.18	0.17	0.15	0.13	0.12	0.11
VT	2.66	2.44	2.65	3.10	3.35	3.26	3.04	3.15	2.28	2.60	2.47	2.47	2.37	2.51	2.77	3.18
VA	0.93	0.58	0.62	0.60	0.54	0.49	0.51	0.46	0.47	0.44	0.40	0.36	0.34	0.36	0.31	0.31
WV	1.05	1.01	1.00	0.97	0.93	0.92	0.92	0.86	0.85	0.82	0.80	0.83	0.77	0.76	0.72	0.72
Region	**3.08**	**3.18**	**3.17**	**3.19**	**3.18**	**3.25**	**3.03**	**3.10**	**2.90**	**3.03**	**2.87**	**2.91**	**2.68**	**2.77**	**2.79**	**2.94**
Central Region																
IL	0.57	0.84	0.75	1.23	0.54	0.77	0.52	0.84	0.62	0.75	0.63	0.54	0.71	0.61	0.75	0.79
IN	0.70	0.65	0.76	0.72	0.62	0.57	0.73	0.68	0.60	0.52	0.50	0.47	0.44	0.42	0.51	0.44
MB									5.42	5.59	5.75	5.92	5.12	3.65	4.43	4.45
MI	5.79	5.91	6.15	5.77	6.10	5.87	5.90	6.44	5.10	5.18	4.60	5.07	4.84	4.68	5.49	4.63
MN	3.46	3.81	3.98	3.96	4.36	3.66	4.33	4.15	3.57	3.60	3.28	3.43	3.27	2.93	3.33	3.41
OH	1.41	1.30	1.27	1.25	1.33	1.17	1.41	1.29	1.27	1.19	1.18	1.15	1.16	1.02	1.15	0.99
ON	6.86	7.67	7.87	7.76	7.78	7.83	7.36	7.46	6.96	6.66	5.70	6.26	5.11	5.76	6.03	5.54
WI	3.32	3.24	3.69	3.74	3.51	3.56	3.38	3.42	2.76	2.90	2.57	2.66	2.61	2.48	2.64	2.96
Region	**3.32**	**3.52**	**3.67**	**3.67**	**3.63**	**3.53**	**3.53**	**3.65**	**3.12**	**3.12**	**2.76**	**2.94**	**2.73**	**2.69**	**3.00**	**2.83**
Continent	**3.20**	**3.35**	**3.42**	**3.43**	**3.41**	**3.39**	**3.28**	**3.38**	**3.01**	**3.08**	**2.82**	**2.92**	**2.70**	**2.73**	**2.90**	**2.89**

Table 2. Continued

State, Province, or Region	Year											
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Eastern Region												
CT	1.17	1.10	1.03	1.04	1.02	1.03	0.97	0.98	0.99	0.94	0.92	1.05
DE	1.03	0.69	0.79	0.80	0.81	0.80	0.73	0.74	0.71	0.86	0.87	0.87
ME	3.87	3.43	3.20	3.47	3.52	3.62	3.54	3.26	3.31	3.24	3.41	3.58
MD	0.58	0.58	0.53	0.51	0.50	0.47	0.47	0.45	0.44	0.42	0.40	0.38
MA	1.88	1.77	1.78	1.75	1.83	1.68	1.68	1.56	1.66	1.65	1.54	1.51
NB	5.80	6.19	5.88	6.43	6.42	7.00	6.29	5.56	5.36	4.92	6.26	6.36
NH	3.53	3.61	3.62	3.93	3.97	3.94	3.76	3.26	3.39	3.96	3.95	3.56
NJ	0.79	0.74	0.64	0.67	0.55	0.52	0.51	0.52	0.45	0.50	0.35	0.41
NY	2.64	2.58	2.53	2.62	2.77	2.59	2.64	2.47	2.37	2.57	2.77	2.62
NS	3.05	2.92	2.79	2.78	2.89	2.85	2.71	2.71	2.63	2.58	2.85	2.70
PA	1.22	1.40	1.37	1.38	1.39	1.41	1.30	1.27	1.37	1.34	1.41	1.26
PEI	3.45	3.33	2.90	2.97	3.00	3.17	3.32	3.20	2.89	3.19	3.00	3.15
QUE	5.58	5.44	5.48	5.45	5.58	5.88	5.56	5.25	5.26	5.36	5.19	5.40
RI	0.10	0.09	0.08	0.07	0.06	0.06	0.05	0.05	0.04	0.04	0.03	0.03
VT	3.28	2.57	2.33	2.52	2.57	2.77	2.82	2.34	2.15	2.39	2.53	2.44
VA	0.29	0.25	0.24	0.25	0.23	0.21	0.20	0.19	0.19	0.16	0.16	0.16
WV	0.70	0.67	0.65	0.66	0.61	0.59	0.58	0.58	0.57	0.56	0.53	0.54
Region	**2.81**	**2.75**	**2.68**	**2.77**	**2.82**	**2.90**	**2.76**	**2.57**	**2.55**	**2.57**	**2.71**	**2.71**
Central Region												
IL	0.69	0.82	0.70	1.23	1.38	0.66	1.01	0.71	0.69	0.64	0.82	0.70
IN	0.39	0.44	0.34	0.32	0.37	0.37	0.30	0.29	0.29	0.28	0.30	0.25
MB	4.64	4.74	3.86	4.53	4.19	5.08	4.27	4.57	4.30	4.61	4.54	5.39
MI	4.90	4.60	4.69	4.87	4.92	4.79	4.47	4.40	4.10	4.13	4.26	4.78
MN	3.85	3.55	3.02	3.09	3.16	3.49	3.36	3.38	3.07	3.36	3.94	3.86
OH	1.03	1.03	0.98	0.94	1.17	1.07	1.04	0.86	0.88	1.00	0.96	0.95
ON	6.52	5.74	5.88	5.28	5.73	5.98	5.73	6.06	5.17	4.94	4.79	5.10
WI	2.81	2.71	2.36	2.51	2.56	2.87	2.66	3.04	2.58	2.62	2.67	2.90
Region	**3.03**	**2.84**	**2.71**	**2.76**	**2.92**	**2.90**	**2.80**	**2.83**	**2.53**	**2.55**	**2.67**	**2.80**
Continent	**2.92**	**2.79**	**2.69**	**2.77**	**2.87**	**2.90**	**2.78**	**2.70**	**2.54**	**2.56**	**2.69**	**2.75**

Table 3. The number of U.S. hunters by state that submitted woodcock wings for the 2009-10 and 2010-11 Wing-collection Surveys.

State of residence	Number of Hunters who submitted woodcock wings[a]	
	2009-10 Season	2010-11 Season
AL	1	2
AR	1	2
CT	26	26
DE	0	2
FL	1	0
GA	5	3
IL	3	2
IN	15	18
IA	7	5
KS	0	0
KY	0	1
LA	16	21
ME	184	158
MD	12	12
MA	51	47
MI	309	304
MN	92	93
MS	1	1
MO	16	16
NE	0	0
NH	72	78
NJ	19	19
NY	132	142
NC	8	6
ND	0	0
OH	13	15
OK	0	0
PA	62	59
RI	2	2
SC	11	9
TN	3	3
TX	1	3
VT	51	67
VA	9	10
WV	17	18
WI	228	210
Total	**1,368**	**1,354**

[a] Number of hunters that submitted envelopes in current year. This number may include a small number of hunters that were sent envelopes in prior years and who subsequently submitted wings from birds shot in current survey year. In addition, some hunters h in more than one state

Table 4. Number of woodcock wings received from hunters, and indices of recruitment in the U.S. Recruitment indices for individual states with ≥125 submitted wings were calculated as the ratio of immatures per adult female. The regional indices for 2010 were weighted by the relative contribution of each state to the cumulative number of adult female and immature wings received during 1963-2009.

State or Region of harvest	Wings received						Recruitment index	
	Total		Adult females		Immatures			
	1963-09	2010	1963-09	2010	1963-09	2010	1963-09	2010
Eastern Region								
CT	14,046	210	3,103	44	8,635	126	2.8	2.9
DE	458	8	64	0	320	6	5.0	
FL	678	0	153	0	422	0	2.8	
GA	3,141	21	969	12	1,354	7	1.4	
ME	82,202	1,546	24,284	488	41,088	744	1.7	1.5
MD	4,239	84	1,057	27	2,370	47	2.2	
MA	22,807	382	7,018	147	11,163	151	1.6	1.0
NH	32,807	830	10,653	290	15,156	359	1.4	1.2
NJ	26,120	216	6,034	50	15,448	133	2.6	2.7
NY	59,255	1,334	19,919	489	27,074	511	1.4	1.0
NC	3,515	120	1,074	47	1,723	47	1.6	
PA	31,171	422	9,895	134	14,355	202	1.5	1.5
RI	2,440	4	467	0	1,619	4	3.5	
SC	3,036	155	932	46	1,396	75	1.5	1.6
VT	25,308	690	8,247	283	11,665	262	1.4	0.9
VA	4,995	72	1,276	23	2,742	35	2.1	
WV	5,979	124	1,802	38	3,004	63	1.7	
Region	**322,197**	**6,218**	**96,947**	**2,118**	**159,534**	**2,772**	**1.7**	**1.5**
Central Region								
AL	924	30	251	11	429	9	1.7	
AR	530	6	168	2	218	4	1.3	
IL	1,471	5	337	1	832	3	2.5	
IN	8,041	182	2,053	47	4,425	107	2.2	2.3
IA	1,210	60	393	18	552	27	1.4	
KS	49	0	9	0	26	0		
KY	1,147	5	279	2	596	2	2.1	
LA	31,651	390	7,088	92	20,494	249	2.9	2.7
MI	124,250	3,125	40,680	1,020	61,064	1,461	1.5	1.4
MN	36,082	1,145	12,620	396	15,785	507	1.3	1.3
MS	1,777	10	504	1	906	6	1.8	
MO	3,842	147	1,001	45	1,890	69	1.9	1.5
NE	13	0	5	0	6	0		
ND	3	0	3	0	0	0		
OH	14,660	136	4,490	53	6,907	49	1.5	0.9
OK	172	0	38	0	91	0	2.4	
TN	1,188	26	307	7	609	11	2.0	
TX	1,018	20	276	11	513	8	1.9	
WI	77,886	2,522	25,967	875	37,035	1,168	1.4	1.3
Region	**305,914**	**7,809**	**96,469**	**2,581**	**152,378**	**3,680**	**1.6**	**1.6**

Table 5. Preliminary estimates of woodcock harvest, hunter numbers, days afield, and hunter success from the 2010-11 Harvest Information Program (note: all estimates rounded to the nearest 100 for harvest, hunters, and days afield).

	Harvest		Active woodcock hunters		Days afield		Season harvest per hunter	
Eastern	**Total**	**+/- 95% CI[a]**	**Total**	**+/- 95% CI**	**Total**	**+/- 95% CI**	**Total**	**+/- 95% CI**
CT	700	54	700	31	3,200	39	0.94	62
DE[c]	900	363	300	82	1,600	197	2.37	305
FL	200	195	200	110	400	119	1.00	223
GA	10,300	196	3,400	196	3,400	196	3.00	277
ME	31,700	55	7,100	33	40,800	52	4.47	64
MD	2,000	160	1,100	99	2,100	92	1.81	188
MA	2,600	27	900	27	5,300	32	2.82	38
NH	9,500	35	2,300	30	14,200	35	4.13	46
NJ	3,800	45	1,300	49	3,700	36	2.87	66
NY	12,000	40	4,000	42	13,300	41	2.99	58
NC	3,400	196	3,400	196	3,400	196	1.00	277
PA	12,800	45	9,100	32	35,600	40	1.41	56
RI	400	84	200	100	800	94	2.12	131
SC	1,700	139	5,300	185	11,100	176	0.32	232
VT	6,200	45	1,300	25	5,400	27	4.78	51
VA	1,100	44	300	23	1,200	29	3.69	50
WV	500	32	300	65	1,100	64	1.56	73
Region	**99,800**	**16**	**na[b]**		**146,700**	**16**	**na[b]**	
Central								
AL	600	124	1,200	180	1,500	142	0.50	218
AR	200	164	100	111	200	128	2.00	198
IL	900	106	800	171	1,200	123	1.04	201
IN	3,000	134	1,000	66	3,900	89	2.91	149
IA	1,700	134	3,200	74	7,400	71	0.52	153
KS	0	----	300	193	700	182	0.00	----
KY	6,800	166	2,900	111	6,700	113	2.37	199
LA	33,000	112	9,100	70	28,200	74	3.62	132
MI	93,200	21	31,100	14	159,200	19	3.00	26
MN	34,800	39	13,900	32	55,400	33	2.51	50
MS[c]	1,400	355	1,000	170	3,000	153	2.59	235
MO	3,000	159	2,600	91	6,000	94	1.16	183
NE	100	193	600	178	800	154	0.10	262
OH	1,700	93	1,800	98	4,300	70	0.94	135
OK	3,100	166	1,000	138	17,600	174	3.00	216
TN[c]	5,100	445	1,600	227	4,900	215	4.34	190
TX[c]	2,200	280	10,100	199	25,500	320	0.54	298
WI	42,300	22	14,600	25	65,700	40	2.90	33
Region	**233,100**	**20**	**na[b]**		**392,400**	**20**	**na[b]**	
Total	**332,900**	**11**	**na[b]**		**539,100**	**11**	**na[b]**	

[a] All 95% Confidence Intervals are expressed as a % of the point estimate.

[b] Regional estimates of hunter numbers and hunter success cannot be obtained due to the occurrence of individual hunters being registered in the Harvest Information Program in more than one state.

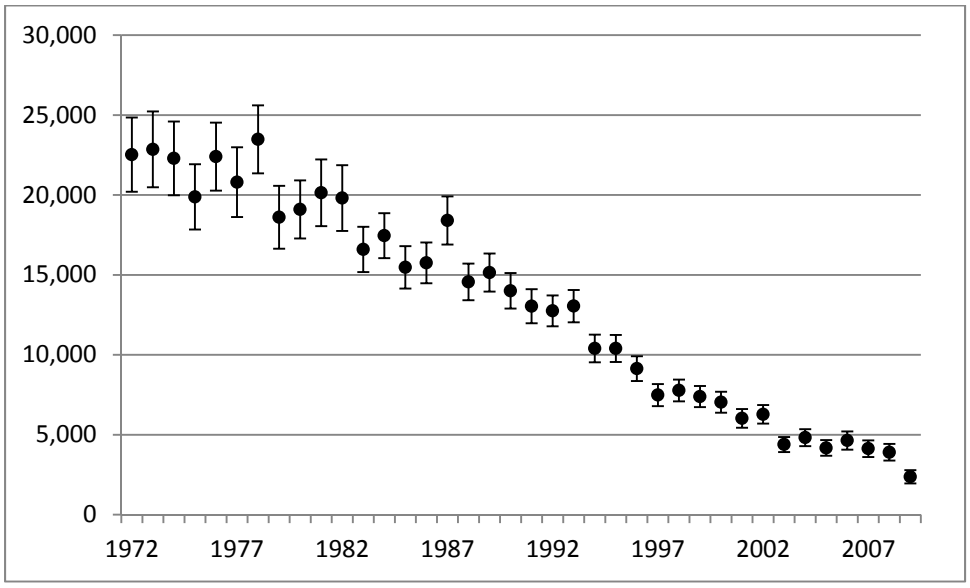
[c] Sample was insufficient for reliable estimation based upon 2010 data, therefore the 1999-2010 average is used.

Appendix A. History of federal framework dates, season lengths, and daily bag limits for hunting American woodcock in the U.S. portion of the Eastern and Central Regions, 1918 - 2010.

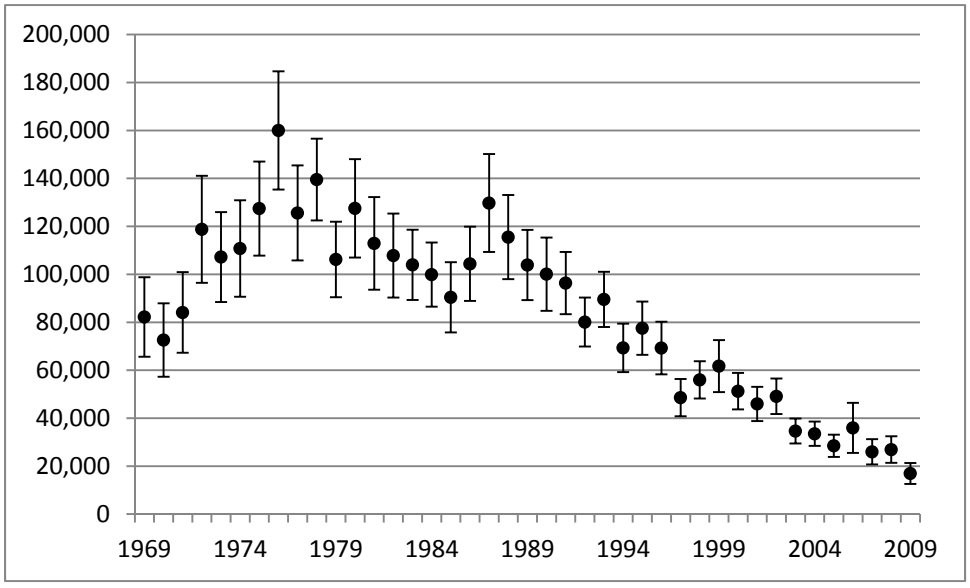
Eastern Region				Central Region			
Year (s)	Outside dates	Season length	Daily bag limit	Year (s)	Outside dates	Season length	Daily bag limit
1918-26	Oct. 1 - Dec. 31	60	6	1918-26	Oct. 1 - Dec. 31	60	6
1927	Oct. 1 - Dec. 31	60	4	1927	Oct. 1 - Dec. 31	60	4
1928-39	Oct. 1 - Dec. 31	30	4	1928-39	Oct. 1 - Dec. 31	30	4
1940-47	Oct. 1 - Jan. 6	15	4	1940-47	Oct. 1 - Jan. 6	15	4
1948-52	Oct. 1 - Jan. 20	30	4	1948-52	Oct. 1 - Jan. 20	30	4
1953	Oct. 1 - Jan. 20	40	4	1953	Oct. 1 - Jan. 20	40	4
1954	Oct. 1 - Jan. 10	40	4	1954	Oct. 1 - Jan. 10	40	4
1955-57	Oct. 1 - Jan. 20	40	4	1955-57	Oct. 1 - Jan. 20	40	4
1958-60	Oct. 1 - Jan. 15	40	4	1958-60	Oct. 1 - Jan. 15	40	4
1961-62	Sep. 1 - Jan. 15	40	4	1961-62	Sep. 1 - Jan. 15	40	4
1963-64	Sep. 1 - Jan. 15	50	5	1963-64	Sep. 1 - Jan. 15	50	5
1965-66	Sep. 1 - Jan. 30	50	5	1965-66	Sep. 1 - Jan. 30	50	5
1967-69	Sep. 1 - Jan. 31	65	5	1967-69	Sep. 1 - Jan. 31	65	5
1970-71	Sep. 1 - Feb. 15	65	5	1970-71	Sep. 1 - Feb. 15	65	5
1972-81	Sep. 1 - Feb. 28	65	5	1972-90	Sep. 1 - Feb. 28	65	5
1982	Oct. 5 - Feb. 28	65	5	1991-96	Sep. 1 - Jan. 31	65	5
1983-84	Oct. 1 - Feb. 28	65	5	1997-2010	Sep. 22[a] - Jan. 31	45	3
1985-96	Oct. 1 - Jan. 31	45	3				
1997-01	Oct. 6 - Jan. 31	30	3				
2002-10	Oct. 1 - Jan. 31	30	3				

[a] Saturday nearest September 22 (September 25th for the 2010 season).

Appendix B. Estimates for Canadian woodcock harvest and the number of successful woodcock hunters in Canada (Gendron and Collins 2009). Data from the 2010 hunting season were not available before this report was completed.



Estimated number of successful woodcock hunters in Canada and associated 95% confidence intervals, 1972-2009.



Estimated woodcock harvest in Canada and associated 95% confidence intervals, 1969-2009.

U.S. Fish and Wildlife Service
Division of Migratory Bird Management
http://www.fws.gov

June 2011

For State Transfer Relay Service: TTY/Voice: 711