

**Supporting Statement B for
Paperwork Reduction Act Submission**

OMB Control Number 1018-0023

Migratory Bird Harvest Surveys

- 1. Describe (including a numerical estimate) the potential respondent universe and any sampling or other respondent selection method to be used. Data on the number of entities (e.g., establishments, State and local government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved.**

Migratory Bird Harvest Information Program and Migratory Bird Hunter Survey: The potential respondent universe is all licensed migratory bird hunters in the 49 States that have migratory bird hunting seasons, approximately 3,800,000 individuals. The universe is stratified by: (1) State, and (2) hunters' hunting activity and success the previous season. A systematic sample is selected within each stratum from the names and addresses in the order in which they are received. Stratum-specific universe and sampling data for forms 3-2056J, 3-2056K, 3-2056L, and 3-2056M, are given in Tables B1-B4 (attached as supplementary documents). Sampling rates vary by State, form, and success strata, and range from <1% to 100%. Because sampling rates vary by State, form, and success strata, weighted and unweighted response rates were calculated to each survey form for 2009. Weighted and unweighted response rates for all five form types average 53% nationally. Response rates for the four HIP survey forms in 2009 were as follows:

Survey form	Unweighted response rate	Weighted response rate
Waterfowl (3-2056J)	0.49	0.53
Dove (3-2056K)	0.53	0.54
Woodcock (3-2056L)	0.56	0.52
Snipe/Coot/Rail/Gallinule (3-2056M)	0.54	0.53

About 4% of the nonresponse rate is due to undeliverable mail.

Parts Collection Survey: Approximately 80,000 duck wings and 21,000 goose tails are collected and examined by biologists out of a universe of 13,500,000 ducks and 3,800,000 geese harvested. These parts are obtained from approximately 6,500 successful waterfowl hunters who return form 3-165 out of a universe of 1,135,000 active waterfowl hunters. Sample sizes for waterfowl are given in Table B5 (see supplementary documents).

The sample of hunters who will be sent from 3-165E consists of approximately 4,100 successful mourning dove hunters from a sample universe of about 1 million active dove hunters. We solicit wings from the first week of the hunting season only. We collect and examine about 50,000 wings from the first week of the hunting season out of a universe of about 8,860,000 birds that are harvested during the first week of the mourning dove hunting

season. Sampling rates vary by State, and range from 55-100% of successful mourning dove hunters responding to Form 3-2056K this previous year. Less than 1% of the harvest during the first week is sampled. Sample sizes for mourning doves are listed in Table B6 (see supplementary documents).

The sample of hunters who are sent form 3-165B consists of approximately 2,000 successful hunters from a sample universe of approximately 200,000 active woodcock (\approx 130,000 hunters), snipe (\approx 30,000 hunters), rail (\approx 10,000 hunters), gallinule (\approx 3,000 hunters), and band-tailed pigeon hunters (\approx 15,000 hunters). Approximately 15,000 wings are collected and examined out of a universe of approximately 500,000 birds harvested. The percent of harvest sampled ranges from $<1\%$ -4% for the species or species groups, with the highest sampling rate applied to woodcock harvest. Table B7 (see supplementary documents) lists sample sizes for woodcock, snipe, rail species, and band-tailed pigeons.

Sandhill Crane Harvest Survey: The universe for sampling is approximately 30,000 individuals who obtain an annual permit to hunt sandhill cranes. Sampling rates are set by State, with 10% of the permittees randomly selected to receive questionnaires in Texas, 20% of the permittees selected in Colorado and North Dakota, and 50% of the permittees contacted in all other States except Wyoming. All permittees in Wyoming are contacted because of the low number of permits issued. Pertinent sampling characteristics by State are listed in Table B8 (see supplementary documents). In 2009, the unweighted response rate for the crane survey was 69%, and the weighted response rate was 65%.

2. Describe the procedures for the collection of information including:

- **Statistical methodology for stratification and sample selection,**
- **Estimation procedure,**
- **Degree of accuracy needed for the purpose described in the justification,**
- **Unusual problems requiring specialized sampling procedures, and**
- **Any use of periodic (less frequent than annual) data collection cycles to reduce burden.**

Migratory Bird Harvest Information Program: Each State requires all migratory bird hunters to identify themselves as such, and to provide their name, address, and date of birth, as a condition for obtaining authorization to hunt migratory game birds in the State. All of the name, address, and date of birth information collection is done by the State's hunting license vendors (agents) or by a State contractor. State license agents or contractors ask each migratory game bird hunter to answer a series of questions that allows us to stratify our sampling procedure. Each State collects the information in a way that is most appropriate for that State, but all States ask some variation of the following questions:

- 1) Will you hunt migratory birds this year?
- 2) How many ducks did you bag last year?
- 3) How many geese did you bag last year?
- 4) How many doves did you bag last year?
- 5) How many woodcock did you bag last year?
- 6) Did you hunt coots or snipe last year?
- 7) Did you hunt rails or gallinules last year?
- 8) Will you hunt sandhill cranes this year?
- 9) Will you hunt band-tailed pigeons this year?
- 10) Will you hunt brant this year?
- 11) Did you hunt sea ducks last year?

States are responsible for development of adequate control procedures to ensure that agents (1) account for all validated licenses; (2) promptly provide the State with names, addresses, and other information; (3) have a low proportion of incomplete or illegible information; and (4) return information from all migratory game bird hunters. We recently began a study to track the collection and receipt of HIP name and address data from each State. Results from the 29 States participating this past year showed that most MBHIP data are being sent to the FWS and being processed properly by the FWS (Appendix A supplementary document).

Migratory Bird Hunter Survey Procedures: Survey procedures are based on Dillman's Total Design Method (Dillman, 1978, Mail and Telephone Surveys, the Total Design Method, Wiley). This method has been shown to substantially reduce nonresponse in many situations.

- a. States provide the Service with migratory game bird hunters' names, addresses, birth dates, and their answers to the above questions in an acceptable form (electronic data or machine-scannable paper form). We receive the first list of hunter names and address in August prior to the migratory bird hunting seasons in each state. The States then send lists every 2 weeks until the end of the migratory bird hunting seasons within each respective State. This information is needed in a timely fashion so that we can contact survey participants and ask them to keep records of their migratory game bird hunting throughout the hunting season. This also allows us to get survey forms to selected hunters before the hunting season starts or shortly after the hunter purchased his or her hunting license.
- b. To protect hunters' privacy, it is our policy to use the names and addresses only for conducting hunter surveys and for no other purpose. All records of hunters' names and addresses are deleted after each year's survey results are finalized and we do not retain a permanent record of names and addresses.
- c. We use the answers to the above questions to assign each hunter to one of three activity strata for duck, goose, dove, and woodcock hunting; and one of two hunting activity strata for coots and snipe, rails and gallinules, band-tailed pigeons, brant, and sea duck hunting. The three hunting activity strata for hunters of duck, goose, and dove hunters are (1) no harvest; (2) low harvest; and (3) high harvest. Low harvest of ducks and geese is defined as harvest of 1-10 birds the previous year; low harvest of doves is defined as harvest of 1-30 birds the previous year. The two hunting activity strata for hunters of woodcock, coots or snipe, rails or gallinules, band-tailed pigeons, brant, sea ducks are: (1) will (did) hunt or (2) will (did) not hunt.
- d. We select samples of hunters for receipt of one of four Migratory Bird Harvest Survey forms: waterfowl (duck, goose, sea duck, and brant; form 3-2056J), dove and band-tailed pigeon (form 3-2056K), woodcock (form 3-2056L), and snipe, rail, gallinule, and coot (form 3-2056M). Similar species are grouped together on the same form to control survey costs. Higher sampling rates are needed for successful hunters and for those who hunt less-frequently hunted species. Hunters are not asked to participate in more than one survey per State per year to minimize the burden on individual respondents.
- e. Samples are stratified by survey form, State, and hunting activity. Stratification by State is relevant because: (1) hunters must register for the Migratory Bird Harvest Information Program in each State in which he/she hunts; (2) harvest regulations and species distributions vary by State; and (3) response rates vary by State. Theoretically, there could be up to $(3)(3)(3)(2)(2)(2)(2)(2)(2) = 1,728$ activity strata in each State, defined by (number of duck hunting activity strata) X (number of goose hunting activity strata) X

(number of dove hunting activity strata) X (number of woodcock hunting activity strata) X (number of coots/snipe success strata) X (number of rail/gallinule success strata) X (number of band-tailed pigeon success strata) X (number of sea duck hunting success strata) X (number of brant hunting success strata). However, individual States do not allow hunting of all the species listed; therefore most States have fewer strata. For example only 11 States have sea duck seasons, only 14 States have brant seasons, and only 7 States have band-tailed pigeon seasons. We also consider the stratification of each species/species group independently. Thus, there are a total of 705 strata in the 49 States, with the number of activity strata in individual States ranging from 10 to 17.

- f. Samples are selected as the names are received so that migratory bird hunters can be contacted and asked to keep records as soon as possible after the hunting season starts. The first, eligible hunter in a file is selected, and then every n^{th} hunter in each stratum is selected thereafter, with (potentially) different sampling rates for each stratum. Sampling without replacement is used, with high priority strata being sampled before lower priority strata. Stratum priority is determined by: (1) biological need and (2) desired precision levels for the estimates.
- g. Double sampling estimates (Hansen and Hurwitz, 1958, JASA) are used to account for nonresponse (see Groves, 1989, *Survey Errors and Survey Costs*, Wiley, pages 165-169; and Hansen, Hurwitz and Madow, 1953 *Sample Survey Methods and Theory*, Wiley, vol. 1, pages 468-475). Two response strata are defined by the respondents and nonrespondents to the first wave of reminder letters. A second wave of reminders and survey replacement forms is sent to all nonrespondents to the first wave of reminder letters. Additionally, a third wave of reminder letters and survey replacement forms is sent to all nonrespondents to the second wave of reminder letters.

For each species (e.g., mourning dove) or species-group (e.g., geese), the number of active hunters, number of hunting days, and number of birds harvested are estimated from the questionnaire responses using a ratio estimator with the harvest per hunter and the number of migratory bird hunters reported, by stratum, by State. Species-, age-, and sex-specific harvests are estimated using ratios estimated from the Parts Collection Survey.

Target 95% confidence intervals for harvest estimates at the management unit level (e.g., Flyway) are as follows: ducks, $\pm 5\%$; geese, $\pm 5\%$; mourning doves, $\pm 5\%$; brant, woodcock, band-tailed pigeons, and white-winged doves, $\pm 10\%$; sea ducks, $\pm 25\%$; snipe, rails, gallinules, and coots, $\pm 50\%$. These target precision levels were deemed appropriate by the Federal and State biologists who are charged with managing those migratory bird species.

Surveys must be conducted annually because migratory bird harvests can change substantially between years depending on the size of the fall flight and hunting pressure. Estimates are required for annually promulgating hunting regulations.

Parts Collection Survey Procedures: Samples of successful hunters from the previous year's Migratory Bird Hunter Survey are asked to complete and return a postcard (forms 3-165A, C, and E), volunteering to contribute wings and tails during the following hunting season. The samples are randomly selected in proportion to the estimated harvest in each State, and rates vary from 30 to 100% of successful hunters. Because it is difficult to find enough hunters to be in the Parts Collection Survey each year and to mail out packages of survey forms, hunters can remain in the survey for 3 (waterfowl)-10 (all others) years. Those who volunteer are sent a cover letter with instructions and a supply of pre-addressed, postage-paid return envelopes (forms 3-165, 3-165B, and 3-165E) for mailing in the wings and tails. Inner envelopes to protect

other mail from stains and seepage are enclosed with the instructions and return envelopes. These packages are sent to survey volunteers before the hunting season opens in their State. Throughout the hunting season, survey participants mail in parts to four collection points (one in each flyway), where they are stored until they are examined. At the end of the hunting season, biologists examine each part to determine species, age, and sex composition of the sample; hunters cannot reliably determine this information. After those data have been compiled, respondents are sent a personalized thank you letter detailing the species, age, and sex of each bird from which they contributed a wing or a tail. The proportions of species, age, and sex in the Parts Collection Survey are then applied to the total harvest estimates from the Migratory Bird Hunter Survey, to allocate harvest estimates among groups. The allocation is proportional to the State, because of different hunting regulations in States and different sampling rates.

Sandhill Crane Harvest Survey: Sampling is stratified according to State of permit issuance; sampling rates vary from 15% in States with many crane permittees (Texas, North Dakota) to 100% in States with few crane permittees (e.g., Wyoming). No specialized sampling procedures are required, and we use the standard estimation methods for stratified random samples. Stratum-specific (State-specific) estimates of the proportion of permittees that actually hunted cranes, the mean number of days hunted, and the mean number of cranes harvested are derived from the responses. Those estimates are expanded by N (number of permits issued) for each State to obtain State totals, which are then combined to provide estimates of the number of active crane hunters, days of hunting, and cranes harvested for all mid-continent sandhill crane hunting in the U.S. The 95% confidence interval for the annual harvest estimate is about $\pm 5\%$, which is a precision level that is adequate to ensure responsible harvest management (i.e., hunting regulations) decisions.

3. Describe methods to maximize response rates and to deal with issues of non-response. The accuracy and reliability of information collected must be shown to be adequate for intended uses. For collections based on sampling, a special justification must be provided for any collection that will not yield "reliable" data that can be generalized to the universe studied.

Response to the Migratory Bird Harvest Information Program is mandatory. We monitor participation by reviewing trends in data transmission from each State, for which we have direct information from 1999-present and indirect information from 1961-present. We also spot-check compliance by following the registrations of individual hunters (App. A - see supplementary documents)

We use standard methods to encourage response to the Migratory Bird Harvest Survey, Parts Collection Survey, and Sandhill Crane Survey. These include a cover letter that is addressed to the individual hunter and signed by the Chief, Division of Migratory Bird Management or the Chief, Branch of Harvest Surveys. The letter explains why the information is important and includes a toll-free number to call and ask questions. The cover letters attempt to motivate the respondent and stress the importance of participation. Forms are sent as early in the hunting season as possible, to encourage participation. The forms are one page and have been designed to be as attractive and as easy to use as possible. All forms are sent to hunters with pre-addressed, postage paid return envelopes.

The Migratory Bird Hunter Survey and Sandhill Crane Survey requests daily diary records, to minimize response bias. The form also includes space to record season totals, for hunters who do not wish to record daily hunting activity. The Migratory Bird Hunter Survey uses three waves of reminder mailings to contact nonrespondents and encourage participation. The first wave includes a postcard and a letter sent by first class mail. Second and third waves of reminders

and replacement forms are sent to all nonrespondents, also by first class mail. The Sandhill Crane Survey uses one wave of reminders, because most sample frame information are not available until late winter and early spring, and we have a limited time frame in which to analyze data and publish reports.

The Parts Collection Survey maximizes response rates by using forms 3-165A, C, and D to solicit volunteer participants from a randomly selected sample of successful hunters. Solicitation forms are mailed out well in advance of the opening of the hunting season, so that survey envelopes can be mailed to them before the start of the hunting season. In these solicitation forms, we tell hunters that we will send a report that contains all of the biological data on the specimens they send in each year, as incentive to participate in the survey for the duration of the hunting season. This report is sent in June of each year. As described in item B. 2.g. above, double sampling estimates are used to detect and, if necessary, account for nonresponse.

Recent Investigations of nonresponse bias and attempts to increase response rates. As requested by OMB in 2004 we conducted several investigations of nonresponse bias in our surveys. Based on these analyses, we do not believe that the following aspects of our surveys impart significant bias that requires adjustment via weighting: (1) nonresponse bias and Parts Collection Survey – waterfowl; (2) response wave bias and Migratory Bird Harvest Survey; (3) nonresponse bias and Sandhill Crane Harvest Survey. Summaries of those investigations were included with the 2007 Information Collection Request.

4. Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

No additional testing of procedures is planned.

5. Provide the name and telephone number of individuals consulted on statistical aspects of the design and the name of the agency unit, contractor(s), grantee(s), or other person(s) who will actually collect and/or analyze the information for the agency.

The individual directly responsible for information collection and analysis is: Dr. Kenneth D. Richkus, Chief, Branch of Harvest Surveys, Division of Migratory Bird Management, Laurel, MD 20708-4028 (301/497-5994).

The following statisticians have reviewed the statistical design and analysis of these surveys:

Dr. Christine M. Bunck, Deputy Center Director, USGS National Wildlife Health Center, Madison, WI 53711 (608-270-2407)

Mr. Grey W. Pendleton, Statistician (Biology), Alaska Department of Fish and Game, Douglas, AK 99824 (907-465-4353)

Dr. Robert E. Trost, Division of Migratory Bird Management, U.S. Fish and Wildlife Service, 911 N.E. 11th Avenue, Portland, OR 97232-4181 (503-231-6162)

Dr. Paul H. Geissler, Biometrician, National Ecological Surveys Team, USGS Fort Collins Science Center, Fort Collins, CO 80526 (970-226-9482)