FERAL SWINE SURVEY

OMB No. 0535-0256

B.   COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS

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 has been conducted previously, include the actual response rate achieved during the last collection.

In 2017, this survey was conducted in the following 13 States: Alabama, Arkansas, California, Florida, Georgia, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas, to measure the damage to livestock that was associated with the presence of feral swine. These States were chosen because they had high feral swine densities and a significant presence of cattle, hogs, sheep and/or goats. The overall response rate was 52.4%; after removing operations who were out of business or no items of interest the response rate dropped to 48.2%.

The 2019 Feral Swine Sampling Frame comprises all active operations in Alabama, Arkansas, California, Florida, Georgia, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, and Texas on NASS's List Frame that have positive control data for any of the following state-crops:

1. All selected states except CA:

    a. Target Crops - Hay, tree nuts (pecans), melons (cantaloupe, honeydew, or watermelon), sugarcane, sweet potatoes, or cotton.

2. CA only:

    a. Target Crops - Hay, tree nuts (almonds), grapes, sod, carrots, lettuce, or strawberries.

The Multivariate Probability Proportional to Size (MPPS) sampling design[a] was used for the 2019 Feral Swine Survey. This design takes advantage of the

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[a]Bailey, Jeff and Kott, Phillip (1997),"An Application of Multipurpose List Frame Sampling For Multi-Purpose Surveys, Proceedings of the Section on Survey Research Methods, American Statistical Association, pp. 496-500.

efficiencies of a Probability Proportional to Size (PPS) design, while adding the dimension of utilizing multiple variables in the sample allocation. Additionally, this design makes it easy to target a sample size for every target item.   The target sample size for each commodity was derived using the SRS sample size formula.

For a MPPS design the probability of selection is:

$$\square$$
$$\pi_i = max\left(n_1 \times \frac{x_{i1}^r}{\sum_{i=1}^{k} x_{i1}^{0.75}}, .., n_h \times \frac{x_{ih}^r}{\sum_{i=1}^{k} x_{ih}^{0.75}}\right)$$

Where:
π_i is the maximum probability of selection for farm operator i.
i is the farm operator,
h is the target commodity,
x is the value of target commodity h, and
r is the power.
The target sample size for each targeted commodity is:

$$n_h = \frac{N_h s_h^2}{\frac{(f_h T_h)^2}{N_h} + s_h^2}$$

Where:
n is the sample size for target commodity h,
N_h is the target commodity population,
s_h is the target commodity standard deviation,
f_h is the target commodity coefficient of variation, and
T_h is the target commodity total.

A target commodity coefficient of variation of 15% was used to derive target sample sizes and a power of 0.75 was used to derive the maximum probability of selection. A sample is chosen by generating a uniform random number (RN), calculating the cumulative probability for unit i as Cumulative$_i$ = Cumulative$_{i+1}$ + π_i, and selecting unit i if Cumulative$_{i+1}$<RN+k< = Cumulative$_i$ for any k= 0,1,2,…n where n is the total number of units selected for the sample[b]. The initial sample size of 9,000 was adjusted by a response rate of 60%; hence the final sample size is approximately 15,500.

2.   Describe the procedures for the collection of information including:
 - **statistical methodology for stratification and sample selection,**
 - **estimation procedure,**

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[b] Hicks, Susan, Amrhein, John and Kott, Phil (1996), Methods to Meet Target Sample Sizes Under a Multivariate PPS Sampling Strategy, Proceedings of the Section on Survey Research Methods, American Statistical Association, pp. 234-238.

- **degree of accuracy needed for the purpose described in the justification,**
- **unusual problems requiring specialized sampling procedures**

Questionnaires will be mailed around the middle of June, 2019. Operations that do not respond by mail or internet within a couple of weeks will be attempted by phone or personal enumeration. Responses will be monitored to make sure that the respondents are representative of the stratified sample. Extra efforts will be taken to collect data from any stratum that has insufficient coverage. After data collection is complete, the data will be edited for reasonableness and completeness.

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.**

The survey will initially be mailed out to the entire sample. Respondents will be given the option to respond by either mail or internet. Non-respondents will be attempted by phone and there will be limited field enumerations for respondents who have been coordinated with any other surveys NASS will be conducting at that time. NASS will be using National Association of State Departments of Agriculture (NASDA) enumerators who have been working with NASS surveys for many years. Training will be provided by the NASDA supervisors and by our regional Data Collection Centers.

The USDA Animal and Plant Health Inspection Service (APHIS) has posted information to their website informing the public on: how to identify feral swine, the damages they cause, control methods that are available, government programs, and more. The public can access this information at:

https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/operational-activities/feral-swine.

4. **Describe any tests of procedures or methods to be undertaken.**

NASS plans to conduct less than 9 cognitive interviews prior to the beginning of data collection. Minor changes have been made to the previous questionnaire based on previous surveys. NASS will do internal testing of the edit and summary programs before any publications will be generated to insure accuracy of data.

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), or other person(s) who will actually collect and/or analyze the information for the agency.

The sample size for each State is determined by the Sampling and Frame Development Section, Methodology Division; Section Head is Peter Quan, (202) 720-5269.

Data collection is carried out by NASS Field Offices; Eastern Field Operation's Director is Jay Johnson (202) 720-3638 and the Western Field Operation's Director is Troy Joshua, (202) 720-8220

The NASS Livestock Branch Chief is Travis Averill (202) 720-3570.

The NASS Survey Administrative Statistician in Headquarters for the Feral Swine Survey is Isiah Nelson (202) 690-8804 in the Commodity Survey Section of the Survey Administration Branch, Census and Survey Division; Branch Chief is Gerald Tillman, (202) 720-3895. The Survey Administrator is responsible for coordination of sampling, questionnaires, data collection, training, Interviewers Manual, Survey Administration Manual, data processing, and other Field Office support.

The national summary is the responsibility of the Summary, Estimation and Disclosure Methodology Branch, Methodology Division; Branch Chief is Jeff Bailey (202) 720-4008.

March 2019