



# Catfish Production Methodology and Quality Measures

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## Annual Catfish Production Survey Methodology

**Scope and Purpose:** A Catfish Production Survey is conducted annually in January, which includes all states with known catfish operations. Data are collected on water area, inventory, sales, and fish sold by point of first sale. In addition, the number of catfish operations is captured. A second survey is conducted in July for three states. The July survey collects data on water area and inventory.

Data collected on the number of operations, water area, inventory, sales, and fish sold by point of first sale are published for seven states. States not required to collect data due to insufficient aggregate production will be estimated for by Headquarters to be included in the Other States estimate. After each Census of Agriculture, which is an exhaustive data collection effort for all known agricultural operations across the United States, the list of published states is evaluated and modified to include the largest catfish producing states.

**Survey Timeline:** The reference date for the January Catfish Production Survey is January 1 with a data collection period of approximately three weeks. States complete data collection, analysis, summarization, and submission of estimates over the three-week period ending in mid-January. The following week, a national review is completed and national estimates are established. Estimates are released to the public at 3:00 p.m. ET in late January on the date designated by the Agricultural Statistics Board on its annual publications calendar.

**Sampling:** The target population for the Catfish Production Survey is all catfish farming operations that sell fish or have the potential to sell fish in the selected states. A state is included for the Catfish Production Survey if it produces at least 1 percent of the total production for the United States. This survey is a complete census of the records on the National Agricultural Statistics Service (NASS) List Frame with positively reported catfish production from a past survey. The List Frame is a current and unduplicated list of agricultural operations, and all current catfish operations are assumed to be on the list. If a new catfish operation is found at any time, the operation is added to the List Frame. Since this is a census of catfish operations, all sample weights are equal to one. Each respondent operation accounts only for itself. The NASS Area Frame, which is a sampling frame of all land area, is not constructed nor sampled to identify catfish operations. Therefore, there is no area frame component to measure list incompleteness for the Catfish Production Survey.

**Data Collection:** State statisticians are responsible for coordinating their own data collection strategy for their respective state. Data are collected by mail, telephone, Electronic Data Reporting (EDR), Computer Assisted Personal Interviewing (CAPI), and personal interviews. For EDR, a questionnaire is enclosed with a letter for the respondent to complete and return by mail. The questionnaire also provides a survey code that can be used to complete the survey securely online. If response is not received by mail or the Internet, respondents are contacted by phone for the survey data. Personal interviews are usually reserved for large operations or those with special handling arrangements.

**Survey Edit:** As survey data are collected and captured, data are edited for consistency and reasonableness using automated systems. Reported data are edited as a batch of data when first captured. The edit logic ensures administrative coding follows the methodological rules associated with the survey design. Relationships between data items (i.e. responses to individual questions) on the current survey are verified. Some data items in the current survey are compared to data items from earlier surveys to ensure certain relationships are logical. The edit will determine the status of each record to be either “dirty” or “clean” (i.e. failing or passing the edit requirements for consistency and reasonableness). Records that fail edit requirements must be updated or certified by an analyst to be exempt from the failed edit requirement. Only records that pass edit requirements are eligible for final summary.

**Analysis Tools:** Edited catfish data are processed through an interactive analysis tool which displays data for all reports by item. The tool provides scatter plots, tables, charts, and special tabulations that allow the analyst to compare an individual record to similar records. Atypical responses and unusual data relationships become evident and Field Office staff review them to determine if they are correct. The tool allows comparison to an agricultural operation's previously reported data to detect large changes in the operation. Data found to be in error are corrected, while accepted data are retained.

**Nonsampling Errors:** Nonsampling errors are present in any survey process. These errors include reporting, recording, and editing errors. Steps are taken to minimize these errors, such as comprehensive interviewer training, validation, and verification of processing systems, application of detailed computer edits, and evaluation of the data via the analysis tools.

**Estimators:** The Catfish Production Survey is a complete enumeration of all known catfish operations in the selected states. Catfish operations are selected from the list of all agricultural operations, and new operations are added into the sample when discovered. No coverage adjustment is made.

Response to the Catfish Production Survey is voluntary. Some producers refuse to participate in the survey. Others cannot be located during the data collection period and some submit incomplete reports. These nonrespondents must be accounted for if accurate estimates of catfish are to be made. For the Catfish Production Survey, nonrespondents are accounted for by adjusting the weights of the respondents. Since the Catfish Production Survey is a census, all operations have a sample weight of one. The adjustment occurs by stratum as the bounded strata represent homogeneous groupings of similar sized farms. The largest stratum is unbounded and is made up of large and, often unique, farms. Nonrespondents in this stratum must be manually imputed by Estimation Center statisticians and their weights are not adjusted. The adjustment is performed by individual item on the questionnaire (total water area, inventory, sales) so adjustments for item nonresponse (partial reports) and unit nonresponse (refusals and inaccessibles) are done in a single calculation.

Two estimators are used to compute direct measures of the catfish water area, inventory, and sales items. The "reweighted" estimator and the "adjusted" estimator are computationally identical except in how the nonresponse adjustments are made. The reweighted estimator uses a global weight adjustment across all usable reports. The nonresponse weight adjustment for the adjusted estimator uses an additional piece of information. When a sampled farm refuses to cooperate, interviewers will probe to determine the presence of water area and catfish inventory and sales even though the number is not reported. This presence/absence indicator is used in the weight adjustment.

Point estimates, called direct expansions, for both estimators are calculated by multiplying the reported value by the nonresponse adjusted weight and summing to strata totals which are subsequently summed to obtain the state total.

**Estimation:** When all samples are accounted for, all responses fully edited, and the analysis material is reviewed, each state executes a summary to evaluate and analyze the data for which it is accountable. Since all states conduct identical surveys, the samples can be pooled and national survey results computed. The summary results provide multiple point estimates and information used to evaluate the quality of the survey estimates, such as response rates.

States are responsible for performing a detailed review of their survey results. Any irregularities revealed by the summary must be investigated and, if necessary, resolved. Using the historical relationship of the survey estimates to the official estimate, states must interpret the survey results and submit a recommended estimate to NASS headquarters in Washington, DC for all data series in the program. The data are viewed in tabular and graphical form and a consensus estimate established.

For the national estimates, NASS assembles a panel of statisticians to serve on the Agricultural Statistics Board (ASB). The ASB reviews the national results and establishes the national estimates. The same estimators used in the state summaries are produced by the national summary. The ASB follows the same approach the states do to determine state estimates when determining the national estimates. In addition, the ASB examines results across all states and compares the state level recommendations. Since larger sample sizes yield more precise results, NASS determines the national estimates first and reconciles the state estimates to the national number. Survey based indicators can be impacted by influential outliers, individual reports that have excessive influence on the estimates and are extremely unusual data for a

given operation. NASS thoroughly reviews the survey data to identify these situations and consider their impact on the survey results when establishing the official estimates.

## Quality Metrics for Catfish

**Purpose and Definitions:** Under the guidance of the Statistical Policy Office of the Office of Management and Budget (OMB), the United States Department of Agriculture’s National Agricultural Statistics Service (NASS) provides data users with quality metrics for its published data series. The metrics tables below describe the performance data for all surveys contributing to the publication. The accuracy of data products may be evaluated through sampling and non-sampling error. The measurement of error due to sampling in the current period is irrelevant for a fully enumerated data series. Non-sampling error is evaluated by response rates and the percent of the estimate from reported data.

**Sample size** is the number of observations selected from the population to represent a characteristic of the population.

**Response rate** is the proportion of the sample that responds to the survey.

**Percent of estimate from reported data** is the value of a characteristic from respondent reports divided by the value of a characteristic from respondent reports plus manually imputed reports expanded by the nonresponse adjusted weights expressed as a percent.

**Catfish Production Survey Sample Size and Response Rates:** To assist in evaluating the performance of the estimates in the catfish report, the sample size and response rates are displayed. Response rates overall for 2012 and 2013 are displayed.

### Catfish Survey Sample Size and Response Rates – Selected States and United States: 2012-2013

	2012		2013	
	Sample size (number)	Response rate (percent)	Sample size (number)	Response rate (percent)
Alabama .....	139	77.7	125	75.2
Arkansas .....	86	89.5	56	92.9
California .....	37	73.0	29	79.3
Louisiana .....	14	85.7	8	87.5
Mississippi .....	233	88.0	211	88.2
North Carolina .....	32	87.5	23	73.9
Texas .....	83	72.3	58	72.4
Other States .....	90	83.3	62	72.6
United States .....	714	82.9	572	81.5

**Catfish Production Percent of Estimate from Reported Data:** To assist in evaluating the performance of the estimates in the catfish report, the percent of the estimate from reported data for total water acres, the number of foodsize fish sold, and the value of foodsize fish sales are displayed for the 7 published states, the other state category, and nationally.

**Quality Metrics for Total Water Acres – Selected States and United States: 2012-2013**

	Percent of estimate from reported data	
	2012	2013
	(percent)	(percent)
Alabama .....	84.1	83.2
Arkansas .....	90.2	83.6
California .....	79.6	78.1
Louisiana .....	100.0	95.2
Mississippi .....	81.5	82.0
North Carolina .....	96.4	94.2
Texas .....	77.4	79.1
Other States .....	86.0	85.6
United States .....	83.4	82.7

**Quality Metrics for Foodsize Fish Sold and Value of Sales – Selected States and United States: 2011-2012**

States	Percent of estimate from reported data			
	Number of fish sold		Value of sales	
	2011	2012	2011	2012
	(percent)	(percent)	(percent)	(percent)
Alabama .....	81.9	80.6	83.7	78.2
Arkansas .....	94.0	89.6	93.0	85.3
California .....	90.7	79.6	88.0	80.0
Louisiana .....	100.0	94.6	100.0	83.8
Mississippi .....	83.9	86.7	79.9	79.6
North Carolina .....	97.1	94.5	97.2	94.7
Texas .....	67.6	84.6	77.0	79.1
Other States .....	85.8	89.3	84.2	88.5
United States .....	83.6	85.0	82.5	79.7

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Questionnaires and Editing .....	Editing and Questionnaire Branch .....	(202) 720-6201	HQ_CSD_DCB@nass.usda.gov
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For more information on NASS surveys and reports, call the NASS Agricultural Statistics Hotline at (800) 727-9540, 7:30 a.m. to 4:00 p.m. ET, or e-mail: [nass@nass.usda.gov](mailto:nass@nass.usda.gov).

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