



# Trout Production Methodology and Quality Measures

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**Scope and Purpose:** The Trout Production Survey is conducted annually. The January 2024 data was collected using the 2023 Census of Aquaculture questionnaire. Data are collected on annual production, value of sales, value of distributed fish, point of first sale, and losses. The target population for the Trout Production Survey is all trout farming operations that sell fish or have the potential to sell fish in the selected States. A State is included for the Trout Production Survey if it produces at least 1 percent of the total production for the United States.

Data collected on annual production, value of sales, value of distributed fish, point of first sale, and losses are published for 16 States. The publication contains estimates for nine States, which are combined into an “Other States” category. 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 trout producing States.

**Survey Timeline:** Data are collected for the previous year’s production beginning in January. States complete data collection, analysis, summarization, and submission of estimates over approximately a six-week period ending in early February. The following few weeks, a national review is completed, and national estimates are established. Estimates are released to the public at 3:00 p.m. ET in late February on the date designated by the Agricultural Statistics Board (ASB) on its annual publications calendar.

**Sampling:** This survey is a complete census of all qualifying records on the National Agricultural Statistics Service (NASS) List Frame with positively reported trout data from a past survey are sampled. The List Frame is a current and unduplicated list of agricultural operations and all current trout operations are assumed to be on the list. If a new trout operation is found at any time, the operation is added to the List Frame. Since this is a census of trout operations, all sample weights are equal to one. Each respondent’s 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 trout operations. Therefore, there is no area frame component to measure list incompleteness for the annual Trout Production Survey.

**Data Collection:** All federal data collections require approval by the Office of Management and Budget (OMB). NASS must document the public need for the data, apply sound statistical practice, prove the data does not already exist elsewhere, and ensure the public is not excessively burdened. The questionnaire must display an active OMB number that gives NASS the authority to conduct the survey, a statement of the purpose of the survey and the use of the data being collected, a response burden statement that gives an estimate of the time required to complete the form, a confidentiality statement that the respondent’s information will only be used for statistical purposes in combination with other producers, and a statement saying that response to the survey is voluntary and not required by law.

Regional Field Office (RFO) statisticians are responsible for coordinating their own data collection strategy for their respective State and it must include provisions for respondents to report securely online. Data are collected by mail, telephone, Computer Assisted Web Interviewing (CAWI), and Mobile Computer Assisted Personal Interviewing (mCAPI). Respondents are mailed a letter and a questionnaire for the respondent to complete and return by mail or use a survey code to complete the survey securely online. The letter explains the purpose and importance of the survey and that they are being contacted for survey purposes only. If a response is not received by mail or online, respondents are contacted by CATI. Limited personal interviewing may be conducted, generally for large operations or those with special handling arrangements.

RFOs use the same, standardized questionnaire for data collection. For consistency across modes, the paper version is considered the master questionnaire and the web-based self-interview and Computer Assisted Telephone Interview (CATI) instruments are built to model the paper instrument. Questionnaire content and format are evaluated annually through a specifications process where requests for changes are evaluated and approved or disapproved.

**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 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 ‘suspect’, ‘dirty’ or ‘clean’. Records that fail edit requirements must be updated or certified by an analyst to be exempt from the failed edit requirement. Only clean records are eligible for analysis and final summary.

**Analysis Tools:** Edited data are processed through an interactive analysis tool which displays all records together by item. The tool provides scatter plots, tables, charts, and special tabulations that allow the analyst to compare an individual record to similar records. Outliers, influential records, trends, and unusual data relationships become evident and RFO staff review them to determine its validity. The tool allows comparison to an operation’s previously reported data to detect large changes in the operation. Data found to be in error are corrected.

**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 Trout Production Survey is a complete enumeration of all known trout operations in the selected States. Trout 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 Trout Production Survey is voluntary. Producers refuse to participate in the survey, may not be located during the data collection period or may submit incomplete reports. The nonrespondents must be accounted for if accurate estimates of trout are to be made. For the Trout Production Survey, nonrespondents are accounted for by adjusting the weights of the respondents. Since the Trout 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 RFO statisticians and their weights are not adjusted.

Two estimators are used to compute direct measures of the trout sales and distributed 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 whether an operation sold or distributed trout even though the number is not known. 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.

Regions 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, regions 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 regions 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. NASS determines State estimates first and these estimates are summarized to the national level. 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 Trout

**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 weighted item response rate.

**Sample size** is the number of observations selected from the population to represent a characteristic of the population. Operations that did not have the item of interest or were out of business at the time of data collection have been excluded.

**Response rate** is the proportion of the above sample that completed the survey.

**Weighted item response rate** is a ratio of reported survey data expanded by the original sampling weight compared to final nonresponse adjusted summary totals.

**Trout Production Survey Sample Size and Response Rates:** To assist in evaluating the performance of the estimates in the trout report, the sample size and response rates are displayed. Response rates overall for 2023 and 2024 are displayed.

### Trout Survey Sample Size and Response Rates – United States: 2023-2024

|                      | 2023                    |                            | 2024                    |                            |
|----------------------|-------------------------|----------------------------|-------------------------|----------------------------|
|                      | Sample size<br>(number) | Response rate<br>(percent) | Sample size<br>(number) | Response rate<br>(percent) |
| Arkansas .....       | 4                       | 75.0                       | 5                       | 80.0                       |
| California .....     | 21                      | 33.3                       | 23                      | 69.6                       |
| Colorado .....       | 32                      | 75.0                       | 28                      | 78.6                       |
| Georgia .....        | 10                      | 70.0                       | 9                       | 100.0                      |
| Idaho .....          | 16                      | 75.0                       | 15                      | 66.7                       |
| Michigan .....       | 16                      | 87.5                       | 17                      | 94.1                       |
| Missouri .....       | 12                      | 91.7                       | 13                      | 76.9                       |
| New York .....       | 18                      | 83.3                       | 21                      | 95.2                       |
| North Carolina ..... | 26                      | 80.8                       | 30                      | 86.7                       |
| Oregon .....         | 8                       | 62.5                       | 8                       | 62.5                       |
| Pennsylvania .....   | 36                      | 52.8                       | 37                      | 40.5                       |
| Utah .....           | 17                      | 94.1                       | 17                      | 100.0                      |
| Virginia .....       | 18                      | 77.8                       | 18                      | 94.4                       |
| Washington .....     | 19                      | 73.7                       | 16                      | 56.3                       |
| West Virginia .....  | 15                      | 93.3                       | 17                      | 88.2                       |
| Wisconsin .....      | 30                      | 83.3                       | 31                      | 96.8                       |
| Other States .....   | 72                      | 76.4                       | 77                      | 87.0                       |
| United States .....  | 370                     | 74.6                       | 382                     | 80.6                       |

**Trout Survey Weighted Item Response Rate:** To assist in evaluating the performance of the estimates in the trout report, the weighted item response rate is displayed nationally by size category for sales and distribution quantity and value.

**Quality Measures for Trout Sales by Category – United States: 2022-2023**

| States                   | Weighted item response rate |           |                |           |
|--------------------------|-----------------------------|-----------|----------------|-----------|
|                          | Fish sold                   |           | Value of sales |           |
|                          | 2022                        | 2023      | 2022           | 2023      |
|                          | (percent)                   | (percent) | (percent)      | (percent) |
| Fish 12" or Longer ..... | 90.3                        | 94.4      | 85.6           | 90.9      |
| Fish 6" - 12" .....      | 72.3                        | 74.7      | 70.3           | 77.6      |
| Fish 1" - 6" .....       | 83.2                        | 94.7      | 76.2           | 92.3      |

**Quality Measures for Trout Distribution by Category – United States: 2022-2023**

| States                   | Weighted item response rate |           |                           |           |
|--------------------------|-----------------------------|-----------|---------------------------|-----------|
|                          | Fish distributed            |           | Value of distributed fish |           |
|                          | 2022                        | 2023      | 2022                      | 2023      |
|                          | (percent)                   | (percent) | (percent)                 | (percent) |
| Fish 12" or Longer ..... | 82.8                        | 70.4      | 83.2                      | 79.3      |
| Fish 6" - 12" .....      | 81.2                        | 87.6      | 81.6                      | 89.1      |
| Fish 1" - 6" .....       | 96.0                        | 94.1      | 94.9                      | 93.4      |

## Information Contacts

| Process                          | Unit   | Telephone      | Email               |
|----------------------------------|--|----------------|---------------------|
| Estimation .....                 | Livestock Branch                                     | (202) 720-3570 | HQ_SD_LB@usda.gov   |
| Data Collection .....            | Survey Administration Branch                         | (202) 720-3895 | HQ_CSD_SAB@usda.gov |
| Questionnaires .....             | Data Collection Branch                               | (202) 720-6201 | HQ_CSD_DCB@usda.gov |
| Sampling and Editing .....       | Sampling Editing and Imputation Methodology Branch   | (202) 690-8141 | HQ_CSD_SB@usda.gov  |
| Summary and Estimators .....     | Summary Estimation and Disclosure Methodology Branch | (202) 690-8141 | HQ_SD_SMB@usda.gov  |
| Dissemination .....              | Data Dissemination Office                            | (202) 720-3869 | HQSDOD@usda.gov     |
| Media Contact and Webmaster .... | Public Affairs Office                                | (202) 720-2639 | HQOAPAO@usda.gov    |

## Access to NASS Reports

For your convenience, you may access NASS reports and products the following ways:

- All reports are available electronically, at no cost, on the NASS web site: [www.nass.usda.gov](http://www.nass.usda.gov).
- Both national and state specific reports are available via a free e-mail subscription. To set-up this free subscription, visit [www.nass.usda.gov](http://www.nass.usda.gov) and click on “National” or “State” in upper right corner above “search” box to create an account and select the reports you would like to receive.
- Cornell’s Mann Library has launched a new website housing NASS’s and other agency’s archived reports. The new website, <https://usda.library.cornell.edu>. All email subscriptions containing reports will be sent from the new website, <https://usda.library.cornell.edu>. To continue receiving the reports via e-mail, you will have to go to the new website, create a new account and re-subscribe to the reports. If you need instructions to set up an account or subscribe, they are located at: <https://usda.library.cornell.edu/help>. You should whitelist [notifications@usda-esmis.library.cornell.edu](mailto:notifications@usda-esmis.library.cornell.edu) in your email client to avoid the emails going into spam/junk folders.

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@usda.gov](mailto:nass@usda.gov).

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