B. Collections of Information Employing Statistical Methods

1. Describe the potential respondent universe and any sampling or other respondent selection methods to be used.

The potential respondent universe for the NAHMS catfish study will be all catfish operations in 4 States[1] which report at least one pond on the NASS January 1, 2010, Catfish Survey. In July of 2009, NASS reported 613 operations in these States. The sampling plan via NASS will be a census of catfish operations in these 4 States. The NAHMS program has established an operational goal of representing at least 70 percent of the farm operations and 70 percent of a specific commodity. These 4 States account for 91.6 percent of 2008 total catfish sales and 90.9 percent of the water surface acres for catfish production, as reported by NASS in the February 2009 Catfish Production Report.

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

- **Statistical methodology for stratification and sample selection:**

  Sampling methodology--Catfish 2010. All catfish farms in Alabama, Arkansas, Louisiana, and Mississippi will be contacted through NASS.

- **Estimation procedures:**

  The selection of all operations for inclusion in the study means that the initial sampling weight is one for all records unlike the NAHMS studies of larger commodities. A weight adjustment will be performed to account for non-response as needed. The statistical estimation will be undertaken using either SAS survey procedures or SUDAAN. Both software packages use a Taylor series expansion to estimate appropriate variances for the stratified, weighted data.

- **Degree of accuracy needed:**

  The overall NAHMS program goal is to develop descriptive statistics with a coefficient of variation less than 20 percent. Analytical studies are being designed with a goal of 80 percent power to detect odds ratios of greater than 2 for the factors identified as most important by the industry. The sample size estimation utilized for national NAHMS surveys is based on achieving an accuracy sufficient to characterize national animal health events with a 95 percent confidence interval of +/- 1 percent.

- **Unusual problems requiring specialized sampling procedures and data collection cycles:**

  Past efforts to collect data on animal health, productivity, and profitability have revealed that recall bias is very important. Past experience demonstrates that collection of productivity and health data for the previous year does provide satisfactory results. The calendar year will be used for consistency with industry production methods and NASS data collection.

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[1] Alabama, Arkansas, Louisiana, and Mississippi.

3. Describe methods to maximize response rates and to deal with issues of non-responses:

Study Design:

- Many questions have been repeated from previous NAHMS catfish studies conducted in 1997 and 2003.

- The study minimizes collection of data to that which is absolutely necessary to meet the stated objectives.

- NAHMS staff will develop a training CD for NASS enumerators that explains the purpose of the study and addresses anticipated difficulties with questions, including proper pronunciation of diseases.

- The Catfish specialist for NAHMS has made numerous contacts and collaborative efforts to identify the information needs of the industry and the best way to ask for that information via questionnaire.

- The study is being limited to four States where most of the acreage and production occurs.

- A pre-survey letter[2] will be sent along with the brochure. Once personal contact is made by the enumerator the brochure will again be presented.

Contacting Respondents:

- The study has been supported by the Catfish Farmers of America and will be announced through the association.

- Producers will be called by the NASS enumerator up to five times followed by an on farm visit before they are listed as a refused or inaccessible operation.

Data Collection Steps:

- Data collectors will arrive at the premises at the agreed upon time.

- Participating producers will be told they will get a copy of the reports.

Data Analysis Steps:

Response rate, given the methods described above, is expected to be approximately 80% for the single data collection phase. The response rate in the 2003 study was 78.6 percent (Appendix B). If the respondents differ substantially from the nonrespondents there will be the potential for bias. There are two approaches that we will use to examine for potential bias. First, NASS's control data on their list frame will be available for both respondents and non-respondents

[2] Sample of pre-survey letter is attached in section 6.

to allow for examination of potential differences in the types of responding and non-responding producers. The information will include number of surface acre in production for each selected unit. Secondly, we can compare estimates from the study with available indicators from other sources. For example, although we do not publish estimates of total surface acres, the survey results will allow us to make estimates that we can use to compare against NASS' inventory estimates.

Since all operations on NASS' list frame are to be included in the initial sample, unlike other NAHMS studies that use complex sampling design, the initial weight will be one. However, to address potential bias due to nonresponse the weights of nonrespondents can be transferred to responding operations that are most similar based on available data. This data will be available from the NASS list frame. Within categories, the sum of weights of the nonrespondents and respondents will be divided by the sum of the weights of the respondents only. This factor will be used to adjust the weights of the respondents within the category. All weights for nonrespondents will be set to zero.

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

Initially, the questionnaire will receive extensive review by a wide variety of experts including researchers, extension, economists, veterinarians/fish health specialists and epidemiologists. The proposed questionnaire will be tested during the pretest phase involving less than 10 respondents. Pretests usually take place in States that are not selected for the national study. Results of these pretests have been utilized to refine the information collection in order to reduce respondent burden and improve the usefulness of the information.

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 statistical aspects of the design were coordinated by Dr. Bruce Wagner, Mathematical Statistician, USDA: APHIS, Veterinary Services, CEAH, Fort Collins, CO, (970) 494-7250. The actual data collection will be conducted by APHIS designated data collectors. Contact persons for data collection are:

- Dr. John Clifford, Deputy Administrator, USDA: APHIS, Veterinary Services, Washington, DC (202) 447-6835.

Analysis of the data will be accomplished by NAHMS veterinarians, epidemiologists, and statisticians under the direction of:

- Mr. George Hill, Acting Director, National Animal Health Monitoring System, USDA: APHIS, VS, CEAH, 2150 Centre Avenue, Building B MS2E7, Fort Collins, CO 80526-8117, (970) 494-7250.

A number of catfish producers participated in focus groups in Arkansas, Mississippi and Alabama and provided input into this study. Primary consultants used for the Catfish 2010 study include:

Dr. Carole Engle, Chair Department of Aquaculture and Fisheries, University of Arkansas at Pine Bluff, 1200 N. University Drive, Mail Slot 4912, Pine Bluff, AR 71601, (870) 575-8523

Dr. Andy Goodwin, Professor - Fish Health and Pathology, University of Arkansas at Pine Bluff, 1200 N. University Drive, Mail Slot 4912, Pine Bluff, AR 71601, (870) 575-8137

Mr. David Heikes, Extension Specialist - Aquaculture/Equipment Development, University of Arkansas at Pine Bluff, 1200 N. University Drive, Mail Slot 4912, Pine Bluff, AR 71601, (870) 575-8143

Dr. Rebecca Lochmann, Professor - Fish Nutrition / Feeds, University of Arkansas at Pine Bluff, 1200 N. University Drive, Mail Slot 4912, Pine Bluff, AR 71601, (870) 575-8124

Dr. Nathan Stone, Extension Section Leader – Aquaculture, University of Arkansas at Pine Bluff, 1200 N. University Drive, Mail Slot 4912, Pine Bluff, AR 71601, (870) 575-8138

Mr. Steeve Pomerleau, Extension Specialist - Aquaculture Yield Verification, University of Arkansas at Pine Bluff, 1200 N. University Drive, Mail Slot 4912, Pine Bluff, AR 71601, (870) 575-8139

Dr. Jimmy Avery, Extension Professor, Thad Cochran National Warmwater Aquaculture Center, 127 Experiment Station Road, P.O. Box 197, Stoneville, MS 38776, (662) 686-3273

Dr. Brian Bosworth, Research Physiologist, USDA/ARS/Catfish Genetics Research Unit, 127 Experiment Station Road, P. O. BOX 38 Stoneville, MS 38776, (662) 686-3592

Dr. Pat Gaunt, Associate Professor, Aquatic Animal Health, College of Veterinary Medicine**,** 127 Experiment Station Road, P.O. Box 197, Stoneville, MS 38776, (662) 686-3237

Mr. Charles Hogue, Extension Associate III, Mississippi State Extension Service, Black Belt Experiment Station, P.O. Box 327, Brooksville, MS, 39739, (662) 738-5470

Dr. Lester Khoo, Professor, Department of Pathobiology and Population Medicine**,** College of Veterinary Medicine**,** 127 Experiment Station Road, P.O. Box 197, Stoneville, MS 38776, (662) 686-3305

Dr. Jim Steeby, Extension Aquaculture Specialist,, Thad Cochran National Warmwater Aquaculture Center, 127 Experiment Station Road, P.O. Box 197, Stoneville, MS 38776, (662) 247-2915

Dr. Les Torrans, Research Fish Biologist, USDA/ARS/Catfish Genetics Research Unit, 127 Experiment Station Road, P. O. BOX 38 Stoneville, MS 38776, (662) 686-5460

Dr. Craig Tucker, Research Professor Mississippi Agriculture and Forestry Experiment Station, Director, National Warmwater Aquaculture Center, Director, Southern Regional Aquaculture Center**,** 127 Experiment Station Road, P.O. Box 197, Stoneville, MS 38776, (662) 686-3286

Dr. David Wise, Research Professor, Mississippi Agriculture and Forestry Experiment Station**,** 127 Experiment Station Road, P.O. Box 197, Stoneville, MS 38776, (662) 686-3239

Dr. Julie Bebak, Veterinary Medical Officer, USDA: Agriculture Research Service, Aquatic Animal Health Research Unit, 990 Wire Rd., Auburn, AL, 36832, (334) 887-3741

Dr. Terry Hanson, Associate Professor in Aquaculture Economics, Department of Fisheries and Allied Aquacultures, Auburn University, 203 Swingle Hall l, Auburn University, Auburn, Alabama 36849, (334) 844-9207

Mr. Bill Hemstreet, Advisor III, Alabama Fish Farming Center, 529 Centerville Street Greensboro, AL 36744, (334) 624-4016

Dr. Jeff Terhune, Assistant Professor/Epidemiology, Department of Fisheries and Allied Aquacultures, Auburn University, 203 Swingle Hall l, Auburn University, Auburn, Alabama 36849, (334) 844-9213

Mr. Greg Whitis, Aquaculturist, Alabama Fish Farming Center, 529 Centerville Street Greensboro, AL 36744, (334) 624-4016

Appendix A: Total U.S. Catfish Operations, Water Surface Acres and Sales, 2008-2009

State	Number of Operations on January 1		Water Surfaces acres Jan 1 - June 30 (acres)		Total Sales (X$1,000)	
	2008	2009[1]	2008	2009	2007	2008
AL	252		22,200	22,100	95,782	93,254
AR	155		31,400	25,000	78,110	64,263
CA	55		2,300	2,400	12,603	7,913
LA	31		6,400	6,300	11,769	11,883
MS	427		90,300	80,200	229,385	206,288
NC	53		2,100	2,200	7,099	7,221
TX	149		3,800	3,800	12,152	13,212
Other States	495		4,600	4,900	7,693	5,964
US	1,617	1,306	163,100	146,900	454,593	409,998

[1]NASS stopped reporting State-level number of operations in 2009

Appendix B: NAHMS Catfish 2003 and 1997 Review of Response Rates

1. Catfish 2003 and 1997 sample review

a. General Catfish Management Report (NASS) response rates:

Year	Questionnaire	Collection dates	Sample	Compl	Compl %	Good	% good
2003	Gen Catfish Mgmt Rept (NASS)	1/2/03-2/14/03	922	725	78.6	600	65.1
1997	Gen Catfish Mgmt Rept (NASS)	1/1/97-1/17/97	900	657	73.0	571	63.4

- Of the 936 operations of NASS' list frame, 14 were considered to be out of scope for this study prior to any contact. These 14 are not included in this table.

Appendix C: Selected estimates from Catfish 2007 with associated standard errors and coefficients of variation[1]

Variable	Point estimate	Standard Error	Coefficient of variation
Percent of operations that bred catfish in 2006	14.2	0.7	4.9
Number of foodsize fish ponds	18.8	1.1	5.8
Percent of broodstock lost due to disease, predation or other problems	14.5	2.8	19.3
Percent of eggs brought into the hatchery that typically survive to hatching	79.3	2.1	2.6
Percent of fingerling operations that drained and dried their fingerling ponds prior to stocking fry	48.9	1.9	3.9
Percent of foodsize fish operations that fed 32 percent protein feed	62.3	1.0	1.6

[1] Design effects, which are typically included in this table, were not calculated for these estimates since there is no sampling of operations.

Appendix D: Estimated Response Rates for the Catfish 2010 study

Estimated response percentages and counts for the Catfish survey.

Phase	Response category	Percentage in Phase	Expected counts
Phase I			
	Zero on hand or out of business	15.0	105
	Complete	64.0	448
	Response to Phase I	79.0	553
	Refusal	20.0	140
	Out of scope (ineligible for phase I)	1.0	7
	Total	100.0	700

Appendix E: Scientific publications citing NAHMS Catfish 1997 or 2003 study

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