



Tennessee Valley Authority, 1101 Market Street, LP 5A, Chattanooga, Tennessee 37402-2801

July 3, 2008

10 CFR 52.80

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U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

In the Matter of )  
Tennessee Valley Authority )

Docket Numbers 52-014 and 52-015

**NUCLEAR REGULATORY COMMISSION (NRC) – BELLEFONTE NUCLEAR PLANT  
(BLN) – RESPONSE TO NRC INFORMATION NEEDS RELATED TO  
SOCIOECONOMICS/ENVIRONMENTAL JUSTICE**

Reference: Letter from Ashok Bhatnagar (TVA) to Mr. R. William Borchardt (NRC),  
"Application for Combined License for BLN Units 3 and 4," dated  
October 30, 2007.

The purpose of this letter is to provide responses to the information needs relating to Socioeconomics/Environmental Justice (EJ), as identified by the NRC reviewers during the Environmental Report (ER) site audit conducted at the Tennessee Valley Authority's (TVA) Bellefonte Nuclear Plant, Units 3 and 4 (BLN) site during the week of March 31 through April 4, 2008.

By the referenced letter, TVA submitted an application for a combined license for two AP1000 advanced passive pressurized-water reactors at the BLN site. Included in the review of a combined license application (COLA) is an environmental site audit during which the NRC staff tours the proposed plant site and environs and reviews the applicable documents that support the information provided in the ER. At the April 4, 2008, exit meeting for the BLN site audit, the NRC staff provided a list of information that was determined to be necessary to complete the review of the ER.

The enclosure to this letter provides responses to the NRC information needs related to Socioeconomics/EJ and identifies changes that will be made in a future revision of the

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BLN application. The enclosure also provides the status of the socioeconomics/EJ information needs. Attachments SE-03 through SE-38 to the enclosure provide the documents that are identified in the BLN responses.

If there are any questions, please contact Phillip Ray at 1101 Market Street, LP 5A, Chattanooga, Tennessee 37402-2801, by telephone at (423) 751-7030, or via email at pmray@tva.gov.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 3<sup>rd</sup> day of July, 2008.

  
Jack A. Bailey  
Nuclear Generation Development

Enclosure and Attachments SE-03 – SE-38  
cc: See Page 5

Enclosure:

Response to NRC Information Needs – Socioeconomics/EJ (SE)

Attachments SE-03 – SE-38:

- SE-03. U.S. Census Bureau, American FactFinder - Jackson County, Alabama (Website accessed May 8, 2007).
- SE-05. Alabama Department of Conservation and Natural Resources, Alabama State Parks Visitor Data, Fiscal Years 2003 – 2004 and 2004 – 2005, 2008.
- SE-06-A. U.S. Department of the Interior, Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau, *2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, Alabama*, FHW/01-AL-Rev., revised March 2003.
- SE-06-B. U.S. Department of the Interior, Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau, *2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, Georgia*, FHW/01-GA Rev., revised March 2003.
- SE-06-C. U.S. Department of the Interior, Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau, *2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, Tennessee*,
- SE-09-A. Tennessee Valley Authority, Environmental Report Figure 4.4-2, BLNConstruction Staffing by Craft, June 2008.
- SE-09-B. U.S. Census Bureau, 2000 Demographic Data for Jackson County, (Website accessed May 8, 2007).
- SE-19-A. *Military Review*, "The Surge Can Succeed," July – August 2007.
- SE-19-B. National Fire Protection Association, "The U.S. Fire Department Profile," November 2007.
- SE-19-C. U.S. Census Bureau, USA QuickFacts from the US Census Bureau, 2006 U.S. Population, (Website accessed March 11, 2008).
- SE-20/44. Tennessee Valley Authority, Summary of Personal Communications with BLN Area Service Providers, June 2008.
- SE-21-A. Alabama Department of Education, State Board of Education, "Report Card for 2005-2006 - Scottsboro City," (no date).
- SE-21-B. Alabama Department of Education, State Board of Education, "Report Card for 2005-2006 - Jackson County," (no date).
- SE-21-C. National Center for Education Statistics, "Jackson County Private School Data," (Website accessed June 20, 2008).
- SE-30. University of Alabama, Center for Business and Economic Research and the Department of Civil, Construction & Environmental Engineering, *Huntsville Area BRAC Transfers: Economic and Transportation Impact Assessment*, April 2007.

SE-32. U.S. Department of Commerce, Bureau of Economic Analysis (BEA),

SE-38. Rees Consulting, "2005 Housing Market and Needs Assessment," June 2005.

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cc: ( Enclosure and Attachments 03 - 38):

- E. Cummins, Westinghouse
- S. P. Frantz, Morgan Lewis
- M. W. Gettler, FP&L
- R. C. Grumbir, NuStart
- P. S. Hastings, NuStart
- P. Hinnenkamp, Entergy
- M. A. Hood, NRC/HQ
- M. C. Kray, NuStart
- D. Lindgren, Westinghouse
- G. D. Miller, PG&N
- M. C. Nolan, Westinghouse
- N. T. Simms, Westinghouse
- G. A. Zinke, NuStart

cc: (w/o Enclosure and Attachments 03-38)

- B. Anderson, NRC/HQ
- M. M. Comar, NRC/HQ
- B. Hughes, NRC/HQ
- R. G. Joshi, NRC/HQ
- R. H. Kitchen, PGN
- M. C. Kray, NuStart
- A. M. Monroe, SCE&G
- C. R. Pierce, SNC
- R. Register, DOE/PM
- L. Reyes, NRC/RII
- J. M. Sebrosky, NRC/HQ
- T. Simms, NRC/HQ

ENCLOSURE  
RESPONSE TO NRC INFORMATION NEEDS - SOCIOECONOMICS/EJ (SE)

**RESPONSE TO NRC  
INFORMATION NEEDS**

**SOCIOECONOMICS/EJ (SE)**

This enclosure provides the status of the 46 NRC information needs related to the NRC review of Socioeconomics/Environmental Justice (SE) and provides BLN responses to 25 of these SE Information Needs.

Status of "SE" Information Needs

<b>NRC Information Need Number</b>	<b>Status</b>
• SE-01	Response provided in this enclosure.
• SE-02	Resolved at BLN site audit.
• SE-03	Response provided in this enclosure.
• SE-04	Resolved at BLN site audit.
• SE-05	Response provided in this enclosure.
• SE-06	Response provided in this enclosure.
• SE-07	Response provided in this enclosure.
• SE-08	Resolved at BLN site audit.
• SE-09	Response provided in this enclosure.
• SE-10	Resolved at BLN site audit.
• SE-11	Resolved at BLN site audit.
• SE-12	Resolved at BLN site audit.
• SE-13	Resolved at BLN site audit.
• SE-14	Resolved at BLN site audit.
• SE-15	Response to be provided in a future TVA letter.
• SE-16	Response provided in this enclosure.
• SE-17	Resolved at BLN site audit.
• SE-18	Response provided in this enclosure.
• SE-19	Response provided in this enclosure.
• SE-20	Response provided in this enclosure.
• SE-21	Response provided in this enclosure.
• SE-22	Response provided in this enclosure.
• SE-23	Resolved at BLN site audit.
• SE-24	Response provided in this enclosure.
• SE-25	Response provided in this enclosure.
• SE-26	Response provided in this enclosure.
• SE-27	Response provided in this enclosure.
• SE-28	Response provided in this enclosure.

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- SE-29 Resolved at BLN site audit.
- SE-30 Response provided in this enclosure.
- SE-31 Response provided in this enclosure.
- SE-32 Response provided in this enclosure.
- SE-33 Response to be provided in a future TVA letter.
- SE-34 Response provided in this enclosure.
- SE-35 Response provided in this enclosure.
- SE-36 Response to be provided in a future TVA letter.
- SE-37 Response to be provided in a future TVA letter.
- SE-38 Response provided in this enclosure.
- SE-39 Response to be provided in a future TVA letter.
- SE-40 Response to be provided in a future TVA letter.
- SE-41 Resolved at BLN site audit.
- SE-42 Resolved at BLN site audit.
- SE-43 Response to be provided in a future TVA letter.
- SE-44 Response provided in this enclosure.
- SE-45 Response to be provided in a future TVA letter.
- SE-46 Response provided in this enclosure.

**NRC Review of the BLN Environmental Report**

**NRC Information Needs - BLN ER Site Audit Exit Meeting**

**NRC Environmental Category: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information needs:

- SE-01:** Page 2.5-1 Section 2.5.1.1 – Please provide the data and equations for the weighted 2007 population estimates and for the equation derived for each county. Please provide the basis for using this method to project population and population distribution over the 50 year time interval, including references.
- SE-07:** Page 2.5-6 – Please provide the backup data behind the estimates of total transient and special transient populations. Please obtain data about permanent/transient residence numbers/ratios in the Mud Creek and nearby residential enclaves/communities such a Creeks Edge.

**BLN INFORMATION NEEDS: SE-01 and SE-07**

**BLN RESPONSE:**

During the week of March 31 through April 4, 2008, the NRC staff conducted an audit of the BLN site, including a review of the documentation supporting the BLN ER. Documentation reviewed by the NRC staff included a calculation for projecting population over a 50-year period. In addition, TVA explained the projection methodology used and provided readily available bibliographic information for the population projection references. In response to the staff's questions regarding transient population projections, TVA referred the NRC reviewers to the calculation that provided the population projections, explained the methodology used, and provided bibliographic information for the transient population projection reference. In addition, TVA presented a digital aerial photograph of the Creeks Edge community with population data overlaid that provided detailed information on the Creeks Edge area. TVA further explained that because Creeks Edge is a residential community (lacking transient activity) and the geography of the community is too small to project transient population, no transient population data were developed for this community. In addition, TVA clarified there is no "Mud Creek" residential community or enclave; references to Mud Creek in the ER are only to the embayment or stream.

Based on discussions with the NRC Socioeconomic/EJ reviewers, including a verbal explanation of the population (and transient population) projection methodology, review of the population calculation, aerial photograph and population data for Creeks Edge, and review of the bibliographic information on projection references; and the NRC reviewers' visit to the Creeks Edge community, TVA understands that the NRC staff considers the above information needs to be resolved and no additional documentation is required in response to these information requests.

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**ASSOCIATED BLN COL APPLICATION REVISIONS:**

None.

**ATTACHMENTS:**

None.

**NRC Review of the BLN Environmental Report**

**NRC Information Needs - BLN ER Site Audit Exit Meeting**

**NRC Environmental Category: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information need:

Page 2.5-4 – Please provide citations for the assumption that 50% of the direct and indirect workforce at Redstone Arsenal move into the regions and that these workforce members would have a family size of 4.

**BLN INFORMATION NEED: SE-03**

**BLN RESPONSE:**

During preparation of the BLN COL, in-migration resulting from the Base Realignment and Closure Act of 2005 (BRAC) activity at Redstone Arsenal was included in the analysis of population in the BLN area. To maintain consistency throughout the combined license (COL) application, the Redstone Arsenal analysis was performed based on the following assumptions: (1) a family size of four and (2) 50 percent of the workforce comes from within the region and 50 percent comes from outside the region. The family size of four is based on U.S. Census Bureau 2000 data, as shown in Attachment SE-03, which states that the average family size in the United States is 3.14 persons. For estimating family size, the value of 3.14 persons per family was rounded up to bound the U.S. Census Bureau value. The assumption that 50 percent of the workforce comes from outside the region was consistently used in BLN COL application analysis as a bounding approach for estimating incoming population. The 50 percent in-migration estimate is consistent with estimates assumed in the evaluation for other nuclear facilities that are located within a similar proximity to metropolitan areas, where construction workers may be available (NUREG-1437, Vol. 2, Appendix C: Socioeconomics, Subsection C.1.4 Case Studies).

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

None.

**ATTACHMENTS:**

The following document is provided as Attachment SE-03:

- SE-03. U.S. Census Bureau, American FactFinder - Jackson County, Alabama (Website accessed May 8, 2007).

**NRC Review of the BLN Environmental Report**

**NRC Information Needs – BLN ER Site Audit Exit Meeting**

**NRC Comment: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information need:

Page 2.5-5 – Please identify the “six parks and three associated lodges” and provide a citation(s) for the number of visitors referenced.

**BLN INFORMATION NEED: SE-05**

**BLN RESPONSE:**

The Chief Accountant for the Alabama Department of Conservation and Natural Resources - State Parks provided the visitor attendance information for fiscal year 2002 – 2003 through fiscal year 2004 – 2005 (Attachment SE-05). (For clarification, it is noted that Attachment SE-05 also lists Oak Mountain State Park, although this it is not one of the six parks in the BLN region.) ER Subsection 2.5.1.3 is revised to include the names of the parks and lodges.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

Revise COLA Part 3, ER Chapter 2, Subsection 2.5.1.3, sixth paragraph, as follows:

Within the BLN region, the majority of transient populations are visitors to parks and lodging. In fiscal year 2004 – 2005, the six parks and three associated lodges hosted more than one million visitors (including day and overnight stay visitors). These six parks are Bucks Pocket, Desoto Park, Cathedral Caverns, Joe Wheeler Park, Lake Guntersville Park, and Monte Sano. The three lodges are Guntersville Lodge, Desoto Lodge, and Joe Wheeler Lodge. From 2002 to 2005, the total number of visitors to these parks declined by approximately 2.5 percent.

**ATTACHMENTS:**

The following document is provided as Attachment SE-05:

- SE-05. Alabama Department of Conservation and Natural Resources, Alabama State Parks Visitor Data, Fiscal Years 2003 – 2004 and 2004 – 2005, 2008.

**NRC Review of the BLN Environmental Report**

**NRC Information Needs - BLN ER Site Audit Exit Meeting**

**NRC Environmental Category: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information need:

Page 2.5-5 – Please clarify the source of the visitor data regarding wild-life related visitors. Also, please provide a citation for selection of the method for forecasting transient population to 2047 (page 2.5-6).

**BLN INFORMATION NEED: SE-06**

**BLN RESPONSE:**

During the BLN site audit, the method for forecasting transient population to 2047 was discussed with NRC reviewers, and the citation for the forecasting methodology reference was provided to NRC reviewers. Based on the above discussion with NRC reviewers and in providing the reference citation, TVA understands no additional information is needed.

Visitor (transient population) numbers for wildlife watching were calculated from data presented in the U.S. Fish and Wildlife Service - U.S. Census Bureau reports, "2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation" for Alabama, Tennessee, and Georgia. The data presented in the tables on page 5 of each state report were area weighted to the portion of each state that lies within the BLN 50-mile region. Attachments SE-06-A, SE-06-B, and SE-06-C, provide the source data for the Alabama, Tennessee, and Georgia wildlife-watching information.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

None.

**ATTACHMENTS:**

The following documents are provided as Attachments SE-06-A, SE-06-B, and SE-06-C:

- SE-06-A. U.S. Department of the Interior, Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau, *2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, Alabama*, FHW/01-AL-Rev., revised March 2003.
- SE-06-B. U.S. Department of the Interior, Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau, *2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, Georgia*, FHW/01-GA Rev., revised March 2003.

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SE-06-C. U.S. Department of the Interior, Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau, *2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, Tennessee*, FHW/01-TN-Rev., revised March 2003.

## **NRC Review of the BLN Environmental Report**

### **NRC Information Needs - BLN ER Site Audit Exit Meeting**

#### **NRC Environmental Category: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information needs:

- SE-09:** Page 2.5-7 – Please provide additional specifications of the expected workforce and the source or basis for this information, as well as some basis for estimating the reliability of these estimates. Workforce numbers and timing estimates were notoriously unreliable for previous NPP construction. Please provide estimated dates for the peak construction workforce and operations workforce.
  
- SE-31:** Page 4.4-8 – Please provide source information for the temporal and geographic distribution of workers. And please provide additional information about the basis for these assumptions and discuss potential bias that these assumptions may impose. How is potential compensation for NPO-qualified workers from other construction on projects in the region factored into this analysis? Provide citations to support/validate your assumptions. Also 3000 is a very round number, how detailed is the workforce estimate? How valid is the assumption that each worker will bring a family of four? Also please provide a more detailed time line of population impact, not just the peak year. What communities will receive workers?

#### **BLN INFORMATION NEEDS: SE-09 and SE-31**

#### **BLN RESPONSE:**

The BLN construction staffing estimate was updated by Westinghouse in May 2008. The revised Figure 4.4-2, "BLN Construction Staffing by Craft," and new Table 4.4-X1, "BLN Workforce Population Estimates," provide BLN construction workforce estimates categorized by craft and an estimate of the total workforce during the peak construction phase. Revised Figure 4.4-2 is provided in Attachment SE-09-A, and the new Table 4.4-X1 is provided as text change Number 10 in the Associated BLN COL Application Revisions section that follows.

The peak construction workforce is estimated to be approximately 3250, which includes construction manual workers and non-manual workers, such as engineers and management. During the peak construction period, the total on-site workforce is estimated to be approximately 3900 workers, which includes the 3250 construction workforce, plus approximately 650 operations workers (security personnel are included among these operations workers) who begin working during the construction period. Following construction, the total operating staff, including security personnel, is estimated to be approximately 1000.

The construction workforce peaks in July 2015. The BLN operations workforce plateaus (reaches the estimated number of personnel needed for plant operations) in October 2017. The peak period for construction and operations workforces combined is between July and October 2015.

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Plant staff data were derived from AP1000 Builders Group benchmarking data developed in February 2007. Plant staff includes operations, maintenance, engineering, and training personnel. The security personnel estimate is based on previous assumptions and changes to 10 CFR Part 26, Subpart I, "Managing Fatigue," and Nuclear Energy Institute's document NEI-06-11 (Revision A), "Managing Fatigue at Nuclear Power Reactor Sites," which provides draft guidance for implementation of 10 CFR Part 26, Subpart I. BLN site schedules assume that activities pertaining to Unit 3 apply similarly to Unit 4 one year after Unit 3 becomes operational.

The estimated geographic distribution of workers was based on a survey performed by TVA. Compensation for Nuclear Process Operator-qualified (NPO-qualified) workers from other construction projects in the region was not factored into this analysis, because it is assumed that workers in the BLN area transition from other projects in the region.

The family size of four is based on U.S. Census Bureau 2000 data, as indicated in Attachment SE-09-B, which states that the average family size in the United States is 3.14 persons. For estimating family size, the value of 3.14 persons per family was rounded up to bound the U.S. Census Bureau value. Expectations are that the worker family size would be typical of the U.S. Census Bureau data. The U.S. Census Bureau data is used instead of Jackson County family size, because the in-migrating construction workers are expected to come from outside Jackson County.

The county population attributed to the BLN on-site workforce is expected to gradually increase over the span of 5 years, increasing the County population by approximately 100 people by the end of 2010, and is expected to peak at 7800 people in 2015 (3900 multiplied by 50 percent [to account for in-migration] multiplied by household size of four). Scottsboro and communities along the major transportation routes are expected to receive the majority of the incoming workers. Jackson County population, with the BLN project, is assumed to increase from approximately 59,100 to approximately 63,700 between the years 2010 and 2019. It is assumed that all workers and their families settle in Jackson County. Therefore, the influx of the on-site workforce and families would likely contribute the following percentage population increase in Jackson County: approximately 1 percent at the beginning of Unit 3 site preparation; up to 12.7 percent at peak construction period; and 3 percent at the completion of Unit 4 construction.

The updated workforce estimates are used to update workforce numbers stated in the ER, and other values in the text that are based on workforce estimates, as provided below. In addition to addressing the specific workforce questions provided in NRC Information Needs SE-09 and SE-31, the following COLA changes also address changes that result from other socioeconomic information needs that are affected by the revised workforce estimates.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

1. Revise COLA Part 3, ER Chapter 2, Subsection 2.5.2.1, third paragraph, as follows:

During the peak phase of construction, it is estimated that a construction workforce of up to 32503000 workers are estimated to be required to complete the facility. The temporal distribution of the construction workforce is discussed in

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Subsection 4.4.2.1 and illustrated in Figure 4.4-2. The estimated number of operations workers required for the BLN is approximately 1000-850 people.

2. Revise COLA Part 3, ER Chapter 2, Subsection 2.5.2.7.2, first and second paragraphs, as follows:

As of 2005, the population of Jackson County, Alabama, was 53,650 (Reference 42). Police ~~and fire protection~~ data, current as of November 2006, indicate that there are 95 sworn officers ~~and 435 firefighters~~ in Jackson County. The Jackson County Sheriff's Department has jurisdiction in Jackson County and is the only such authority in the county. There are seven additional local police departments in the county with jurisdictions usually limited to the city limits and an area extending out 3 mi. beyond the city limits. ~~Local police and fire protection are currently considered adequate, but future expansion and facility upgrades may be needed to accommodate future population growth. According to the U.S. military, the recommended police officer-to-resident ratio is between 1 and 4 officers per 1000 residents, or a police-to-resident ratio between 1:250 and 1:1000 (Reference 139). Currently, there is 1 police officer for every 565 persons in Jackson County (95/53,650), well within the recommended range.~~

There are 25 fire departments in the county with a total of 35 paid firefighters and 400 volunteer firefighters (no less than 10 per station). The Hollywood Fire Department is a volunteer fire department with 14 volunteer fire fighters. The fire department owns three pumper trucks, one brush truck, and one response vehicle. The Hollywood Fire Department is the first responder for the BLN. The Scottsboro Fire Department is the only ~~paid~~ fire department in the county with paid firefighters, employing 35 firefighters at three fire stations. The department owns five pumper trucks, one ladder truck, one brush truck, and one service truck. The Scottsboro Fire Department is the primary backup for the BLN. The National Fire Protection Association (Reference 140) estimates that in 2006 there were 1,140,900 firefighters in the United States. Dividing the 2006 resident population of the United States (299,398,484) (Reference 144) by the firefighter population provides a ratio of 1 firefighter for every 262 persons. The firefighter-to-resident ratio for Jackson County is 1:123. (435/53,650). This indicates that the firefighter ratio in Jackson County is above the national average.

3. Revise COLA Part 3, ER Chapter 2, Subsection 2.5.6, by adding the following references:

139. Broemmell, Major J., Major T. L. Clark, and Major S. Nielsen, U.S. Army. "The Surge Can Succeed," *Military Review*, July-August 2007, p. 110.

140. National Fire Protection Association, Fire Service Statistics, The U.S. Fire Department Profile, Website, <http://www.nfpa.org/assets/files//PDF/FDprofilefactsheet.pdf>, accessed June 2008.

144. U.S. Census Bureau, State & County QuickFacts USA, Website, <http://quickfacts.census.gov/qfd/states/00000.html>, accessed March 11, 2008.

4. Revise COLA Part 3, ER Chapter 4, Subsection 4.2.1.3, as follows:

Water for construction of the BLN is provided by the Guntersville Reservoir and the Scottsboro Municipal Water System. This water is drawn from Guntersville

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## Responses to Environmental Report Information Needs

Reservoir via the existing intake structure located on the west shore of the river near Tennessee River mile (TRM) 392 or from the existing municipal services to the BLN site. Construction activities for the BLN are expected to require water amounts of approximately 345,600 ~~to~~ 604,800 gpd or 240 ~~to~~ 420 gpm for concrete batch plant operation, dust suppression, and sanitary needs. A peak use of 872,000 gpd of water could be required for startup (Reference 5). Portable toilet facilities are utilized for sanitary needs during construction. The recommended planning number for potable water consumption for workers in hot climates is 3 gpd for each worker, or approximately 5 ~~to~~ 7 oz. every 15 ~~to~~ 20 min. (Reference 1). Based on the maximum construction worker population of ~~3900~~2400 people (Reference 2), the potable water consumption is estimated at ~~11,700~~6300 gpd. It is anticipated that potable water continues to be obtained from the Scottsboro Municipal Water System. The quantities of water obtained from Guntersville Reservoir are expected to have little effect on the availability of water for other users and is considered a SMALL impact.

5. Revise COLA Part 3, ER Chapter 4, Subsection 4.4.1.1, second paragraph, as follows:

Beyond the immediate site boundary, the area is rural, bound by water features, woods, and pastureland. As shown in Table 2.5-2, the 2007 projected permanent population for the area within 10 mi. is 25,483. Population distribution details are given in Subsection 2.5.1. Unit 3 site preparation is estimated to begin in 2011, with the peak phase of construction targeted for three years later. The estimated on-site ~~construction~~-workforce during the peak construction phase increases to ~~3900~~3000, and then diminishes until completion of the construction phase.

6. Revise COLA Part 3, ER Chapter 4, Subsection 4.4.2.1, as follows:

#### 4.4.2.1 Demography

Population estimates and projections for the region are discussed in Subsection 2.5.1.

Industry, heavy construction, and unemployment data are discussed Subsection 2.5.2.

During the peak construction period, there is an on-site ~~construction~~-workforce of approximately 3900, 3000 (including which includes a construction workforce of approximately 3250, 2,100 (construction workers, plus-engineering, management, security, etc.) and approximately 650 operations workers (includes security personnel). Figure 4.4-2 and Table 4.4-X1 show ~~illustrates~~ the temporal distribution of workers for construction of the new units. ~~Some of the different~~ Trade skills represented in the labor pool include electrical workers, welders, and pipe fitters, etc. To ensure the necessary labor pool is available, as the demand for workers increases, construction companies recruit employees from local technical school programs and work with school administrators to build up curriculum in the necessary labor trade areas. National labor trade union organizers, such as the American Federation of Labor, have made it a high priority to train new entrants in the construction industry as the need for labor ramps up. Additionally BLN recruits their Nuclear Process Operator-qualified (NPO-qualified) workers from among those working at other project sites.

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Based on current employment levels in the construction industry in Alabama, Georgia, and Tennessee, and given the significant growth between 1997 and 2002 in the region, (Alabama saw more than a 16.5 percent increase, Georgia saw a 118.4 percent increase, and Tennessee saw a 19.7 percent increase in the number of heavy-construction workers), it is assumed that 50 percent of the construction workforce come from the existing local/regional industry and the other 50 percent migrate into the region, and that each construction worker is accompanied by in-migrates with their family (References 5, 6, and 11). The assumption that 50 percent of the workforce construction workers are expected to migrate into comes from outside the region is considered a conservative estimate. used in the analysis as a bounding approach for estimating incoming population.

In 2000, the average family size in the United States was 3.14 people (Reference 2). To be conservative, an average household size of four was used. The assumed family size of four is based on U.S. Census Bureau 2000 data (Reference 2), which states that the average family size in the United States is 3.14 persons. Expectations are that the worker family size would be typical of the U.S. Census Bureau data; however, for estimating family size in this report, the value of 3.14 persons per family was rounded up to bound the U.S. Census Bureau value. The U.S. Census Bureau data is used instead of Jackson County family size, because the in-migrating construction workers are expected to come from outside Jackson County.

The county population due to the BLN is expected to gradually increase over the span of 5 years, increasing the population by approximately 100 people in year 2010, and the population increase resulting from on-site workers is expected to peak at 7800 people in 2015 (3900 multiplied by 50 percent [to account for in-migration] multiplied by household size of four). With a peak construction workforce of 3000-3844, the population within the region increases by 6000-7688 people (50 percent of 3000-3844 multiplied by household size of four). In 2013, Jackson County's estimated population is 59,913 (Reference 1). Jackson County population with the BLN project is assumed to increase from approximately 59,100 to approximately 63,700 between the year of 2010 and 2019. It is assumed that all workers and their families settle in Jackson County. Therefore, the influx of construction workers and families would likely contribute the following percentage population increases in Jackson County during construction: approximately 1 percent at the beginning of Unit 3 site preparation; up to 12.7 percent at peak construction period; and 3 percent at the completion of Unit 4 construction. represent a 10-12 percent increase in population in Jackson County. Therefore construction-phase workers and their families represent a small percentage of the existing county population, and the impact is anticipated to be SMALL. Within Jackson County, the impacts to the communities within the BLN vicinity (the main recipient of workers being Scottsboro and the area along its major transportation routes) are expected to be MODERATE.

7. Revise COLA Part 3, ER Chapter 4, Subsection 4.4.2.3, second and fourth paragraphs, as follows:

The demand on potable water utilities and waste treatment increases during construction at the BLN site. Considering the estimated on-site workforce during

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~~the peak construction phase number of construction workers with families moving that moves into the vicinity with families,~~ the population increases by ~~78006000~~ people (or ~~one-half~~ of the total ~~number of~~ anticipated workers multiplied by the ~~assumedestimated~~ family size of four). ~~All of the-~~The potable water used for human consumption at the BLN site is expected to ~~be use per day for human consumption~~ is obtained from the city of Scottsboro, Alabama. The Scottsboro Municipal Water System currently uses approximately ~~75.020~~ percent (64.6 million gallons per day [Mgd]) of their normal utilization condition capacity of 8 Mgd. It is anticipated that the average per capita amount of water consumed per day is 90 gallons (gal.), ~~with resulting in an overall increase in consumption of approximately 700,000540,000 gal. by from~~ the additional population. This represents an additional ~~8.86-8~~ percent usage of system capacity, bringing total usage to approximately ~~83.827~~ percent of capacity during the peak construction phase. Within the vicinity of the plant, the current drinking water treatment ~~reserve capacity including reserve~~ is 12 Mgd. The current wastewater treatment reserve capacity is 5 Mgd, and the wastewater treatment plant is operating at 4 Mgd (80 percent). During the peak construction phase, it is anticipated to operate at 94 percent or approximately 4.7 Mgd. According to officials, there are no concerns with water supplies as water systems in Jackson County are generally not operating at or near capacity.

The impacts of water treatment services due to increased population are expected to be SMALL, with no mitigation required.

Water for construction activities, such as concrete batch plant operation, dust suppression, and sanitary needs, of the BLN would be provided by the Guntersville Reservoir and the Scottsboro Municipal Water System as discussed in Subsection 4.2.1. Because most of the water needed for construction is expected to be withdrawn from Guntersville Reservoir, impacts of on-site construction activities on water treatment services are expected to be SMALL.

There are 95 sworn police officers and 435 firefighters in Jackson County. The ratio of ~~current residents to~~ police officers to current residents in Jackson County, Alabama, is ~~1:565, 565:1,~~ and the ratio of firefighters to current residents ratio is 1:123423:1. With the increase in population due to the total on-site workforce during the peak construction phase workers and their families, the police ratio of police to residents would become ~~1:647628:1,~~ and the ratio of firefighters to residents ratio would become ~~1:141137:1~~ in Jackson County. Although these ratios increase during the construction of the BLN, this increase would only be short term, and the expected ratios are within the national recommended range for police (1 police officer for every 250 to 1000 persons) and above the national ratio for firefighters (1 firefighter for every 262 persons), as discussed and referenced in Subsection 2.5.2.7.2.

The impacts of on-site construction activity on local police and firefighters are expected to be SMALL and offset by increased tax revenue.

8. Revise COLA Part 3, ER Chapter 4, Subsection 4.4.2.4, second and third paragraphs, as follows:

Because construction of the BLN site is not a permanent condition, during the peak construction phase it is probable that not all of the estimated 3900~~construction~~ workers would move into the region and need housing.

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Jackson County has a total of 2553 vacant housing units, with 894 available for sale or rent. For this analysis, a conservative assumption is made suggesting 1950-1500 construction workers (or half of the total anticipated workers-peak on-site workforce of 3900, which includes 3250 construction and 650 operations workers) need housing during the peak construction phase, thus one housing unit per ~~construction~~ worker is required, for a total of 1950-1500 units. This represents a deficit in the number of ~~available~~ housing units available in Jackson County. Table 4.4-2 describes household growth trends in Jackson County.

The impacts of plant construction on the housing market in Jackson County are expected to be MODERATE to LARGE based on an estimated deficit in the number of available houses. The construction workforce will likely compete with lower-wage employees for housing, forcing up rental prices and decreasing availability (Reference 15). There are several small rural communities around the BLN site on both sides of the Tennessee River. While there are adequate roads and bridges in Jackson County between the site and many of these communities, on the east side of the river the local geography makes commuting to the site from those more distant locations, such as Dutton and Pisgah, less convenient. There are also less housing opportunities available in these communities because of their rural nature and availability of services. Therefore, a majority of workers are expected to concentrate in the communities nearer to the site and in larger cities within the BLN region. With mitigation, this impact to the housing market caused by increased competition for housing could be reduced to SMALL to MODERATE. The availability of housing would be reviewed again during the construction phase to assess whether mitigation efforts are needed. These efforts could include housing assistance for employees, transportation assistance for commuting employees, or remote parking areas with shuttles.

9. Revise COLA Part 3, ER Chapter 4, Subsection 4.4.4, by adding the following reference:
  15. Rees Consulting Inc., Housing Market and Needs Assessment – Valley and Adams County, 2005, available through Valley County Economic Development, Website, <http://www.valleycountyeconomicdevelopment.com/pages/finalneeds.htm>, accessed May 16, 2008.
10. Revise COLA Part 3, ER Chapter 4, by adding new Table 4.4-X1 (BLN Workforce Population Estimates), as provided on the following two pages:

**Table 4.4-X1  
BLN WORKFORCE POPULATION ESTIMATES**

Date	Site-Specific Civil Structural	Site-Specific Fitters	Site-Specific Electricians	Site-Specific Miscellaneous Direct	Unit 3 Civil Structural	Unit 3 – Pipefitters	Unit 3 - Electricians	Unit 3 – Miscellaneous Direct	Unit 3 – Testing & Startup Support	Unit 4 – Civil Structural	Unit 4 – Pipefitters	Unit 4 – Electricians	Unit 4 – Miscellaneous Direct	Unit 4 – Testing & Startup Support	Distributable Indirect Support (Note a)	Non-Manuals (Note a)	OPERATIONS	SECURITY	CONSTRUCTION WORKFORCE	TOTAL ON-SITE WORKFORCE (Note a)
1/1/2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
4/1/2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	5
7/1/2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	0	0	36	36
10/1/2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	0	0	46	46
1/1/2011	48	0	0	56	0	0	0	0	0	0	0	0	0	0	37	88	0	0	229	229
4/1/2011	57	0	0	56	0	0	0	0	0	0	0	0	0	0	40	102	0	0	255	255
7/1/2011	84	14	18	62	0	0	0	0	0	0	0	0	0	0	63	123	0	0	364	364
10/1/2011	88	16	26	62	0	0	0	0	0	0	0	0	0	0	68	148	0	0	408	408
1/1/2012	94	20	30	62	0	0	0	0	0	0	0	0	0	0	73	175	0	0	454	454
4/1/2012	102	28	38	62	0	0	0	0	0	0	0	0	0	0	82	193	0	0	505	505
7/1/2012	10	34	42	58	72	0	0	0	0	0	0	0	0	0	113	221	0	0	646	646

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Date	Site-Specific Civil Structural	Site-Specific Fitters	Site-Specific Electricians	Site-Specific Miscellaneous Direct	Unit 3 Civil Structural	Unit 3 – Pipefitters	Unit 3 - Electricians	Unit 3 - Miscellaneous Direct	Unit 3 – Testing & Startup Support	Unit 4 – Civil Structural	Unit 4 – Pipefitters	Unit 4 – Electricians	Unit 4 – Miscellaneous Direct	Unit 4 – Testing & Startup Support	Distributable Indirect Support (Note a)	Non-Manuals (Note a)	OPERATIONS	SECURITY	CONSTRUCTION WORKFORCE	TOTAL ON-SITE WORKFORCE (Note a)
<u>2</u>	<u>6</u>																			
<u>10/1/20</u>	<u>11</u>																			
<u>12</u>	<u>6</u>	<u>34</u>	<u>42</u>	<u>54</u>	<u>80</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>119</u>	<u>241</u>	<u>125</u>	<u>50</u>	<u>686</u>	<u>861</u>
<u>1/1/201</u>	<u>12</u>																			
<u>3</u>	<u>0</u>	<u>34</u>	<u>42</u>	<u>52</u>	<u>176</u>	<u>0</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>157</u>	<u>272</u>	<u>162</u>	<u>54</u>	<u>855</u>	<u>1071</u>
<u>4/1/201</u>	<u>12</u>																			
<u>3</u>	<u>2</u>	<u>34</u>	<u>44</u>	<u>46</u>	<u>202</u>	<u>34</u>	<u>84</u>	<u>18</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>214</u>	<u>301</u>	<u>199</u>	<u>58</u>	<u>1099</u>	<u>1356</u>
<u>7/1/201</u>	<u>12</u>																			
<u>3</u>	<u>2</u>	<u>34</u>	<u>44</u>	<u>42</u>	<u>256</u>	<u>92</u>	<u>11</u>	<u>22</u>	<u>0</u>	<u>72</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>289</u>	<u>324</u>	<u>235</u>	<u>63</u>	<u>1409</u>	<u>1707</u>
<u>10/1/20</u>	<u>11</u>																			
<u>13</u>	<u>4</u>	<u>34</u>	<u>44</u>	<u>40</u>	<u>282</u>	<u>21</u>	<u>13</u>	<u>36</u>	<u>0</u>	<u>80</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>359</u>	<u>343</u>	<u>272</u>	<u>67</u>	<u>1686</u>	<u>2025</u>
<u>1/1/201</u>	<u>11</u>																			
<u>4</u>	<u>0</u>	<u>34</u>	<u>44</u>	<u>40</u>	<u>288</u>	<u>25</u>	<u>15</u>	<u>70</u>	<u>0</u>	<u>176</u>	<u>0</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>427</u>	<u>422</u>	<u>309</u>	<u>71</u>	<u>2017</u>	<u>2397</u>
<u>4/1/201</u>	<u>10</u>																			
<u>4</u>	<u>8</u>	<u>30</u>	<u>44</u>	<u>40</u>	<u>290</u>	<u>28</u>	<u>15</u>	<u>74</u>	<u>20</u>	<u>202</u>	<u>34</u>	<u>84</u>	<u>18</u>	<u>0</u>	<u>513</u>	<u>435</u>	<u>346</u>	<u>75</u>	<u>2330</u>	<u>2751</u>
<u>7/1/201</u>	<u>10</u>																			
<u>4</u>	<u>6</u>	<u>28</u>	<u>44</u>	<u>38</u>	<u>308</u>	<u>30</u>	<u>18</u>	<u>74</u>	<u>30</u>	<u>256</u>	<u>92</u>	<u>112</u>	<u>22</u>	<u>0</u>	<u>600</u>	<u>454</u>	<u>383</u>	<u>79</u>	<u>2650</u>	<u>3112</u>
<u>10/1/20</u>	<u>10</u>																			
<u>14</u>	<u>6</u>	<u>28</u>	<u>42</u>	<u>30</u>	<u>302</u>	<u>33</u>	<u>21</u>	<u>104</u>	<u>40</u>	<u>282</u>	<u>218</u>	<u>136</u>	<u>36</u>	<u>0</u>	<u>685</u>	<u>458</u>	<u>420</u>	<u>83</u>	<u>3017</u>	<u>3520</u>
<u>1/1/201</u>	<u>10</u>																			
<u>5</u>	<u>6</u>	<u>28</u>	<u>40</u>	<u>24</u>	<u>298</u>	<u>33</u>	<u>21</u>	<u>88</u>	<u>50</u>	<u>288</u>	<u>254</u>	<u>150</u>	<u>70</u>	<u>0</u>	<u>706</u>	<u>460</u>	<u>456</u>	<u>88</u>	<u>3110</u>	<u>3654</u>
<u>4/1/201</u>	<u>10</u>																			
<u>5</u>	<u>0</u>	<u>28</u>	<u>38</u>	<u>22</u>	<u>252</u>	<u>34</u>	<u>22</u>	<u>94</u>	<u>80</u>	<u>290</u>	<u>284</u>	<u>154</u>	<u>74</u>	<u>20</u>	<u>707</u>	<u>454</u>	<u>493</u>	<u>92</u>	<u>3162</u>	<u>3747</u>

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Date	Site-Specific Civil Structural	Site-Specific Fitters	Site-Specific Electricians	Site-Specific Miscellaneous Direct	Unit 3 Civil Structural	Unit 3 - Pipefitters	Unit 3 - Electricians	Unit 3 - Miscellaneous Direct	Unit 3 - Testing & Startup Support	Unit 4 - Civil Structural	Unit 4 - Pipefitters	Unit 4 - Electricians	Unit 4 - Miscellaneous Direct	Unit 4 - Testing & Startup Support	Distributable Indirect Support (Note a)	Non-Manuals (Note a)	OPERATIONS	SECURITY	CONSTRUCTION WORKFORCE	TOTAL ON-SITE WORKFORCE (Note a)
7/1/2015	86	28	32	18	226	336	245	97	80	308	302	184	74	30	718	453	530	96	3218	3844
10/1/2015	70	28	28	18	173	291	246	77	100	302	332	218	104	40	706	442	567	100	3175	3842
1/1/2016	46	20	18	6	94	265	114	68	170	298	334	214	88	50	642	409	609	100	2836	3545
4/1/2016	0	0	0	0	22	174	12	38	170	252	342	223	94	80	462	377	652	100	2246	2998
7/1/2016	0	0	0	0	0	0	0	0	154	226	336	245	97	80	367	338	694	100	1843	2637
10/1/2016	0	0	0	0	0	0	0	0	80	173	291	246	77	100	316	299	729	150	1582	2461
1/1/2017	0	0	0	0	0	0	0	0	60	94	265	114	68	170	273	194	739	163	1238	2140
4/1/2017	0	0	0	0	0	0	0	0	60	22	174	12	38	170	151	146	749	175	773	1697
7/1/2017	0	0	0	0	0	0	0	0	0	0	0	0	0	154	55	114	758	188	323	1269
10/1/2017	0	0	0	0	0	0	0	0	0	0	0	0	0	80	28	109	768	200	217	1185
1/1/2018	0	0	0	0	0	0	0	0	0	0	0	0	0	60	21	15	768	200	96	1064
4/1/2018	0	0	0	0	0	0	0	0	0	0	0	0	0	60	21	0	768	200	81	1049

<u>Date</u>	<u>Site-Specific Civil Structural</u>	<u>Site-Specific Fitters</u>	<u>Site-Specific Electricians</u>	<u>Site-Specific Miscellaneous Direct</u>	<u>Unit 3 Civil Structural</u>	<u>Unit 3 – Pipefitters</u>	<u>Unit 3 - Electricians</u>	<u>Unit 3 - Miscellaneous Direct</u>	<u>Unit 3 – Testing &amp; Startup Support</u>	<u>Unit 4 – Civil Structural</u>	<u>Unit 4 – Pipefitters</u>	<u>Unit 4 – Electricians</u>	<u>Unit 4 – Miscellaneous Direct</u>	<u>Unit 4 – Testing &amp; Startup Support Distributable</u>	<u>Indirect Support (Note a)</u>	<u>Non-Manuals (Note a)</u>	<u>OPERATIONS</u>	<u>SECURITY</u>	<u>CONSTRUCTION WORKFORCE</u>	<u>TOTAL ON-SITE WORKFORCE (Note a)</u>
08																				
7/1/2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	768	200	0	968

- a. Approximations carried into the ER text include 3250 for the peak TOTAL CONSTRUCTION WORKFORCE (shown in table as 3217 on 7/1/2015); 3900 for the peak TOTAL ONSITE WORKFORCE (shown in table as 3844 on 7/1/2015); and 1000 for the Operations workforce (shown in table as 968 [768 – Operations, 200 – Security] from 10/1/2017 forward).

11. Revise COLA Part 3, ER Chapter 4, Section 4.4, by replacing Figure 4.4-2 with the **revised Figure 4.4-2** (BLN Construction Staffing by Craft), as provided as Attachment SE-09-A.

12. Revise COLA Part 3, ER Chapter 5, Subsection 5.8.1, third paragraph, as follows:

An estimated ~~1000850~~ operations workers are needed for operation of the BLN. The impacts from these workers on the local and regional area are discussed in Subsection 5.8.2.

13. Revise COLA Part 3, ER Chapter 5, Subsection 5.8.1.2, third paragraph, as follows:

For plant operations, it was assumed that the BLN site would operate in three shifts. The day shift would be composed of 60 percent of the workers, the night shift would be composed of 30 percent of the workers, and the midnight (graveyard) shift would be composed of 10 percent of the workers. It was also assumed that 20 percent of ~~all the~~ workers would carpool, and the remaining 80 percent of the workers would not carpool with another plant employee. The BLN site expects to employ approximately 1000850 operations workers at the new units. Therefore, the 1000850 workers needed for operation of the new facility would add approximately 800680 additional vehicles on the roadway. Of these, approximately 480408 are associated with the day shift, 240204 are associated with the night shift, and 8068 are associated with the midnight (graveyard) shift. Assuming the most of the vehicles are on the roadway at the end of the day shift and the start of the night shift (shift change), there is a maximum of 720642 additional vehicles entering and leaving the site. Additional impacts may be present during outages and during refueling periods when more workers are present. Additional information on transportation, including current traffic counts, is discussed in Subsection 2.5.2.

14. Revise COLA Part 3, ER Chapter 5, Subsection 5.8.2.1, first and second paragraphs, as follows:

The 2007 estimated permanent population within the 50-mi. BLN region is 1,158,869. Population projections are discussed in Subsection 2.5.1. The BLN site is expected to employ approximately ~~1000850~~ operations workers at the new units. Based on preliminary estimates, and to provide a maximum impact scenario, it is assumed that 50 percent of the new units' employees migrate into the region, and that each operations worker brings their family. The assumed family size of four is based on U.S. Census Bureau 2000 data (Reference 2), which states that the average family size in the United States is 3.14 persons. For estimating family size, the value of 3.14 persons per family was rounded up to bound the U.S. Census Bureau value. Expectations are that the worker family size would be typical of the U.S. Census Bureau data. The U.S. Census Bureau data is used instead of Jackson County family size, because the in-migrating construction workers are expected to come from outside Jackson County. The average family size in the United States is 3.18 in 2000. To be conservative, an average family size of four was used to estimate the increase in population within the 50-mi. region. An operational workforce of ~~1000850~~ increases the population in the 50-mi. region by approximately ~~20004700~~ people. Of the operations workers who migrate into the region, it is assumed that all settle in Jackson

County. In 2015, the Jackson County estimated population is 61,249. Based on these estimates, the influx of operations workers and families would likely represent a 32.8 percent increase in population in Jackson County. The operations workers and their families represent a very small percent increase in the existing population.

Within the communities in the vicinity, the influx of operational workers during outages helps reduce the bust effect of population decline caused by the departure of construction workers. At the current rate of population growth it would take approximately 15 years for the population in the vicinity to reach the population peak experienced during construction. However, the approximate 600 to- 800 temporary employees required for the scheduled refueling outage every 18 months act to offset this impact. These workers are expected to work at the plant for a 30-day period. The impact of plant operations on local and regional demography is considered to be SMALL, as the percent increase in population is below 4 percent for Jackson County, and mitigation is not warranted.

15. Revise COLA Part 3, ER Chapter 5, Subsection 5.8.2.2, second paragraph, as follows:

For every plant operations employee, an estimated additional 0.759 jobs are created in the 50-mi. region, which means that 1000850 direct operations jobs resulted in an additional 759645 indirect jobs for a total of 1759495 new jobs in the region. For the operations phase, it is assumed that the operations workforce is in place having in-migrated during or near the end of the construction phase. Because most indirect jobs are service-related and not highly specialized, it is likely that most, if not all, indirect jobs are filled by the existing population, including both unemployed workers and persons not currently in the workforce within the 50-mi. region. This is a positive impact on the economy by providing new business and job opportunities for local residents. In addition, these businesses and employees generate additional profits, wages, and salaries, upon which taxes are paid.

16. Revise COLA Part 3, ER Chapter 5, Subsection 5.8.2.3.1, **to update ER revisions provided in response to comment ER64 in TVA's May 2, 2008, letter**, as follows:

#### 5.8.2.3.1 Social and Public Services

##### Water Supply Facilities

Subsection 2.5.2 describes the public water supply systems in the area, their capacities, and current demands. Subsection 4.4.2.3 describes the public water supply system usage during construction. The BLN site is not anticipating the use of groundwater as a safety-related water source, and it does not plan to use groundwater as its primary water supply resource for any purpose. Potable water is supplied by the Scottsboro Municipal Water System, operated by the city of Scottsboro, Alabama.

The demand on potable water utilities is anticipated to decrease during operations at the BLN site. Taking into consideration the estimated number of operational workers (1000850) with families moving into Jackson County, the population is expected to decrease by 58004300 people (estimated construction

population increase [78006000], minus the result of multiplying one-half of the anticipated operational workers by the estimated family size of four [20004700]. During operation, the Scottsboro Municipal Water System would use approximately 77.277 percent (6.2 Mgd) of its normal capacity of 8 Mgd. It is anticipated that the average per capita amount of water consumed per day is 90 gal. (Reference 3). Based on these values, an overall decrease in consumption is anticipated at approximately 522,000387,000 gal., from the construction phase to the operational phase. This represents a reduction of 6.65 percent usage of system capacity.

The current maximum capacities for the potable water supplies would not be reached during the peak construction phase, the period of highest use of service. Because the Scottsboro Municipal Water System is expected to be capable of handling the additional water use for construction, capacity is not expected to be reached during operation, when water demand decreases and approaches preconstruction levels.

Impacts to municipal water supplies from the operations-related population increase are considered SMALL and mitigation is not warranted.

#### Wastewater

Wastewater treatment is provided by the city of Scottsboro, Alabama. Currently, there are five wastewater treatment systems in the county, the largest of which is operated by the city of Scottsboro, Alabama. This plant has a maximum capacity of 5 Mgd. Estimated wastewater amounts for operations are based on expected water supply usage. With the understanding that some water is lost before it reaches the wastewater treatment facility due to watering lawns, evaporation, etc., the values for wastewater are conservative.

During the construction phase, the wastewater treatment facility operated by the city of Scottsboro is expected to operate at 9494 percent of its capacity or 4.74.5 Mgd. Following construction, during reactor operation, facility use is anticipated to drop to 83.683 percent or approximately 4.2 Mgd, which is approximately 3.63 percent more than the wastewater system's current, preconstruction use of 4 Mgd (80 percent of capacity).

The current maximum capacity for the wastewater treatment facility is not expected to be surpassed during the peak construction phase, the period of greatest use of services. Because this facility is expected to process the increased wastewater produced during construction without a change in capacity, no anticipated capacity increases are expected during operation. Indeed, wastewater production during operation is anticipated to approach preconstruction levels.

Based on system capacity and expected utilization, impacts to wastewater treatment facilities from an operations-related population increase are considered SMALL and mitigation is not warranted.

#### Police and Fire Protection Services

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Because the number of police officers in Jackson County is not expected to increase during construction or operation, the ~~resident-to-police-officer-to-resident~~ ratio is anticipated to be ~~1:586583 persons per officer~~ during operations, a decrease of ~~6145~~ persons per officer from the construction period. According to the U.S. military, ~~resident-to-police~~ the recommended police officer-to-resident ratios should be between 1 and 4 officers per 1000 citizens, or 1 police officer for every 250 to 1000 persons ~~250 to 1000 persons per police officer~~ (Reference 14). Police-officer-to-resident ratios in Jackson County during Construction and operations values fall within these recommended rangeratios.

Because the number of firefighters is not expected to increase during construction or operation, the ~~resident-to-firefighter-to-resident~~ ratio is anticipated to be ~~1:128127 persons per firefighter~~ during operation, a decrease of ~~10 persons per firefighter~~ an increase from 1:141 ratio during the peak construction period. The derived ~~resident-to-firefighter-to-resident~~ ratio for the United States in 2006 was 1:262 residents per firefighter (References 15 and 16). Firefighter-to-resident ratios in Jackson County during construction and operations are greater than the national average.

Even with the anticipated increase and decrease of population in Jackson County due to construction and operations, the predicted ratios for ~~persons per police officers~~ and ~~persons per firefighters per resident~~ fall within the recommended ratios or cited national values. Potential impacts of the BLN operations on police protection and firefighting are considered SMALL, and mitigation is not warranted.

#### Medical Services

In Jackson County, the ratio of primary-care-physicians-to-persons ratio is 6.2 doctors per 10,000 people; however, the state ratio for rural areas is 5.74 doctors per 10,000 people. Jackson County is considered to be an area with a physician shortage. Alabama's shortage of physicians is a state-wide problem (Reference 17).

The construction and operation of the BLN station is expected to stimulate the local economy and make the area more attractive to physicians and medical investors. Because the county is currently experiencing a shortage, an excess of physicians is not anticipated during the transition from the construction phase to the operational phase of the BLN. Minor injuries to operations workers are assessed and treated by on-site medical personnel. Other injuries are treated at Highland Medical Center (Subsection 2.5.2).

Based on these factors, the impact of plant operations on medical services is considered SMALL and mitigation is not warranted.

17. Revise COLA Part 3, ER Chapter 5, Subsection 5.8.2.3.2, fourth paragraph, as follows:

The plant employs approximately ~~1000850~~ people for operations. As stated previously, based on an assumption that 50 percent of the workers in-migrate to Jackson County, a conservative estimate of ~~484425~~ housing units are needed for

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- the new workers. Jackson County has a total of 2553 vacant housing units, with 894 available for sale or rent.
18. Revise COLA Part 3, ER Chapter 4, Subsection 5.8.4, by adding the following references:
    14. Broemmel, Major J., Major T. L. Clark, and Major S. Nielsen, U.S. Army, "The Surge Can Succeed," *Military Review*, July-August 2007, p. 110.
    15. National Fire Protection Association, Fire Service Statistics, The U.S. Fire Department Profile, Website, <http://www.nfpa.org/assets/files//PDF/FDprofilefactsheet.pdf>, accessed June 2008.
    16. U.S. Census Bureau, State & County QuickFacts USA, Website, <http://quickfacts.census.gov/qfd/states/00000.html>, accessed March 11, 2008.
    17. Alabama Rural Health Association, Alabama Rural Health Report "Selected Indicators of Rural Health Status in Alabama," March 2003, Website, <http://www.arhaonline.org/PDF%20Files/RHRv3no1.PDF>, accessed April 27, 2008.
  19. Revise COLA Part 3, ER Chapter 10, Subsection 10.1.1, Subpart **Socioeconomic Impacts**, first paragraph, sixth bullet, as follows:
    - A total of approximately ~~39003000~~<sup>3000</sup> ~~operative~~ workers on site during peak construction period, of which about 50 percent migrate into the region. This worker impact is deemed to be SMALL. The projected influx of workers and their families have a SMALL demographic impact upon the county.
  20. Revise COLA Part 3, ER Chapter 10, Subsection 10.1.2, Subpart **Socioeconomic Impacts**, first paragraph, fifth bullet, as follows:
    - Operation of the two units requires approximately ~~1000850~~ workers, of which about 50 percent migrate into the region. This worker impact is deemed to be SMALL. The projected influx of workers and their families would increase the population of Jackson County by approximately ~~32.8~~ percent which represents a SMALL demographic impact upon the county.
  21. Revise COLA Part 3, ER Chapter 10, Subsection 10.1.3, Subpart **Construction Impacts**, only paragraph, as follows:
 

Construction impacts and mitigation measures are summarized in Table 10.1-1. As outlined in Section 2.5.2, during the peak phase of construction, up to ~~39003,000~~<sup>3,000</sup> ~~operative~~ workers are on site ~~at the peak period of construction~~. All of the impacts, other than socioeconomic, from the construction of BLN and initial re-clearing of existing transmission lines are SMALL and short-term. Most socioeconomic impacts can either be partly mitigated or are expected to dissipate after construction is complete.
  22. Revise COLA Part 3, ER Chapter 10, Subsection 10.1.3, Subpart **Operational Impacts**, second paragraph, as follows:
 

**Socioeconomic:** As outlined in Section 2.5.2, the estimated number of operations workers to staff the two BLN units is approximately 1000850 people, a

small fraction of the total projected population of the region. Because of the smaller number of workers involved in operation of the BLN, the socioeconomic impacts are generally smaller but are sustained over a longer period of time when compared to that of construction. An increased volume of traffic from operational workers may adversely affect traffic patterns and levels of service in the vicinity of BLN. Mitigation measures for partially offsetting some impacts may include promoting carpooling, implementing staggered shifts, and using signage and turn lanes to alleviate traffic concerns.

23. Revise COLA Part 3, ER Chapter 10, Table 10.1-2 (Sheet 5 of 9), second paragraph under column heading "Adverse Impact" as follows below. [Only affected text is shown.]

Socioeconomics	Operation of the BLN is projected to increase the population in the region by approximately <del>1000850</del> workers and their families, which increases traffic, school crowding, and puts an additional burden on community infrastructure and services. This impact is short-term and is expected to dissipate over time.
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**ATTACHMENTS:**

The following figure and document are provided as Attachments SE-09-A and SE-09-B, respectively:

- SE-09-A. Tennessee Valley Authority, Environmental Report Figure 4.4-2, BLN Construction Staffing by Craft, June 2008.
- SE-09-B. U.S. Census Bureau, 2000 Demographic Data for Jackson County, (Website accessed May 8, 2007).

**NRC Review of the BLN Environmental Report****NRC Information Needs - BLN ER Site Audit Exit Meeting****NRC Environmental Category: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information need:

Page 2.5-12 – Please describe the type of local governments in place in Jackson County, including the relationship between the County and the unincorporated areas and “towns”.

**BLN INFORMATION NEED: SE-16****BLN RESPONSE:**

The Jackson County Commission is the governing body for county government. This Commission consists of five members: the Chairman and four Commissioners. Jackson County is divided into four districts, but the Commissioners are elected countywide. The County Chairman is also elected by countywide vote. Commissioners are elected at the same time for a four-year term.

In addition to the County Commission, Jackson County has five other elected county officials: a board of education superintendent, county sheriff, county engineer, county revenue commissioner, and county court clerk. The Jackson County Sheriff's Department provides law enforcement and protection for the unincorporated areas of the county. The Jackson County Public Works Department oversees public works projects throughout the county and is responsible for maintaining 1100 miles of county roads in Jackson County. In addition, the department issues permits for utilities in the unincorporated areas of Jackson County. The Public Works Department operates on local gasoline and fuel taxes only.

Scottsboro is the county seat. There are 13 incorporated municipalities in the county, and services offered by each vary. The incorporated municipalities are categorized as cities (Bridgeport, Stevenson, and Scottsboro) and towns (Dutton, Hollywood, Hytop, Langston, Paint Rock, Pisgah, Pleasant Groves, Section, Skyline, and Woodville). City governments within Jackson County each have a mayor and five council members.

In addition to Scottsboro, Stevenson and Bridgeport have their own planning and zoning regulations, and they issue their own building permits. As discussed in Subsection 2.5.2.4, unincorporated portions of Jackson County do not have zoning regulations.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

1. Revise COLA Part 3, ER Chapter 2, Subsection 2.5.2.3.1, by inserting the following new paragraphs between the existing second and third paragraphs, and adding text to and after the third paragraph as follows:

The Jackson County Commission is the governing body for Jackson County government. This Commission consists of five members: the Chairman and four Commissioners. Jackson County is divided into four districts, but the Commissioners are elected countywide. The County Chairman is also elected by

countywide vote. Commissioners are elected at the same time for a four-year term (Reference 143). In addition to the County Commission, Jackson County has five other elected county officials: a board of education superintendent, county sheriff, county engineer, county revenue commissioner, and county court clerk (Reference 135).

Scottsboro is the county seat. There are 13 incorporated municipalities in the county, and services offered by each vary. The incorporated municipalities are categorized as cities (Bridgeport, Stevenson, and Scottsboro) and towns (Dutton, Hollywood, Hytop, Langston, Paint Rock, Pisgah, Pleasant Groves, Section, Skyline, and Woodville). City governments within Jackson County each have a mayor and five council members (Reference 135).

Emergency planning in Jackson County, Alabama, is handled by the Jackson County Emergency Management Agency (EMA) (Reference 97). The city of Scottsboro and towns located in the BLN site vicinity either provide and maintain their own community services and infrastructure or contract with one another to provide specific services to their individual populations. Jackson County's role is to maintain and build county roads, maintain county property records, perform district and circuit court actions, and operate the Sheriff's Department. The Jackson County Sheriff's Department provides law enforcement and protection for the unincorporated areas of the county. The Jackson County Public Works Department oversees public works projects throughout the county and is responsible for maintaining 1100 miles of county roads in Jackson County. In addition, the department issues permits for utilities in the unincorporated areas of Jackson County. The Public Works Department operates on local gasoline and fuel taxes only. Their responsibilities include the following (Reference 137):

- Issuing permits for utilities
- Sizing driveway tile and inspecting for drainage prior to installation
- Inspecting and maintaining 186 bridges and culverts on Jackson County roads
- Inspecting and approving subdivision roads according to regulations
- Utilizing federal and state funds for paving roads and replacing bridges
- Taking requests from citizens for maintenance, routing the requests, and tracking them for completion
- Repairing and maintaining drainage ditches and cross-drain pipes to prevent flooding and washouts
- Paving (tar and gravel paving) of dirt roads and repaving of previously paved roads in need
- Patching, mowing, blading, and other routine maintenance
- Placing and maintaining road signs
- Maintaining department trucks, vehicles, and equipment

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At the local and county government level, the roles are unique in the services provided, but they do work together when applicable, such as fire, police, and sheriff's departments.

2. Revise COLA Part 3, ER Chapter 2, Subsection 2.5.2.4, second paragraph, as follows:

The largest city that is partially located within the vicinity of the BLN is the city of Scottsboro, Alabama, which is also the county seat of Jackson County (Reference 18). This city has a well developed zoning plan and supporting zoning laws in place for land inside the city limits. The cities of Stevenson and Bridgeport also have their own planning and zoning regulations, and issue their own building permits (Reference 136).

3. Revise COLA Part 3, ER Chapter 2, Subsection 2.5.6, by adding the following references:

135. National Association of Counties, Find a County – Jackson County, AL, Website, [http://www.naco.org/Template.cfm?Section=Find\\_a\\_County&Template=/cfiles/counties/county.cfm&id=1071](http://www.naco.org/Template.cfm?Section=Find_a_County&Template=/cfiles/counties/county.cfm&id=1071), accessed March 25, 2008.
136. Jackson County Economic Development Authority, Executive Summary, March 2008, Website, <http://www.jacksoncountyeda.org/data/execsum.pdf>, accessed June 16, 2008.
137. Jackson County Alabama, Jackson County Department of Public Works, Website, [http://www.jacksoncountyal.com/courthouse/main/public\\_works.htm](http://www.jacksoncountyal.com/courthouse/main/public_works.htm), accessed March 25, 2008.
143. Tennessee Valley Information Center, Scottsboro/Jackson County, Website, [http://www.tennessee-valley.org/communities/jackson/comm\\_profile.html](http://www.tennessee-valley.org/communities/jackson/comm_profile.html), accessed June 19, 2008.

**ATTACHMENTS:**

None.

**NRC Review of the BLN Environmental Report****NRC Information Needs - BLN ER Site Audit Exit Meeting****NRC Environmental Category: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information need:

Page 2.5-14 - Please provide update on the number of vacant units in Jackson County and/or the communities in the vicinity of the site. Add a description of Mud Creek and Creeks Edge developments.

**BLN INFORMATION NEED: SE-18****BLN RESPONSE:**

The real estate market in Jackson County, Alabama, was fairly steady between 2000 and 2007. In April 2008, 141 houses in Jackson County were listed by realtors. Additional real estate might be available as for-sale-by-owner properties. Approximately 10 to 15 properties were available near the Mud Creek embayment. The Creeks Edge development is not listed through a real estate agency, but through the developer. As of April, Creeks Edge had 73 lots available for purchase.

A new subdivision called Riverside, located in Scottsboro, is in the first phase of development, with 45 lots available. Riverside is a 200-acre planned residential development with many amenities. Seven phases of development are planned. The development trend will adjust to the market conditions.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

Revise COLA Part 3, ER Chapter 2, Subsection 2.5.2.6, by inserting the following new paragraph between the existing third and fourth paragraphs:

The real estate market in Jackson County, Alabama, was fairly steady between 2000 and 2007. In April 2008, 141 houses in Jackson County were listed by realtors. Approximately 10 to 15 properties were available near the Mud Creek embayment. The Creeks Edge development had 73 lots available for purchase. A new subdivision called Riverside, located in Scottsboro, is in the first phase of development, with 45 lots available. Riverside is a 200-ac. planned residential development with many amenities. Seven phases of development are planned.

**ATTACHMENTS:**

None.

**NRC Review of the BLN Environmental Report**

**NRC Information Needs - BLN ER Site Audit Exit Meeting**

**NRC Environmental Category: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information needs:

- SE-19:** Page 4.4-2 – Page 2.5-16 – Please provide information about how the ratio of law enforcement and firefighters to population in Jackson County compare to state or national ratios.
- SE-35:** 4.4-10 – Please provide comparative ratio information and source/citations to support the conclusion about police and fire. What about section Pisgah, etc.?

**BLN INFORMATION NEEDS: SE-19 and SE-35**

**BLN RESPONSE:**

As discussed in Subsections 2.5.2.7.2, 4.4.2.3, and 5.8.2.3.1, a national police ratio was obtained from the U.S. military, stating that the recommended ratio was one to four police officers per 1000 residents, or one officer for every 250 to 1000 residents (Attachment SE-19-A). A firefighter ratio was derived from the National Fire Protection Association and U.S. Census Bureau information, such that the current national ratio is approximately 4 firefighters per 1000 citizens, or one firefighter per 262 citizens (Attachments SE-19-B and SE-19-C). According to these national ratios, the Jackson County baseline (current) and construction ratios of law enforcement to population (1:565 and 1:647, respectively) and firefighters to population (1:123 and 1:141, respectively) are within the recommended ranges. The above ratios are updates of law enforcement and firefighter ratios previously stated in the ER. The ratios were updated based on updated workforce estimates developed by Westinghouse. The ER is revised to reflect the updated ratios, as noted below, and the ER revisions are an update to the ratios presented in the response to ER64 in TVA's May 2, 2008, letter.

The number of police and firefighters for Section, Pisgah, and other towns in Jackson County are included in the police and firefighter data presented in the ER.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

Revisions to COLA Part 3, ER Chapter 2, Subsection 2.5.2.7.2, are provided in the BLN response to ER Information Need SE-09 as text change Number 2.

Revisions to COLA Part 3, ER Chapter 4, Subsection 4.4.2.3, are provided in the BLN response to ER Information Need SE-09 as text change Number 7.

Revisions to COLA Part 3, ER Chapter 5, Subsection 5.8.2.3.1, are provided in the BLN response to ER Information Need SE-09 as text change Number 16.

**ATTACHMENTS:**

The following documents are provided as Attachments SE-19-A, SE-19-B, and SE-19-C:

- SE-19-A. *Military Review*, "The Surge Can Succeed," July – August 2007.
- SE-19-B. National Fire Protection Association, "The U.S. Fire Department Profile," November 2007.
- SE-19-C. U.S. Census Bureau, USA QuickFacts from the US Census Bureau, 2006 U.S. Population, (Website accessed March 11, 2008).

**NRC Review of the BLN Environmental Report****NRC Information Needs - BLN ER Site Audit Exit Meeting****NRC Environmental Category: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information needs:

**SE-20:** Page 2.5-15 – 2.5-18 – Please provide some qualitative assessments from the service providers about their capacity, ability to manage additional demands, and past history dealing with both growth and downturns.

**SE-44:** Page 5.8-9 – Please provide copies of your discussions with area service providers. It seems unlikely that the police department, for example, would not expect to expand their force in future years if population is growing and resources are available. Please provide information about key agency plans.

**BLN INFORMATION NEEDS: SE-20 and SE-44****BLN RESPONSE:**

Ten service providers were contacted in regards to their service capacity, management of additional demands, and history in dealing with growth and downturns. A summary of the agencies contacted, their contact information, and a summary of their responses are provided in Attachment SE-20/44. Qualitative assessments of the providers' capacities, expansion plans, and ability to handle growth and downturns are as follows:

- City of Scottsboro has two water treatment facilities, each with a capacity of 6 million gallons per day (Mgd). To increase capacity beyond current rates, a need would have to be demonstrated. The provider is currently looking into plans to increase capacity to address the growing needs of the communities it serves. Reaching a capacity of 80 to 85 percent would prompt expansion of facility, but the first step would be to increase filter capacity from 2 ft/min to 3 ft/min, which would provide a 50 percent increase. The city would have to add pumping capacity for the facility, and the facility is already positioning itself to upgrade by taking intermediate steps. Peak days only last a few days, and the plant manager does not foresee an expansion of the facility based on an increase in population due to BLN construction, further indicating that it depends somewhat on the economy. In the 1960s, the second water plant was built in response to a growing population and increase in the local textile industry workforce. Those textile industries closed in the 1980s, leaving Scottsboro with excess water treatment capacity. Currently, both plants are in operation, one during the daytime hours and one during the night-time hours. The plants run more in the summer during peak usage. They would need to run 24 hours for 30 days in the winter time (February) before being able to qualify to expand the facility to increase capacity.
- Scottsboro wastewater treatment plant has a current capacity of 5 Mgd and currently processes 4 Mgd. However, the facility has a permit for modifications that could increase capacity to 15 Mgd. There are currently no plans to expand the facility.

- Bridgeport wastewater treatment plant has an aerated lagoon system and currently operates at 1.5 Mgd, which is near capacity. There are no immediate plans for expansion.
- Hollywood wastewater treatment plant processes 125,000 gallons per day (gpd) (0.125 Mgd) and has plans to double the current capacity. This facility is in the process of connecting to the Scottsboro facility. [For what purpose? Will this impact the Scottsboro facility capacity?] The Hollywood plant utilization is 50 percent in the summer and 75 percent in the winter.
- Stevenson wastewater treatment plant has the capacity of 750,000 gpd (0.75 Mgd); however, it is currently operating at 500,000 gpd (0.5 Mgd). There are no plans to increase the capacity.
- Woodville wastewater treatment plant has a capacity of 25,000 gpd (0.025 Mgd). The facility is planning to make infrastructure improvements, including rehabilitating two small lift stations and electrical repairs at the main plant.
- Scottsboro Police Department has 45 sworn officers. The department has a need to increase their force at this time with the increase in activity in the community. An increase in population and rising demands would also warrant a request to increase facilities. The department has not had direct funds to hire additional officers since the 1994 fiscal budget. Since 1995, the department has hired officers using funds from various grants. Once these grants expire, the cost of the officers is absorbed into the police department budget, and the officers remain on duty.
- Hollywood, Section, Woodville, and Skyline have one police officer in each town. Stevenson has five police officers and Bridgeport has seven police officers.
- Jackson County Sheriff's Department currently has 34 sworn officers. There is one county jail, and there are no plans to expand the facility at this time.
- Jackson County Volunteer Firefighter Association adds volunteers as needed and may add a new station to the county. There are 25 departments within the county.
- Scottsboro Fire Department is the only fire department in Jackson County that pays its firefighters. The department has 35 firefighters, five pumpers, one ladder truck, one brush truck, and one service truck. The department currently is evenly distributed in the 5-mile radius surrounding the community; however, a need already exists for expansion on the west side of the town. Funding comes from the yearly budget. An increase in population, especially to the west side, would create a need to expand services. Historically, the fire department has never experienced a need to shut down a station due to a decrease in population.
- Hollywood Fire Department is a volunteer-based fire department with 14 volunteers, one brush truck, three pumpers, and one response vehicle. Hollywood Fire Department would be the first to respond to a fire at BLN, with Scottsboro as the backup. The entire county is covered by radio communications.

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- Highlands Medical Center currently has 41 doctors and 600 employees, including the nursing home employees. The facility has 75 beds, but is licensed for 170 beds. There are 50 beds in the nursing home facility. An attempt to contact Highlands Medical Center in regards to their current capacity, capability to expand, and historical data was made; however, no response was obtained at this time.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

None.

**ATTACHMENTS:**

The following document is provided as Attachment SE-20/44:

- SE-20/44. Tennessee Valley Authority, Summary of Personal Communications with BLN Area Service Providers, June 2008.

**NRC Review of the BLN Environmental Report****NRC Information Needs - BLN ER Site Audit Exit Meeting****NRC Environmental Category: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information need:

Page 2.5-17 – Please provide some overview of how schools are structured county-wide, unified districts, etc. and their financial system and the role of private schools.

**BLN INFORMATION NEED: SE-21****BLN RESPONSE:**

Revisions to the ER are provided to give an overview of the Jackson County School District structure and financial system, and the role of private schools. Financial information indicates that the Scottsboro City and Jackson County school systems were funded above the state average for the 2004-2005 school year as indicated in Attachments SE-21-A and SE-21-B. Private schools within the county are not under the jurisdiction of the Jackson County School District, and they were not factored into the educational analysis.

Alabama was one of the first states to receive federal funding under the No Child Left Behind Act. Jackson County Schools and Scottsboro City Schools both fall under the auspices of the State of Alabama Board of Education. The Scottsboro City School District is separate from the Jackson County School District, and both systems elect separate School Board Members and Superintendents. At the state level, both systems are presided over by a single State Superintendent of Education.

Funding for the Scottsboro City School District and the Jackson County School District originates from Federal, State, and local sources. Total 2004-2005 fiscal year spending for Scottsboro City School District was \$23,028,945.68, and average spending per student was \$7173.77. For the 2004-2005 fiscal year, 53.2 percent of funding came from the State of Alabama, 26.2 percent from local taxes, 8.3 percent from Federal sources, 5.1 percent from local school revenue, and 7.3 percent from other sources, as stated in Attachment SE-21-A.

Total 2004-2005 fiscal year spending for Jackson County Schools was \$48,494,374.94 and average spending per student was \$7,037.84. For the 2004-2005 fiscal year, 59.5 percent of funding came from the State of Alabama, 21.3 percent from local taxes, 11.5 percent from Federal sources, 4.1 percent from local school revenue, and 3.5 percent from other sources as stated in Attachment SE-21-B.

Private schools within the county are not under the control of the Jackson County School District, and they were not factored into the analysis of educational funding. According to the National Center for Educational Statistics (NCES), there are five private schools at the Pre-Kindergarten to Grade 12 level in Jackson County, with a total enrollment of 776 students (Attachment SE-21-C). The five schools include an early childhood school and a special education school. The other three are defined as "regular elementary or secondary" schools. Information on enrollment capacities is not available. The enrollments for the 2005 – 2006 school year are as follows:

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- Cumberland Presbyterian Pre-School – 81 students, Pre-Kindergarten and Kindergarten
- Three Springs Private School – 508 students, Special Education
- Floral Crest Jr. Academy – 30 students, Kindergarten to Grade 9
- Mountain View Christian Academy – 85 students, Pre-Kindergarten to Grade 12
- Scottsboro Christian Academy – 72 students, Pre-Kindergarten to Grade 12

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

1. Revise COLA Part 3, ER Chapter 2, Subsection 2.5.2.8.2, by modifying the existing third paragraph and adding two new paragraphs to the end of the subsection, as follows:

Jackson County Schools and Scottsboro City Schools both fall under the auspices of the State of Alabama Board of Education, and Alabama was one of the first states to receive federal funding under the No Child Left Behind Act (Reference 60). The Scottsboro City School District is separate from the Jackson County School District, and both systems elect separate School Board Members and Superintendents. At the state level, both systems are presided over by a single State Superintendent of Education (References 141 and 142).

Funding for the Scottsboro City School District and the Jackson County School District originates from Federal, State, and local sources. Total 2004-2005 fiscal year spending for Scottsboro City School District was \$23,028,945.68, and average spending per student was \$7,173.77 (Reference 141). For the 2004-2005 fiscal year, 53.2 percent of funding came from the State of Alabama, 26.2 percent from local taxes, 8.3 percent from Federal sources, 5.1 percent from local school revenue, and 7.3 percent from other sources (Reference 141). Total 2004-2005 fiscal year spending for Jackson County schools was \$48,494,374.94 and average spending per student was \$7,037.84 (Reference 142). For the 2004-2005 fiscal year, 59.5 percent of funding came from the State of Alabama, 21.3 percent from local taxes, 11.5 percent from Federal sources, 4.1 percent from local school revenue, and 3.5 percent from other sources (Reference 142).

Private schools within the county are not under the control of the Jackson County School District, and they were not factored into the analysis of educational funding. The number of private schools at the Pre-Kindergarten to Grade 12 level in Jackson County is five, with a total enrollment of 776 students during the 2005–2006 school year (Reference 145). The five schools include an early childhood school (81 students) and a special education school (508 students). The other three are defined as “regular elementary or secondary” schools and have a combined enrollment of 187 students. Two of these schools offer Pre-Kindergarten to Grade 12 education, and the third offers Kindergarten to Grade 9 education (Reference 145).

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2. Revise COLA Part 3, ER Chapter 2, Subsection 2.5.6, by adding the following references:

141. Alabama Department of Education, State Board of Education Report Card for 2005-2006 – Scottsboro City, Website, <ftp://ftp.alsde.edu/documents/ReportCards/2005-2006/190/190.pdf>, accessed April 2008.
142. Alabama Department of Education, State Board of Education Report Card for 2006-2007 – Jackson County, Website, <ftp://ftp.alsde.edu/documents/ReportCards/2005-2006/036/036.pdf>, accessed April 2008.
145. National Center for Education Statistics, Schools, Colleges, and Libraries search, Website, <http://nces.ed.gov/>, accessed June 20, 2008.

**ATTACHMENTS:**

The following documents are provided as Attachments SE-21-A, SE-21-B, and SE-21-C:

- SE-21-A. Alabama Department of Education, State Board of Education, "Report Card for 2005-2006 - Scottsboro City," (no date).
- SE-21-B. Alabama Department of Education, State Board of Education, "Report Card for 2005-2006 - Jackson County," (no date).
- SE-21-C. National Center for Education Statistics, "Jackson County Private School Data," (Website accessed June 20, 2008).

**NRC Review of the BLN Environmental Report****NRC Information Needs - BLN ER Site Audit Exit Meeting****NRC Environmental Category: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information need:

Page 2.5-17 – Please provide information about technical training/vocational training resources in the study area, including whether they train craft workers.

**BLN INFORMATION NEED: SE-22****BLN RESPONSE:**

Jackson County and Scottsboro City public school systems are accredited by the Southern Association of Colleges and Schools. Both systems have ongoing technical preparation courses at the high school level, and both offer dual enrollment. More intense "hands-on" skills training is available at the shared Ernest Pruet Center of Technology (EPCOT) in Hollywood, Alabama. EPCOT is an educational extension that provides advanced training for students in cooperation with J.F. Drake State Technical College in Huntsville, Alabama, which offers technical programs that culminate in a career-skills certificate, career-entry certificate, or Associate of Applied Technology degree. Classes in the EPCOT programs are made available in the evenings to accommodate the needs of industry and adult education. The Center also offers apprenticeship programs to interested businesses.

Drake's Business and Engineering Technologies Division offers an Industrial Electronics Technology program. Technical programs offered in Drake's Manufacturing and Applied Technologies Division include Electrical Technology, Heating and Air Conditioning Technology, Industrial Systems Technology, Machine Tool Technology, and Welding Technology.

Northeast Alabama Community College (NACC) in Rainsville, Alabama, is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools. Through its Workforce Development Division, NACC offers a short-term certificate in Industrial Systems Technology, with options in Electrical and Instrumentation, Maintenance Mechanic, Multi-Skilled Maintenance Technician, Welder, and Machinist/Millwright. In addition, NACC offers programs in Drafting and Design Technology and Industrial Electronics that culminate in a short-term certificate, long-term certificate, or Associate of Applied Science degree. NACC's Industrial Electronics program is approved by Electronics Technicians Association-International.

TVA periodically offers entry-level training in the duties for various positions specific to operations and maintenance of their facilities. In the areas of fossil, hydroelectric, and nuclear power generation, TVA offers the following training: Student Generating Plant Operator, Instrument Mechanic, Electrical Technician, Mechanical Technician, and Hydro Technician. In the areas of transmission and power supply, TVA also offers entry-level training in the duties for the positions of Groundman, Lineman Apprentice, and Electrician Apprentice.

The ER is revised to include this additional information on technical and vocational training resources in the BLN area, as stated below.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

1. Revise COLA Part 3, ER Chapter 2, Subsection 2.5.2.8.3 by revising the subsection title and adding four paragraphs, as follows:

2.5.2.8.3 Colleges, and Universities, and Technical/Vocational Training

There are 16 two-year and four-year colleges and universities within the region of the BLN site. Total enrollment for these schools is more than 46,000 students (References 61, 62, and 63). The two-year and four-year colleges and universities in the region are typically near peak daily capacity for the majority of the year, excluding the summer months (mid-May through mid-August).

Jackson County and Scottsboro City public school systems are accredited by the Southern Association of Colleges and Schools. Both systems have ongoing technical preparation courses at the high school level, and both offer dual enrollment. More intense "hands-on" skills training is available at the shared Ernest Pruet Center of Technology (EPCOT) in Hollywood, Alabama. EPCOT is an educational extension that provides advanced training for students in cooperation with J.F. Drake State Technical College in Huntsville, Alabama, which offers technical programs that culminate in a career-skills certificate, career-entry certificate, or Associate of Applied Technology degree. Classes in the EPCOT programs are made available in the evenings to accommodate the needs of industry and adult education. The Center also offers apprenticeship programs to interested businesses (References 130 and 131).

Drake's Business and Engineering Technologies Division offers an Industrial Electronics Technology program. Technical programs offered in Drake's Manufacturing and Applied Technologies Division include Electrical Technology, Heating and Air Conditioning Technology, Industrial Systems Technology, Machine Tool Technology, and Welding Technology (Reference 132).

Northeast Alabama Community College (NACC) in Rainsville, Alabama, is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools. Through its Workforce Development Division, NACC offers a short-term certificate in Industrial Systems Technology with options in Electrical and Instrumentation, Maintenance Mechanic, Multi-Skilled Maintenance Technician, Welder, and Machinist/Millwright. In addition, NACC offers a program in Drafting and Design Technology and Industrial Electronics that culminate in a short-term certificate, long-term certificate, or Associate of Applied Science degree. NACC's Industrial Electronics program is approved by Electronics Technicians Association-International (Reference 133).

TVA periodically offers entry-level training in the duties for various positions specific to operations and maintenance of their facilities. In the areas of fossil, hydroelectric, and nuclear power generation, TVA offers the following training: Student Generating Plant Operator, Instrument Mechanic, Electrical Technician, Mechanical Technician, and Hydro Technician. In the areas of transmission and

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power supply, TVA also offers entry-level training in the duties for the positions of Groundman, Lineman Apprentice, and Electrician Apprentice (Reference 134).

2. Revise COLA Part 3, ER Chapter 2, Subsection 2.5.6, by adding the following references:

130. Jackson County Economic Development Authority, Education, Website, <http://www.jacksoncountyedda.org/education.html>, accessed June 13, 2008.

131. J.F. Drake State Technical College, EPCOT (Ernest Pruet Center of Technology), Websites, <http://www.dstc.cc.al.us/> and <http://www.dstc.cc.al.us/EPCOT.htm>, accessed June 13, 2008.

132. J.F. Drake State Technical College, Instructional Programs, Website, <http://www.dstc.cc.al.us/programs.htm>, accessed April 11, 2008.

133. Northeast Alabama Community College, Website, <http://www.nacc.edu/Default.htm>, accessed June 13, 2008.

134. Tennessee Valley Authority, Operations and Maintenance Training Programs, Website, [http://www.tva.gov/employment/ops\\_maint/index.htm](http://www.tva.gov/employment/ops_maint/index.htm), accessed April 11, 2008.

**ATTACHMENTS:**

None.

**NRC Review of the BLN Environmental Report****NRC Information Needs - BLN ER Site Audit Exit Meeting****NRC Environmental Category: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information needs:

- SE-24:** Page 4.4-2 – Please provide additional information about the schedule and characteristics of the work force and provide additional basis for the assumptions used in the transportation analysis, including sources. Please provide greater specificity about the analysis of impacts on county roads 33 and 133. The existing information is vague and is not adequate to interpret the “moderate to large” impact assessment.
- SE-26:** Page 4.4-5 – Please clarify the times construction will be underway. Page 4.4-2 says that “two staggered shifts of 10 hours each” are expected while page 4.4-5 indicates that “most construction would occur during normal daylight hours, between 7:00 and 17:00. Please clarify and provide more substantive detail on construction schedule.

**BLN INFORMATION NEEDS: SE-24 and SE-26****BLN RESPONSE:**

More detailed information pertaining to construction schedule, operation workforce characteristics, additional basis for transportation analysis, and impact analysis for Jackson County Road 33 and Bellefonte Road is incorporated into the ER Chapter 4 subsections. Jackson County Road 113 is not included in the transportation impact analysis, because it is not a designated site-access route for BLN construction or operations workers. The source of the construction staffing information is Westinghouse. The temporal distribution of the construction workforce is discussed in greater detail in Subsection 4.4.2.1 and illustrated in Figure 4.4-2.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

1. Revise COLA Part 3, ER Chapter 2, Subsection 2.5.2.2.3, first paragraph as follows:

Jackson County consists of both urban and rural roadways. Vehicle volume on roads, obtained from estimated annual average daily traffic (AADT) counts from the Alabama Department of Transportation (ALDOT), reflects the urban and rural traffic characteristics of the county. Road capacity limits are discussed in Chapters 4 and 5. ~~No capacity limits exist for roadways in Alabama.~~ ALDOT ~~The state Department of Transportation~~ uses AADT counts, traffic volume data, speed of traffic, time of travel, and budget restraints to determine the need for roadway expansion.

2. Revise COLA Part 3, ER Chapter 4, Subsection 4.1.1.1, ninth paragraph as follows:

Construction materials are to be shipped to the site using local roadways, railroads, and waterways. Several new roadways, both temporary and permanent, are planned for the BLN site. Heavy equipment and reactor

components are planned to be shipped by barge up the Tennessee River. Construction of a heavy-haul road from the barge unloading facility to the construction site is planned, and construction access to the site is provided on the ~~south~~ north access road (County Rd. 33), so as to not impede other traffic. These roads are illustrated in Figure 3.1-6. The laydown areas are used for staging building materials and equipment used during construction, and they are also illustrated in Figure 3.1-6.

3. Revise COLA Part 3, ER Chapter 4, Subsection 4.4.1.3, starting with the third paragraph to the end of the subsection, as follows:

Plant construction at the BLN site increases traffic on local roads. Subsection 4.1.1 describes the transport of construction materials and workforce to the site by public roads. Traffic access to the site is described in Subsection 2.5.2. Both construction workers and truck deliveries access the site via U.S. Highway 72 (U.S. 72) and Jackson County Roads 33 (County Rd. 33) and 113 (County Rd. 113) and Bellefonte Road. Operational workers and security personnel are expected to access the site during the construction and the operation period using U.S. 72 and Bellefonte Road.

The county roads are two-lane, paved roads and have a maximum capacity of 1700 cars per hour in each direction of travel (Reference 13). For BLN, County Rd. 33 is planned to be used as the sole access road for construction workers. During the peak construction period, a single "construction" ~~two staggered~~ shifts of 10 hrs. during daylight hours is scheduled. However, to accommodate construction traffic converging on the site during this shift, staggered shift starts are expected to be utilized. each are scheduled, with a combined workforce is of 3000. The number of workers per shift is not known at this time. As construction ramps up, scheduling of a night shift dedicated to preparation of the site for the next day's construction work is expected. Traffic into the site to the construction worker parking lot is unrestricted, reducing the potential for traffic buildup on County Rd. 33 and the site access road. Site security is planned to be performed on pedestrian traffic crossing from the unsecured parking lot to the site's work areas. The percentage of construction workers per shift is 70 percent for the day shift and 30 percent for the night shift. A conservative bounding estimate of 100 daily truck deliveries is assumed for this analysis, with all deliveries occurring during daytime hours and inbound shipments occurring outside of the startup shift hours. These deliveries include shipments of materials, trash removal, etc. It is also assumed that there is one worker per vehicle and no carpooling, is to take place. The total number of vehicles, including deliveries, on the road during the peak construction period is projected at 3100 during the workday.

Initially, staggered day shifts are not expected. However, after the fourth year of construction, the shifts are expected to be staggered to accommodate road limitations. Based on the total expected construction workforce of 3250 (as discussed in Subsection 4.4.2.1) and the 70/30 percent split in workers between the day and night shifts, the expected maximum workforce using County Rd. 33 for the day shift would be 2275 construction workers. Dividing this number into two staggered shifts results in 1138 construction workers accessing the site during the staggered shifts (2275 / 2), or 2-hour time period for the construction force to access the site. This traffic load is less than the maximum capacity of

County Rd. 33 (1700 cars per hour). The utilization of staggered times also leaves extra road capacity that could prove useful for scheduling flexibility and the occasional delivery during day shift start times. This peak is expected to last for 2 years. The night shift workforce is expected to consist of 975 workers (3250 x 0.3), and staggered shifts for the nighttime workers during the peak construction period are not expected.

Operation of both BLN units is expected to require approximately 1000 operations and security workers that work on shifts around the clock and access the site using Bellefonte Road. The Bellefonte Road capacity of 1700 cars per hour (Reference 13) is not expected to be exceeded during any phase of the construction and operation of the plant.

U.S. 72 has sufficient capacity to handle an increase in traffic due to construction. Based on available data, County Roads 33 and 113 and Bellefonte Road may require mitigation measures expansion to handle an increase of this magnitude. Consideration for expansion of ~~these roads~~ this road should be evaluated (Reference 13).

Impacts to transportation from construction workers and deliveries are considered to be of SMALL impact for all roads except County Rd. 33, which is expected to be a temporary MODERATE TO LARGE impact during the peak construction period. Potential mitigation measures include establishing a centralized parking area away from the site and shuttling construction workers to the site, encouraging carpooling, installing traffic-control lighting and directional signage, county road modifications, and staggering shifts further to avoid traditional traffic congestion time periods.

4. Revise COLA Part 3, ER Chapter 4, Subsection 4.4.1.5, eighth paragraph (top of page 4.4-5), as follows:

Those construction activities that generate noise above 60 – 65 dBA levels at the fence line would be temporary. With the exception of scheduling a night shift dedicated to preparation of the site for the next day's construction activities, ~~Generally,~~ most construction activities would occur during normal daylight hours between 0700 and 1700. There are occasions when construction activities must be scheduled during night time hours. Typical instances include continuous concrete pours to ensure homogeneity and strength of the structures. At these times the noise level remains upwards of 60 – 90 dB at a distance of 100 ft. from the equipment, but should be attenuated to below the acceptable 65 dBA at the site boundary, depending on the location of the continuous pour (Reference 8).

**ATTACHMENTS:**

None.

**NRC Review of the BLN Environmental Report****NRC Information Needs - BLN ER Site Audit Exit Meeting****NRC Environmental Category: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information need:

Page 4.4-3 – Please describe the impacts of the steam plume from the cooling towers on watershed and aesthetics.

**BLN INFORMATION NEED: SE-25****BLN RESPONSE:**

The impacts from the cooling tower structures on aesthetics have already occurred, as the towers for the new units were built in the 1970s. Aircraft warning lights are an essential federal requirement of temporary and permanent structures that exceed 200 ft. The appropriate warning lights were installed on the cooling towers during the original 1970s construction at the BLN site, and are maintained through construction and operation at the site. The existence of these lights is not expected to cause any additional aesthetic impact to vicinity residents.

There are no steam plumes generated during the construction period. However, the steam plumes are generated from the operation of the plant. The plumes are most visible during the winter with an average seasonal distance of just over 3 miles. The maximum plume distance occurs less than 20 percent of the time. Information on steam plumes and aesthetics was added to the discussion in Subsections 4.4.1.4 and 5.8.1.3. The impacts of the steam plume on the watershed during operation are discussed in Subsection 5.3.3.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

1. Revise COLA Part 3, ER Chapter 4, Subsection 4.4.1.4, by inserting the following two paragraphs between the existing third and fourth paragraphs, as follows:

Figure 4.4-1 illustrates the effect of the towers as a function of distance and angle of vision occupied by the cooling towers. As the distance from the cooling towers increases, the angle of vision occupied by the cooling towers decreases significantly. Most of the parks in the region are located more than 18.6 mi. from the site. Although the towers may be visible at that distance, the two cooling towers occupy less than one-half of a degree of vision.

Section 3.1 describes construction materials that ultimately lessen the visual impact of the site on the vicinity. The tallest structures on-site during the construction of Units 3 and 4 are the existing cooling towers. Aircraft warning lights are an essential federal requirement of temporary and permanent structures that exceed 200 ft. (Reference 16). The appropriate warning lights were installed on the cooling towers during the construction of Bellefonte Units 1 and 2, and are maintained through construction and operation at the site. The existence of these lights is not expected to cause any additional aesthetic impact to vicinity residents.

During construction there is no steam plume from the cooling towers, so there is no steam plume impact to aesthetics.

Based on existing structures and the topographic layout of the vicinity, the impact of construction at the BLN site on aesthetics and recreational opportunities is considered to be SMALL and requires no mitigation efforts.

2. Revise COLA Part 3, ER Chapter 4, Subsection 4.4.4, by adding the following reference:

16. U. S. Department of Transportation, Federal Aviation Administration Advisory Circular AC 70/7460-1K Obstruction Marking and Lighting, February 1, 2007, Website, [http://rgl.faa.gov/Regulatory\\_and\\_Guidance\\_Library/rgAdvisoryCircular.nsf/0/b993dcdcf37fcdc486257251005c4e21/\\$FILE/AC70\\_7460\\_1K.pdf](http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/0/b993dcdcf37fcdc486257251005c4e21/$FILE/AC70_7460_1K.pdf), accessed May 13, 2008.

3. Revise COLA Part 3, ER Chapter 5, Subsection 5.8.1.3, by revising the second paragraph and inserting a new paragraph between the existing second and third paragraphs, as follows:

As shown in Figure 1.1-4, the BLN site is located along the Tennessee River which borders the site boundary from approximately river mile marker 390 to river mile marker 393. Areas adjacent to the site boundary primarily consist of farmland, pastureland, and undeveloped woodland.

The tallest structures at the BLN site are the existing natural draft cooling towers. TVA works to minimize the visual impact of the structures through use of topography, design, materials and color. As stated in Section 4.4, the cooling towers for the new units were constructed in the 1970's and any effect on local viewsheds has already occurred. The cooling towers are most visible from the Creeks Edge community, housing addition, located northwest ~~from~~ of the BLN site across Town Creek, Gunter'sville Reservoir, and its associated parks. Because the visual effects are inversely proportional to distance, the effects of the towers on most of the other parks in the region are minimal.

Following construction and throughout the operations phase, the BLN cooling towers discharge two plumes, which are visible to the surrounding communities. These plumes are most visible in the winter, during which the average seasonal plume length has been calculated to not exceed 3.11 miles as indicated in Table 5.3-5. In addition, maximum plume lengths are estimated to occur only 16.9 percent of the time annually according to the information provided in FSAR Table 2.3-305. The plumes are similar in size and scale to plumes generated by other nuclear plants. The length of the visible plumes depends on the ambient temperature and humidity. Colder and more humid weather is more conducive to longer plumes. Most of the time, the visible plumes are anticipated to extend only a short distance from the towers and then disappear by evaporation. Because the visual impact from the two steam plumes is similar to lines of cumulus clouds and the maximum plumes for the BLN cooling system occur infrequently, this visual impact is considered to be SMALL. Furthermore, because the surrounding land is primarily less developed and heavily wooded, the plume is blocked from view by dense trees and is not visible from nearby roads in many areas. The effects of the steam plumes on the watershed are described in Subsection 5.3.3.

Most of the parks in the region are located more than 18.6 mi. from the site. Although the towers and plumes may be visible at that distance, the two cooling towers occupy less than one-half of a degree of vision as detailed in Section 4.4. ~~The plumes resemble cumulus clouds when seen from a distance and the impact on visual aesthetics is negligible.~~

Because the transmission service lines are already present, the impact on visual aesthetics is considered SMALL and mitigation is not warranted.

Further discussion on the impacts of recreational activities is discussed in Subsection 5.8.2.3.4.

**ATTACHMENTS:**

None.

**NRC Review of the BLN Environmental Report****NRC Information Needs - BLN ER Site Audit Exit Meeting****NRC Environmental Category: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information need:

Page 4.4-5 – Please quantify the nature, timing and frequency and duration of noise generating activities such as steam blows, blasting, demolition, etc. and their impact on neighbors. Please clarify the location and characteristics of Creeks Edge addition.

**BLN INFORMATION NEED: SE-27****BLN RESPONSE:**

The nature, timing, frequency, and duration of noise-generating activities will fluctuate throughout the construction period. Blasting and demolition will occur early in the project at intermittently and is expected to be limited to day-shift hours. Steam is not anticipated to be used to clean equipment during the construction phase; therefore, steam blows are not expected to occur. ER Subsection 4.4.1.5 is revised to reflect this information.

The following information regarding potential noise impacts to nearby residences, including the Creeks Edge addition, and expected construction noise magnitudes is discussed in greater detail in ER Subsection 4.4.1.5. The degree of noise impact is discussed based on the U.S. Department of Housing and Urban Development (HUD) noise guidelines (24 CFR 51.103, U.S. Department of Housing and Urban Development, Criteria and Standards), with noise levels below 65 dBA classified as acceptable for residential uses and considered to be of small significance (as discussed in NUREG-1437). Construction noise levels are generally expected to attenuate below the acceptable level of 65 dBA at the site boundary, and activities that generate higher magnitudes of noise could temporarily impact the nearest residences, such as the Creeks Edge addition. The location and characteristics of the Creeks Edge addition are discussed in ER Subsection 2.2.1.2.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

Revise COLA Part 3, ER Chapter 4, Subsection 4.4.1.5, twelfth paragraph (page 4.4-5), as follows:

Unusual noise due to construction activities may be necessary, such as steam blows, blasting, demolition, and testing of the emergency warning siren, and could result in temporarily excessive noise levels. The noise generating processes are expected to fluctuate throughout the construction period. Steam is not anticipated to be used for cleaning of equipment; therefore, steam blows are not an anticipated noise-generating construction activity at BLN. Blasting and demolition occur early in the project at intermittent frequencies and only occur during the daylight hours (between 0700 and 1700). If the construction activities are in close proximity to the northwestern fence line or boundary, then the residences closest to the fence line

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could temporarily experience noise from the construction equipment. Potential mitigation measures include, but are not limited to, the use of blasting blankets, notification of the surrounding receptors prior to unusual noise events (~~steam blows~~, blasting, emergency siren testing, etc.), building berms, noise reduction devices on heavy equipment (mufflers), limiting tail gate slamming, placement of foliage and ground cover between noise sources and receptors, and limiting noise-generating such activities to daylight hours.

**ATTACHMENTS:**

None.

## **NRC Review of the BLN Environmental Report**

### **NRC Information Needs - BLN ER Site Audit Exit Meeting**

#### **NRC Environmental Category: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information need:

Page 4.4-6 – Please characterize the resident and transient population along the access road: a) to quantify these impacts; and b) verify that this population is not disproportionately minority or poor. Please describe the methodology used.

#### **BLN INFORMATION NEED: SE-28**

##### **BLN RESPONSE:**

Adverse impacts to minority or low-income blocks due to construction traffic would be focused on populations located adjacent to the access road area. Of the three minority blocks that are near the site, none are adjacent to the access roads; thus, these blocks are not disproportionately impacted. No low-income population blocks are located adjacent to the access roads, so no disproportionate impact occurs on the basis of income. The ER Subsections 4.4.1.5.2 and 4.4.3.2 are revised to include this information and characterize resident and transient populations along the access road. The methodology used to identify minority and low-income populations within the BLN region is discussed in detail in ER Subsections 2.5.4.2 and 2.5.4.3.

##### **ASSOCIATED BLN COL APPLICATION REVISIONS:**

1. Revise COLA Part 3, ER Chapter 4, Subsection 4.4.1.5.2, second paragraph, as follows:

Traffic noise levels along the access road would increase during construction. Much of the traffic during the construction period would be at the beginning and end of the work shift. ~~Peak hour~~ Traffic during the peak hours would result in an increase in traffic noise levels along the access road from about 51 dBA at 100 ft. to about 58 dBA at 100 ft. for the three hours scheduled for shift changes during peak construction, as described in Subsection 4.4.1.3. Traffic noise during the peak hours could be noticeable at nearby residences. Heavy truck traffic, usually occurring outside of shift-change hours, would be the most bothersome and could approach levels of 70 to 90 dBA at 50 ft. from the road. Peak traffic noise during construction is expected to have a SMALL to MODERATE impact at approximately two 40 homes and one business along the southern access road. ~~and~~ Off-peak traffic would have a SMALL impact to surrounding communities. Noise mitigation measures include, but are not limited to: enforcing low speed limits, maintaining good road conditions, minimizing Jake-braking, maintaining equipment with noise reduction devices (mufflers), utilizing barge traffic for large equipment, and controlling the time of day the peak traffic would occur.

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2. Revise COLA Part 3, ER Chapter 4, Subsection 4.4.3.2, pg 4.4-13, last paragraph, as follows:

Transportation during construction is expected to have a MODERATE to LARGE impact on local roads including U.S. 72, County Roads 33 and 113, and Bellefonte Road. Although few houses are located along the access roads, the residential properties present are rural houses on acreages or farms. The access roads provide access to, but are not adjacent to, the Creeks Edge housing addition. Transient populations may utilize the southern access road to fish from the banks of the Gunterville Reservoir, but boat ramps are not located along the access roads. There are two aggregate minority plus Hispanic blocks that are located between the BLN site and U.S. 72, and one on the northwest side of U.S. 72. However, none of the minority blocks are located adjacent to the access roads. Thus, the minority populations are not expected to be adversely impacted by the construction traffic. The minority populations are evenly distributed along these routes. Therefore, there are no disproportionate impacts on minority populations. The low-income populations in the vicinity are not located adjacent to the roads expected to be impacted. Therefore, low-income populations are not disproportionately affected.

**ATTACHMENTS:**

None.

**NRC Review of the BLN Environmental Report****NRC Information Needs - BLN ER Site Audit Exit Meeting****NRC Environmental Category: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information need:

Page 4.4-8 – Please clarify how information about future development/construction in the region is incorporated into the population and employment projections, including, for example the BRAC workforce, and further development at Goose Pond and Gunderson Marina, etc.

**BLN INFORMATION NEED: SE-30****BLN RESPONSE:**

Information related to future construction in the region was not incorporated into the population and employment projections. Following guidance provided in NUREG 1555, the population analysis for the BLN region was based upon U.S. Census Bureau 2000 data and Alabama, Tennessee, and Georgia state projection information. Analysis of the Base Realignment and Closure Act (BRAC) workforce at Redstone Arsenal and other construction projects in the region were reviewed individually in conjunction with the construction timeline at Bellefonte. The other projects reviewed are the Alabama Department of Transportation proposed tri-state highway, TVA's reactivation of Watts Bar Nuclear Plant Unit 2 construction, and Jackson County housing development activity. These projects are discussed below, and the ER is revised, as noted.

Alabama Department of Transportation (ALDOT) Proposed Tri-State Highway

A tri-state, 163-mile highway has been proposed to connect Memphis to Huntsville and Huntsville to Atlanta. Portions of the proposed freeway corridor lie within the BLN region. In the Huntsville area, the route enters Madison County along I-565, follows the Southern Bypass across the Redstone Arsenal and then turns east between New Hope and Owens Cross Roads. After leaving Huntsville area, the route curves across portions of Marshall, DeKalb, and Cherokee counties before heading into Georgia on State Road 9.

ALDOT has not announced a construction timeline or start date for the proposed Memphis-Huntsville-Atlanta Highway, and they have not made available a construction schedule for the three-state region or for the state of Alabama. The 2008 ALDOT five-year plan does not list this freeway project. There is an overlap in the type of craft workers needed for this type of road construction project and for BLN plant construction (e.g., steel workers, concrete, etc.); however, construction details regarding worker numbers and construction timeline are not currently available.

TVA Watts Bar Nuclear Plant Unit 2 Construction Reactivation

TVA has approved reactivation of construction on Watts Bar Nuclear Plant (WBN) Unit 2, with a targeted completion date of 2013. The new reactor is associated with WBN Unit 1

and located in Rhea County outside Spring City, Tennessee. WBN is located approximately 89 miles from the BLN site, so it does not lie within the BLN 50-mile region. Original construction on WBN Unit 2 was suspended in 1985. According to TVA, the 5-year construction project will boost the regional economy through material purchases from area suppliers and vendors, contracts with service providers, and numerous temporary and permanent employment opportunities. Approximately 2300 contract workers are expected to be needed during the height of construction, and it is expected the project will result in about 250 additional operational jobs. Because the end of construction at WBN Unit 2 coincides with the beginning of the construction phase at BLN, there should be little competition for craft workers. The WBN Unit 2 direct workforce and any subsequent indirect workers will impact the counties immediately surrounding WBN, but are expected to have little or no impact on the BLN region.

#### Base Realignment and Closure (BRAC) Activity at Redstone Arsenal – Workforce Analysis

The four-county Huntsville region defined in the 2007 University of Alabama BRAC report (Attachment SE-30) includes Limestone, Madison, Marshall, and Morgan counties, all of which lie wholly or partially within the BLN region. A sensitivity analysis based on the 2007 University of Alabama BRAC report compares BRAC projected population growth (population plus direct and indirect jobs) in the four Alabama counties to the Alabama state-sanctioned projections for those counties. Based on projections for the year 2030, there is a 0.17 percent combined difference between the state projections and the new BRAC estimates for the four specified counties. For 2010 and 2015, there is a 2.2 and 3.4 percent combined difference, respectively, in the projected population for the same counties. Fifty percent of BLN construction workers are expected to come from within the 50-mile region and have already been accounted for in the state projections. Because the other 50 percent of BLN construction personnel are assumed to in-migrate from outside the region and find housing as close as possible to the construction site in Jackson County, there should be little or no competition for housing or services between BLN workers and BRAC workers remaining in the four counties.

#### Jackson County Housing Developments

**Goose Pond Colony.** Current information provided the developer of the Goose Pond Island lakefront community in Scottsboro, Alabama, indicates approximately 70 percent of the 248 home sites within the development are sold. Property owners build at their own pace, and there is no date by which a home must be built. Approximately 15 homes are under construction, with construction on 20-30 homes scheduled to start by the end of summer 2008. About 2000 acres are still undeveloped on the island, and it is anticipated more development may occur; however, there are no firm plans for such.

**Riverside Subdivision.** Information from the Jackson County Board of Realtors indicates the new Riverside subdivision, located in Scottsboro, is in the first phase of development, with 45 lots available. Riverside is a 200-acre planned residential development with many amenities. Seven phases of development are planned. The development trend will adjust to the market conditions.

**Gunderson Marina.** No information on a “Gunderson Marina” in the BLN area could be located.

#### **ASSOCIATED BLN COL APPLICATION REVISIONS:**

Revise COLA Part 3, ER Chapter 2, Subsection 2.5.1.2.1, by adding the additional paragraph, as follows:

As a part of the Base Realignment and Closure Act of 2005, Redstone Arsenal, located at the periphery of the BLN 50-mi. region is to be realigned. It is estimated that during realignment construction at Redstone Arsenal, from 2006 to 2009, between 10,000 and 16,000 new direct and indirect jobs are expected within the Huntsville region (Reference 128). The four-county Huntsville region defined in the report includes Limestone, Madison, Marshall, and Morgan counties, all of which lie wholly or partially are within the BLN region. Assuming 50 percent of construction and realigned personnel move into the region and a family size of four, the regional population would increase by 32,000 people, or 2.7 percent during the construction period. During operation at Redstone Arsenal after realignment, approximately 4870 new direct and indirect jobs are expected within the four-county region (Reference 128).

During operation at Redstone Arsenal after realignment, approximately 4870 new direct and indirect jobs are expected within the four-county region (Reference 128). Assuming that 50 percent of realigned personnel move into the region and a family size of four, the regional population would increase by 9740 people, or 0.81 percent during operation.

BRAC construction activity is expected to be completed during the 2006-2010 period: residential construction (2006-2009) and military construction (2007-2010) (Reference 128). Construction phase impacts are one-time impacts that occur only during the specified construction period. Because BRAC construction is expected to be completed prior to the BLN construction commencement date of mid-2013, there should be no competition in the hiring of a BLN construction workforce due to BRAC.

A sensitivity analysis was performed, based on the 2007 University of Alabama BRAC report (Reference 128), that compares BRAC projected population growth (population plus direct and indirect jobs) in the four counties to the Alabama state sanctioned projections for those counties. At the projected year of 2030, there is a 0.17 percent combined difference between the state projections and the new BRAC estimates for the four specified counties. For 2010 and 2015, there is a 2.2 and 3.4 percent combined difference in the projected population for the same counties. Fifty percent of BLN construction workers are expected to come from within the 50-mile region and have already been accounted for in the state projections. Because the other 50 percent of BLN construction personnel are assumed to in-migrate from outside the region and find housing as close as possible to the construction site in Jackson County, little or no competition is expected for housing or services with BRAC workers remaining in the four counties mentioned previously.

#### **ATTACHMENTS:**

The following document is provided as Attachment SE-30:

- SE-30. University of Alabama, Center for Business and Economic Research and the Department of Civil, Construction & Environmental Engineering, *Huntsville Area BRAC Transfers: Economic and Transportation Impact Assessment*, April 2007.

**NRC Review of the BLN Environmental Report****NRC Information Needs - BLN ER Site Audit Exit Meeting****NRC Environmental Category: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information need:

Page 4.4-8 uses a multiplier to estimate the number of new jobs that will be created by the influx of new construction workers for the life of the construction project. Specific issues and questions that arise related to the use of the multiplier include the following:

1. Is it appropriate for this multiplier to be applied directly to the labor component of the economy?
2. What were the baseline and specific changes to that baseline that went into the RIMS II analysis? Please provide the RIMS II multiplier value and the BEA contact's instructions on how to use it.
3. When construction is complete, the area will experience a loss of jobs (based on the maximum construction employment, net of the new operations work force). In terms of multiplier effects, can you adequately capture and discuss the net loss in employment from this change?

Construction employment is not constant. It will begin with a small work force and then expand to its maximum size, then decline to a low level again (similar to a bell curve with the peak at 3,000) not a constant plateau at 3,000 from beginning to end. This would suggest that the ER overstates the full employment effect by as much as 100% (assuming a normal distribution on the bell curve). Can you adjust your analysis based upon this distribution?

**BLN INFORMATION NEED: SE-32****BLN RESPONSE:**

Instructions for the use of the RIMS II model are included in the U.S. Department of Commerce Bureau of Economic Analysis (BEA) user's handbook, *Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System (RIMS II)*, which is provided on the BEA website (<http://www.bea.gov/scb/pdf/regional/perinc/meth/rims2.pdf>).

The RIMS II economic/employment multipliers were ordered from the BEA for the contiguous 50-mi. region surrounding the BLN. Table 1.4 in Attachment SE-32 was used to determine the number of jobs created by each construction job. Table 2.4 in Attachment SE-32 was used to determine the number of jobs created by each operations job. The two multipliers used were (1) construction and (2) utilities. These two most closely match the type of activity occurring on the BLN site during construction and operation, respectively. The multipliers were used to estimate the number of indirect jobs generated by the employment at the plant and the expenditure of money during the construction and operation periods. The changes that are considered are the increase and decrease of workers for the construction phase, the increase of workers for

the operations phase, and the expenditures generated during construction and operation. The multiplier application is correctly applied to the labor component of the economy as each multiplier is designed for its specific industry and is adjusted with regional modifiers for the specific location in the nation.

Baseline information includes the area used in the analysis as well as the changes that are being modeled using the RIMS II multipliers. The area included in the analysis is the 50-mile region surrounding the BLN site. The changes that are considered are the increase and decrease of workers for the construction phase, the increase of workers for operations, and the expenditures generated during construction and operation.

As stated in the information need, employment during the project is not a constant plateau. The following information is provided to clarify the ramp up and ramp down of construction employment and the effect this has on overall employment.

The multiplier from the RIMS II analysis for a construction job is 1.4218. Thus, for every in-migrating construction worker, an estimated additional 0.422 jobs are created in the region. The RIMS II multiplier for operations jobs is 1.759. Thus, for every job of operation worker, an estimated additional 0.759 jobs are created in the region. Operations jobs occur as the construction jobs approach the end of the construction phase, with some overlaps.

Starting in 2010, indirect jobs are created by construction jobs with approximately 100 new jobs by 2012 and 680 jobs at the peak time in 2015. The indirect jobs due to operations are forecast to begin at the end of 2012 with 506 jobs in 2015 and a peak of 735 jobs at the end of the bust cycle. When combined with the construction and operations jobs, indirect jobs contribute to a peak of approximately 5020 jobs in 2015. A net loss of about 440 indirect jobs, from the peak construction time to the beginning of the operations period, are expected to be offset by the population decline as the construction workers move out from the area. The total jobs loss from the peak construction to the beginning of commercial operation is 3340. Any permanent effects are discussed in Chapter 5.

The ER is revised to provide the analysis related to the net gain and loss of newly created jobs using the RIMS II multipliers, with gradual change of worker numbers considered.

#### **ASSOCIATED BLN COL APPLICATION REVISIONS:**

1. Revise COLA Part 3, ER Chapter 4, Subsection 4.4.2.2, by providing revisions in addition to those noted in the combined response to comment ER36, ER63, and ER65 in TVA's May 2, 2008 letter. The previous revisions are included here, along with new revisions, as follows:

The economy of the region surrounding the BLN, including industry, workforce, unemployment, and future economic outlook, is described in Subsection 2.5.2.

The in-migration of construction workers is likely to create new indirect service jobs in the area and increase the amount of money used to purchase goods and services. The U.S. Department of Commerce Bureau of Economic Analysis (BEA), Economics and Statistics Division, provides multipliers for industry jobs, earnings, and expenditures. The economic model they use is called the Regional

Input-Output Modeling System (RIMS II). This model incorporates buying and selling linkages among regional industries creating multipliers for both jobs and monetary expenditures. The resulting multipliers were used to estimate the number of indirect jobs and expenditure of money in Jackson County, Alabama.

The multiplier from RIMS II analysis for construction jobs is 1.4218. Thus, for every in-migrating construction worker, an estimated additional 0.4230.422 jobs are created in the region. The RIMS II (utilities) multiplier for operations jobs is 1.759. Thus, for every job of operation worker, an estimated additional 0.759 jobs are created in the region. The expenditures of the peak construction workforce in the region for shelter, food and services could, through the multiplier effect of expenditures, create a number of new jobs. Operations jobs occur as the construction jobs approach the end of the construction phase, with some overlap. The peak period for construction and operations workforces combined is between July and October 2015.

Starting in 2010, indirect jobs are created by construction jobs; approximately 100 new indirect jobs are created by 2012 and 670 new indirect jobs during the peak construction period in 2015. The indirect jobs due to operations are forecast to begin at the end of 2012; approximately 506 indirect jobs are created during the peak construction period in 2015, with a high of 735 indirect jobs at the end of the bust cycle. When combined with the construction and operations jobs, total indirect jobs (1176) contribute to a peak of approximately 5020 jobs in 2015. A net loss of 441 indirect jobs, from the peak construction time to the beginning of the operations period, are expected to be partially offset by the normal projected population increases that would help maintain indirect jobs created during the construction phase. The total jobs loss from the peak construction to the beginning of commercial operation is 3315. An influx of 1500 workers (50 percent of the 3000 construction workforce) would create 635 indirect jobs for a total of 3635 new jobs within the region. Any permanent effects are discussed in Chapter 5.

For every dollar input into the BLN site, an additional 0.443 dollars is added to the regional economy (Reference 7). At this time annual expenditures within the region for materials and services during construction of the BLN site are not known. This information is not expected to be available until the construction plan is finalized. A limited quantity of material and services are purchased from within the BLN region in support of plant construction. Most materials for construction are procured through bulk contracts in order to obtain bulk pricing incentives. This somewhat limits regional procurement (within 50 mi of the BLN site). Specific items that are not likely to be purchased regionally include rebar and major plant equipment, such as pumps, valves, tanks and other vessels. Safety-related concrete is expected to be purchased locally, as are many consumable items such as cleaning supplies and office supplies, along with miscellaneous services, such as janitorial services, paving, landscaping, and maintenance on temporary buildings. Other regional expenditures would include items such as office furniture and equipment, construction trailers and vehicles, trucks, and scaffolding. Estimated regional purchases total about \$41 million throughout the construction period, as detailed below:

TVA Letter Dated: July 3, 2008

Responses to Environmental Report Information Needs – Socioeconomics/EJ

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<u>Category</u>	<u>Construction (Total \$)</u>
• <u>Consumables</u>	<u>2,000,000</u>
• <u>Miscellaneous Services</u>	<u>5,000,000</u>
• <u>Safety-Related Concrete</u>	<u>14,000,000</u>
• <u>Other</u>	<u>20,000,000</u>
<b><u>Total</u></b>	<b><u>41,000,000</u></b>

In addition to direct expenditures on construction-related materials and services, expenditures and benefits associated with the construction workforce include the creation of jobs, employee purchasing, and increased tax revenues. –When comparing the influx of the construction workforce with the relatively small population of the vicinity, the increase in expenditures and benefits is substantial. When comparing the influx of the construction workforce with the larger population of the region, the increase in expenditures and benefits is proportionally smaller. ~~Expenditures and benefits include the creation of jobs, employee purchasing, and increased tax revenues.~~ Thus the impact from plant construction expenditures and employees is considered a MODERATE to LARGE beneficial impact in the vicinity and a SMALL beneficial impact in the region.

**ATTACHMENTS:**

The following document is provided as Attachment SE-32:

- SE-32. U.S. Department of Commerce, Bureau of Economic Analysis (BEA), "RIMS II Multipliers (1997/2004)," (Updated May 2, 2007).

**NRC Review of the BLN Environmental Report****NRC Information Needs - BLN ER Site Audit Exit Meeting****NRC Environmental Category: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information needs:

- SE-34:** Provide the list of local “government officials, the staff of social welfare agencies, and local businesses” that were contacted concerning environmental justice issues. Provide copies of all interview notes as well.
- SE-46:** Page 5.8-12 – Please lay out the rationale for the discussion in Section 5.8.3.2. No basis for the assignment of impacts is provided.

**BLN INFORMATION NEEDS: SE-34 and SE-46****BLN RESPONSE:**

During the week of March 31 through April 4, 2008, the NRC staff conducted an audit of the BLN site, including a review of documentation supporting the BLN ER. The documentation provided to the staff for review included a draft document titled, “Bellefonte Environmental Justice – Impact Assessment Methodology and Findings,” (dated March 26, 2008) that was prepared as part of the response to comments ER14-19. That document provides the rationale for the discussion in ER Subsection 5.8.3.2, and information on the officials, agencies, and businesses that were contacted regarding environmental justice for the BLN project. The document was subsequently provided as Attachment B to TVA’s May 2, 2008 letter. TVA refers the reviewers to the May 2, 2008 letter (ML081270657). Based on discussions with the NRC’s Socioeconomics/EJ reviewers, TVA understands that the NRC staff considers these comments resolved, and no additional documentation is required in response to this information request.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

None.

**ATTACHMENTS:**

None.

**NRC Review of the BLN Environmental Report****NRC Information Needs - BLN ER Site Audit Exit Meeting****NRC Environmental Category: SOCIOECONOMICS/EJ**

During the BLN Environmental Report site audit exit meeting on April 4, 2008, the NRC staff identified the following information need:

Page 4.4-11 – Please make consistent the discussions throughout Section 4.4 re: worker numbers relocation. Additional information about the likely consequences of competition for housing, with references is needed. The relative impact on different communities needs to be reflected in the analysis, including communities on the east side of the river (given the new bridge).

**BLN INFORMATION NEED: SE-38****BLN RESPONSE:**

Additional information has been provided that further analyzes the likely consequences of competition for housing and the relative impact on the nearby communities, including those located on the east side of the river in Jackson County.

The construction workforce will likely compete with lower-wage employees for housing, forcing up rental prices and decreasing availability (Attachment SE-38). There are several small, rural communities around the site on both sides of the river. While there are adequate roads and bridges in the county that provide access to these communities, the local geography on the east side of the river makes commuting to the site from the more distant locations, such as Dutton and Pisgah, less convenient. There are also fewer housing opportunities available in these communities because of their rural nature and availability of services. Therefore, a majority of workers are expected to concentrate in the communities nearer to the site and in major cities within the BLN region.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

Revisions to COLA Part 3, ER Chapter 2, Subsection 4.4.2.4 and 4.4.4 that provide consistency in the discussion of worker numbers throughout ER Subsection 4.4 are provided in the response to BLN Information Need SE-09 as text change Numbers 8 and 9.

**ATTACHMENT:**

The following reference is provided as Attachment SE-38:

SE-38. Rees Consulting, "2005 Housing Market and Needs Assessment," June 2005.

ATTACHMENT SE-03  
U.S. CENSUS BUREAU  
AMERICAN FACTFINDER – JACKSON COUNTY, ALABAMA  
(WEBSITE ACCESSED MAY 8, 2007)

## **U.S. Census Bureau**

### **American FactFinder Jackson County, Alabama**

**(Website accessed May 8, 2007)**



**U.S. Census Bureau**  
**American FactFinder**

FACT SHEET

**Jackson County, Alabama**

View a Fact Sheet for a race, ethnic, or ancestry group

**Census 2000 Demographic Profile Highlights:**

**General Characteristics - show more >>**

	Number	Percent	U.S.		
Total population	53,926			map	brief
Male	26,281	48.7	49.1%	map	brief
Female	27,645	51.3	50.9%	map	brief
Median age (years)	37.6	(X)	35.3	map	brief
Under 5 years	3,387	6.3	6.8%	map	
18 years and over	40,890	75.8	74.3%		
65 years and over	7,210	13.4	12.4%	map	brief
One race	52,849	98.0	97.6%		
White	49,552	91.9	75.1%	map	brief
Black or African American	2,019	3.7	12.3%	map	brief
American Indian and Alaska Native	946	1.8	0.9%	map	brief
Asian	124	0.2	3.6%	map	brief
Native Hawaiian and Other Pacific Islander	13	0.0	0.1%	map	brief
Some other race	195	0.4	5.5%	map	
Two or more races	1,077	2.0	2.4%	map	brief
Hispanic or Latino (of any race)	610	1.1	12.5%	map	brief
Household population	53,347	98.9	97.2%	map	brief
Group quarters population	579	1.1	2.8%	map	
Average household size	2.47	(X)	2.59	map	brief
Average family size	2.92	(X)	3.14	map	
Total housing units	24,168			map	
Occupied housing units	21,615	89.4	91.0%		brief
Owner-occupied housing units	16,842	77.9	66.2%	map	
Renter-occupied housing units	4,773	22.1	33.8%	map	brief
Vacant housing units	2,553	10.6	9.0%	map	

**Social Characteristics - show more >>**

	Number	Percent	U.S.		
Population 25 years and over	36,435				
High school graduate or higher	24,429	67.0	80.4%	map	brief
Bachelor's degree or higher	3,798	10.4	24.4%	map	
Civilian veterans (civilian population 18 years and over)	4,923	12.0	12.7%	map	brief
Disability status (population 5 years and over)	11,842	23.7	19.3%	map	brief
Foreign born	395	0.7	11.1%	map	brief
Male, Now married, except separated (population 15 years and over)	13,250	64.1	56.7%		brief
Female, Now married, except separated (population 15 years and over)	13,130	58.2	52.1%		brief
Speak a language other than English at home (population 5 years and over)	1,059	2.1	17.9%	map	brief

**Economic Characteristics - show more >>**

	Number	Percent	U.S.		
In labor force (population 16 years and over)	26,344	62.0	63.9%		brief
Mean travel time to work in minutes (workers 16 years and over)	27.0	(X)	25.5	map	brief
Median household income in 1999 (dollars)	32,020	(X)	41,994	map	
Median family income in 1999 (dollars)	38,082	(X)	50,046	map	
Per capita income in 1999 (dollars)	16,000	(X)	21,587	map	
Families below poverty level	1,640	10.3	9.2%	map	brief
Individuals below poverty level	7,293	13.7	12.4%	map	

**Housing Characteristics - show more >>**

	Number	Percent	U.S.		
Single-family owner-occupied homes	10,224				brief
Median value (dollars)	72,400	(X)	119,600	map	brief
Median of selected monthly owner costs	(X)	(X)			brief
With a mortgage (dollars)	690	(X)	1,088	map	

Not mortgaged (dollars)	218	(X)	295
(X) Not applicable.			

Source: U.S. Census Bureau, Summary File 1 (SF 1) and Summary File 3 (SF 3)

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ATTACHMENT SE-05  
ALABAMA DEPARTMENT OF CONSERVATION AND NATIONAL RESOURCES  
ALABAMA STATE PARKS VISITOR DATA, FY 2003 - 2004 AND 2004 - 2005  
2008

# **Alabama Department of Conservation and Natural Resources**

## **Alabama State Parks Visitor Data Fiscal Years 2003 – 2004 and 2004 – 2005**

**2008**

ALABAMA STATE PARKS  
 FISCAL YEAR 2003-2004 and 2004-2005  
 ATTENDANCE COMPARISONS

PARK	FY 2002-03	FY 2003-04	FY 2004-05	DIFFERENCE	% CHANGE
BUCKS POCKET	32,962	31,377	29,374	(2,003.00)	-6.38%
DESOTO PARK	113,588	117,200	115,252	(1,948.00)	-1.66%
CATHEDRAL CAVERNS	33,580	35,574	37,154	1,580.00	4.44%
JOE WHEELER PARK	232,405	242,193	230,743	(11,450.00)	-4.73%
LAKE GUNTERVILLE PARK	220,018	218,422	223,468	5,046.00	2.31%
MONTE SANO	207,327	224,853	235,258	10,405.00	4.63%
OAK MOUNTAIN	454,091	442,555	451,993	9,438.00	2.13%
GUNTERVILLE LODGE	145,768	54,674	24,827	(29,847.00)	-54.59%
DESOTO LODGE	62,104	61,564	56,446	(5,118.00)	-8.31%
JOE WHEELER LODGE	75,985	85,228	91,310	6,082.00	7.14%
<b>TOTALS</b>	<b>1,577,828</b>	<b>1,513,640</b>	<b>1,495,825</b>	<b>(17,815)</b>	<b>-1.18%</b>

CAMPSITE OCCUPANCY COMPARISON  
 NUMBER OF UNITS RENTED

PARK	FY 1999-00	FY 2000-01	FY 2001-02	FY 2002-03	FY 2003-04
BUCKS POCKET	446	379	604	716	718
DESOTO PARK	10,783	10,816	10,993	10,150	10,815
JOE WHEELER PARK	17,329	15,591	14,918	16,920	17,710
LAKE GUNTERVILLE PARK	33,852	34,504	34,501	37,568	36,906
MONTE SANO	8,580	8,206	8,970	9,198	10,488
OAK MOUNTAIN	15,185	17,402	19,721	21,159	20,518
<b>TOTALS</b>	<b>86,175</b>	<b>86,898</b>	<b>89,707</b>	<b>95,711</b>	<b>97,155</b>

ALABAMA STATE PARKS  
MOTEL OCCUPANCY COMPARISON  
NUMBER OF UNITS RENTED

PARK	FY 1999-00	FY 2000-01	FY 2001-02	FY 2002-03	FY 2003-04
GUNTERSVILLE LODGE	13,271	12,462	12,671	11,465	2,948
DESOTO LODGE	4,487	4,522	4,516	4,629	4,708
JOE WHEELER LODGE	12,443	11,411	11,730	11,314	12,219
<b>TOTALS</b>	<b>30,201</b>	<b>28,395</b>	<b>28,917</b>	<b>27,408</b>	<b>19,875</b>

ALABAMA STATE PARKS  
COTTAGE OCCUPANCY COMPARISON  
NUMBER OF UNITS RENTED

PARK	FY 1999-00	FY 2000-01	FY 2001-02	FY 2002-03	FY 2003-04
DESOTO LODGE	5,174	5,335	5,242	5,266	4,910
JOE WHEELER PARK	4,185	4,365	4,445	4,420	4,936
LAKE GUNTERSVILLE LODGE	6,638	6,202	6,089	6,034	5,861
MONTE SANO	2,507	2,542	2,334	2,355	2,365
OAK MOUNTAIN	2,000	1,945	2,140	2,252	2,275
<b>TOTALS</b>	<b>20,504</b>	<b>20,389</b>	<b>20,250</b>	<b>20,327</b>	<b>20,347</b>

**ALABAMA STATE PARKS  
ATTENDANCE COMPARISONS  
NON REVENUE GUEST COUNT**

<b>PARK</b>	<b>FY 1999-00</b>	<b>FY 2000-01</b>	<b>FY 2001-02</b>	<b>FY 2002-03</b>	<b>FY 2003-04</b>	<b>FY 2004-05</b>
BUCKS POCKET	28,800	26,050	28,566	30,415	29,050	27,105
DESOTO PARK	44,275	44,750	45,150	44,800	45,250	45,850
JOE WHEELER PARK	417,249	427,680	441,639	100,000	98,000	81,500
LAKE GUNTERSVILLE PARK	32,303	33,917	31,982	33,350	33,683	33,629
LAKEPOINT PARK	25,019	25,019	25,019	25,019	25,700	25,700
MONTE SANO	142,792	142,792	142,792	132,792	142,792	142,792
OAK MOUNTAIN	35,920	35,595	33,981	31,065	32,408	33,570
<b>TOTALS</b>	<b>726,358</b>	<b>735,803</b>	<b>749,129</b>	<b>397,441</b>	<b>406,883</b>	<b>390,146</b>

Parks with no increase or decrease from prior year(s) are utilizing invalid data

**ALABAMA STATE PARKS  
ATTENDANCE COMPARISONS  
OTHER REVENUE GUEST COUNT**

<b>PARK</b>	<b>FY 1999-00</b>	<b>FY 2000-01</b>	<b>FY 2001-02</b>	<b>FY 2002-03</b>	<b>FY 2003-04</b>
DESOTO PARK	63,318	39,766	45,003	38,600	40,585
CATHEDRAL CAVERNS	4,919	36,801	34,285	33,580	35,574
JOE WHEELER PARK	97,741	70,295	75,383	61,463	67,386
LAKE GUNTERSVILLE PARK	67,109	58,958	55,474	47,846	47,113
MONTE SANO	47,367	44,690	44,747	37,235	51,925
OAK MOUNTAIN	427,649	417,636	401,194	353,760	339,813

<b>GUNTERSVILLE LODGE</b>	119,889	119,747	117,412	102,199	27,834
<b>DESOTO LODGE</b>	35,645	35,594	35,203	36,022	36,923
<b>JOE WHEELER LODGE</b>	67,100	57,693	60,335	55,578	63,544
<b>TOTALS</b>	<b>930,737</b>	<b>881,180</b>	<b>869,036</b>	<b>766,283</b>	<b>710,697</b>

ALABAMA STATE PARKS  
ATTENDANCE COMPARISONS  
OVERNIGHT GUEST COUNT

<b>PARK</b>	<b>FY 1999-00</b>	<b>FY 2000-01</b>	<b>FY 2001-02</b>	<b>FY 2002-03</b>	<b>FY 2003-04</b>	<b>FY 2004-05</b>
<b>BUCKS POCKET</b>	2447	2187	2282	2547	2327	2269
<b>DESOTO PARK</b>	32932	33708	33536	30188	31365	29360
<b>JOE WHEELER PARK</b>	73143	66206	64820	70942	76807	81462
<b>LAKE GUNTERSVILLE PARK</b>	123971	128116	125690	138822	137626	143099
<b>OAK MOUNTAIN</b>	55315	62794	69533	69266	70334	75352
<b>GUNTERSVILLE LODGE</b>	46726	44454	44374	43569	26840	22435
<b>DESOTO LODGE</b>	26991	27592	26537	26082	24641	21915
<b>JOE WHEELER LODGE</b>	20824	20399	20268	20407	21684	23849
<b>Totals</b>	<b>382349</b>	<b>385456</b>	<b>387040</b>	<b>401823</b>	<b>391624</b>	<b>399741</b>

	PRIOR YEAR	
FY 2004-05	DIFFERENCE	% CHANGE
728	10	1.39%
10071	(744)	-6.88%
18193	483	2.73%
39402	2,496	6.76%
10164	(324)	-3.09%
23713	3,195	15.57%
102,271	5,116	5.27%

PRIOR YEAR

FY 2004-05	DIFFERENCE	% CHANGE
0	(2,948)	-100.00%
4,832	124	2.63%
13,925	1,706	13.96%
18,757	(1,118)	-5.63%

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PRIOR YEAR

FY 2004-05	DIFFERENCE	% CHANGE
4,135	(775)	-15.78%
5,301	365	7.39%
6,159	298	5.08%
2,471	106	4.48%
2,153	(122)	-5.36%
20,219	(128)	-0.62%

**PRIOR YEAR**

<b>DIFFERENCE</b>	<b>% CHANGE</b>
(1,945)	-6.70%
600	1.33%
(16,500)	-16.84%
(54)	-0.16%
0	0.00%
0	0.00%
1,162	3.59%
(16,737)	-4.11%

**PRIOR YEAR**

<b>FY 2004-05</b>	<b>DIFFERENCE</b>	<b>% CHANGE</b>
40,042	(543)	-1.34%
37,154	1,580	4.44%
67,781	395	0.59%
46,740	(373)	-0.79%
63,110	11,185	21.54%
343,071	3,258	0.96%

2,392	(25,442)	-91.41%
34,531	(2,392)	-6.48%
67,461	3,917	6.16%
	0	
702,282	(8,415)	-1.18%

DIFFERENCE	% CHANGE
(58.00)	-2.49%
(2005.00)	-6.39%
4655.00	6.06%
5473.00	3.98%
5018.00	7.13%
(4405.00)	-16.41%
(2726.00)	-11.06%
2165.00	9.98%
8117	2.07%

TOTAL GUEST COUNT  
 FY2004-2005 TO FY2005-2006  
 MONTH: July 2006

PARKS	MONTH		INCREASE DECREASE % OVER		YTD	
	FY2005	FY2006	PRIOR YEAR		FY2005	FY2006
BUCK'S POCKET	2960	3,043	83	2.80%	24,125	37,066
DESOTO	18,962	14,515	-4,447	-23.45%	94,408	82,549
CATHERAL CAVERNS	6,450	6,760	310	4.81%	31,672	31,126
JOE WHEELER PARK	35,160	34,691	-469	-1.33%	209,171	190,593
GUNTERVILLE PARK	31,297	32,907	1,610	5.14%	193,026	184,530
MONTE SANO	16,012	22,660	6,648	41.52%	183,235	182,793
OAK MOUNTAIN	60371	55,141	-5,230	-8.66%	384,272	397,076
GUNTERSVILLE LODGE	4261	4,239	-22	-0.52%	19,821	20,867
DESOTO LODGE	5,663	6,593	930	16.42%	49,216	47,705
JOE WHEELER LODGE	11,202	11,023	-179	-1.60%	78,072	76,460
<b>TOTAL GUEST COUNT</b>	<b>192,338</b>	<b>191,572</b>	<b>-766</b>	<b>-0.40%</b>	<b>1,267,018</b>	<b>1,250,765</b>

OVERNIGHT GUEST COUNT  
 FY2004-2005 TO FY2005-2006  
 MONTH: July 2006

PARKS	MONTH		INCREASE DECREASE % OVER		YTD	
	FY2005	FY2006	PRIOR YEAR		FY2005	FY2006
BUCK'S POCKET	110	143	33	30.00%	2,120	2,566
DESOTO	4,198	1,482	-2,716	-64.70%	25,287	18,065
CATHERAL CAVERNS	0	0	0	0.00%	0	0
JOE WHEELER PARK	11,049	11,028	-21	-0.19%	71,153	65,237
GUNTERVILLE PARK	19,545	20,038	493	2.52%	125,283	113,574
MONTE SANO	3,212	2,481	-731	-22.76%	26,211	19,829
OAK MOUNTAIN	8,393	8,392	-1	-0.01%	66,553	73,089
GUNTERSVILLE LODGE	3,291	3,354	63	1.91%	18,076	19,402
DESOTO LODGE	2,511	2,828	317	12.62%	18,890	17,862
JOE WHEELER LODGE	2,905	2,914	9	0.31%	20,363	20,035
<b>TOTAL GUEST COUNT</b>	<b>55,214</b>	<b>52,660</b>	<b>18,171</b>	<b>16.95%</b>	<b>373,936</b>	<b>349,659</b>

OTHER REVENUE AREAS GUEST COUNT  
 FY2004-2005 TO FY2005-2006  
 MONTH: July 2006

PARKS	MONTH FY2005	FY2006	INCREASE DECREASE % OVER		YTD	
			PRIOR YEAR		FY2005	FY2006
BUCK'S POCKET	0	0	0	0.00%	0	3,500
DESOTO	8,264	7,633	-631	-7.64%	28,871	33,084
CATHERAL CAVERNS	6,450	6,760	310	4.81%	31,672	31,126
JOE WHEELER PARK	12,837	12,389	-448	-3.49%	58,148	55,985
GUNTERVILLE PARK	7,868	8,946	1,078	13.70%	36,223	41,708
MONTE SANO	2,800	10,179	7,379	263.54%	49,232	50,272
OAK MOUNTAIN	47,253	43,155	-4,098	-8.67%	289,505	297,060
GUNTERSVILLE LODGE	970	885	-85	-8.76%	1,745	1,465
DESOTO LODGE	3,152	3,765	613	19.45%	30,327	29,843
JOE WHEELER LODGE	8,297	8,109	-188	-2.27%	57,709	56,425
<b>TOTAL GUEST COUNT</b>	<b>97,891</b>	<b>101,821</b>	<b>3,930</b>	<b>9.47%</b>	<b>583,432</b>	<b>600,468</b>

NON REVENUE AREAS GUEST COUNT  
 FY2004-2005 TO FY 2005-2006  
 MONTH: July 2006

PARKS	MONTH FY2005	FY2006	INCREASE DECREASE % OVER		YTD	
			PRIOR YEAR		FY2005	FY2006
BUCK'S POCKET	2,850	2,900	50	1.75%	22,005	22,055
DESOTO	6,500	5,400	-1,100	-16.92%	37,150	36,050
CATHERAL CAVERNS	0	0	0	0.00%	0	0
JOE WHEELER PARK	11,274	11,274	0	0.00%	69,871	69,871
GUNTERVILLE PARK	3,884	3,923	39	1.00%	28,530	28,569
MONTE SANO	10,000	10,000	0	0.00%	107,792	107,792
GUNTERSVILLE LODGE	0	0	0	0.00%	0	0
DESOTO LODGE	0	0	0	0.00%	0	0
JOE WHEELER LODGE	0	0	0	0.00%	0	0
<b>TOTAL GUEST COUNT</b>	<b>34,508</b>	<b>33,497</b>	<b>-1,011</b>	<b>-2.93%</b>	<b>265,348</b>	<b>264,337</b>

PERFORMANCE REPORT COMPARISON  
 CAMPSITES OCCUPANCY  
 FY2004-2005 TO FY2005-2006  
 MONTH: July 2006

PARKS	31 AVAILABLE		RENTED		PERCENTAGE	
	2005	2006	2005	2006	2005	2006
	BUCK'S POCKET	1116	1116	52	58	4.66%
DESOTO	2418	2418	1300	1,356	53.76%	56.08%

JOE WHEELER PARK	3565	3565	2143	2,065	60.11%	57.92%
GUNTERVILLE PARK	9982	9982	5112	5,349	51.21%	53.59%
MONTE SANO	2759	2759	885	938	32.08%	34.00%
TOTAL	21,876	21,846	9,440	9,708	43.15%	44.44%

PERFORMANCE REPORT COMPARISON  
COTTAGES OCCUPANCY  
FY2004-2005 TO FY2005-2006  
MONTH: July 2006

PARKS	31 AVAILABLE		RENTED		PERCENTAGE	
	2005	2006	2005	2006	2005	2006
JOE WHEELER PARK	810	810	646	669	79.75%	82.59%
GUNTERSVDGE	1050	1050	739	761	70.38%	72.48%
CHEAHA LODGE	450	450	365	354	81.11%	78.67%
DESOTO LODGE	660	660	417	570	63.18%	86.36%
TOTAL	2,970	2,970	2,167	2,354	72.96%	79.26%

PERFORMANCE REPORT COMPARISON  
MOTEL OCCUPANCY  
FY2004-2005 TO FY2005-2006  
MONTH: July 2006

PARKS	31 AVAILABLE		RENTED		PERCENTAGE	
	2005	2006	2005	2006	2005	2006
DESOTO LODGE	750	750	494	485	65.87%	64.67%
JOE WHEELER LODGE	2250	2250	1,460	1,618	64.89%	71.91%
TOTAL	3,000	3,000	1,954	2,103	65.13%	70.10%

PERFORMANCE REPORT COMPARISON  
GROUP LODGE  
FY2004-2005 TO FY2005-2006  
MONTH: July 2006

PARKS	31 AVAILABLE		RENTED		PERCENTAGE	
	2005	2006	2005	2006	2005	2006
JOE WHEELER	30	30	25	25	83.33%	83.33%
MONTE SANO	0	60	0	26		43.33%
TOTAL	30	90	25	51	83.33%	56.67%

INCREASE  
DECREASE  
% OVER  
PRIOR YEAR

12,941	53.64%
-11,859	-12.56%
-546	-1.72%
-18,578	-8.88%
-8,496	-4.40%
-442	-0.24%
12,804	3.33%
1,046	5.28%
-1,511	-3.07%
-1,612	-2.06%
<hr/>	
123,153	5.36%

INCREASE  
DECREASE  
% OVER  
PRIOR YEAR

0	
446	21.04%
-7,222	-28.56%
0	0.00%
-5,916	-8.31%
-11,709	-9.35%
-6,382	-24.35%
6,536	9.82%
1,326	7.34%
-1,028	-5.44%
-328	-1.61%
<hr/>	
111,671	15.61%

INCREASE  
DECREASE  
% OVER  
PRIOR YEAR

3,500	#DIV/0!
4,213	14.59%
-546	-1.72%
-2,163	-3.72%
5,485	15.14%
1,040	2.11%
7,555	2.61%
-280	-16.05%
-484	-1.60%
-1,284	-2.22%
<hr/>	
17,036	4.45%

INCREASE  
DECREASE  
% OVER  
PRIOR YEAR

50	673.90%
-1,100	454.62%
0	0.00%
0	519.75%
39	635.52%
0	977.92%
0	0.00%
0	0.00%
0	0.00%
<hr/>	
-1,011	-0.38%

AVAILABLE  
2005      2006

11268	11304
24414	24492

36025	36140
100786	101108
27857	27946
200,350	200,990

AVAILABLE

2005	2006
8544	8754
10860	10895
4750	4766
6864	6459
<hr/>	<hr/>
31,018	30,874

AVAILABLE

2005	2006
7800	7825
23400	23475
<hr/>	<hr/>
31,200	31,300

AVAILABLE

2005	2006
312	313
0	626
312	939

ATTACHMENT SE-06-A  
U.S. DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE  
AND U.S. DEPARTMENT OF COMMERCE, U.S. CENSUS BUREAU  
*2001 NATIONAL SURVEY OF FISHING, HUNTING, AND WILDLIFE-ASSOCIATED  
RECREATION, ALABAMA*  
MARCH 2003

**U.S. Department of the Interior  
Fish and Wildlife Service**

**U.S. Department of Commerce  
U.S. Census Bureau**

***2001 National Survey of Fishing,  
Hunting, and Wildlife-Associated  
Recreation, Alabama***

**FHW/01-AL-Rev.**

**March 2003**

*2001 National Survey of  
Fishing, Hunting, and  
Wildlife-Associated Recreation*

*Alabama*



Revised March 2003



**U.S. Department of the Interior**  
**Gale A. Norton,**  
Secretary

**FISH AND WILDLIFE SERVICE**  
**Steve Williams,**  
Director



**U.S. Department of Commerce**  
**Donald L. Evans,**  
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**Economics and Statistics Administration**  
**Kathleen B. Cooper,**  
Under Secretary for Economic Affairs

**U.S. CENSUS BUREAU**  
**Charles Louis Kincannon,**  
Director



**Economics and Statistics  
Administration**

**Kathleen B. Cooper**  
Under Secretary for Economic Affairs



**Department of Interior**  
Gale A. Norton, Secretary



**FISH AND WILDLIFE SERVICE**  
Steve Williams, Director



**U.S. CENSUS BUREAU**  
Charles Louis Kincannon  
Director



**Division of Federal Aid**  
Kris E. LaMontagne, Chief

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure their development in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

The mission of the Department's Fish and Wildlife Service is to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people. The Service is responsible for national programs of vital importance to our natural resources, including administration of the Federal Aid in Sport Fish Restoration and the Federal Aid of Wildlife Restoration Programs. These two grant programs provide financial assistance to the States for projects to enhance and protect fish and wildlife resources and to assure their availability to the public for recreational purposes. Multistate grants from these programs pay for the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation.

#### **Suggested Citation**

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# Foreword

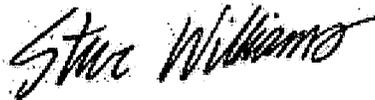
Fish and wildlife resources are part of our American culture. Whether we are fishing, hunting, watching wildlife or feeding backyard birds, Americans derive many hours of enjoyment from wildlife-related recreation. Wildlife recreation is the cornerstone of our Nation's great conservation ethic.

The 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation is a partnership effort with the States and national conservation organizations, and has become one of the most important sources of information on fish and wildlife recreation in the United States. It is a useful tool that quantifies the economic impact of wildlife-based recreation. Federal, State, and private organizations use this detailed information to manage wildlife, market products, and look for trends. The 2001 Survey is the tenth in a series that began in 1955.

More than 82 million U.S. residents fished, hunted, and watched wildlife in 2001. They spent over \$108 billion pursuing their recreational activities, contributing to millions of jobs in industries and businesses that support wildlife-related recreation. Furthermore, funds generated by licenses and taxes on hunting and fishing equipment pay for many of the conservation efforts in this country.

Wildlife recreationists are among the Nation's most ardent conservationists. They not only contribute financially to conservation efforts, but also spend time and effort to introduce children and other newcomers to the enjoyment of the outdoors and wildlife.

I appreciate the assistance of those who took time to participate in this valuable survey. We all can be grateful that America's great tradition of wildlife-related recreation remains strong.



**Steve Williams**  
Director, U.S. Fish and Wildlife Service  
U.S. Department of the Interior

# Survey Background and Method

The National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (Survey) has been conducted since 1955 and is one of the oldest and most comprehensive continuing recreation surveys. The purpose of the Survey is to gather information on the number of anglers, hunters, and wildlife-watching participants (formerly known as nonconsumptive wildlife-related participants) in the United States. Information also is collected on how often these recreationists participate and how much they spend on their activities.

Preparations for the 2001 Survey began in 1999 when the International Association of Fish and Wildlife Agencies (IAFWA) asked us, the Fish and Wildlife Service, to conduct the tenth national survey of wildlife-related recreation. Funding came from the Multistate Conservation Grant Programs, authorized by Sport Fish and Wildlife Restoration Acts, as amended.

We consulted with State and Federal agencies and nongovernmental organizations such as the Wildlife Management Institute and American Sportfishing Association to determine survey content. Other sportspersons' organizations and conservation groups, industry representatives, and researchers also provided valuable advice.

Four regional technical committees were set up under the auspices of the IAFWA to ensure that State fish and wildlife agencies had an opportunity to participate in all phases of survey planning and

design. The committees were made up of agency representatives.

Data collection for the Survey was carried out in two phases by the U.S. Census Bureau. The first phase was the screen which began in April 2001. During the screening phase, the Census Bureau interviewed a sample of 80,000 households nationwide to determine who in the household had fished, hunted, or engaged in wildlife-watching activities in 2000, and who had engaged or planned to engage in those activities in 2001. In most cases, one adult household member provided information for all household members. The screen primarily covered 2000 activities while the next, more in-depth phase covered 2001 activities. For more information on the 2000 data, refer to Appendix C.

The second phase of the data collection consisted of three detailed interview waves. The first wave began in April 2001, the second in September 2001, and the last in January 2002. Interviews were conducted with samples of likely anglers, hunters, and wildlife watchers who were identified in the initial screening phase. These interviews were conducted primarily by telephone, with in-person interviews for those respondents who could not be reached by telephone. Respondents in the second survey phase were limited to those at least 16 years old. Each respondent provided information pertaining only to his or her activities and expenditures. Sample sizes were designed to provide statistically reliable

results at the State level. Altogether, interviews were completed for 25,070 respondents from the sportspersons sample and 15,303 from the wildlife watchers sample. More detailed information on sampling procedures and response rates is found in Appendix D.

## Comparability With Previous Surveys

The 2001 Survey's questions and methodology were similar to those used in the 1996 and 1991 Surveys. Therefore, the estimates of all three surveys are comparable.

The methodology of the 2001, 1996, and 1991 Surveys did differ significantly from the 1985 and 1980 Surveys, so their estimates are not directly comparable to those earlier surveys. The changes in methodology included reducing the recall period over which respondents had to report their activities and expenditures. Previous Surveys used a 12-month recall period which resulted in greater reporting bias. Research found that the amount of activity and expenditures reported in 12-month recall surveys was overestimated in comparison with that reported using shorter recall periods. See the Summary Section and Appendix B.

# *Highlights*



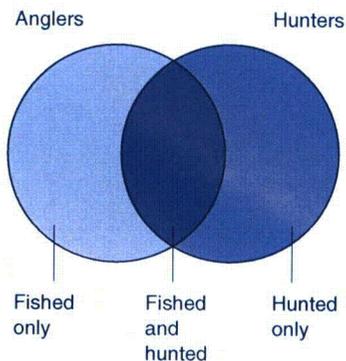
# Introduction

The National Survey of Fishing, Hunting, and Wildlife-Associated Recreation reports results from interviews with U.S. residents about their fishing, hunting, and other wildlife-related recreation. This report focuses on 2001 participation and expenditures of U.S. residents 16 years of age and older.

In addition to the 2001 numbers, we also provide 11-year trend data. The 2001 numbers reported can be compared with those in the 1991 and 1996 Survey reports because these three surveys used similar methodologies. However, the 2001 estimates should not be directly compared with the results from Surveys earlier than 1991 because of changes in methodology. These changes were made to improve accuracy in the information provided. Trend information from 1991 to 2001 is presented in Appendix B.

The report also provides information on participation in wildlife-related recreation in 2000, particularly of persons 6 to 15 years of age. The 2000 information is provided in Appendix C. Additional information about the scope and coverage of the Survey can be found in the Survey Background and Method section of this report. The remainder of this section defines important terms used in the Survey.

## Sportspersons



## Wildlife-Associated Recreation

Wildlife-associated recreation includes fishing, hunting, and wildlife-watching activities. These categories are not mutually exclusive because many individuals enjoyed fish and wildlife in several ways in 2001. Wildlife-associated recreation is reported in two major categories: (1) fishing and hunting and (2) wildlife watching (formerly nonconsumptive wildlife-related recreation). Wildlife watching includes observing, photographing, and feeding fish and wildlife.

## Fishing and Hunting

This Survey reports information about residents of the United States who fished or hunted in 2001, regardless of whether they were licensed. The fishing and hunting sections of this report are organized to report three groups: (1) sportspersons, (2) anglers, and (3) hunters.

## Sportspersons

Sportspersons are those who fished or hunted. Individuals who fished or hunted commercially in 2001 are reported as sportspersons only if they also fished or hunted for recreation. The sportspersons group is composed of the three subgroups in the diagram below: (1) those who fished and hunted, (2) those who only fished, and (3) those who only hunted. The total number of sportspersons is equal to the sum of people who only

fished, only hunted, and both hunted and fished. It is not the sum of all anglers and all hunters, because those people who both fished and hunted are included in both the angler and hunter population and would be incorrectly counted twice.

## Anglers

Anglers are sportspersons who only fished plus those who fished and hunted. Anglers include not only licensed hook-and-line anglers, but also those who have no license and those who use special methods such as fishing with spears. Three types of fishing are reported: (1) freshwater, excluding the Great Lakes, (2) Great Lakes, and (3) saltwater. Since many anglers participated in more than one type of fishing, the total number of anglers is less than the sum of the three types of fishing.

## Hunters

Hunters are sportspersons who only hunted plus those who hunted and fished. Hunters include not only licensed hunters using common hunting practices, but also those who have no license and those who engaged in hunting with a bow and arrow, muzzleloader, other primitive firearms, or a pistol or handgun. Four types of hunting are reported: (1) big game, (2) small game, (3) migratory bird, and (4) other animals. Since many hunters participated in more than one type of hunting, the sum of hunters for big game, small game, migratory bird, and other animals exceeds the total number of hunters.

**Wildlife-Watching Activities  
(formerly Nonconsumptive  
Wildlife-Related Recreation)**

Since 1980, the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation has included information on wildlife-watching activities in addition to fishing and hunting. However, the 1991, 1996, and 2001 Surveys, unlike the 1980 and 1985 Surveys, collected data only for those activities where the primary purpose was wildlife watching (observing, photographing, or feeding wildlife). The Survey uses a strict definition of wildlife watching. Participants must either take a "special interest" in wildlife around their homes or take a trip for the "primary purpose" of wildlife watching. Secondary wildlife-watching activities such as incidentally observing wildlife while

pleasure driving were included in the 1980 and 1985 Surveys but not in the succeeding ones.

Two types of wildlife-watching activity are reported: (1) nonresidential and (2) residential. Because some people participate in more than one type of wildlife-watching activity, the sum of participants in each type will be greater than the total number of wildlife watchers. The two types of wildlife-watching activities are defined below.

**Nonresidential (away from the home)**

This group included persons who took trips or outings of at least 1 mile for the primary purpose of observing, feeding, or photographing fish and wildlife. Trips to fish, hunt, or scout and trips to zoos,

circuses, aquariums, or museums were not considered wildlife-watching activities.

**Residential (around the home)**

This group included those whose activities are within 1 mile of home and involve one or more of the following: (1) closely observing or trying to identify birds or other wildlife; (2) photographing wildlife; (3) feeding birds or other wildlife on a regular basis; (4) maintaining natural areas of at least one-quarter acre where benefit to wildlife is the primary concern; (5) maintaining plantings (shrubs, agricultural crops, etc.) where benefit to wildlife is the primary concern; or (6) visiting public parks within 1 mile of home for the primary purpose of observing, feeding, or photographing wildlife.

# 2001 Alabama Summary

(Participants 16 years old and older)

## Activities in the United States by Alabama Residents

<b>Fishing</b>	
<b>Anglers</b> .....	<b>.634,000</b>
Days of fishing .....	10,841,000
Average days per angler .....	.17
Total expenditures .....	\$600,364,000
Trip-related .....	\$.336,118,000
Equipment and other .....	\$.264,246,000
Average per angler .....	\$.946
Average trip expenditure per day .....	\$.31
Trip and equipment expenditures by Alabamians out of state .....	\$.53,725,000
<b>Hunting</b>	
<b>Hunters</b> .....	<b>.316,000</b>
Days of hunting .....	7,262,000
Average days per hunter .....	.23
Total expenditures .....	\$652,845,000
Trip-related .....	\$.186,478,000
Equipment and other .....	\$.466,367,000
Average per hunter .....	\$.2,069
Average trip expenditure per day .....	\$.26
Trip and equipment expenditures by Alabamians out of state .....	\$.69,972,000
<b>Wildlife Watching</b>	
<b>Total wildlife-watching participants</b> .....	<b>.965,000</b>
Nonresidential .....	.280,000
Residential .....	.925,000
Total expenditures .....	\$662,574,000
Trip-related .....	\$.109,926,000
Equipment and other .....	\$.552,648,000
Average per participant .....	\$.687
Trip and equipment expenditures by Alabamians out of state .....	\$.59,848,000

## Activities in Alabama by U.S. Residents

<b>Fishing</b>	
<b>Anglers</b> .....	<b>.851,000</b>
Days of fishing .....	11,275,000
Average days per angler .....	.13
Total expenditures .....	\$723,467,000
Trip-related .....	\$.358,210,000
Equipment and other .....	\$.365,257,000
Average per angler .....	\$.870
Average trip expenditure per day .....	\$.32
Trip and equipment expenditures by nonresidents in Alabama .....	\$.156,997,000
<b>Hunting</b>	
<b>Hunters</b> .....	<b>.423,000</b>
Days of hunting .....	7,616,000
Average days per hunter .....	.18
Total expenditures .....	\$663,576,000
Trip-related .....	\$.195,870,000
Equipment and other .....	\$.467,706,000
Average per hunter .....	\$.1,550
Average trip expenditure per day .....	\$.26
Trip and equipment expenditures by nonresidents in Alabama .....	\$.66,598,000
<b>Wildlife Watching</b>	
<b>Total wildlife-watching participants</b> .....	<b>1,016,000</b>
Nonresidential .....	.276,000
Residential .....	.925,000
Total expenditures .....	\$626,400,000
Trip-related .....	\$.79,531,000
Equipment and other .....	\$.546,869,000
Average per participant .....	\$.616
Trip and equipment expenditures by nonresidents in Alabama .....	\$.22,929,000

# Wildlife-Associated Recreation

## Participation in Alabama

The 2001 Survey revealed that 1.6 million Alabama residents and nonresidents 16 years old and older fished, hunted, or wildlife watched in Alabama. Of the total number of participants, 851 thousand fished, 423 thousand hunted, and 1.0 million participated in wildlife-watching activities, including observing, feeding, and photographing wildlife. The sum of anglers, hunters, and wildlife watchers exceeds the total number of participants in wildlife-related recreation because many individuals engaged in more than one wildlife activity.

## Participation by 6- to 15-year-old Alabama Residents

The focus of this report is on the activity of participants 16 years old and older since they are the primary source of wildlife-associated expenditures. However, the activity of 6 to 15 year olds can be calculated using the screening data covering the year 2000. It is assumed for estimation purposes that the relative

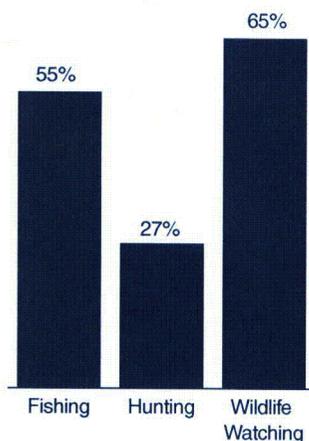
activity levels of 6- to 15-year-old participants and participants 16 years old and older remained the same from 2000 to 2001. Based on this assumption, in addition to the 634,000 resident anglers 16 years old and older in Alabama there were 199,000 resident anglers 6 to 15 years old. Also, there were 316,000 16-year-old and older Alabamians and 57,000 6- to 15-year-old Alabamians who hunted. Finally, there were 965,000 Alabamians 16 years old and older and 163,000 Alabamians 6 to 15 years old who wildlife watched. Further information on 6 to 15 year olds is provided in Appendix C.

## Expenditures in Alabama

In 2001, state residents and nonresidents spent \$2.3 billion on wildlife recreation in Alabama. Of that total, trip-related expenditures were \$634 million and equipment purchases totaled \$1.3 billion. The remaining \$376 million was spent on licenses, contributions, land ownership and leasing, and other items and services.

## Percent of Total Participation by Activity

(Total: 1.6 million participants)



## Participants in Wildlife-Associated Recreation in Alabama—2001

(U.S. residents 16 years old and older)

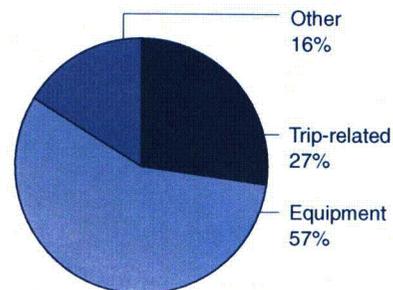
<b>Total</b> .....	<b>1.6 million</b>
<b>Sportspersons</b>	
<b>Total</b> .....	<b>1.0 million</b>
Anglers .....	851 thousand
Hunters .....	423 thousand
<b>Wildlife Watchers</b>	
<b>Total</b> .....	<b>1.0 million</b>
Residential .....	925 thousand
Nonresidential .....	276 thousand

Source: Tables 3, 24, 40.

Detail does not add to total because of multiple responses.

## Wildlife-Associated Recreation Expenditures in Alabama

(Total: \$2.3 billion)



# Sportspersons

In 2001, 1.0 million state resident and nonresident sportspersons 16 years old and older fished or hunted in Alabama. This group comprised 851 thousand anglers (83 percent of all sportspersons) and 423 thousand hunters (41 percent of

all sportspersons). Among the 1.0 million sportspersons who fished or hunted in the state, 599 thousand (59%) fished but did not hunt in Alabama. Another 170 thousand (17%) hunted but did not fish

there. The remaining 253 thousand (25%) fished and hunted in Alabama in 2001.

<b>Sportspersons' Participation in Alabama</b>	
<i>(State residents and nonresidents 16 years old and older)</i>	
<b>Sportspersons (fished or hunted)</b> .....	<b>1.0 million</b>
<b>Anglers</b> .....	<b>851 thousand</b>
Fished only .....	599 thousand
Fished and hunted .....	253 thousand
<b>Hunters</b> .....	<b>423 thousand</b>
Hunted only .....	170 thousand
Hunted and fished .....	253 thousand

Source: Table 1.  
Detail does not add to total because of multiple responses.

# Anglers

## Participants and Days of Fishing

In 2001, 851 thousand state residents and nonresidents 16 years old and older fished in Alabama. Of this total, 610 thousand anglers (72%) were state residents and 241 thousand anglers (28%) were nonresidents. Anglers fished a total of 11.3 million days in Alabama—an average of 13 days per angler. State residents fished 10.2 million days, 90 percent of all fishing days within Alabama compared to nonresidents who fished 1.1 million days—10 percent of all fishing days in the state.

There were 634 thousand Alabamians 16 years old and older who fished in the United States in 2001. These anglers fished a total of 10.8 million days. Approximately 610 thousand resident anglers (96%) fished in Alabama. They spent 10.2 million days, 94 percent of their total fishing days, fishing in their resident state.

Some state residents fished in other states as well as in Alabama. In 2001, 88 thousand anglers fished in other states—14 percent of the resident angler total.

They fished 668 thousand days as nonresidents, representing 6 percent of all days fished by Alabama residents. For further details about fishing in Alabama, see Table 3.

### Anglers in Alabama

(State residents and nonresidents 16 years old and older)

<b>Anglers</b> .....	<b>851 thousand</b>
Resident .....	610 thousand
Nonresident .....	241 thousand
<b>Days of fishing</b> .....	<b>11.3 million</b>
Resident .....	10.2 million
Nonresident .....	1.1 million

Source: Table 3.

### In-State/Out-of-State

(State residents 16 years old and older)

<b>Alabama anglers</b> .....	<b>634 thousand</b>
In Alabama .....	610 thousand
In other states .....	88 thousand
<b>Days of fishing</b> .....	<b>10.8 million</b>
In Alabama .....	10.2 million
In other states .....	668 thousand

Source: Table 3.

Detail does not add to total because of multiple responses.

### Fishing Expenditures in Alabama

Anglers 16 years old and older spent \$723 million on fishing expenses in Alabama in 2001. Trip-related expenditures including food and lodging, transportation, and other expenses totaled \$358 million—50 percent of all their fishing expenditures. They spent \$114 million on food and lodging and \$69 million on transportation. Other trip expenses such as equipment rental, bait, and cooking fuel totaled \$175 million. Each angler spent an average of \$435 on trip-related costs during 2001.

Anglers spent \$286 million on equipment in Alabama in 2001, 40 percent of all fishing expenditures. Fishing equipment (rods, reels, line, etc.) totaled \$104 million—36 percent of the equipment total. Auxiliary equipment expenditures (tents, special fishing clothes, etc.) and special equipment expenditures (boats, pickups, etc.) amounted to \$182 million, 64 percent of the equipment total. Special and auxiliary equipment are items that were purchased for fishing, but could be used in activities other than fishing.

The purchase of other items such as magazines, membership dues, licenses, permits, stamps, and land leasing and ownership amounted to \$79 million—11 percent of all fishing expenditures. For more details about fishing expenditures in Alabama, see Tables 19, 21-23.

### Fishing Expenditures in Alabama

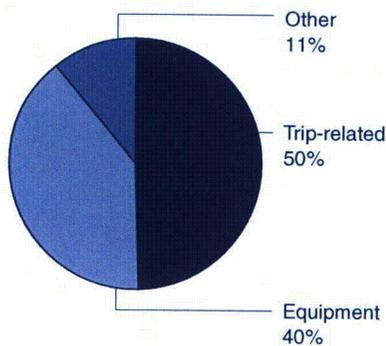
(State residents and nonresidents 16 years old and older)

<b>Total</b> .....	<b>\$723 million</b>
Trip-related .....	\$358 million
Equipment .....	\$286 million
Fishing .....	\$104 million
Auxiliary and special .....	\$182 million
Other .....	\$79 million

Source: Table 19.

### Fishing Expenditures in Alabama

(Total: \$723 million)



# Hunters

## Participants and Days of Hunting

In 2001, there were 423 thousand residents and nonresidents 16 years old and older who hunted in Alabama. Resident hunters numbered 307 thousand accounting for 73 percent of the hunters in Alabama. There were 116 thousand nonresidents who hunted in Alabama—27 percent of the State's hunters. Residents and nonresidents hunted 7.6 million days in 2001, an average of 18 days per hunter. Residents hunted on 6.6 million days in

Alabama or 87 percent of all hunting days, while nonresidents spent 1 million days hunting in Alabama, 13 percent of all hunting days.

There were 316 thousand Alabama residents 16 years old and older who hunted in the United States in 2001. Of the total 7.3 million days of hunting by state residents, 6.6 million days (91 percent of the total) were spent pursuing game within Alabama.

Some state residents hunted in other states as well as in Alabama. Altogether, 45 thousand Alabama hunters, 14 percent of the total, hunted as nonresidents in other states. Their 650 thousand days of hunting in other states represented 9 percent of all days Alabama residents spent hunting in 2001. For more information on hunting activities by Alabama residents, see Table 3.

### Hunters in Alabama

(State residents and nonresidents 16 years old and older)

<b>Hunters</b> .....	<b>423 thousand</b>
Resident .....	307 thousand
Nonresident .....	116 thousand
<b>Days of hunting</b> .....	<b>7.6 million</b>
Resident .....	6.6 million
Nonresident .....	1.0 million

Source: Table 3.

### In-State/Out-of-State

(State residents 16 years old and older)

<b>Alabama hunters</b> .....	<b>316 thousand</b>
In Alabama .....	307 thousand
In other states .....	45 thousand
<b>Days of hunting</b> .....	<b>7.3 million</b>
In Alabama .....	6.6 million
In other states .....	650 thousand

Source: Table 3.

Detail does not add to total because of multiple responses.

### Hunting Expenditures in Alabama

Hunters 16 years old and older spent \$664 million in Alabama in 2001. Trip-related expenses such as food and lodging, transportation, and other trip costs totaled \$196 million, 30 percent of their total expenditures. They spent \$94 million on food and lodging and \$55 million on transportation. Other expenses such as equipment rental totaled \$46 million for the year. The average trip-related expenditure per hunter was \$463.

Hunters spent \$309 million on equipment—47 percent of all hunting expenditures. Hunting equipment (guns, ammunition, etc.) totaled \$165 million and comprised 53 percent of all equipment costs. Hunters spent \$144 million on auxiliary equipment (tents, special hunting clothes, etc.) and special equipment (boats, pickups, etc.), accounting for 47 percent of total equipment expenditures for hunting. Special and auxiliary equipment are items

that were purchased for hunting but could be used in activities other than hunting.

The purchase of other items such as magazines, membership dues, licenses, permits, and land leasing and ownership cost hunters \$159 million—24 percent of all hunting expenditures. For more details on hunting expenditures in Alabama, see Tables 20-23.

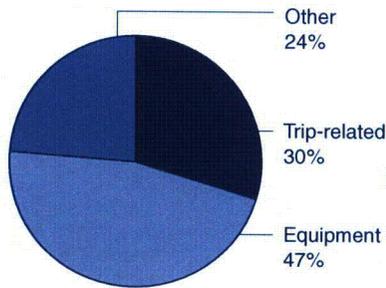
### Hunting Expenditures in Alabama

(State residents and nonresidents 16 years old and older)

<b>Total</b> .....	<b>\$664 million</b>
Trip-related .....	\$196 million
Equipment .....	\$309 million
Hunting .....	\$165 million
Auxiliary and special .....	\$144 million
Other .....	\$159 million

Source: Table 20.

**Hunting Expenditures in Alabama**  
(Total: \$664 million)



# Wildlife-Watching Activities

## Participants and Days of Activity

In 2001, 1 million U.S. residents 16 years old and older fed, observed, or

photographed wildlife in Alabama. Approximately 91 percent—925 thousand of the wildlife watchers—enjoyed their activities close to home and are called

"residential" participants. Those persons who enjoyed wildlife at least 1 mile from home are called "nonresidential" participants. People participating in nonresidential activities in Alabama in 2001 numbered 276 thousand—27 percent of all wildlife watchers in Alabama. Of the 276 thousand, 204 thousand were state residents and 72 thousand were nonresidents.

Alabamians 16 years old and older who enjoyed nonresidential wildlife watching within their state totaled 204 thousand. Of this group, 192 thousand participants observed wildlife, 123 thousand fed wildlife, and 80 thousand photographed wildlife. Since some individuals engaged in more than one of the three nonresidential activities during the year, the sum of wildlife observers, feeders, and photographers exceeds the total number of nonresidential participants.

Alabamians spent nearly 3.4 million days engaged in nonresidential wildlife-watching activities in their state. During 2001, they spent 2.3 million days observing wildlife, 1.7 million days feeding wildlife, and 823 thousand days photographing wildlife. The sum of days observing, feeding, and photographing wildlife exceeds the total days of wildlife-watching activity because individuals may have engaged in more than one activity on some days. For further details about nonresidential activities, see Table 25.

Alabama residents also took an active interest in wildlife around their homes. In 2001, 925 thousand state residents enjoyed observing, feeding, and photographing wildlife within 1 mile of their homes. Among this residential group, 835 thousand fed wildlife, 634 thousand observed wildlife, and 144 thousand photographed wildlife around their homes. Another 130 thousand participants maintained natural areas of one-quarter acre or more for wildlife; 110 thousand participants maintained plantings for the benefit of wildlife; and 60 thousand residential participants visited public parks within a mile of home. Adding the participants in these six activities results in a sum that exceeds the total number of residential participants because many people participated in more than one type of residential activity. For further details about Alabama residents participating in residential wildlife-watching activities, see Table 28.

### Wildlife-Watching Participants in Alabama

(State residents and nonresidents 16 years old and older)

<b>Total</b> .....	<b>1.0 million</b>	<b>100%</b>
Residential .....	925 thousand	91%
Nonresidential .....	276 thousand	27%

Source: Table 24.

### Nonresidential (away from home) Wildlife-Watching Participation in Alabama

(State residents and nonresidents 16 years old and older)

<b>Participants, total</b> .....	<b>276 thousand</b>
Observe wildlife .....	262 thousand
Feed wildlife .....	143 thousand
Photograph wildlife .....	126 thousand
<b>Days, total</b> .....	<b>3.6 million</b>
Observe wildlife .....	2.6 million
Feed wildlife .....	1.8 million
Photograph wildlife .....	1.0 million

Source: Table 25.

Detail does not add to total because of multiple responses.

### Residential (around the home) Wildlife-Watching Participation in Alabama

(State residents 16 years old and older)

<b>Total</b> .....	<b>925 thousand</b>
Feed wildlife .....	835 thousand
Observe wildlife .....	634 thousand
Photograph wildlife .....	144 thousand
Maintain natural areas .....	130 thousand
Maintain plantings .....	110 thousand
Visit public areas .....	60 thousand

Source: Table 28.

Detail does not add to total because of multiple responses.

### Wild Bird Observers

Bird watching attracted many wildlife enthusiasts in Alabama. In 2001, 703 thousand people observed birds around the home and on trips. A large majority, 85 percent (600 thousand), observed wild birds around the home while 34 percent, 239 thousand, took trips away from home to watch birds.

People bird watching in Alabama varied in their ability to identify different bird species. Within Alabama, 562 thousand of these 703 thousand birders (80 percent) could identify 1 to 20 different types of birds; 89 thousand birders (5 percent) could identify 21 to 40 types of birds; and 36 thousand birders (5 percent) could identify 41 or more types of birds.

Approximately 43 thousand wild bird enthusiasts kept birding life lists in 2001. Participants keeping these lists—a tally of bird species seen by a birder during his or

her lifetime—comprised 6 percent of all wild bird observers in Alabama. For further details about birding in Alabama, see Tables 30 and 31.

### Wildlife-Watching Expenditures in Alabama

Participants 16 years old and older spent \$626 million on wildlife-watching activities in Alabama in 2001. Trip-related expenditures, including food and lodging (\$33 million), transportation (\$37 million), and other trip expenses such as equipment rental (\$10 million) amounted to nearly \$80 million. This summation comprised 13 percent of all wildlife-watching expenditures by participants. The average trip-related expenditure for nonresidential participants was \$288 per person in 2001.

Wildlife-watching participants spent nearly \$408 million on equipment—65 percent of all their expenditures.

Specifically, wildlife-watching equipment (binoculars, special clothing, etc.) totaled \$119 million, 29 percent of the equipment total. Auxiliary equipment expenditures (tents, backpacking equipment, etc.) and special equipment expenditures (campers, trucks, etc.) amounted to \$288 million—71 percent of all equipment costs. Special and auxiliary equipment are items that were purchased for wildlife-watching recreation but can be used in activities other than wildlife-watching activities.

Other items purchased by wildlife-watching participants such as magazines, membership dues, and contributions, land leasing and ownership, and plantings totaled \$139 million—22 percent of all wildlife-watching expenditures. For more details about wildlife-watching expenditures in Alabama, see Table 33.

#### Wild Bird Observers in Alabama

(State residents and nonresidents 16 years old and older)

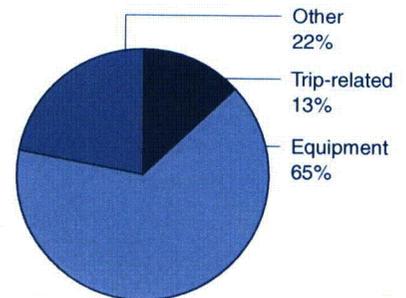
<b>Participants, total</b> .....	<b>703 thousand</b>	<b>100%</b>
Residential (around the home) .....	600 thousand	85%
Nonresidential (away from home) ....	239 thousand	34%
<b>Days, total</b> .....	<b>73.1 million</b>	<b>100%</b>
Residential (around the home) .....	70.0 million	96%
Nonresidential (away from home) ....	3.1 million	4%

Source: Table 30.

Detail does not add to total because of multiple responses.

#### Wildlife-Watching Expenditures in Alabama

(Total: \$626 million)



#### Wildlife-Watching Expenditures in Alabama

(State residents and nonresidents 16 years old and older)

<b>Total</b> .....	<b>\$626 million</b>
Trip-related .....	\$80 million
Equipment .....	\$408 million
Wildlife-watching .....	\$119 million
Auxiliary and special .....	\$288 million
Other .....	\$139 million

Source: Table 33.

# 1991-2001 Survey Comparisons

Comparing the estimates from the 1991, 1996, and 2001 National Surveys provides a picture of wildlife-related recreation in the 1990s and early 2000s in Alabama. Only the most general recreation comparisons are presented here.

The best way to compare estimates from surveys is to compare the confidence intervals around the estimates—not to compare the estimates themselves. A 90-percent confidence interval around an

estimate gives the range of estimates that 90 percent of all possible representative samples would supply. If the 90-percent confidence intervals of two survey's estimates overlap, it is not possible to say the two estimates are statistically different at the 10 percent level of significance.

The state resident estimates cover the participation and expenditure activity of Alabama residents anywhere in the United States. The in-state estimates cover the participation, day, and

expenditure activity of U.S. residents in Alabama.

The expenditure estimates were made comparable by adjusting the estimates for inflation—all dollar estimates are in 2001 dollars. Also, expenditure items that were not common to each survey were not included in the comparisons. Therefore, expenditure estimates used in the comparisons may not match the estimates presented elsewhere in this report.

## Alabama 1991 and 2001 Comparisons

	1991	2001	Percent change
<b>Fishing</b>			
(Numbers in thousands)			
Anglers in-state .....	909	851	*
Days in-state .....	12,498	11,275	*
In-state trip-related expenditures .....	\$332,656	\$355,883	*
State resident anglers .....	678	634	*
Total expenditures by state residents .....	\$582,304	\$598,037	*
<b>Hunting</b>			
(Numbers in thousands)			
Hunters in-state .....	359	423	*
Days in-state .....	5,823	7,616	*
In-state trip-related expenditures .....	\$116,555	\$185,360	*
State resident hunters .....	311	316	*
Total expenditures by state residents .....	\$358,648	\$642,336	+79
<b>Nonresidential Wildlife Watching</b>			
(Numbers in thousands)			
Participants in-state .....	450	276	-39
Days in-state .....	3,286	3,643	*
State resident participants .....	347	280	*
<b>Residential Wildlife Watching</b>			
(Numbers in thousands)			
Total participants .....	1,214	925	-24
Observers .....	934	634	-32
Feeders .....	1,111	835	-25
<b>Wildlife-Watching Expenditures</b>			
(Numbers in thousands)			
Trip-related expenditures by state residents .....	\$92,388	\$97,150	*
Total expenditures by state residents .....	\$230,580	\$499,257	+117

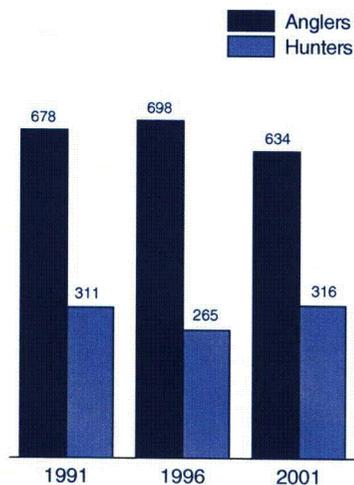
\*No significant difference at the 0.10 level of significance.

## Alabama 1996 and 2001 Comparison

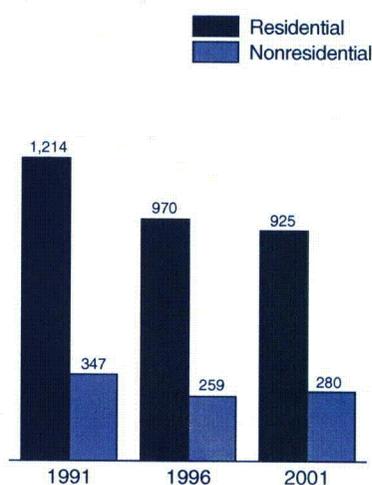
	1996	2001	Percent change
<b>Fishing</b>			
(Numbers in thousands)			
Anglers in-state .....	984	851	*
Days in-state .....	16,553	11,275	*
In-state trip-related expenditures .....	\$407,730	\$355,883	*
State resident anglers .....	698	634	*
Total expenditures by state residents .....	\$851,693	\$598,037	*
<b>Hunting</b>			
(Numbers in thousands)			
Hunters in-state .....	347	423	*
Days in-state .....	7,181	7,262	*
In-state trip-related expenditures .....	\$128,690	\$185,361	*
State resident hunters .....	265	316	*
Total expenditures by state residents .....	\$600,645	\$642,336	*
<b>Nonresidential Wildlife Watching</b>			
(Numbers in thousands)			
Participants in-state .....	336	276	*
Days in-state .....	3,105	3,643	*
State resident participants .....	259	280	*
<b>Residential Wildlife Watching</b>			
(Numbers in thousands)			
Total participants .....	970	925	*
Observers .....	633	634	*
Feeders .....	924	835	*
<b>Wildlife-Watching Expenditures</b>			
(Numbers in thousands)			
Trip-related expenditures by state residents .....	\$59,942	\$97,150	*
Total expenditures by state residents .....	\$267,871	\$499,257	+86

\*No significant difference at the 0.10 level of significance.

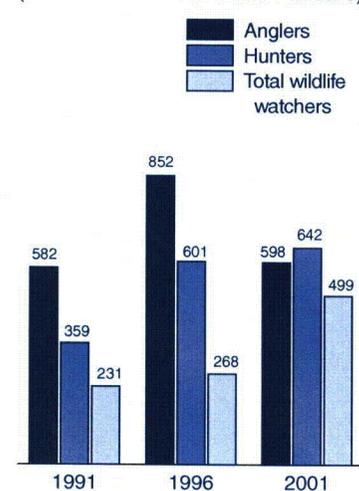
**Number of Alabama Resident Hunters and Anglers: 1991-2001**  
(Thousands)



**Number of Alabama Resident Wildlife Watchers: 1991-2001**  
(Thousands)



**Total Expenditures by Alabama Residents: 1991-2001**  
(Millions. In constant 2001 dollars)



# Guide to Statistical Tables

## Purpose and Coverage of Tables

The statistical tables of this report were designed to meet a wide range of needs for those interested in wildlife-related recreation. Special terms used in these tables are defined in Appendix A.

The tables are based on responses to the 2001 Survey which was designed to collect data about participation in wildlife-related recreation. To have taken part in the Survey, a respondent must have been a U.S. resident (a resident of one of the 50 states or the District of Columbia). No one residing outside the United States (including U.S. citizens) was eligible for interviewing. Therefore, reported state and national totals do not include participation by those who were not U.S. residents or who were residing outside the United States.

## Comparability With Previous Surveys

The numbers reported can be compared with those in the 1991 and 1996 Survey Reports. The methodology used in 2001 was similar to that used in 1996 and 1991. These results should not be directly compared to results from surveys earlier than 1991 since there were major changes in methodology. These changes were made to improve accuracy in the information provided.

## Coverage of an Individual Table

Since the Survey covers many activities in various places by participants of different ages, all table titles, headnotes, stubs, and footnotes are designed to identify and articulate each item being reported in the table. For example, the title of Table 2 shows that data about anglers and hunters, their days of participation, and their number of trips are being reported by type of activity. By contrast, the title of Table 7 indicates that it contains data on freshwater anglers and the days they fished for different species of fish.

## Percentages Reported in the Tables

Percentages are reported in the tables for the convenience of the user. When exclusive groups are being reported, the base of a percentage is apparent from its context because the percents add to 100 percent (plus or minus a rounding error). For example, if a table reports the number of trips taken by big game hunters (57 percent), those taken by small game hunters (23 percent), those taken by migratory bird hunters (12 percent), and those taken by sportspersons hunting other animals (8 percent), then these percentages would total 100 percent because they are exclusive categories.

Percents should not add to 100 when nonexclusive groups are being reported. Using Table 2 as an example, note that adding the percentages associated with total number of big game hunters, total small game hunters, total migratory bird hunters, and total hunters of other animals will not necessarily yield 100 percent because respondents could hunt for more than one type of game.

When the base of the percentage is not apparent in context, it is identified in a footnote. For example, Table 12 reports 3 percentages with different bases: one for the number of hunters, one for the number of trips, and one for days of hunting. Footnotes are used to clarify the bases of the reported percentages.

## Footnotes to the Tables

Footnotes are used to clarify the information or items that are being reported in a table. Symbols in the body of a table indicate important footnotes. These symbols are used in the tables to refer to the same footnote each time they appear:

- \* Estimate based on a small sample size.
- ... Sample size too small to report data reliably.
- W Less than .5 dollars.
- Z Less than .5 percent.
- X Not applicable.
- NA Not available.

Estimates based upon fewer than 10 responses are regarded as being based on a sample size that is too small for reliable reporting. An estimate based upon at least 10 but fewer than 30 responses is treated as an estimate based on a small sample size. Other footnotes appear, as necessary, to qualify or clarify the estimates reported in the tables. In addition, these two important footnotes appear frequently:

- Detail does not add to total because of multiple responses.
- Detail does not add to total because of multiple responses and nonresponse.

"Multiple responses" is a term used to reflect the fact that individuals or their characteristics fall into more than one category. Using Table 2 as an example, those who fished in saltwater and freshwater appear in both of these totals. Yet each angler is represented only once in the "Total, all fishing" row. Similarly, in Table 12 those who hunt for big game and small game are counted only once as a hunter in the "Total, all hunting" row. Therefore, totals may be smaller than the sum of subcategories when multiple responses exist.

"Nonresponse" exists because the survey questions were answered voluntarily and some respondents did not or could not answer all the questions. The effect of nonresponses is illustrated in Table 18 where the total for hunting expenditures may be greater than the sum for the different types of hunting expenditures. This occurs because some respondents did not specify the type of hunting as the primary purpose of the purchase. As a result, it is known that the expenditures were for hunting, but it is not known whether they were primarily for a particular type of hunting. In this case, totals are greater than the sum of subcategories when nonresponses have occurred.

**Table 1. Fishing and Hunting in Alabama by Resident and Nonresident Sportspersons: 2001**

(Population 16 years old and older. Numbers in thousands)

Sportspersons	Total, state residents and nonresidents		Residents		Nonresidents	
	Number	Percent of sportspersons	Number	Percent of resident sportspersons	Number	Percent of nonresident sportspersons
<b>Total sportspersons (fished or hunted) . . . . .</b>	<b>1,021</b>	<b>100</b>	<b>697</b>	<b>100</b>	<b>324</b>	<b>100</b>
<b>Total anglers . . . . .</b>	<b>851</b>	<b>83</b>	<b>610</b>	<b>88</b>	<b>241</b>	<b>74</b>
Fished only . . . . .	599	59	391	56	208	64
Fished and hunted . . . . .	253	25	220	32	*33	*10
<b>Total hunters . . . . .</b>	<b>423</b>	<b>41</b>	<b>307</b>	<b>44</b>	<b>116</b>	<b>36</b>
Hunted only . . . . .	170	17	87	12	*83	*26
Hunted and fished . . . . .	253	25	220	32	*33	*10

\* Estimate based on a small sample size.

Note: Detail does not add to total because of multiple responses.

**Table 2. Anglers and Hunters, Days of Participation, and Trips in Alabama by Type of Fishing and Hunting: 2001**

(Population 16 years old and older. Numbers in thousands)

Type of fishing and hunting	Participants		Days of participation		Trips	
	Number	Percent	Number	Percent	Number	Percent
<b>FISHING</b>						
<b>Total, all fishing . . . . .</b>	<b>851</b>	<b>100</b>	<b>11,275</b>	<b>100</b>	<b>10,398</b>	<b>100</b>
Total, all freshwater . . . . .	732	86	9,877	88	9,152	88
Freshwater, except Great Lakes . . . . .	732	86	9,877	88	9,152	88
Great Lakes . . . . .	...	...	...	...	...	...
Saltwater . . . . .	167	20	1,340	12	1,246	12
<b>HUNTING</b>						
<b>Total, all hunting . . . . .</b>	<b>423</b>	<b>100</b>	<b>7,616</b>	<b>100</b>	<b>7,384</b>	<b>100</b>
Big game . . . . .	392	93	6,658	87	5,807	79
Small game . . . . .	109	26	898	12	818	11
Migratory bird . . . . .	95	23	481	6	457	6
Other animals . . . . .	*21	*5	*310	*4	*303	*4

\* Estimate based on a small sample size.     ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 3. Anglers and Hunters, Trips, and Days of Participation: 2001**

(Population 16 years old and older. Numbers in thousands)

Anglers and hunters, trips, and days of participation	Activity in Alabama						Activity by Alabama residents in United States					
	Total, state residents and nonresidents		State residents		Nonresidents		Total, in state of residence and in other states		In state of residence		In other states	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
<b>FISHING</b>												
Total anglers .....	851	100	610	72	241	28	634	100	610	96	88	14
Total trips .....	10,398	100	9,640	93	757	7	10,027	100	9,640	96	386	4
Total days of fishing .....	11,275	100	10,173	90	1,102	10	10,841	100	10,173	94	668	6
Average days of fishing .....	13	(X)	17	(X)	5	(X)	17	(X)	17	(X)	8	(X)
<b>HUNTING</b>												
Total hunters .....	423	100	307	73	116	27	316	100	307	97	45	14
Total trips .....	7,384	100	6,823	92	561	8	7,348	100	6,823	93	525	7
Total days of hunting .....	7,616	100	6,613	87	1,003	13	7,262	100	6,613	91	650	9
Average days of hunting .....	18	(X)	22	(X)	9	(X)	23	(X)	22	(X)	14	(X)

(X) Not applicable.

Note: Detail does not add to total because of multiple responses.

**Table 4. Alabama Resident Anglers and Hunters by Place Fished or Hunted: 2001**

(State population 16 years old and older. Numbers in thousands)

Place fished or hunted	Anglers		Hunters	
	Number	Percent	Number	Percent
<b>Total, all places .....</b>	<b>634</b>	<b>100</b>	<b>316</b>	<b>100</b>
In-state only .....	545	86	270	86
In-state and other states .....	66	10	*36	*12
In other states only .....	*22	*4	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail may not add to total because of multiple responses and nonresponse.

**Table 5. Alabama Resident Anglers and Hunters, Days of Participation, and Trips in the United States by Type of Fishing and Hunting: 2001**

(State population 16 years old and older. Numbers in thousands)

Type of fishing and hunting	Participants		Days of participation		Trips	
	Number	Percent	Number	Percent	Number	Percent
<b>FISHING</b>						
<b>Total, all fishing</b> .....	<b>634</b>	<b>100</b>	<b>10,841</b>	<b>100</b>	<b>10,027</b>	<b>100</b>
Total, all freshwater .....	573	90	9,543	88	8,775	88
Freshwater, except Great Lakes .....	573	90	9,464	87	8,775	88
Great Lakes .....	...	...	...	...	...	...
Saltwater .....	144	23	1,325	12	1,252	12
<b>HUNTING</b>						
<b>Total, all hunting</b> .....	<b>316</b>	<b>100</b>	<b>7,262</b>	<b>100</b>	<b>7,348</b>	<b>100</b>
Big game .....	294	93	6,247	86	5,794	79
Small game .....	91	29	877	12	770	10
Migratory bird .....	85	27	483	7	435	6
Other animals .....	*20	*6	*358	*5	*349	*5

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 6. Freshwater Anglers, Trips, Days of Fishing, and Type of Water Fished: 2001**

(Population 16 years old and older. Numbers in thousands)

Anglers, trips, and days of fishing	Activity in Alabama					
	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
<b>Total anglers</b> .....	<b>732</b>	<b>100</b>	<b>557</b>	<b>76</b>	<b>175</b>	<b>24</b>
<b>Total trips</b> .....	<b>9,152</b>	<b>100</b>	<b>8,474</b>	<b>93</b>	<b>678</b>	<b>7</b>
<b>Total days of fishing</b> .....	<b>9,877</b>	<b>100</b>	<b>8,984</b>	<b>91</b>	<b>894</b>	<b>9</b>
Average days of fishing .....	13	(X)	16	(X)	5	(X)
<b>ANGLERS</b>						
<b>Total, all types of water</b> .....	<b>732</b>	<b>100</b>	<b>557</b>	<b>76</b>	<b>175</b>	<b>24</b>
Ponds, lakes or reservoirs .....	607	100	462	76	145	24
Rivers or streams .....	347	100	288	83	*59	*17
<b>DAYS</b>						
<b>Total, all types of water</b> .....	<b>9,877</b>	<b>100</b>	<b>8,984</b>	<b>91</b>	<b>894</b>	<b>9</b>
Ponds, lakes or reservoirs .....	6,839	100	6,025	88	814	12
Rivers or streams .....	4,079	100	3,892	95	*187	*5

\* Estimate based on a small sample size. (X) Not applicable.

Note: Detail does not add to total because of multiple responses.

**Table 7. Freshwater Anglers and Days of Fishing in Alabama by Type of Fish: 2001**

(Population 16 years old and older. Numbers in thousands)

Anglers and days of fishing	Activity in Alabama					
	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
<b>ANGLERS</b>						
<b>Total, all types of fish</b> .....	<b>732</b>	<b>100</b>	<b>557</b>	<b>76</b>	<b>175</b>	<b>24</b>
Crappie .....	257	100	215	84	*42	*16
Panfish .....	215	100	176	82	*39	*18
White bass, striped bass, striped bass hybrids .....	145	100	119	82	...	...
Black bass .....	383	100	290	76	93	24
Catfish, bullheads .....	230	100	202	88	*28	*12
Walleye, sauger .....	...	...	...	...	...	...
Northern pike, pickerel, muskie, muskie hybrids .....	...	...	...	...	...	...
Steelhead .....	...	...	...	...	...	...
Trout .....	*19	*100	...	...	...	...
Salmon .....	...	...	...	...	...	...
Anything <sup>1</sup> .....	141	100	125	88	...	...
Other freshwater fish .....	55	100	47	86	...	...
<b>DAYS</b>						
<b>Total, all types of fish</b> .....	<b>9,877</b>	<b>100</b>	<b>8,984</b>	<b>91</b>	<b>894</b>	<b>9</b>
Crappie .....	2,746	100	2,600	95	*145	*5
Panfish .....	2,474	100	2,331	94	*142	*6
White bass, striped bass, striped bass hybrids .....	1,579	100	1,449	92	...	...
Black bass .....	5,578	100	4,960	89	*618	*11
Catfish, bullheads .....	2,637	100	2,471	94	*166	*6
Walleye, sauger .....	...	...	...	...	...	...
Northern pike, pickerel, muskie, muskie hybrids .....	...	...	...	...	...	...
Steelhead .....	...	...	...	...	...	...
Trout .....	*154	*100	...	...	...	...
Salmon .....	...	...	...	...	...	...
Anything <sup>1</sup> .....	819	100	771	94	...	...
Other freshwater fish .....	425	100	406	96	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Respondent fished for no specific species and identified "Anything" from a list of categories of fish.

Note: Detail does not add to total because of multiple responses.

**Table 8. Great Lakes Anglers, Trips, and Days of Fishing in Alabama: 2001**

This table does not apply to this state.

**Table 9. Great Lakes Anglers and Days of Fishing in Alabama by Type of Fish: 2001**

This table does not apply to this state.

**Table 10. Saltwater Anglers, Trips, and Days of Fishing in Alabama: 2001**

(Population 16 years old and older. Numbers in thousands)

Anglers, trips, and days of fishing	Activity in Alabama					
	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
Total anglers.....	167	100	109	65	*59	*35
Total trips.....	1,246	100	1,167	94	*79	*6
Total days.....	1,340	100	1,194	89	*145	*11
Average days of fishing.....	8	(X)	11	(X)	*2	(X)

\* Estimate based on a small sample size. (X) Not applicable.

Note: Detail does not add to total because of multiple responses.

**Table 11. Saltwater Anglers and Days of Fishing in Alabama by Type of Fish: 2001**

(Population 16 years old and older. Numbers in thousands)

Anglers and days of fishing	Activity in Alabama					
	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
<b>ANGLERS</b>						
<b>Total, all types of fish</b> .....	<b>167</b>	<b>100</b>	<b>109</b>	<b>65</b>	<b>*59</b>	<b>*35</b>
Salmon.....	...	...	...	...	...	...
Striped bass.....	...	...	...	...	...	...
Bluefish.....	...	...	...	...	...	...
Flatfish (flounder, halibut).....	*29	*100	*27	*94	...	...
Red drum (redfish).....	*26	*100	...	...	...	...
Seatrout (weakfish).....	*32	*100	*19	*58	...	...
Mackerel.....	...	...	...	...	...	...
Shellfish.....	...	...	...	...	...	...
Anything <sup>1</sup> .....	89	100	75	85	...	...
Other saltwater fish.....	*36	*100	*19	*51	...	...
<b>DAYS</b>						
<b>Total, all types of fish</b> .....	<b>1,340</b>	<b>100</b>	<b>1,194</b>	<b>89</b>	<b>*145</b>	<b>*11</b>
Salmon.....	...	...	...	...	...	...
Striped bass.....	...	...	...	...	...	...
Bluefish.....	...	...	...	...	...	...
Flatfish (flounder, halibut).....	*382	*100	*380	*100	...	...
Red drum (redfish).....	*262	*100	...	...	...	...
Seatrout (weakfish).....	*353	*100	*302	*86	...	...
Mackerel.....	...	...	...	...	...	...
Shellfish.....	...	...	...	...	...	...
Anything <sup>1</sup> .....	553	100	519	94	...	...
Other saltwater fish.....	*342	*100	*316	*92	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Respondent fished for no specific species and identified "Anything" from a list of categories of fish.

Note: Detail does not add to total because of multiple responses.

**Table 12. Hunters, Trips, and Days of Hunting in Alabama by Type of Hunting: 2001**

(Population 16 years old and older. Numbers in thousands)

Hunters, trips, and days of hunting	Activity in Alabama					
	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
<b>HUNTERS</b>						
<b>Total, all hunting</b> .....	<b>423</b>	<b>100</b>	<b>307</b>	<b>73</b>	<b>116</b>	<b>27</b>
Big game .....	392	100	284	72	108	28
Small game .....	109	100	87	80	...	...
Migratory bird .....	95	100	79	83	...	...
Other animals .....	*21	*100	*17	*81	...	...
<b>TRIPS</b>						
<b>Total, all hunting</b> .....	<b>7,384</b>	<b>100</b>	<b>6,823</b>	<b>92</b>	<b>561</b>	<b>8</b>
Big game .....	5,807	100	5,374	93	433	7
Small game .....	818	100	742	91	...	...
Migratory bird .....	457	100	408	89	...	...
Other animals .....	*303	*100	*299	*99	...	...
<b>DAYS</b>						
<b>Total, all hunting</b> .....	<b>7,616</b>	<b>100</b>	<b>6,613</b>	<b>87</b>	<b>1,003</b>	<b>13</b>
Big game .....	6,658	100	5,738	86	920	14
Small game .....	898	100	837	93	...	...
Migratory bird .....	481	100	415	86	...	...
Other animals .....	*310	*100	*299	*96	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses.

**Table 13. Hunters and Days of Hunting in Alabama by Type of Game: 2001**

(Population 16 years old and older. Numbers in thousands)

Type of game	Hunters, state residents and nonresidents		Days of hunting	
	Number	Percent	Number	Percent
<b>Total, all types of game</b> .....	<b>423</b>	<b>100</b>	<b>7,616</b>	<b>100</b>
<b>Big game, total</b> .....	<b>392</b>	<b>93</b>	<b>6,658</b>	<b>87</b>
Deer.....	379	90	6,309	83
Elk.....	...	...	...	...
Bear.....	...	...	...	...
Wild turkey.....	80	19	648	9
Other big game.....	...	...	...	...
<b>Small game, total</b> .....	<b>109</b>	<b>26</b>	<b>898</b>	<b>12</b>
Rabbit, hare.....	*47	*11	*346	*5
Quail.....	...	...	...	...
Grouse/prairie chicken.....	...	...	...	...
Squirrel.....	60	14	455	6
Pheasant.....	...	...	...	...
Other small game.....	...	...	...	...
<b>Migratory birds, total</b> .....	<b>95</b>	<b>23</b>	<b>481</b>	<b>6</b>
Geese.....	...	...	...	...
Duck.....	*27	*6	*153	*2
Dove.....	72	17	336	4
Other migratory bird.....	...	...	...	...
<b>Other animals, total</b> <sup>1</sup> .....	<b>*21</b>	<b>*5</b>	<b>*310</b>	<b>*4</b>

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Includes groundhog, raccoon, fox, coyote, crow, prairie dog, etc.

Note: Detail does not add to total because of multiple responses.

**Table 14. Hunters and Days of Hunting in Alabama by Type of Land: 2001**

(Population 16 years old and older. Numbers in thousands)

Hunters and days of hunting	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
<b>HUNTERS</b>						
<b>Total, all types of land</b> .....	<b>423</b>	<b>100</b>	<b>307</b>	<b>100</b>	<b>116</b>	<b>100</b>
<b>Public land, total</b> .....	<b>55</b>	<b>13</b>	<b>50</b>	<b>16</b>	...	...
Public land only.....	...	...	...	...	...	...
Public and private land.....	45	11	*41	*14	...	...
<b>Private land, total</b> .....	<b>395</b>	<b>93</b>	<b>294</b>	<b>96</b>	<b>101</b>	<b>87</b>
Private land only.....	350	83	252	82	98	84
Private and public land.....	45	11	*41	*14	...	...
<b>DAYS</b>						
<b>Total, all types of land</b> .....	<b>7,616</b>	<b>100</b>	<b>6,613</b>	<b>100</b>	<b>1,003</b>	<b>100</b>
Public land <sup>1</sup> .....	426	6	402	6	...	...
Private land <sup>2</sup> .....	7,416	97	6,428	97	988	99

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Days of hunting on public land includes both days spent solely on public land and those spent on public and private land.

<sup>2</sup> Days of hunting on private land includes both days spent solely on private land and those spent on private and public land.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 15. Selected Characteristics of Alabama Resident Anglers and Hunters: 2001**

(State population 16 years old and older. Numbers in thousands)

Characteristic	Population		Sportspersons (fished or hunted)			Anglers			Hunters		
	Number	Percent	Number	Percent who participated	Percent of sportspersons	Number	Percent who participated	Percent of anglers	Number	Percent who participated	Percent of hunters
<b>Total persons</b> .....	3,427	100	726	21	100	634	19	100	316	9	100
<b>Population Density of Residence</b>											
Urban.....	2,014	59	324	16	45	296	15	47	117	6	37
Rural.....	1,412	41	401	28	55	338	24	53	199	14	63
<b>Population Size of Residence</b>											
Metropolitan statistical area (MSA)	2,375	69	476	20	66	433	18	68	182	8	58
1,000,000 or more.....	...	...	...	...	...	...	...	...	...	...	...
250,000 to 999,999.....	1,561	46	326	21	45	303	19	48	109	7	35
50,000 to 249,999.....	813	24	150	18	21	130	16	21	73	9	23
Outside MSA.....	1,052	31	249	24	34	201	19	32	134	13	42
<b>Sex</b>											
Male.....	1,585	46	551	35	76	471	30	74	285	18	90
Female.....	1,842	54	174	9	24	163	9	26	*31	*2	*10
<b>Age</b>											
16 to 17 years.....	109	3	*37	*34	*5	*35	*32	*5	*21	*20	*7
18 to 24 years.....	396	12	88	22	12	68	17	11	44	11	14
25 to 34 years.....	540	16	136	25	19	128	24	20	64	12	20
35 to 44 years.....	661	19	153	23	21	129	20	20	78	12	25
45 to 54 years.....	662	19	158	24	22	140	21	22	68	10	21
55 to 64 years.....	433	13	84	19	12	78	18	12	*20	*5	*6
65 years and older.....	627	18	69	11	10	57	9	9	*21	*3	*7
<b>Ethnicity</b>											
Hispanic.....	*23	*1	...	...	...	...	...	...	...	...	...
Non-Hispanic.....	3,404	99	724	21	100	633	19	100	316	9	100
<b>Race</b>											
White.....	2,632	77	652	25	90	563	21	89	306	12	97
Black.....	761	22	70	9	10	68	9	11	...	...	...
All others.....	*34	*1	...	...	...	...	...	...	...	...	...
<b>Annual Household Income</b>											
Under \$10,000.....	215	6	*22	*10	*3	*15	*7	*2	...	...	...
\$10,000 to \$19,999.....	352	10	*43	*12	*6	*39	*11	*6	...	...	...
\$20,000 to \$29,999.....	341	10	74	22	10	68	20	11	*26	*8	*8
\$30,000 to \$39,999.....	337	10	87	26	12	70	21	11	*40	*12	*13
\$40,000 to \$49,999.....	247	7	70	29	10	59	24	9	*38	*15	*12
\$50,000 to \$74,999.....	422	12	125	30	17	114	27	18	55	13	17
\$75,000 to \$99,999.....	193	6	71	37	10	62	32	10	*38	*20	*12
\$100,000 or more.....	129	4	*42	*32	*6	*35	*27	*5	*23	*18	*7
Not reported.....	1,190	35	191	16	26	171	14	27	75	6	24
<b>Education</b>											
11 years or less.....	664	19	124	19	17	110	17	17	44	7	14
12 years.....	1,223	36	254	21	35	225	18	35	113	9	36
1 to 3 years college.....	805	23	198	25	27	166	21	26	88	11	28
4 years college or more.....	735	21	149	20	21	133	18	21	70	9	22

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses. Percent who participated shows the percent of each row's population who participated in the activity named by the column (the percent of those living in urban areas who fished, etc.). Remaining percent columns show the percent of each column's participants who are described by the row heading (the percent of anglers who lived in urban areas, etc.).

**Table 16. Summary of Expenditures in Alabama by U.S. Residents for Fishing and Hunting: 2001**

(Population 16 years old and older)

Expenditure item	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per sportsperson (dollars)
<b>FISHING AND HUNTING</b>				
<b>Total</b> .....	<b>1,680,270</b>	<b>1,033</b>	<b>1,626</b>	<b>1,677</b>
Food and lodging .....	208,502	812	257	210
Transportation .....	123,958	817	152	125
Other trip costs <sup>1</sup> .....	221,620	692	320	223
Equipment (fishing, hunting) .....	271,055	596	454	265
Auxiliary equipment <sup>2</sup> .....	56,940	212	269	55
Special equipment <sup>3</sup> .....	561,914	82	6,859	564
Magazines and books .....	5,866	166	35	5
Membership dues and contributions .....	15,951	109	147	16
Other <sup>4</sup> .....	214,465	495	433	215
<b>FISHING</b>				
<b>Total</b> .....	<b>723,467</b>	<b>834</b>	<b>867</b>	<b>870</b>
Food and lodging .....	114,227	661	173	139
Transportation .....	68,725	641	107	84
Other trip costs <sup>1</sup> .....	175,258	637	275	213
Fishing equipment .....	104,179	468	222	122
Auxiliary equipment <sup>2</sup> .....	9,010	69	131	10
Special equipment <sup>3</sup> .....	*173,266	*42	*4,077	*210
Magazines and books .....	2,062	75	28	2
Membership dues and contributions .....	*1,826	*41	*45	*2
Other <sup>4</sup> .....	74,914	386	194	88
<b>HUNTING</b>				
<b>Total</b> .....	<b>663,576</b>	<b>444</b>	<b>1,493</b>	<b>1,550</b>
Food and lodging .....	94,275	339	278	223
Transportation .....	55,233	363	152	131
Other trip costs <sup>1</sup> .....	46,361	124	373	110
Hunting equipment .....	164,671	253	650	373
Auxiliary equipment <sup>2</sup> .....	37,311	120	311	87
Special equipment <sup>3</sup> .....	*106,749	*21	*5,189	*252
Magazines and books .....	2,160	54	40	4
Membership dues and contributions .....	12,281	51	241	29
Other <sup>4</sup> .....	144,535	274	527	341
<b>UNSPECIFIED<sup>5</sup></b>				
<b>Total</b> .....	<b>296,005</b>	<b>103</b>	<b>2,874</b>	<b>295</b>
Auxiliary equipment <sup>2</sup> .....	*10,619	*44	*244	*10
Special equipment <sup>3</sup> .....	*281,899	*27	*10,609	*283
Magazines and books .....	*1,644	*42	*40	*1
Membership dues and contributions .....	...	...	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Includes boating costs, equipment rental, guide fees, access fees, heating and cooking fuel, and ice and bait (for fishing only).

<sup>2</sup> Includes tents, special clothing, etc.

<sup>3</sup> Includes boats, campers, 4x4 vehicles, cabins, etc.

<sup>4</sup> Includes land leasing and ownership, licenses, stamps, tags, and permits.

<sup>5</sup> Respondent could not specify whether expenditure was primarily for either fishing or hunting.

Note: Detail does not add to total because of multiple responses and nonresponse. See Tables 19-20 for a detailed listing of expenditure items.

**Table 17. Summary of Fishing Trip and Equipment Expenditures in Alabama by U.S. Residents, by Type of Fishing: 2001**

(Population 16 years old and older)

Expenditure item	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per angler (dollars)
<b>ALL FISHING</b>				
<b>Total</b> .....	<b>644,665</b>	<b>782</b>	<b>824</b>	<b>777</b>
Food and lodging.....	114,227	661	173	139
Transportation.....	68,725	641	107	84
Other trip costs.....	175,258	637	275	213
Equipment.....	286,455	482	594	342
<b>ALL FRESHWATER</b>				
<b>Total</b> .....	<b>328,307</b>	<b>687</b>	<b>478</b>	<b>443</b>
Food and lodging.....	78,910	577	137	108
Transportation.....	56,257	567	99	77
Other trip costs.....	83,683	557	150	114
Equipment.....	109,457	408	268	144
<b>FRESHWATER, EXCEPT GREAT LAKES</b>				
<b>Total</b> .....	<b>327,731</b>	<b>687</b>	<b>477</b>	<b>443</b>
Food and lodging.....	78,910	577	137	108
Transportation.....	56,257	567	99	77
Other trip costs.....	83,683	557	150	114
Equipment.....	108,880	407	268	144
<b>GREAT LAKES</b>				
<b>Total</b> .....	...	...	...	...
Food and lodging.....	...	...	...	...
Transportation.....	...	...	...	...
Other trip costs.....	...	...	...	...
Equipment.....	...	...	...	...
<b>SALTWATER</b>				
<b>Total</b> .....	<b>156,406</b>	<b>156</b>	<b>1,006</b>	<b>930</b>
Food and lodging.....	35,317	136	260	211
Transportation.....	12,468	128	97	75
Other trip costs.....	91,575	130	706	547
Equipment.....	17,046	64	267	97

... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses and nonresponse. See Table 19 for detailed listing of expenditure items.

**Table 18. Summary of Hunting Trip and Equipment Expenditures in Alabama by U.S. Residents, by Type of Hunting: 2001**

(Population 16 years old and older)

Expenditure item	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per hunter (dollars)
<b>ALL HUNTING</b>				
<b>Total</b> .....	<b>504,600</b>	<b>416</b>	<b>1,214</b>	<b>1,179</b>
Food and lodging .....	94,275	339	278	224
Transportation .....	55,233	363	152	131
Other trip costs .....	46,361	124	373	110
Equipment .....	308,730	270	1,142	714
<b>BIG GAME</b>				
<b>Total</b> .....	<b>394,002</b>	<b>385</b>	<b>1,023</b>	<b>993</b>
Food and lodging .....	80,893	314	258	206
Transportation .....	45,341	337	134	116
Other trip costs .....	41,674	109	381	106
Equipment .....	226,094	240	941	565
<b>SMALL GAME</b>				
<b>Total</b> .....	<b>33,920</b>	<b>101</b>	<b>335</b>	<b>903</b>
Food and lodging .....	8,013	70	115	420
Transportation .....	5,093	73	70	267
Other trip costs .....	*1,490	*18	*84	*78
Equipment .....	19,324	46	419	139
<b>MIGRATORY BIRD</b>				
<b>Total</b> .....	<b>23,170</b>	<b>78</b>	<b>297</b>	<b>1,212</b>
Food and lodging .....	4,036	64	63	486
Transportation .....	3,165	61	52	381
Other trip costs .....	*2,615	*25	*106	*315
Equipment .....	*13,354	*32	*422	*30
<b>OTHER ANIMALS</b>				
<b>Total</b> .....	...	...	...	...
Food and lodging .....	...	...	...	...
Transportation .....	...	...	...	...
Other trip costs .....	...	...	...	...
Equipment .....	...	...	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses and nonresponse. See Table 20 for detailed listing of expenditure items.

**Table 19. Expenditures in Alabama by U.S. Residents for Fishing: 2001**

(Population 16 years old and older)

Expenditure item	Expenditures		Spenders		
	Amount (thousands of dollars)	Average per angler (dollars)	Number (thousands)	Percent of anglers	Average per spender (dollars)
<b>Total, all items</b> .....	<b>723,467</b>	<b>870</b>	<b>834</b>	<b>101</b>	<b>867</b>
<b>TRIP-RELATED EXPENDITURES</b>					
<b>Total trip-related</b> .....	<b>358,210</b>	<b>435</b>	<b>733</b>	<b>89</b>	<b>489</b>
<b>Food and lodging, total</b> .....	<b>114,227</b>	<b>139</b>	<b>661</b>	<b>80</b>	<b>173</b>
Food .....	90,352	110	661	80	137
Lodging .....	23,875	29	90	11	264
Transportation .....	68,725	84	641	78	107
<b>Other trip costs, total</b> .....	<b>175,258</b>	<b>213</b>	<b>637</b>	<b>77</b>	<b>275</b>
Privilege and other fees <sup>1</sup> .....	26,360	32	155	19	170
Boating costs <sup>2</sup> .....	114,942	140	236	29	487
Bait .....	24,165	29	488	59	50
Ice .....	7,464	9	340	41	22
Heating and cooking fuel .....	*2,327	*3	*37	*5	*62
<b>EQUIPMENT AND OTHER EXPENDITURES PRIMARILY FOR FISHING</b>					
<b>Fishing equipment, total</b> .....	<b>104,179</b>	<b>122</b>	<b>468</b>	<b>57</b>	<b>222</b>
Reels, rods, and rod making components .....	51,199	60	241	29	212
Lines, hooks, sinkers, etc .....	17,879	21	392	48	46
Artificial lures and flies .....	19,393	23	335	41	58
Creels, stringers, fish bags, landing nets, and gaff hooks .....	1,961	2	67	8	29
Minnow seines, traps, and bait containers .....	1,445	2	81	10	18
Other fishing equipment <sup>3</sup> .....	12,303	15	139	17	89
Auxiliary equipment <sup>4</sup> .....	9,010	10	69	8	131
Special equipment <sup>5</sup> .....	*173,266	*210	*42	*5	*4,077
Other fishing costs <sup>6</sup> .....	78,802	92	437	53	180

\* Estimate based on a small sample size.

<sup>1</sup> Includes boat or equipment rental and fees for guides, pack trip (party and charter boats, etc.), public land use, and private land use.

<sup>2</sup> Includes boat launching, mooring, storage, maintenance, insurance, pumpout fees and fuel.

<sup>3</sup> Includes electronic fishing devices (depth finders, fish finders, etc.), tackle boxes, ice fishing equipment, and other fishing equipment.

<sup>4</sup> Includes tents, special fishing clothing, etc.

<sup>5</sup> Includes boats, campers, 4x4 vehicles, cabins, etc.

<sup>6</sup> Includes magazines and books, membership dues and contributions, land leasing and ownership, licenses, stamps, tags, and permits.

Note: Detail does not add to total because of multiple responses and nonresponse. Percent of anglers may be greater than 100 because spenders who did not fish in this state are included.

**Table 20. Expenditures in Alabama by U.S. Residents for Hunting: 2001**

(Population 16 years old and older)

Expenditure item	Expenditures		Spenders		
	Amount (thousands of dollars)	Average per hunter (dollars)	Number (thousands)	Percent of hunters	Average per spender (dollars)
<b>Total, all items</b> .....	<b>663,576</b>	<b>1,550</b>	<b>444</b>	<b>105</b>	<b>1,493</b>
<b>TRIP-RELATED EXPENDITURES</b>					
<b>Total trip-related</b> .....	<b>195,870</b>	<b>463</b>	<b>387</b>	<b>92</b>	<b>506</b>
<b>Food and lodging, total</b> .....	<b>94,275</b>	<b>223</b>	<b>339</b>	<b>80</b>	<b>278</b>
Food .....	82,707	196	339	80	244
Lodging .....	*11,568	*27	*56	*13	*205
Transportation .....	55,233	131	363	86	152
<b>Other trip costs, total</b> .....	<b>46,361</b>	<b>110</b>	<b>124</b>	<b>29</b>	<b>373</b>
Privilege and other fees <sup>1</sup> .....	35,852	85	84	20	425
Boating costs .....	...	...	...	...	...
Heating and cooking fuel .....	*4,680	*11	*54	*13	*87
<b>EQUIPMENT AND OTHER EXPENDITURES PRIMARILY FOR HUNTING</b>					
<b>Hunting equipment, total</b> .....	<b>164,671</b>	<b>373</b>	<b>253</b>	<b>60</b>	<b>650</b>
Guns and rifles .....	79,638	181	87	20	919
Ammunition .....	16,481	38	233	55	71
Other hunting equipment <sup>2</sup> .....	68,551	155	129	31	530
Auxiliary equipment <sup>3</sup> .....	37,311	87	120	28	311
Special equipment <sup>4</sup> .....	*106,749	*252	*21	*5	*5,189
Other hunting costs <sup>5</sup> .....	158,976	374	302	71	526

\* Estimate based on a small sample size.   ... Sample size too small to report data reliably.

<sup>1</sup> Includes guide fees, pack trip or package fees, public and private land use access fees, and rental of equipment such as boats and hunting or camping equipment.

<sup>2</sup> Includes bows, arrows, archery equipment, telescopic sights, decoys and game calls, handloading equipment and components, hunting dogs and associated costs, hunting knives, and other hunting equipment.

<sup>3</sup> Includes tents, special hunting clothing, etc.

<sup>4</sup> Includes boats, campers, 4x4 vehicles, cabins, etc.

<sup>5</sup> Includes magazines and books, membership dues and contributions, land leasing and ownership, licenses, stamps, and permits.

Note: Detail does not add to total because of multiple responses and nonresponse. Percent of hunters may be greater than 100 percent because spenders who did not hunt in this state are included.

**Table 21. Trip and Equipment Expenditures in Alabama for Fishing and Hunting by Alabama Residents and Nonresidents: 2001**

(Population 16 years old and older)

Equipment item	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per sportsperson (dollars)
<b>STATE RESIDENTS AND NONRESIDENTS</b>				
<b>Trip and equipment expenditures for fishing and hunting, total ..</b>	<b>1,443,988</b>	<b>974</b>	<b>1,482</b>	<b>1,435</b>
<b>Trip and equipment expenditures for fishing, total .....</b>	<b>644,665</b>	<b>782</b>	<b>824</b>	<b>777</b>
Food and lodging .....	114,227	661	173	139
Transportation .....	68,725	641	107	84
Boating costs <sup>1</sup> .....	114,942	236	487	140
Other trip costs <sup>2</sup> .....	60,316	613	98	73
Equipment .....	286,455	482	594	342
<b>Trip and equipment expenditures for hunting, total .....</b>	<b>504,600</b>	<b>416</b>	<b>1,214</b>	<b>1,176</b>
Food and lodging .....	94,275	339	278	223
Transportation .....	55,233	363	152	131
Boating costs <sup>1</sup> .....	...	...	...	...
Other trip costs <sup>2</sup> .....	40,532	115	353	96
Equipment .....	308,730	270	1,142	712
<b>Unspecified equipment<sup>3</sup> .....</b>	<b>294,723</b>	<b>77</b>	<b>3,815</b>	<b>292</b>
<b>STATE RESIDENTS</b>				
<b>Trip and equipment expenditures for fishing and hunting, total ..</b>	<b>1,219,951</b>	<b>657</b>	<b>1,857</b>	<b>1,768</b>
<b>Trip and equipment expenditures for fishing, total .....</b>	<b>487,668</b>	<b>558</b>	<b>874</b>	<b>813</b>
Food and lodging .....	80,938	485	167	135
Transportation .....	49,003	459	107	82
Boating costs <sup>1</sup> .....	106,835	193	555	179
Other trip costs <sup>2</sup> .....	50,195	462	109	84
Equipment .....	200,697	411	488	332
<b>Trip and equipment expenditures for hunting, total .....</b>	<b>438,002</b>	<b>301</b>	<b>1,456</b>	<b>1,415</b>
Food and lodging .....	65,722	260	253	214
Transportation .....	39,915	268	149	130
Boating costs <sup>1</sup> .....	...	...	...	...
Other trip costs <sup>2</sup> .....	25,005	79	315	82
Equipment .....	301,595	248	1,218	970
<b>Unspecified equipment<sup>3</sup> .....</b>	<b>294,281</b>	<b>72</b>	<b>4,068</b>	<b>424</b>
<b>NONRESIDENTS</b>				
<b>Trip and equipment expenditures for fishing and hunting, total ..</b>	<b>224,037</b>	<b>317</b>	<b>706</b>	<b>701</b>
<b>Trip and equipment expenditures for fishing, total .....</b>	<b>156,997</b>	<b>224</b>	<b>700</b>	<b>684</b>
Food and lodging .....	33,289	175	190	148
Transportation .....	19,723	182	109	88
Boating costs <sup>1</sup> .....	*8,107	*43	*187	*36
Other trip costs <sup>2</sup> .....	10,121	151	67	45
Equipment .....	*85,758	*71	*1,200	*368
<b>Trip and equipment expenditures for hunting, total .....</b>	<b>66,598</b>	<b>115</b>	<b>579</b>	<b>544</b>
Food and lodging .....	*28,553	*79	*360	*246
Transportation .....	*15,318	*95	*160	*132
Boating costs <sup>1</sup> .....	...	...	...	...
Other trip costs <sup>2</sup> .....	...	...	...	...
Equipment .....	...	...	...	...
<b>Unspecified equipment<sup>3</sup> .....</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Includes boat launching, mooring, storage, maintenance, insurance, pumpout fees, and fuel.

<sup>2</sup> Includes equipment rental, guide and access fees, ice and bait for fishing, and heating and cooking oil.

<sup>3</sup> Respondent could not specify whether item was for fishing or for hunting.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 22. Summary of Expenditures by Alabama Residents in the United States for Fishing and Hunting: 2001**

(State population 16 years old and older)

Expenditure item	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per sportsperson (dollars)
<b>FISHING AND HUNTING</b>				
<b>Total</b> .....	<b>1,579,426</b>	<b>680</b>	<b>2,321</b>	<b>2,177</b>
Food and lodging.....	186,777	594	315	257
Transportation.....	121,578	585	208	168
Other trip costs <sup>1</sup> .....	214,241	519	413	295
Equipment (fishing, hunting).....	273,149	531	514	376
Auxiliary equipment <sup>2</sup> .....	55,294	183	302	76
Special equipment <sup>3</sup> .....	522,108	78	6,694	720
Magazines and books.....	5,174	126	41	7
Membership dues and contributions.....	17,273	97	179	24
Other <sup>4</sup> .....	183,831	393	468	253
<b>FISHING</b>				
<b>Total</b> .....	<b>600,364</b>	<b>581</b>	<b>1,033</b>	<b>946</b>
Food and lodging.....	101,634	504	201	160
Transportation.....	64,781	484	134	102
Other trip costs <sup>1</sup> .....	169,703	496	342	268
Fishing equipment.....	102,102	415	246	161
Auxiliary equipment <sup>2</sup> .....	8,026	52	156	13
Special equipment <sup>3</sup> .....	*95,148	*36	*2,661	*150
Magazines and books.....	1,783	52	34	3
Membership dues and contributions.....	*1,423	*30	*47	*2
Other <sup>4</sup> .....	55,766	308	181	88
<b>HUNTING</b>				
<b>Total</b> .....	<b>652,845</b>	<b>307</b>	<b>2,128</b>	<b>2,069</b>
Food and lodging.....	85,143	267	319	270
Transportation.....	56,797	276	205	180
Other trip costs <sup>1</sup> .....	44,538	93	479	141
Hunting equipment.....	168,842	246	686	535
Auxiliary equipment <sup>2</sup> .....	36,567	114	322	116
Special equipment <sup>3</sup> .....	*116,086	*22	*5,299	*368
Magazines and books.....	*1,792	*37	*49	*6
Membership dues and contributions.....	12,549	53	237	40
Other <sup>4</sup> .....	130,531	228	572	414
<b>UNSPECIFIED<sup>5</sup></b>				
<b>Total</b> .....	<b>326,476</b>	<b>97</b>	<b>3,370</b>	<b>450</b>
Auxiliary equipment <sup>2</sup> .....	*10,702	*40	*267	*15
Special equipment <sup>3</sup> .....	*310,874	*29	*10,578	*428
Magazines and books.....	*1,600	*41	*39	*2
Membership dues and contributions.....	...	...	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Includes boating costs, equipment rental, guide fees, access fees, heating and cooking fuel, and ice and bait (for fishing only).

<sup>2</sup> Includes tents, special clothing, etc.

<sup>3</sup> Includes boats, campers, 4x4 vehicles, cabins, etc.

<sup>4</sup> Includes land leasing and ownership, licenses, stamps, tags, and permits.

<sup>5</sup> Respondent could not specify whether expenditure was primarily for either fishing or hunting.

Note: Detail does not add to total because of multiple responses and nonresponse. See Tables 19-20 for a detailed listing of expenditure items.

**Table 23. Summary of Expenditures by Alabama Residents in State and Out of State for Fishing and Hunting: 2001**

(State population 16 years old and older)

Expenditure item	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per sportsperson (dollars)
<b>IN ALABAMA</b>				
<b>Expenditures for fishing and hunting, total</b> .....	<b>1,417,866</b>	<b>670</b>	<b>2,118</b>	<b>2,071</b>
Trip-related expenditures.....	423,377	627	676	619
Equipment (fishing and hunting).....	258,836	522	496	378
Auxiliary equipment <sup>1</sup> .....	54,018	179	302	79
Special equipment <sup>2</sup> .....	483,721	75	6,435	707
Other <sup>3</sup> .....	197,915	427	463	289
<b>Expenditures for fishing, total</b> .....	<b>544,607</b>	<b>572</b>	<b>953</b>	<b>911</b>
Trip-related expenditures.....	286,971	537	534	480
Fishing equipment.....	97,599	407	240	163
Auxiliary equipment <sup>1</sup> .....	8,026	52	156	13
Special equipment <sup>2</sup> .....	*95,073	*36	*2,659	*159
Other <sup>3</sup> .....	56,939	327	174	95
<b>Expenditures for hunting, total</b> .....	<b>577,379</b>	<b>304</b>	<b>1,900</b>	<b>1,883</b>
Trip-related expenditures.....	136,407	282	484	445
Hunting equipment.....	159,032	239	665	519
Auxiliary equipment <sup>1</sup> .....	35,815	108	333	117
Special equipment <sup>2</sup> .....	*106,749	*21	*5,189	*348
Other <sup>3</sup> .....	139,378	239	584	454
<b>Unspecified expenditures for fishing and hunting, total</b> <sup>4</sup> .....	<b>285,206</b>	<b>70</b>	<b>4,093</b>	<b>417</b>
Auxiliary equipment <sup>1</sup> .....	*7,921	*23	*343	*12
Special equipment <sup>2</sup> .....	*274,447	*22	*12,418	*401
Other <sup>3</sup> .....	*2,837	*43	*66	*4
<b>OUT OF STATE</b>				
<b>Expenditures for fishing and hunting, total</b> .....	<b>161,560</b>	<b>139</b>	<b>1,166</b>	<b>1,396</b>
Trip-related expenditures.....	99,218	105	944	857
Equipment (fishing and hunting).....	*14,314	*39	*367	*124
Auxiliary equipment <sup>1</sup> .....	...	...	...	...
Special equipment <sup>2</sup> .....	...	...	...	...
Other <sup>3</sup> .....	8,364	61	137	72
<b>Expenditures for fishing, total</b> .....	<b>55,758</b>	<b>95</b>	<b>588</b>	<b>656</b>
Trip-related expenditures.....	49,147	73	674	578
Fishing equipment.....	*4,503	*19	*237	*53
Auxiliary equipment <sup>1</sup> .....	...	...	...	...
Special equipment <sup>2</sup> .....	...	...	...	...
Other <sup>3</sup> .....	*2,033	*34	*59	*24
<b>Expenditures for hunting, total</b> .....	<b>75,466</b>	<b>62</b>	<b>1,208</b>	<b>1,664</b>
Trip-related expenditures.....	*50,071	*43	*1,177	*1,104
Hunting equipment.....	*9,810	*24	*407	*216
Auxiliary equipment <sup>1</sup> .....	...	...	...	...
Special equipment <sup>2</sup> .....	...	...	...	...
Other <sup>3</sup> .....	*5,494	*35	*156	*121
<b>Unspecified expenditures for fishing and hunting, total</b> <sup>4</sup> .....	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>
Auxiliary equipment <sup>1</sup> .....	...	...	...	...
Special equipment <sup>2</sup> .....	...	...	...	...
Other <sup>3</sup> .....	...	...	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Includes tents, special hunting or fishing clothing, etc.

<sup>2</sup> Includes boats, campers, 4x4 vehicles, cabins, etc.

<sup>3</sup> Includes magazines, books, membership dues, contributions, land leasing and ownership, stamps, tags, and licenses.

<sup>4</sup> Respondent could not specify whether expenditure was primarily for either fishing or hunting.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 24. U.S. Residents Participating in Wildlife Watching in Alabama: 2001**

(Population 16 years old and older. Numbers in thousands)

Participants	Number	Percent
<b>Total participants</b> .....	<b>1,016</b>	<b>100</b>
Nonresidential (away from home) .....	276	27
Observe wildlife .....	262	26
Photograph wildlife .....	126	12
Feed wildlife .....	143	14
Residential (around the home) .....	925	91
Observe wildlife .....	634	62
Photograph wildlife .....	144	14
Feed wildlife .....	835	82
Visit public parks <sup>1</sup> .....	*60	*6
Maintain plantings or natural areas .....	170	17

\* Estimate based on a small sample size. <sup>1</sup> Includes visits only to parks or publicly owned areas within 1 mile of home.

Note: Detail does not add to total because of multiple responses.

**Table 25. Participants, Trips, and Days of Participation in Nonresidential (Away From Home) Wildlife-Watching Activities in Alabama: 2001**

(Population 16 years old and older. Numbers in thousands)

Participants, trips, and days of participation	Activity in Alabama					
	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
<b>PARTICIPANTS</b>						
<b>Total participants</b> .....	<b>276</b>	<b>100</b>	<b>204</b>	<b>100</b>	<b>*72</b>	<b>*100</b>
Observe wildlife .....	262	95	192	94	*70	*97
Photograph wildlife .....	126	46	*80	*39	...	...
Feed wildlife .....	143	52	123	60	...	...
<b>TRIPS</b>						
Total trips .....	2,594	100	2,497	100	*96	*100
Average days per trip .....	1	(X)	1	(X)	*3	(X)
<b>DAYS</b>						
<b>Total days</b> .....	<b>3,643</b>	<b>100</b>	<b>3,350</b>	<b>100</b>	<b>*294</b>	<b>*100</b>
Observing wildlife .....	2,554	70	2,278	68	*276	*94
Photographing wildlife .....	1,004	28	*823	*25	...	...
Feeding wildlife .....	1,829	50	1,730	52	...	...
<b>Average days per participant</b> .....	<b>13</b>	<b>(X)</b>	<b>16</b>	<b>(X)</b>	<b>*4</b>	<b>(X)</b>
Observing wildlife .....	10	(X)	12	(X)	*4	(X)
Photographing wildlife .....	8	(X)	*10	(X)	...	(X)
Feeding wildlife .....	13	(X)	14	(X)	...	(X)

\* Estimate based on a small sample size. ... Sample size too small to report data reliably. (X) Not applicable.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 26. Nonresidential (Away From Home) Wildlife-Watching Participants Visiting Public Areas in Alabama and Type of Site Visited: 2001**

(Population 16 years old and older. Numbers in thousands)

Participants and sites	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
<b>Total participants</b> .....	<b>276</b>	<b>100</b>	<b>204</b>	<b>100</b>	<b>*72</b>	<b>*100</b>
Visited public areas .....	167	60	106	52	*61	*84
Did not visit public areas .....	110	40	98	48	...	...
<b>Total, all sites</b> .....	<b>276</b>	<b>100</b>	<b>204</b>	<b>100</b>	<b>*72</b>	<b>*100</b>
Oceanside .....	*47	*17	*39	*19	...	...
Lakes and streamsidess .....	182	66	128	63	...	...
Marsh, wetland, swamp .....	*83	*30	*72	*35	...	...
Woodland .....	214	78	173	85	...	...
Brush-covered areas .....	145	52	119	59	...	...
Open field .....	185	67	142	70	...	...
Man-made area .....	*58	*21	*33	*16	...	...
Other .....	...	...	...	...	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses.

**Table 27. Nonresidential (Away From Home) Wildlife-Watching Participants by Wildlife Observed, Photographed, or Fed in Alabama: 2001**

(Population 16 years old and older. Numbers in thousands)

Wildlife observed, photographed, or fed	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
<b>Total all wildlife</b> .....	<b>276</b>	<b>100</b>	<b>204</b>	<b>74</b>	<b>*72</b>	<b>*26</b>
<b>Total birds</b> .....	<b>241</b>	<b>100</b>	<b>171</b>	<b>71</b>	<b>*70</b>	<b>*29</b>
Songbirds .....	196	100	139	71	...	...
Birds of prey .....	144	100	108	75	...	...
Waterfowl .....	189	100	119	63	*70	*37
Shorebirds .....	108	100	*78	*72	...	...
Other birds .....	*86	*100	*61	*71	...	...
<b>Total land mammals</b> .....	<b>163</b>	<b>100</b>	<b>137</b>	<b>84</b>	...	...
Large land mammals .....	124	100	106	86	...	...
Small land mammals .....	123	100	101	82	...	...
Fish .....	*58	*100	*42	*72	...	...
Marine mammals .....	...	...	...	...	...	...
Other wildlife .....	*79	*100	*62	*79	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses.

**Table 28. Participation in Residential (Around the Home) Wildlife-Watching Activities in Alabama: 2001**

(State population 16 years old and older. Numbers in thousands)

Residential activity	Participants		Residential activity	Participants	
	Number	Percent		Number	Percent
<b>Total residential participants</b> .....	<b>925</b>	<b>100</b>	11 to 50 days .....	166	26
Observe wildlife .....	634	69	51 to 200 days .....	181	29
Visit public parks <sup>1</sup> .....	*60	*7	201 days or more .....	160	25
Photograph wildlife .....	144	16	<b>Participants Visiting Public Parks<sup>1</sup></b>		
Feed wildlife .....	835	90	<b>Total, 1 day or more</b> .....	<b>*60</b>	<b>*100</b>
Maintain natural areas .....	130	14	1 to 5 days .....	...	...
Maintain plantings .....	110	12	6 to 10 days .....	...	...
<b>Participants Observing Wildlife</b>			11 days or more .....	...	...
<b>Total, all wildlife</b> .....	<b>634</b>	<b>100</b>	<b>Participants Photographing Wildlife</b>		
Birds .....	600	95	<b>Total, 1 day or more</b> .....	<b>144</b>	<b>100</b>
Land mammals .....	511	81	1 to 3 days .....	*79	*55
Large mammals .....	245	39	4 to 10 days .....	*35	*25
Small mammals .....	480	76	11 or more days .....	*30	*21
Amphibians or reptiles .....	158	25	<b>Participants Feeding Wildlife</b>		
Insects or spiders .....	174	27	<b>Total, all wildlife</b> .....	<b>835</b>	<b>100</b>
Fish and other wildlife .....	120	19	Wild birds .....	820	98
<b>Total, 1 day or more</b> .....	<b>634</b>	<b>100</b>	Other wildlife .....	329	39
1 to 10 days .....	120	19			

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Includes visits only to parks or publicly owned areas within 1 mile of home.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 29. Alabama Residents Participating in Wildlife Watching in the United States: 2001**

(State population 16 years old and older. Numbers in thousands)

Participants	Number	Percent of participants	Percent of population
<b>Total participants</b> .....	<b>965</b>	<b>100</b>	<b>28</b>
Nonresidential (away from home) .....	280	29	8
Residential (around home) .....	925	96	27
Observe wildlife .....	634	66	19
Photograph wildlife .....	144	15	4
Feed wild birds or other wildlife .....	835	87	24
Maintain plantings or natural areas .....	170	18	5
Visit public parks .....	*60	*6	*2

\* Estimate based on a small sample size.

Note: Detail does not add to total because of multiple responses. The column showing percent of participants is based on total participants. The column showing percent of population is based on the state population 16 years old and older, including those who did not participate in wildlife watching.

**Table 30. Wild Bird Observers and Days of Observation in Alabama: 2001**

(Population 16 years old and older. Numbers in thousands)

Observers and days of observation	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
<b>OBSERVERS</b>						
<b>Total bird observers</b> .....	703	100	633	100	*70	*100
Residential (around the home) observers.....	600	85	600	95	...	...
Nonresidential (away from home) observers.....	239	34	169	27	*70	*100
<b>DAYS</b>						
<b>Total days observing birds</b> .....	73,092	100	72,845	100	*247	*100
Residential (around the home).....	69,966	96	69,966	96	...	...
Nonresidential (away from home).....	3,126	4	2,879	4	*247	*100

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses.

**Table 31. Wild Bird Observers in Alabama Who Can Identify Wild Birds by Sight or Sound, and Who Keep Birding Life Lists: 2001**

(State population 16 years old and older. Numbers in thousands)

Participants	Number	Percent
<b>Total bird observers</b> .....	703	100
Observers who can identify:		
1-20 bird species.....	562	80
21-40 bird species.....	*89	*13
41 or more species.....	*36	*5
Observers who keep birding life lists.....	*43	*6

\* Estimate based on a small sample size.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 32. Selected Characteristics of Alabama Residents Participating in Wildlife Watching: 2001**

(Population 16 years old and older. Numbers in thousands)

Characteristic	Population		Participants								
			Total			Nonresidential (away from home)			Residential (around the home)		
	Number	Percent	Number	Percent who participated	Percent	Number	Percent who participated	Percent	Number	Percent who participated	Percent
<b>Total persons</b> .....	<b>3,427</b>	<b>100</b>	<b>965</b>	<b>28</b>	<b>100</b>	<b>280</b>	<b>8</b>	<b>100</b>	<b>925</b>	<b>27</b>	<b>100</b>
<b>Population Density of Residence</b>											
Urban .....	2,014	59	514	26	53	154	8	55	483	24	52
Rural .....	1,412	41	451	32	47	126	9	45	441	31	48
<b>Population Size of Residence</b>											
Metropolitan statistical area (MSA) ..	2,375	69	665	28	69	189	8	67	627	26	68
1,000,000 or more .....	...	...	...	...	...	...	...	...	...	...	...
250,000 to 999,999 .....	1,561	46	399	26	41	110	7	39	377	24	41
50,000 to 249,999 .....	813	24	266	33	28	*79	*10	*28	250	31	27
Outside MSA .....	1,052	31	300	28	31	*91	*9	*33	297	28	32
<b>Sex</b>											
Male .....	1,585	46	431	27	45	130	8	46	411	26	44
Female .....	1,842	54	534	29	55	150	8	54	514	28	56
<b>Age</b>											
16 to 17 years .....	109	3	...	...	...	...	...	...	...	...	...
18 to 24 years .....	396	12	*69	*17	*7	...	...	...	*65	*17	*7
25 to 34 years .....	540	16	98	18	10	*42	*8	*15	*88	*16	*9
35 to 44 years .....	661	19	186	28	19	*89	*14	*32	170	26	18
45 to 54 years .....	662	19	237	36	25	*72	*11	*26	226	34	24
55 to 64 years .....	433	13	168	39	17	*33	*8	*12	168	39	18
65 years and older .....	627	18	196	31	20	...	...	...	196	31	21
<b>Ethnicity</b>											
Hispanic .....	*23	*1	...	...	...	...	...	...	...	...	...
Non-Hispanic .....	3,404	99	960	28	100	280	8	100	920	27	99
<b>Race</b>											
White .....	2,632	77	895	34	93	265	10	95	857	33	93
Black .....	761	22	*64	*8	*7	...	...	...	*62	*8	*7
All others .....	*34	*1	...	...	...	...	...	...	...	...	...
<b>Annual Household Income</b>											
Under \$10,000 .....	215	6	*36	*17	*4	...	...	...	*36	*17	*4
\$10,000 to \$19,999 .....	352	10	*75	*21	*8	...	...	...	*75	*21	*8
\$20,000 to \$29,999 .....	341	10	*76	*22	*8	...	...	...	*73	*21	*8
\$30,000 to \$39,999 .....	337	10	118	35	12	...	...	...	106	31	11
\$40,000 to \$49,999 .....	247	7	92	37	9	*39	*16	*14	92	37	10
\$50,000 to \$74,999 .....	422	12	146	35	15	*60	*14	*22	129	31	14
\$75,000 to \$99,999 .....	193	6	*93	*48	*10	...	...	...	*91	*47	*10
\$100,000 or more .....	129	4	*50	*38	*5	...	...	...	*46	*36	*5
Not reported .....	1,190	35	280	24	29	*75	*6	*27	278	23	30
<b>Education</b>											
11 years or less .....	664	19	162	24	17	*40	*6	*14	162	24	18
12 years .....	1,223	36	261	21	27	*55	*5	*20	256	21	28
1 to 3 years college .....	805	23	235	29	24	*67	*8	*24	218	27	24
4 years college or more .....	735	21	308	42	32	117	16	42	289	39	31

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses and nonresponse. Percent who participated shows the percent of each row's population who participated in the activity named by the column (the percent of those living in urban areas who participated, etc.). Percent columns show the percent of each column's participants who are described by the row heading (the percent of those who participated who live in urban areas, etc.).

**Table 33. Expenditures in Alabama by U.S. Residents for Wildlife Watching: 2001**

(Population 16 years old and older)

Expenditure item	Expenditures (thousands of dollars)	Average per participant (dollars)	Spenders		
			Number (thousands)	Percent of wildlife-watching participants <sup>1</sup>	Average per spender (dollars)
<b>Total, all items</b> .....	<b>626,400</b>	<b>616</b>	<b>907</b>	<b>89</b>	<b>691</b>
<b>TRIP EXPENDITURES</b>					
<b>Total trip-related</b> .....	<b>79,531</b>	<b>288</b>	<b>245</b>	<b>88</b>	<b>325</b>
Food and lodging .....	32,846	119	216	78	152
Food .....	22,395	81	216	78	104
Lodging .....	*10,450	*38	*68	*25	*153
Transportation .....	36,772	133	232	84	159
Other trip costs <sup>2</sup> .....	*9,913	*36	*52	*19	*192
<b>EQUIPMENT AND OTHER EXPENDITURES</b>					
<b>Total</b> .....	<b>546,868</b>	<b>538</b>	<b>826</b>	<b>81</b>	<b>662</b>
<b>Wildlife-watching equipment, total</b> .....	<b>119,232</b>	<b>117</b>	<b>749</b>	<b>74</b>	<b>159</b>
Binoculars, spotting scopes .....	*10,398	*10	*59	*6	*178
Film and developing .....	17,540	17	173	17	101
Cameras, special lenses, videocameras, and other photographic equipment .....	*15,946	*16	*52	*5	*308
Day packs, carrying cases, and special clothing .....	*4,771	*5	*34	*3	*142
Bird food .....	40,487	40	642	63	63
Food for other wildlife .....	19,535	19	186	18	105
Nest boxes, bird houses, bird feeders, and bird baths .....	10,171	10	266	26	38
Other equipment (including field guides) .....	...	...	...	...	...
Auxiliary equipment <sup>3</sup> .....	*3,216	*3	*32	*3	*101
Special equipment <sup>4</sup> .....	*285,187	*281	*37	*4	*7,810
Magazines and books .....	4,028	4	130	13	31
Membership dues and contributions .....	*4,478	*4	*78	*8	*58
Land leasing and ownership .....	...	...	...	...	...
Plantings .....	13,181	14	98	11	134

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Percent of wildlife-watching participants column for trip-related expenditures is based on nonresidential participants. For equipment and other expenditures, the percent of wildlife-watching participants column is based on total wildlife-watching participants.

<sup>2</sup> Includes equipment rental and fees for guides, pack trips, public land use and private land use, boat fuel, other boating costs, and heating and cooking fuel.

<sup>3</sup> Includes tents, tarps, frame packs and other backpacking equipment, other camping equipment, and other auxiliary equipment.

<sup>4</sup> Includes travel or tent trailers, off-the-road vehicles, pickups, campers or vans, motor homes, boats, and other special equipment.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 34. Trip and Equipment Expenditures in Alabama for Wildlife Watching by Residents and Nonresidents: 2001**

(Population 16 years old and older)

Expenditure item	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per participant (dollars)
<b>STATE RESIDENTS AND NONRESIDENTS</b>				
<b>Total</b> .....	<b>487,167</b>	<b>850</b>	<b>573</b>	<b>479</b>
Food and lodging.....	32,846	216	152	119
Transportation.....	36,772	232	159	133
Other trip costs <sup>1</sup> .....	*9,913	*52	*192	*36
Equipment <sup>2</sup> .....	407,636	764	534	401
<b>STATE RESIDENTS</b>				
<b>Total</b> .....	<b>464,238</b>	<b>756</b>	<b>614</b>	<b>492</b>
Food and lodging.....	24,151	153	158	118
Transportation.....	27,846	170	164	136
Other trip costs <sup>1</sup> .....	*9,323	*32	*296	*46
Equipment <sup>2</sup> .....	402,918	718	561	427
<b>NONRESIDENTS</b>				
<b>Total</b> .....	<b>*22,929</b>	<b>*94</b>	<b>*243</b>	<b>*317</b>
Food and lodging.....	...	...	...	...
Transportation.....	...	...	...	...
Other trip costs <sup>1</sup> .....	...	...	...	...
Equipment <sup>2</sup> .....	...	...	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Includes equipment rental and fees for guides, pack trips, public land use, private land use, boat fuel, other boating costs, and heating and cooking fuel.

<sup>2</sup> Includes wildlife watching, auxiliary and special equipment.

Note: Detail does not add to total because of multiple responses and nonresponse. See Table 33 for a detailed listing of expenditure items.

**Table 35. Expenditures in the United States by Alabama Residents for Wildlife Watching: 2001**

(Population 16 years old and older)

Expenditure item	Expenditures (thousands of dollars)	Average per participant (dollars)	Spenders		
			Number (thousands)	Percent of wildlife-watching participants <sup>1</sup>	Average per spender (dollars)
<b>Total, all items</b> .....	<b>662,574</b>	<b>687</b>	<b>796</b>	<b>82</b>	<b>832</b>
<b>TRIP EXPENDITURES</b>					
<b>Total trip-related</b> .....	<b>109,926</b>	<b>539</b>	<b>233</b>	<b>114</b>	<b>472</b>
Food and lodging .....	53,255	261	206	101	258
Food .....	33,066	162	206	101	160
Lodging .....	*20,189	*99	*74	*36	*274
Transportation .....	43,895	215	219	107	201
Other trip costs <sup>2</sup> .....	*12,776	*63	*34	*17	*376
<b>EQUIPMENT AND OTHER EXPENDITURES</b>					
<b>Total</b> .....	<b>552,648</b>	<b>573</b>	<b>752</b>	<b>78</b>	<b>735</b>
<b>Wildlife-watching equipment, total</b> .....	<b>125,823</b>	<b>130</b>	<b>706</b>	<b>73</b>	<b>178</b>
Binoculars, spotting scopes .....	*14,517	*15	*66	*7	*220
Film and developing .....	18,026	19	166	17	108
Cameras, special lenses, videocameras, and other photographic equipment .....	*18,637	*19	*63	*7	*297
Day packs, carrying cases, and special clothing .....	*4,470	*5	*29	*3	*154
Bird food .....	39,630	41	635	66	62
Food for other wildlife .....	19,476	20	181	19	108
Nest boxes, bird houses, bird feeders, and bird baths .....	10,470	11	265	27	39
Other equipment .....	*597	*1	*32	*3	*19
Auxiliary equipment <sup>3</sup> .....	*3,151	*3	*26	*3	*119
Special equipment <sup>4</sup> .....	*285,187	*295	*37	*4	*7,810
Magazines and books .....	3,800	4	122	13	31
Membership dues and contributions .....	*3,960	*4	*70	*7	*56
Land leasing and ownership .....	...	...	...	...	...
Plantings .....	13,181	14	98	11	134

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Percent of wildlife-watching participants column for trip-related expenditures is based on nonresidential participants. For equipment and other expenditures, the percent of wildlife-watching participants column is based on total wildlife-watching participants.

<sup>2</sup> Includes equipment rental and fees for guides, pack trips, public land use and private land use, boat fuel, other boating costs, and heating and cooking fuel.

<sup>3</sup> Includes tents, tarps, frame packs and other backpacking equipment, other camping equipment, and other auxiliary equipment.

<sup>4</sup> Includes travel or tent trailers, off-the-road vehicles, pickups, campers or vans, motor homes, boats, and other special equipment.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 36. Summary of Expenditures by Alabama Residents in State and Out of State for Wildlife Watching: 2001**

(State population 16 years old and older)

Expenditure item	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per participant (dollars)
<b>IN ALABAMA</b>				
<b>Expenditures for wildlife watching, total</b> .....	<b>601,426</b>	<b>783</b>	<b>768</b>	<b>623</b>
Trip-related expenditures .....	61,320	180	341	301
Wildlife-watching equipment .....	114,581	703	163	119
Auxiliary equipment .....	*3,151	*26	*119	*3
Special equipment .....	*285,187	*37	*7,810	*295
Other .....	124,007	145	856	128
<b>OUT OF STATE</b>				
<b>Expenditures for wildlife watching, total</b> .....	<b>60,809</b>	<b>132</b>	<b>459</b>	<b>63</b>
Trip-related expenditures .....	*48,606	*87	*556	*174
Wildlife-watching equipment .....	*11,242	*47	*237	*12
Auxiliary equipment .....	...	...	...	...
Special equipment .....	...	...	...	...
Other .....	...	...	...	...

\* Estimate based on a small sample size.   ... Sample size too small to report data reliably.

Note: See Table 33 for detailed listing of expenditure items.

**Table 37. Participation of Alabama Resident Wildlife-Watching Participants in Fishing and Hunting: 2001**

(State population 16 years old and older. Numbers in thousands)

Participants	Total, nonresidential and residential		Wildlife-watching activity			
			Nonresidential (away from home)		Residential (around the home)	
	Number	Percent	Number	Percent	Number	Percent
<b>Total participants</b> .....	<b>965</b>	<b>100</b>	<b>280</b>	<b>100</b>	<b>925</b>	<b>100</b>
Wildlife-watching participants who:						
Did not fish or hunt .....	597	62	126	45	576	62
Fished or hunted .....	368	38	154	55	349	38
Fished .....	316	33	128	46	303	33
Hunted .....	171	18	81	29	155	17

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 38. Participation of Alabama Resident Sportspersons in Wildlife-Watching Activities: 2001**

(State population 16 years old and older. Numbers in thousands)

Sportspersons	Sportspersons		Anglers		Hunters	
	Number	Percent	Number	Percent	Number	Percent
<b>Total Sportspersons</b> .....	<b>726</b>	<b>100</b>	<b>634</b>	<b>100</b>	<b>316</b>	<b>100</b>
Sportspersons who:						
Did not engage in wildlife-watching activities .....	358	49	318	50	145	46
Engaged in wildlife-watching activities .....	368	51	316	50	171	54
Nonresidential (away from home) .....	154	21	128	20	81	26
Residential (around the home) .....	349	48	303	48	155	49

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 39. Participants in Wildlife-Associated Recreation by Participant's State of Residence: 2001**

(Population 16 years old and older. Numbers in thousands)

Participant's state of residence	Population	Total participants		Sportspersons		Wildlife-watching participants	
		Number	Percent of population	Number	Percent of population	Number	Percent of population
<b>United States, total.....</b>	<b>212,298</b>	<b>82,302</b>	<b>39</b>	<b>37,805</b>	<b>18</b>	<b>66,105</b>	<b>31</b>
Alabama.....	3,427	1,323	39	726	21	965	28
Alaska.....	454	320	70	205	45	241	53
Arizona.....	3,700	1,296	35	437	12	1,107	30
Arkansas.....	1,999	1,034	52	617	31	774	39
California.....	25,982	6,873	26	2,486	10	5,491	21
Colorado.....	3,215	1,518	47	679	21	1,213	38
Connecticut.....	2,536	999	39	332	13	885	35
Delaware.....	599	220	37	94	16	170	28
Florida.....	12,171	3,857	32	2,158	18	2,856	23
Georgia.....	6,096	1,932	32	1,136	19	1,326	22
Hawaii.....	916	195	21	114	12	126	14
Idaho.....	972	507	52	306	31	388	40
Illinois.....	9,244	3,154	34	1,507	16	2,498	27
Indiana.....	4,558	2,179	48	914	20	1,786	39
Iowa.....	2,201	1,206	55	580	26	977	44
Kansas.....	2,017	942	47	491	24	735	36
Kentucky.....	3,121	1,547	50	703	23	1,264	40
Louisiana.....	3,306	1,330	40	833	25	844	26
Maine.....	1,005	607	60	256	26	520	52
Maryland.....	4,078	1,546	38	571	14	1,311	32
Massachusetts.....	4,837	1,726	36	521	11	1,493	31
Michigan.....	7,587	2,950	39	1,325	17	2,424	32
Minnesota.....	3,688	2,388	65	1,437	39	1,993	54
Mississippi.....	2,111	851	40	533	25	579	27
Missouri.....	4,206	2,010	48	1,076	26	1,612	38
Montana.....	699	438	63	279	40	362	52
Nebraska.....	1,266	623	49	308	24	498	39
Nevada.....	1,454	439	30	194	13	334	23
New Hampshire.....	954	506	53	175	18	450	47
New Jersey.....	6,300	1,993	32	669	11	1,694	27
New Mexico.....	1,337	595	45	256	19	471	35
New York.....	14,201	3,987	28	1,492	11	3,522	25
North Carolina.....	5,918	2,330	39	982	17	1,884	32
North Dakota.....	483	228	47	170	35	135	28
Ohio.....	8,645	3,407	39	1,513	17	2,768	32
Oklahoma.....	2,587	1,308	51	730	28	1,042	40
Oregon.....	2,630	1,545	59	611	23	1,286	49
Pennsylvania.....	9,303	4,169	45	1,648	18	3,522	38
Rhode Island.....	765	280	37	96	13	242	32
South Carolina.....	3,080	1,375	45	674	22	1,079	35
South Dakota.....	559	326	58	176	31	251	45
Tennessee.....	4,317	2,109	49	903	21	1,706	40
Texas.....	15,445	4,515	29	2,745	18	3,088	20
Utah.....	1,554	736	47	468	30	572	37
Vermont.....	479	319	67	125	26	287	60
Virginia.....	5,471	2,535	46	970	18	2,168	40
Washington.....	4,516	2,537	56	932	21	2,234	49
West Virginia.....	1,447	694	48	353	24	517	36
Wisconsin.....	4,059	2,489	61	1,141	28	2,159	53
Wyoming.....	377	223	59	138	37	172	46

Note: Detail does not add to total because of multiple responses. U.S. totals include responses from participants residing in the District of Columbia, as described in the statistical accuracy appendix.

**Table 40. Participants in Wildlife-Associated Recreation by State Where Activity Took Place: 2001**

(Population 16 years old and older. Numbers in thousands)

State where activity took place	Total participants		Sportspersons		Wildlife-watching participants	
	Number	Percent	Number	Percent	Number	Percent
<b>United States, total.....</b>	<b>82,302</b>	<b>100</b>	<b>37,805</b>	<b>46</b>	<b>66,105</b>	<b>80</b>
Alabama.....	1,557	100	1,021	66	1,016	65
Alaska.....	632	100	457	72	420	67
Arizona.....	1,720	100	486	28	1,465	85
Arkansas.....	1,369	100	960	70	841	61
California.....	7,231	100	2,556	35	5,720	79
Colorado.....	2,138	100	1,077	50	1,552	73
Connecticut.....	1,151	100	356	31	967	84
Delaware.....	321	100	157	49	232	72
Florida.....	4,860	100	3,158	65	3,240	67
Georgia.....	2,198	100	1,236	56	1,494	68
Hawaii.....	324	100	151	46	220	68
Idaho.....	868	100	486	56	643	74
Illinois.....	3,390	100	1,366	40	2,627	77
Indiana.....	2,427	100	965	40	1,866	77
Iowa.....	1,334	100	645	48	1,022	77
Kansas.....	1,091	100	563	52	807	74
Kentucky.....	1,834	100	901	49	1,362	74
Louisiana.....	1,558	100	1,059	68	935	60
Maine.....	975	100	449	46	778	80
Maryland.....	1,911	100	752	39	1,524	80
Massachusetts.....	1,988	100	632	32	1,686	85
Michigan.....	3,481	100	1,659	48	2,666	77
Minnesota.....	2,915	100	1,733	59	2,155	74
Mississippi.....	1,017	100	720	71	631	62
Missouri.....	2,494	100	1,382	55	1,826	73
Montana.....	871	100	463	53	687	79
Nebraska.....	768	100	382	50	565	74
Nevada.....	657	100	193	29	543	83
New Hampshire.....	892	100	295	33	766	86
New Jersey.....	2,345	100	855	36	1,895	81
New Mexico.....	884	100	379	43	671	76
New York.....	4,620	100	1,760	38	3,885	84
North Carolina.....	2,882	100	1,386	48	2,168	75
North Dakota.....	322	100	259	81	190	59
Ohio.....	3,658	100	1,540	42	2,897	79
Oklahoma.....	1,529	100	838	55	1,131	74
Oregon.....	2,051	100	761	37	1,680	82
Pennsylvania.....	4,570	100	1,783	39	3,794	83
Rhode Island.....	399	100	181	45	298	75
South Carolina.....	1,666	100	922	55	1,186	71
South Dakota.....	518	100	349	67	358	69
Tennessee.....	2,671	100	1,062	40	2,084	78
Texas.....	4,949	100	2,857	58	3,240	65
Utah.....	1,091	100	585	54	806	74
Vermont.....	569	100	211	37	496	87
Virginia.....	3,001	100	1,137	38	2,460	82
Washington.....	2,970	100	1,024	34	2,496	84
West Virginia.....	843	100	444	53	605	72
Wisconsin.....	3,165	100	1,611	51	2,442	77
Wyoming.....	662	100	373	56	498	75

Note: Detail does not add to total because of multiple responses. U.S. totals include responses from participants residing in the District of Columbia, as described in the statistical accuracy appendix.

**Table 41. Anglers and Hunters by State Where Fishing or Hunting Took Place: 2001**

(Population 16 years old and older. Numbers in thousands)

State where fishing or hunting took place	Anglers						Hunters					
	Total anglers, residents and nonresidents		Residents		Nonresidents		Total hunters, residents and nonresidents		Residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
<b>United States, total. ....</b>	<b>34,071</b>	<b>100</b>	<b>31,218</b>	<b>92</b>	<b>7,880</b>	<b>23</b>	<b>13,034</b>	<b>100</b>	<b>12,377</b>	<b>95</b>	<b>2,027</b>	<b>16</b>
Alabama .....	851	100	610	72	241	28	423	100	307	73	116	27
Alaska .....	421	100	183	43	239	57	93	100	72	77	*21	*23
Arizona .....	419	100	351	84	68	16	148	100	119	81	*28	*19
Arkansas .....	782	100	539	69	243	31	431	100	303	70	128	30
California .....	2,444	100	2,288	94	156	6	274	100	261	95	*12	*5
Colorado .....	915	100	560	61	357	39	281	100	159	57	121	43
Connecticut .....	346	100	271	78	75	22	45	100	*35	*77	...	...
Delaware .....	148	100	71	47	*78	*53	16	100	13	81	...	...
Florida .....	3,104	100	2,057	66	1,047	34	226	100	191	84	*35	*16
Georgia .....	1,086	100	947	87	139	13	417	100	355	85	*62	*15
Hawaii .....	150	100	109	73	*41	*27	17	100	17	100	...	...
Idaho .....	416	100	251	60	165	40	197	100	150	76	47	24
Illinois .....	1,237	100	1,157	94	80	6	310	100	246	79	*64	*21
Indiana .....	874	100	784	90	90	10	290	100	269	93	...	...
Iowa .....	542	100	471	87	70	13	243	100	195	80	*48	*20
Kansas .....	404	100	357	88	*47	*12	291	100	189	65	103	35
Kentucky .....	780	100	590	76	190	24	323	100	269	83	*54	*17
Louisiana .....	970	100	757	78	213	22	333	100	295	89	*38	*11
Maine .....	376	100	212	56	165	44	164	100	123	75	41	25
Maryland .....	701	100	457	65	243	35	145	100	115	80	*30	*20
Massachusetts .....	615	100	425	69	191	31	66	100	64	97	...	...
Michigan .....	1,354	100	1,002	74	352	26	754	100	705	94	*48	*6
Minnesota .....	1,624	100	1,293	80	331	20	597	100	568	95	*29	*5
Mississippi .....	586	100	450	77	136	23	357	100	245	69	111	31
Missouri .....	1,215	100	942	78	272	22	489	100	405	83	84	17
Montana .....	349	100	212	61	138	39	229	100	170	74	59	26
Nebraska .....	296	100	241	81	55	19	173	100	124	72	*49	*28
Nevada .....	172	100	119	69	*53	*31	47	100	42	90	...	...
New Hampshire .....	267	100	147	55	119	45	78	100	52	67	*26	*33
New Jersey .....	806	100	531	66	275	34	135	100	108	80	...	...
New Mexico .....	314	100	197	63	*116	*37	130	100	105	80	*26	*20
New York .....	1,550	100	1,243	80	307	20	714	100	635	89	79	11
North Carolina .....	1,287	100	831	65	456	35	295	100	272	92	*23	*8
North Dakota .....	179	100	119	67	*59	*33	139	100	87	63	*52	*37
Ohio .....	1,371	100	1,225	89	146	11	490	100	452	92	*38	*8
Oklahoma .....	774	100	648	84	126	16	261	100	241	92	*20	*8
Oregon .....	687	100	513	75	174	25	248	100	234	94	*15	*6
Pennsylvania .....	1,266	100	1,032	82	234	18	1,000	100	858	86	142	14
Rhode Island .....	179	100	86	48	93	52	*9	*100	*7	*83	...	...
South Carolina .....	812	100	571	70	241	30	265	100	221	83	*44	*17
South Dakota .....	214	100	140	65	75	35	209	100	90	43	119	57
Tennessee .....	903	100	709	79	194	21	359	100	288	80	71	20
Texas .....	2,372	100	2,151	91	221	9	1,201	100	1,101	92	100	8
Utah .....	517	100	388	75	129	25	198	100	177	89	*22	*11
Vermont .....	171	100	96	56	75	44	100	100	74	74	*26	*26
Virginia .....	1,010	100	761	75	248	25	355	100	279	79	*75	*21
Washington .....	938	100	808	86	130	14	227	100	210	92	...	...
West Virginia .....	318	100	250	79	*67	*21	284	100	229	81	*55	*19
Wisconsin .....	1,412	100	941	67	471	33	660	100	588	89	*72	*11
Wyoming .....	293	100	117	40	176	60	133	100	65	49	68	51

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses. U.S. totals include responses from participants residing in the District of Columbia, as described in the statistical accuracy appendix.

# *Appendix A*



# Appendix A.

## Definitions

**Annual household income**—Total 2001 income of household members before taxes and other deductions.

**Auxiliary equipment**—Equipment owned primarily for wildlife-associated recreation. These include for the sportspersons section—camping bags, packs, duffel bags and tents, binoculars, field glasses, telescopes, special fishing and hunting clothing, foul weather gear, boots, waders, and processing and taxidermy costs; and for the wildlife-watching section—tents, tarps, frame packs, backpacking equipment and other camping equipment.

**Big game**—Antelope, bear, deer, elk, moose, wild turkey, and similar large animals which are hunted.

**Birding life list**—A tally of bird species seen during a birder's lifetime.

### Census Divisions

#### East North Central

Illinois  
Indiana  
Michigan  
Ohio  
Wisconsin

#### East South Central

Alabama  
Kentucky  
Mississippi  
Tennessee

#### Middle Atlantic

New Jersey  
New York  
Pennsylvania

#### Mountain

Arizona  
Colorado  
Idaho  
Montana  
Nevada  
New Mexico

Utah  
Wyoming

#### New England

Connecticut  
Maine  
Massachusetts  
New Hampshire  
Rhode Island  
Vermont

#### Pacific

Alaska  
California  
Hawaii  
Oregon  
Washington

#### South Atlantic

Delaware  
District of Columbia  
Florida  
Georgia  
Maryland  
North Carolina  
South Carolina  
Virginia  
West Virginia

#### West North Central

Kansas  
Iowa  
Minnesota  
Missouri  
Nebraska  
North Dakota  
South Dakota

#### West South Central

Arkansas  
Louisiana  
Oklahoma  
Texas

**Day**—Any part of a day spent in a given activity. For example, if someone hunted 2 hours 1 day and 3 hours another day, it would be recorded as 2 days of hunting. If someone hunted 2 hours in the morning and 3 hours in the evening of the same

day, it would be considered 1 day of hunting.

**Education**—The highest completed grade of school or year of college.

**Expenditures**—Money spent in 2001 for wildlife-related recreation trips in the United States and wildlife-related recreational equipment purchased in the United States. Expenditures include both money spent by participants for themselves and the value of gifts they received.

**Federal land**—Public land owned by the federal government such as National Forests and National Wildlife Refuges.

**Fishing**—The sport of catching or attempting to catch fish with a hook, line, bow and arrow, or spear; it also includes catching or gathering shellfish (clams, crabs, etc.); and the noncommercial seining or netting of fish, unless the fish are for use as bait. For example, seining for smelt is fishing, but seining for bait minnows is not included as fishing.

**Fishing equipment**—Items owned primarily for fishing. These items are listed in Table 19.

**Freshwater**—Reservoirs, lakes, ponds, and the nontidal portions of rivers and streams.

**Great Lakes fishing**—Fishing in Lakes Superior, Michigan, Huron, St. Clair, Erie, and Ontario, their connecting waters such as the St. Marys River system, Detroit River, St. Clair River, and the Niagara River, and the St. Lawrence River south of the bridge at Cornwall, New York. Great Lakes fishing includes fishing in tributaries of the Great Lakes for smelt, steelhead, and salmon.

**Home**—The starting point of a wildlife-related recreational trip. It may be a permanent residence or a temporary or seasonal residence such as a cabin.

**Hunting**—The sport of shooting or attempting to shoot wildlife with firearms or archery equipment.

**Hunting equipment**—Items owned primarily for hunting. These items are listed in Table 20.

**Local land**—Public land owned by local government such as county parks or municipal watersheds.

**Maintain natural areas**—To set aside one-quarter acre or more of natural environment such as wood lots or open fields for the primary purpose of benefiting wildlife.

**Maintain plantings**—To introduce or encourage the growth of food and cover plants for the primary purpose of benefiting wildlife.

**Metropolitan statistical area (MSA)**—Except in the New England States, an MSA is a county or group of contiguous counties containing at least one city of 50,000 or more inhabitants or twin cities (i.e., cities with contiguous boundaries and constituting, for general social and economic purposes, a single community) with a combined population of at least 50,000. Also included in an MSA are contiguous counties that are socially and economically integrated with the central city. In the New England States, an MSA consists of towns and cities instead of counties. Each MSA must include at least one central city.

**Migratory birds**—Birds that regularly migrate from one region or climate to another. The survey focuses on migratory birds which may be hunted, including bandtailed pigeons, coots, ducks, doves, gallinules, geese, rails, and woodcocks.

**Multiple responses**—The term used to reflect the fact that individuals or their characteristics fall into more than one reporting category. An example of a big game hunter who hunted for deer and elk demonstrates the effect of multiple responses. In this case, adding the number of deer hunters (1) and elk hunters (1) would over state the number of big game hunters (1) because deer and elk hunters are not mutually exclusive

categories. In contrast, total participants is the sum of male and female participants, because male and female are mutually exclusive categories.

**Nonresidential activity (away from home)**—Trips or outings at least 1 mile from home for the primary purpose of observing, photographing, or feeding wildlife. Trips to zoos, circuses, aquariums, and museums are not included.

**Nonresidents**—Individuals who do not live in the state being reported. For example, a person living in Texas who watches whales in California is a nonresident participant in California.

**Nonresponse**—Nonresponse is a term used to reflect the fact that some survey respondents provide incomplete sets of information. For example, a survey respondent may have been unable to identify the primary type of hunting for which a gun was bought. Hunting expenditures will reflect the gun purchase, but it will not appear as spending for big game or any other type of hunting. Nonresponses result in reported totals that are greater than the sum of their parts.

**Observe**—To take special interest in or try to identify birds, fish, or other wildlife.

**Other animals**—Coyotes, crows, foxes, groundhogs, prairie dogs, raccoons, and similar animals that are often regarded as varmints or pests. Other animals may be classified as unprotected or nongame animals by the state in which they are hunted.

**Participants**—Individuals who engaged in fishing, hunting, or a wildlife-watching activity.

**Primary purpose**—The principal motivation for an activity, trip, or expenditure.

**Public areas**—Public lands owned by local, state, or federal governments.

**Public land**—Land that is owned by the local, state, or federal government.

**Private land**—Land that is owned by a private individual, group of individuals, or nongovernmental organization.

**Residential activity (around the home)**—Activity within 1 mile of home with a primary purpose: (1) closely observing or trying to identify birds or other wildlife, (2) photographing wildlife, (3) feeding birds or other wildlife, (4) maintaining natural areas of at least one-quarter acre primarily for the benefit to wildlife, (5) maintaining plantings (shrubs, agricultural crops, etc.) primarily for the benefit of wildlife, or (6) visiting public parks within 1 mile of home to observe, photograph, or feed wildlife.

**Residents**—Individuals who lived in the state being reported. For example, persons who live in California and watch whales in California are resident participants in California.

**Rural**—Respondent lived in a rural nonfarm, or rural farm area, as determined by Census.

**Saltwater**—Oceans, tidal bays and sounds, and the tidal portions of rivers and streams.

**Screening interviews**—The first survey contact with a household. Screening interviews with a household representative in each household to identify respondents who are eligible for indepth interviews. Screening interviews gather data about the individuals in the households, such as their age and sex. Screening interviews are discussed in the Survey Background and Method section of this report.

**Small game**—Grouse, partridge, pheasants, quail, rabbits, squirrels, and similar small animals and birds for which many states have small game seasons and bag limits.

**Special equipment**—Items of equipment that are owned primarily for wildlife-related recreation. These include for the sportsmen section bass boat and other types of motor boat; canoe and other types of nonmotor boat; boat motor, boat trailer/hitch, and other boat accessories; pickup, camper, van, travel or tent trailer, motor home, house trailer, RV, cabin; and trail bike, dune buggy, 4x4 vehicle, four-wheeler, and snowmobile. For the wildlife-watching section these include off-the-road vehicles such as snowmobiles, four-wheeler, 4x4 vehicle, trail bike, dune buggy, travel or tent trailer, motor home, pickup, camper, van,

house trailer, RV, boat and boat accessories, and cabin.

**Spenders**—Individuals who reported an expenditure value for fishing, hunting, or wildlife-watching activities or equipment.

**Sportspersons**—Individuals who engaged in fishing, hunting, or both.

**State land**—Public land owned by a state such as state parks or state wildlife management areas.

**Trip**—An outing involving fishing, hunting, or wildlife-watching activities. In the context of this survey, a trip may begin from an individual's principal residence or from another place, such as a vacation home or the home of a

relative. A trip may last an hour, a day, or many days.

**Type of fishing**—Three types of fishing are reported: fishing in (1) freshwater except Great Lakes, (2) Great Lakes, and (3) saltwater.

**Type of hunting**—Four types of hunting are reported: hunting for (1) big game, (2) small game, (3) migratory bird, and (4) other animals.

**Urban**—Respondent lived in an urban area, as determined by the U.S. Census Bureau.

**Wildlife**—Animals such as birds, fish, insects, mammals, amphibians, and reptiles that are living in natural or wild environments. Wildlife does not include

animals living in aquariums, zoos, and other artificial surroundings or domestic animals such as farm animals or pets.

**Wildlife-associated recreation**—Recreational fishing, hunting, or wildlife watching.

**Wildlife-watching activity**—An activity engaged in primarily for the purpose of feeding, photographing, or observing fish or other wildlife. In previous years, this was termed nonconsumptive activity. (See also residential and nonresidential activities.)

**Wildlife-watching equipment**—Items owned primarily for observing, photographing, or feeding wildlife. These items are listed in Table 33.

# *Appendix B*



# Appendix B.

## National and Regional 1991-2001 Comparisons

Appendix B provides national and regional trend information based on the 1991, 1996, and 2001 Surveys. Since all three surveys used similar methodologies, their published information is directly comparable.

### Fishing and Hunting

Comparing national hunting and fishing estimates for the 1991, 1996, and 2001 Surveys found participation declined over that 10-year time period. In 1991 and 1996, the number of people who hunted and fished remained essentially unchanged. In 2001, the overall number of people who hunted and fished declined from their 1991/1996 levels. In 1991, there were 35.6 million anglers and 14.1 million hunters. In 1996, there were 35.2 million anglers and 14.0 million hunters. In 2001, there were 34.1 million anglers—a 4 percent drop from its 1991 level, and 13.0 million hunters—a 7 percent drop from 1991.

The amount of time people spent fishing and hunting fluctuated between 1991 and 2001. The number of days spent fishing rose 22 percent between 1991 and 1996 and then fell 11 percent between 1996 and 2001. Days of hunting followed a similar pattern. Between 1991 and 1996, hunting days increased 9 percent but then fell 11 percent between 1996 and 2001.

The amount of money spent for fishing and hunting trips and equipment rose from 1991 to 1996 and fell from 1996 to 2001. Total fishing expenditures rose 37 percent from \$31.2 billion in 1991 to \$42.7 billion in 1996; and, then fell 17 percent to \$35.6 billion in 2001. Likewise, hunting expenditures increased from \$16.0 billion in 1991 to \$23.3 billion in 1996—45 percent increase—and then fell 12 percent to \$20.6 billion in 2001.

### Wildlife Watching

Comparing the results from the last three surveys finds different trends for various

types of wildlife watching. The number of wildlife watchers decreased 17 percent from 1991 to 1996 and increased 5 percent from 1996 to 2001—with 76.1 million participants in 1991, 62.9 million in 1996, and 66.1 million in 2001. Residential wildlife watching, the preeminent type of wildlife watching, led this trend with an 18 percent drop from 1991 to 1996 and a 4 percent increase from 1996 to 2001. Unlike residential wildlife watching, nonresidential wildlife watching dropped throughout the '90s and early '00s with a 21 percent drop from 1991 to 1996 and an 8 percent drop from 1996 to 2001. Days afield by participants tended upward, counter to the trend in participation, although the increase is not statistically significant. Total expenditures for wildlife watching increased 21 percent from 1991 to 1996 and 16 percent from 1996 to 2001, making an overall increase of 41 percent from 1991 to 2001.

### Differences in the 1991, 1996, and 2001 Surveys

The 1996 and 2001 Surveys underwent a number of changes in order to improve data collection, lower costs, and meet the data needs of its users. The most significant design differences in the three surveys are as follows:

1. The 1991 Survey data was collected by interviewers filling out paper questionnaires. The data entries were keyed in a separate operation after the interview. The 1996 and 2001 survey data were collected by the use of computer-assisted interviews. The questionnaires were programmed into computers, and interviewers keyed in the responses at the time of the interview.
2. The 1991 Survey screening phase was conducted in January and February of 1991, when the sample households were contacted and a household respondent was

interviewed on behalf of the entire household. The 1991 screening interview consisted primarily of sociodemographic questions and wildlife-related recreation questions concerning activity in the year 1990 and intentions for the year 1991. The screening interviews for the 1996 and 2001 Surveys were conducted April through June of their survey years in conjunction with the first wave of the detailed interviews. The screening interviews consisted primarily of sociodemographic questions and wildlife-related recreation questions concerning activity in the previous year (1995 or 2000) and intentions for the survey year (1996 or 2001).

3. In the 1991 Survey, an attempt was made to contact every sample person in all three detailed interview waves. In 1996 and 2001, respondents who were interviewed in the first detailed interview wave were not contacted again until the third wave. Also, all interviews in the second wave were conducted by telephone. In-person interviews were only conducted in the first and third waves.

### Important instrument differences in the 1991, 1996, and 2001 Surveys

1. The 1991 Survey collected information on all wildlife-related recreation purchases made by participants without reference to where the purchase was made. The 1996 and 2001 Surveys asked in which state the purchase was made.
2. In 1991, respondents were asked what kind of fishing they did, i.e., Great Lakes, other freshwater, or saltwater, and then were asked in what states they fished. In 1996 and 2001, respondents were asked in which states they fished and then were asked the pertinent kind of fishing questions. This method had the advantage of not asking about,

for example, saltwater fishing when they only fished in a noncoastal state. In 1991, respondents were asked how many days they "actually" hunted or fished for a particular type of game or fish and then how many days they "chiefly" hunted or fished for the same type of game or fish rather than another type of game or fish. To get total days of hunting or fishing for a particular type of game or fish, the "actually" day response was used, while to get the sum of all days of hunting or fishing, the "chiefly" days were summed. In 1996 and 2001, respondents were asked their total days of hunting or fishing in the United States and each state, then how many days they hunted or fished for a particular type of game or fish.

Trip-related and equipment expenditure categories were not the same for all Surveys. "Guide fee" and "Pack trip or package fee" were two separate trip-related expenditure items in 1991, while they were combined into one category in the 1996 and 2001 Surveys. "Boating costs" was added to the 1996 and 2001 hunting and wildlife-watching trip-related expenditure sections. "Heating and cooking fuel" was added to all of the trip-related expenditure sections. "Spearfishing equipment" was moved from a separate category to the "Other" list. "Rods" and "Reels" were two separate categories in 1991 but were combined in 1996 and 2001. "Lines, hooks, sinkers, etc." was one category in 1991 but split into "Lines" and "Hooks, sinkers, etc." in 1996 and 2001. "Food used to feed other wildlife" was added to the wildlife-watching equipment section, "Boats" and "Cabins" were added to the wildlife-watching special equipment section, and "Land leasing and ownership" was added to the wildlife-watching expenditures section.

5. Questions asking sportspersons if they participated as much as they wanted were added in 1996 and 2001. If the sportspersons said no, they were asked why not.

6. The 1991 Survey included questions about participation in organized fishing competitions; anglers using bows and arrows, nets or seines, or spearfishing; hunters using pistols or handguns and target shooting in preparation for hunting. These questions were not asked in 1996 and 2001.
7. The 1996 Survey included questions about catch and release fishing and persons with disabilities participating in wildlife-related recreation. These questions were not part of the 1991 Survey. The 2001 Survey included questions about persons with disabilities participating in wildlife-related recreation but not about catch and release fishing.
8. The 1991 Survey included questions about average distance traveled to recreation sites. These questions were not included in the 1996 and 2001 Surveys.
9. The 1996 Survey included questions about the last trip the respondent took. Included were questions about the type of trip, where the activity took place, and the distance and direction to the site visited. These questions were not asked in 2001.
10. The 1991 Survey collected data on hunting, fishing, and wildlife watching by U.S. residents in Canada. The 1996 and 2001 Surveys collected data on fishing and wildlife-watching by U.S. residents in Canada.

#### **Important instrument changes in the 2001 Survey**

1. The 1991 and 1996 single race category "Asian or Pacific Islander" was changed to two categories "Asian" and "Native Hawaiian or Other Pacific Islander." In 1991 and 1996, the respondent was required to pick only one category, while in 2001 the respondent could pick any combination of categories. The next question stipulated that the respondent could only be identified with one category and then asked what that category was.

2. The 1991 and 1996 land leasing and ownership sections asked the respondent to combine the two types of land use into one and give total acreage and expenditures. In 2001, the two types of land use were explored separately.
3. The 1991 and 1996 wildlife watching sections included questions on birdwatching for residential users only. The 2001 Survey added a question on birdwatching for nonresidential users. Also, questions on the use of birding life lists and how many species the respondent can identify were added in 2001.
4. "Recreational vehicles" was added to the sportspersons and wildlife watchers special equipment section in 2001. "House trailer" was added to the sportspersons special equipment section.
5. Total personal income was asked in the detailed phase of the 1996 Survey. This was changed to total household income in the 2001 Survey.
6. A question was added to the trip-related expenditures section in the 2001 Survey to ascertain how much of the total was spent in the respondent's state of residence when the respondent participated in hunting, fishing, or wildlife watching out-of-state.
7. Boating questions were added to the 2001 Surveys fishing section. The respondent was asked about the extent of boat usage for the three types of fishing.
8. The 1996 Survey included questions about the months residential wildlife watchers fed birds. These questions were not repeated in the 2001 Survey.
9. The contingent valuation sections of the three types of wildlife-related recreation were altered, using an open-ended question format instead of 1996's dichotomous choice format.

**Table B-1. Comparison of Wildlife-Related Recreation in the United States: 1991 to 2001**

(U.S. population 16 years old and older. Numbers in thousands)

Participants, days, and expenditures	1991 (Number)	2001 (Number)	1991-2001 (Percent change)	1996 (Number)	2001 (Number)	1996-2001 (Percent change)
<b>Hunting</b>						
Hunters, total .....	14,063	13,034	-7	13,975	13,034	-7
Hunting days, total .....	235,806	228,368	-3*	256,676	228,368	-11
Hunting expenditures, total (2001 dollars) <sup>1</sup> .....	\$16,031,197	\$20,611,025	29	\$23,293,156	\$20,611,025	-12*
<b>Fishing</b>						
Anglers, total .....	35,578	34,067	-4	35,246	34,067	-3
Fishing days, total .....	511,329	557,394	9	625,893	557,394	-11
Fishing expenditures, total (2001 dollars) <sup>1</sup> .....	\$31,175,168	\$35,632,132	14	\$42,710,679	\$35,632,132	-17
<b>Wildlife Watching</b>						
Total wildlife watching .....	76,111	66,105	-13	62,868	66,105	5
Residential .....	73,904	62,928	-15	60,751	62,928	4
Nonresidential .....	29,999	21,823	-27	23,652	21,823	-8
Days, nonresidential .....	342,406	372,006	9*	313,790	372,006	19
Wildlife-watching expenditures, total (2001 dollars) <sup>1</sup> .....	\$24,002,990	\$33,730,868	41	\$29,062,524	\$33,730,868	16

\* Not different from zero at the 5 percent confidence level.

<sup>1</sup>All 2001 and 1996 expenditure categories are adjusted to make them comparable to 1991.

**Table B-2. Anglers and Hunters by Census Division: 1991, 1996, and 2001**

(U.S. population 16 years old and older. Numbers in thousands)

Sportspersons	1991		1996		2001	
	Number	Percent	Number	Percent	Number	Percent
<b>UNITED STATES</b>						
Total population .....	189,964	100	201,472	100	212,298	100
Sportspersons .....	39,979	21	39,694	20	37,805	18
Anglers .....	35,578	19	35,246	17	34,067	16
Hunters .....	14,063	7	13,975	7	13,034	6
<b>New England</b>						
Total population .....	10,180	100	10,306	100	10,575	100
Sportspersons .....	1,658	16	1,673	16	1,504	14
Anglers .....	1,545	15	1,520	15	1,402	13
Hunters .....	444	4	465	5	386	4
<b>Middle Atlantic</b>						
Total population .....	29,216	100	29,371	100	29,806	100
Sportspersons .....	4,508	15	4,192	14	3,810	13
Anglers .....	3,871	13	3,627	12	3,250	11
Hunters .....	1,746	6	1,453	5	1,633	5
<b>East North Central</b>						
Total population .....	32,188	100	33,121	100	34,082	100
Sportspersons .....	7,202	22	6,912	21	6,400	19
Anglers .....	6,264	19	6,006	18	5,655	17
Hunters .....	2,789	9	2,712	8	2,421	7
<b>West North Central</b>						
Total population .....	13,504	100	13,875	100	14,430	100
Sportspersons .....	4,143	31	3,977	29	4,239	29
Anglers .....	3,647	27	3,416	25	3,836	27
Hunters .....	1,709	13	1,917	14	1,710	12
<b>South Atlantic</b>						
Total population .....	33,682	100	36,776	100	39,286	100
Sportspersons .....	6,996	21	7,282	20	6,957	18
Anglers .....	6,441	19	6,636	18	6,451	16
Hunters .....	2,083	6	2,050	6	1,875	5
<b>East South Central</b>						
Total population .....	11,667	100	12,459	100	12,976	100
Sportspersons .....	2,984	26	2,907	23	2,865	22
Anglers .....	2,635	23	2,514	20	2,543	20
Hunters .....	1,279	11	1,301	10	1,164	9
<b>West South Central</b>						
Total population .....	19,926	100	21,811	100	23,337	100
Sportspersons .....	5,125	26	5,093	23	4,924	21
Anglers .....	4,592	23	4,616	21	4,375	19
Hunters .....	1,843	9	1,812	8	1,988	9
<b>Mountain</b>						
Total population .....	10,092	100	11,966	100	13,308	100
Sportspersons .....	2,488	25	2,761	23	2,757	21
Anglers .....	2,079	21	2,411	20	2,443	18
Hunters .....	1,069	11	1,061	9	1,020	8
<b>Pacific</b>						
Total population .....	29,508	100	31,787	100	34,498	100
Sportspersons .....	4,875	17	4,897	15	4,349	13
Anglers .....	4,505	15	4,501	14	4,111	12
Hunters .....	1,101	4	1,203	4	837	2

**Table B-3. Wildlife-Watching (Nonconsumptive) Participants by Census Division: 1991, 1996, and 2001**

(U.S. population 16 years old and older. Numbers in thousands)

Wildlife watching	1991		1996		2001	
	Number	Percent	Number	Percent	Number	Percent
<b>UNITED STATES</b>						
Total population .....	189,964	100	201,472	100	212,298	100
Wildlife-watching participants .....	76,111	40	62,868	31	66,105	31
Nonresidential .....	29,999	16	23,652	12	21,823	10
Residential .....	73,904	39	60,751	30	62,928	30
<b>New England</b>						
Total population .....	10,180	100	10,306	100	10,575	100
Wildlife-watching participants .....	4,598	45	3,710	36	3,875	37
Nonresidential .....	1,856	18	1,443	14	1,155	11
Residential .....	4,544	45	3,586	35	3,765	36
<b>Middle Atlantic</b>						
Total population .....	29,216	100	29,371	100	29,806	100
Wildlife-watching participants .....	10,556	36	8,185	28	8,740	29
Nonresidential .....	4,166	14	2,960	10	2,849	10
Residential .....	10,282	35	8,023	27	8,452	28
<b>East North Central</b>						
Total population .....	32,188	100	33,121	100	34,082	100
Wildlife-watching participants .....	14,511	45	11,731	35	11,631	34
Nonresidential .....	5,572	17	4,501	14	3,571	10
Residential .....	14,175	44	11,297	34	11,196	33
<b>West North Central</b>						
Total population .....	13,504	100	13,875	100	14,430	100
Wildlife-watching participants .....	6,924	51	5,089	37	6,206	43
Nonresidential .....	2,654	20	1,927	14	2,059	14
Residential .....	6,722	50	4,900	35	5,938	41
<b>South Atlantic</b>						
Total population .....	33,682	100	36,776	100	39,286	100
Wildlife-watching participants .....	13,047	39	11,252	31	11,395	29
Nonresidential .....	4,450	13	3,992	11	3,469	9
Residential .....	12,813	38	10,964	30	10,911	28
<b>East South Central</b>						
Total population .....	11,667	100	12,459	100	12,976	100
Wildlife-watching participants .....	4,864	42	3,904	31	4,514	35
Nonresidential .....	1,592	14	1,118	9	1,086	8
Residential .....	4,765	41	3,795	30	4,390	34
<b>West South Central</b>						
Total population .....	19,926	100	21,811	100	23,337	100
Wildlife-watching participants .....	7,035	35	5,933	27	5,747	25
Nonresidential .....	2,459	12	2,096	10	1,822	8
Residential .....	6,817	34	5,773	26	5,490	24
<b>Mountain</b>						
Total population .....	10,092	100	11,966	100	13,308	100
Wildlife-watching participants .....	4,437	44	4,099	34	4,619	35
Nonresidential .....	2,215	22	1,967	16	2,019	15
Residential .....	4,145	41	3,855	32	4,282	32
<b>Pacific</b>						
Total population .....	29,508	100	31,787	100	34,498	100
Wildlife-watching participants .....	10,139	34	8,966	28	9,377	27
Nonresidential .....	5,035	17	3,648	11	3,793	11
Residential .....	9,641	33	8,558	27	8,504	25

# *Appendix C*



## *Appendix C.*

### *Participants 6 to 15 Years Old*

The 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation was carried out in two phases. The first (or screening) phase began in April 2001. The main purpose of this phase was to collect information about persons 16 years old and older in order to develop a sample of potential sportsmen and wildlife-watching participants for the second (or detailed) phase. Information was also collected on the number of persons 6 to 15 years old who participated in wildlife-related recreation activities in 2000. These data are reported here in order to include the recreation activity of 6- to 15-year-olds in this report.

It is important to emphasize that the information reported here from the 2001 screening questionnaires relates to activity only up to and including 2000.

Also, these data were based on long-term recall (at least 12-month recall was required for most of these tables) and were reported, in most cases, by one household respondent speaking for all household members rather than the shorter term recall of the actual participant, as in the case of the 2001 detailed phase.

Tables C-1 to C-3 report data on participants 6 to 15 years old in 2000. Detailed expenditures and recreational activity data were not gathered for the 6- to 15-year-old participants.

Because of the difference in methodologies of the screening phase and the detailed phase of the 2001 Survey, the data are not comparable. Only participants 16 years old and older were eligible for the detailed phase. The

detailed phase was a series of three interviews conducted at 4-month intervals. The screening interviews were 1-year recall. The shorter recall period of the detailed phase had better data accuracy. It has been found in survey studies that in many cases longer recall periods result in over-estimating participation in and expenditures on wildlife-related recreation activities.

**Table C-1. Alabama Residents 6 to 15 Years Old Participating in Fishing and Hunting: 2000**

(State population 6 to 15 years old. Numbers in thousands)

Sportspersons	Sportspersons 6 to 15 years old		
	Number	Percent of sportspersons	Percent of population
<b>Total sportspersons</b> .....	<b>247</b>	<b>100</b>	<b>40</b>
<b>Total anglers</b> .....	<b>236</b>	<b>96</b>	<b>38</b>
Fished only .....	191	77	31
Fished and hunted .....	45	18	7
<b>Total hunters</b> .....	<b>56</b>	<b>23</b>	<b>9</b>
Hunted only .....	...	...	...
Hunted and fished .....	45	18	7

... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses. Column showing percent of sportspersons is based on the "Total sportspersons" row. Column showing percent of population is based on the state population 6 to 15 years old, including those who did not fish or hunt. Data reported on this table are from screening interviews in which one adult household member responded for household members 6 to 15 years old. The screening interview required the respondent to recall 12 months worth of activity. Includes state residents who fished or hunted only in other countries.

**Table C-2. Selected Characteristics of Alabama Resident Anglers and Hunters 6 to 15 Years Old: 2000**

(State population 6 to 15 years old. Numbers in thousands)

Characteristic	Population		Sportspersons (fished or hunted)			Anglers			Hunters		
	Number	Percent	Number	Percent who participated	Percent of sportspersons	Number	Percent who participated	Percent of anglers	Number	Percent who participated	Percent of hunters
<b>Total persons</b> .....	<b>618</b>	<b>100</b>	<b>247</b>	<b>40</b>	<b>100</b>	<b>236</b>	<b>38</b>	<b>100</b>	<b>56</b>	<b>9</b>	<b>100</b>
<b>Population Density of Residence</b>											
Urban .....	369	60	117	32	47	115	31	49	*15	*4	*26
Rural .....	249	40	130	52	53	121	49	51	*41	*17	*74
<b>Population Size of Residence</b>											
Metropolitan statistical areas (MSA) .....	449	73	176	39	71	173	38	73	*28	*6	*50
1,000,000 or more .....	...	...	...	...	...	...	...	...	...	...	...
250,000 to 999,999 .....	325	53	118	36	48	115	35	49	*17	*5	*31
50,000 to 249,999 .....	124	20	58	47	23	58	47	24	...	...	...
Outside MSA .....	169	27	71	42	29	64	38	27	*28	*17	*50
<b>Sex</b>											
Male .....	330	53	170	52	69	163	49	69	51	16	92
Female .....	288	47	77	27	31	74	26	31	...	...	...
<b>Age</b>											
6 to 8 years .....	181	29	63	35	26	63	35	27	...	...	...
9 to 11 years .....	184	30	84	46	34	82	45	35	...	...	...
12 to 15 years .....	254	41	100	39	41	91	36	38	*41	*16	*74
<b>Ethnicity</b>											
Hispanic .....	...	...	...	...	...	...	...	...	...	...	...
Non-Hispanic .....	612	99	247	40	100	236	39	100	56	9	100
<b>Race</b>											
White .....	449	73	217	48	88	207	46	88	52	11	92
Black .....	166	27	*29	*17	*12	*27	*17	*12	...	...	...
All others .....	...	...	...	...	...	...	...	...	...	...	...
<b>Annual Household Income</b>											
Less than \$10,000 .....	*33	*5	...	...	...	...	...	...	...	...	...
\$10,000 to \$19,999 .....	81	13	*20	*25	*8	*17	*21	*7	...	...	...
\$20,000 to \$29,999 .....	84	14	*36	*43	*14	*33	*39	*14	...	...	...
\$30,000 to \$39,999 .....	67	11	*20	*30	*8	*20	*30	*9	...	...	...
\$40,000 to \$49,999 .....	65	10	*22	*34	*9	*22	*34	*9	...	...	...
\$50,000 to \$74,999 .....	87	14	53	60	21	51	59	22	...	...	...
\$75,000 or more .....	70	11	*31	*44	*12	*31	*44	*13	...	...	...
Not reported .....	133	22	56	42	23	53	40	22	*15	*12	*28

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Percent who participated shows the percent of each row's population who participated in the activity named by the column (the percent of those living in urban areas who fished, etc.). Remaining percent columns show the percent of each column's participants who are described by the row heading (the percent of anglers who lived in urban areas, etc.). Data reported on this table are from screening interviews in which one adult household member responded for 6 to 15 years old. The screening interview required the respondent to recall 12 months worth of activity. Includes state residents who fished or hunted only in other countries.

**Table C-3. Alabama Residents 6 to 15 Years Old Participating in Wildlife Watching: 2000**

(State population 6 to 15 years old. Numbers in thousands)

Participants	Number	Percent of participants	Percent of population
<b>Total participants</b> .....	<b>178</b>	<b>100</b>	<b>29</b>
Nonresidential .....	52	29	8
Residential .....	161	90	26
Observe wildlife.....	122	69	20
Photograph wildlife .....	*16	*9	*3
Feed wild birds or other wildlife .....	100	56	16
Maintain plantings or natural areas.....	*35	*20	*6

\* Estimate based on a small sample size.

Note: Detail does not add to total because of multiple responses. The column showing percent of participants is based on total participants. The column showing percent of population is based on the state population 6 to 15 years old, including those who did not participate in wildlife watching. Data reported on this table are from screening interviews in which one adult household member responded for household members 6 to 15 years old. The screening interview required the respondent to recall 12 months worth of activity.

# *Appendix D*



# Appendix D.

## Sample Design and Statistical Accuracy

This Appendix is presented in two parts. The first part is the U.S. Census Bureau Source and Accuracy Statement. This statement describes the sampling design for the 2001 Survey and highlights the steps taken to produce estimates from the completed questionnaires. The statement explains the use of standard errors and confidence intervals. It also provides comprehensive information about errors characteristic of surveys, and formulas and parameters to calculate an approximate standard error or confidence interval for each number published in this report. The second part reports approximate standard errors (S.E.s) for selected measures of participation and expenditures for wildlife-related recreation. Tables D-1 to D-3 show common estimates by state with their estimated standard errors. Tables D-4 to D-9 provide parameters for computing standard errors.

### Source and Accuracy Statement for the Alabama State Report of the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation

#### Source of Data

The estimates in this report are based on data collected in the *2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation* (FHWAR).

The 2001 FHWAR Survey was designed to provide state-level estimates of the number of participants in recreational hunting and fishing, and in wildlife-watching activities (e.g., wildlife observation). Information was collected on the number of participants, where and how often they participated, the type of wildlife encountered, and the amounts of money spent on wildlife-related recreation.

The survey was conducted in two stages: an initial screening of households to

identify likely sportspersons and wildlife-watching participants, and a series of follow-up interviews of selected persons to collect detailed data about their wildlife-related recreation during 2001.

The 2001 FHWAR state samples were selected from expired samples of the Current Population Survey (CPS).

#### Sample Design

##### A. CPS - Current Population Survey

The expired CPS samples used for the 2001 FHWAR had been selected initially from 1990 decennial census files with coverage in all 50 states and the District of Columbia. The samples, while active, had been continually updated to reflect new construction. The sample addresses were located in 754 geographic areas consisting of a county or several contiguous counties.

##### B. The FHWAR Screening Sample

The screening sample consisted of households identified from the above sources. In Alabama, 1,735 household interviews were assigned to be interviewed. Of these, 13.2 percent were found to be vacant or otherwise not enumerated. Of the remaining households, about 2.8 percent could not be enumerated because the occupants were not found at home after repeated calls or were unavailable for some other reason.

Overall, 1,463 completed household interviews were obtained for a state response rate of 97.2 percent. The field representatives asked screening questions for all household members 6 years old and older. Interviewing for the screen was conducted during April, May, and June of 2001.

Data for the FHWAR sportspersons sample and wildlife-watchers sample were collected in three waves. The first wave started in April 2001, the second in September 2001, and the third in January 2002. In the sportspersons sample, all persons who hunted or fished in 2001 by the time of the screening interview were interviewed in the first wave. The remaining sportspersons sample were interviewed in the second wave. All sample persons (from both the first and second waves) were interviewed in the third wave.

The reference period was the preceding 4 months for waves 1 and 2. In wave 3, the reference period was either 4 or 8 months depending on when the sample person was first interviewed.

##### C. The Detailed Samples

Two independent detailed samples were chosen from the FHWAR screening sample. One consisted of sportspersons (people who hunt or fish) and the other of wildlife watchers (people who observe, photograph, or feed wildlife).

###### 1. Sportspersons

The Census Bureau selected the state detailed samples based on information reported during the screening phase. Every person 16 years old and older in the FHWAR screening sample was assigned to a sportspersons stratum based on time devoted to hunting/fishing in the past and time expected to be devoted to hunting/fishing in the future.

The four sportspersons categories were:

*Active* - a person who had already participated in hunting/fishing in 2001 at the time of the screener interview.

*Likely* - a person who had not participated in 2001 at the time of the screener but had participated in 2000 OR said they were likely to participate in 2001.

*Inactive* - a person who had not participated in 2000 or 2001 AND said they were somewhat unlikely to participate in 2001.

*Nonparticipant* - a person who had not participated in 2000 or 2001 AND said they were very unlikely to participate in 2001.

Persons were selected for the detailed phase based on these groupings.

Active sportspersons were given the detailed interview twice—at the same time of the screening interview (April-June 2001) and again in January/February 2002. Likely sportspersons and a subsample of the inactive sportspersons were also interviewed twice—first in September/October 2001, then in January/February 2002. If Census field representatives were not able to obtain the first interview, they attempted to interview the person in the final interviewing period with the reference period being the entire year. Persons in the nonparticipant group were not eligible for a detailed interview.

About **788** persons were designated for interviews in Alabama. Overall, **735** detailed sportspersons interviews were completed for a response rate of **93.3** percent.

## 2. Wildlife Watchers

The wildlife-watching state detailed sample also was selected based on information reported during the screening phase. Every person 16 years of age and

older was assigned to a category based on time devoted to wildlife-watching activities in previous years, participation in 2001 by the time of the screening interview, and intentions to participate in activities during the remainder of 2001.

Each person was placed into one of the following five groups based on their past participation:

*Active* - a person who had already participated in 2001 at the time of the screening interview.

*Avid* - a person who had not yet participated in 2001 but in 2000 had taken trips to participate in wildlife-watching activities for 21 or more days or had spent \$300 or more.

*Average* - a person who had not yet participated in 2001 but in 2000 had taken trips to wildlife-watch for less than 21 days and had spent less than \$300 OR had not participated in wildlife-watching activities but said they were very likely to in the remainder of 2001.

*Infrequent* - a person who had not participated in 2000 or 2001 but said they were somewhat likely or somewhat unlikely to participate in the remainder of 2001.

*Nonparticipant* - a person who had not participated in 2000 or 2001 and said they were very unlikely to participate during the remainder of 2001.

Persons were selected for the detailed phase based on these groupings. Persons in the nonparticipant group were not eligible for a detailed interview. A subsample of each of the other groups was selected to receive a detailed interview with the chance of being selected diminishing as the likelihood of participation diminished.

Wildlife-watching participants were given the detailed interview twice. Some received their first detailed interview at the same

time as the screening interview (April-June 2001). The rest received their first detailed interview in September/October 2001. All wildlife-watching participants received their second interview in January/February 2002. If Census field representatives were not able to obtain the first interview, they attempted to interview the person in the final interviewing period with the reference period being the entire year.

About **373** persons were designated for interviews in Alabama. Overall, **358** detailed wildlife-watching participant interviews were completed for a response rate of **96.0** percent.

## Estimation Procedure

Several stages of adjustments were used to derive the final 2001 FHWAR person weights. A brief description of the major components of the weights is given below.

All statistics for the population 6 to 15 years of age were derived from the screening interview. Statistics for the population 16 and over came from both the screening and detailed interviews. Estimates which came from the screening sample are presented in Appendix C.

### A. Screening Sample

Every interviewed person in the screening sample received a weight that was the product of the following factors:

1. *Base Weight*. The base weight is the inverse of the household's probability of selection.
2. *Household Noninterview Adjustment*. The noninterview adjustment inflated the weight assigned to interviewed households to account for households eligible for interview but for which no interview was obtained.
3. *First-Stage Adjustment*. The 754 areas designated for our samples were selected from over 2,000 such areas of the United States.

Some sample areas represent only themselves and are referred to as self-representing. The remaining areas represent other areas similar in selected characteristics and are thus designated nonself-representing. The first-stage factor reduces the component of variation arising from sampling the nonself-representing areas.

4. *Second-Stage Adjustment.* This adjustment brings the estimates of the total population in each state into agreement with census-based estimates of the civilian noninstitutional and nonbarrack military populations for each state.

## B. Sportspersons Sample

Every interviewed person in the sportspersons detailed sample received a weight that was the product of the following factors:

1. *Screening Weight.* This is the individual's final weight from the screening sample.
2. *Sportspersons Stratum Adjustment.* This factor inflated the weights of persons selected for the detailed sample to account for the subsampling done within each sportsperson's stratum.
3. *Sportspersons Noninterview Adjustment.* This factor adjusts the weights of the interviewed sportspersons to account for sportspersons selected for the detailed sample for whom no interview was obtained. A person was considered a noninterview if he/she were not interviewed in the third wave of interviewing.
4. *Sportspersons Ratio Adjustment Factor.* This is a ratio adjustment of the detailed sample to the screening sample within sportspersons sampling stratum. This adjustment brings the population estimates of persons age 16 years old or older from the detailed sample into agreement with the same estimates from the screening sample, which was a much larger sample.

## C. Wildlife-Watchers Sample

Every interviewed person in the wildlife-watchers detailed sample received a weight that was the product of the following factors:

1. *Screening Weight.* This is the individual's final weight from the screening sample.
2. *Wildlife-Watchers Stratum Adjustment.* This factor inflated the weights of persons selected for the detailed sample to account for the subsampling done within each wildlife-watcher stratum.
3. *Wildlife-Watchers Noninterview Adjustment.* This factor adjusts the weights of the interviewed wildlife-watching participants to account for wildlife watchers selected for the detailed sample for which no interview was obtained. A person was considered a noninterview if he/she were not interviewed in the third wave of interviewing.
4. *Wildlife-Watchers Ratio Adjustment Factor.* This is a ratio adjustment of the detailed sample to the screening sample within wildlife-watchers sampling strata. This adjustment brings the population estimates of persons age 16 years old or older from the detailed sample into agreement with the same estimates from the screening sample, which was a much larger sample.

## Accuracy of the Estimates

Since the 2001 estimates came from a sample, they may differ from figures from a complete census using the same questionnaires, instructions, and enumerators. A sample survey estimate has two possible types of error—sampling and nonsampling. The accuracy of an estimate depends on both types of error, but the full extent of the nonsampling error is unknown. Consequently, one should be particularly careful when interpreting results based on a relatively small number of cases or on small differences between estimates. The standard errors for the 2001 FHWAR estimates primarily indicate the magnitude of sampling error. They also partially measure the effect of some

nonsampling errors in responses and enumeration, but do not measure systematic biases in the data. (Bias is the average over all possible samples of the differences between the sample estimate and the actual value.)

## Nonsampling Variability

Let us suppose that a comparable complete enumeration was conducted. That is, an interview is attempted for every person 16 years old and older in the United States. Chances are we will not correctly estimate every parameter under consideration (for example, the proportion of people who fished). In this instance, the difference is due solely to nonsampling errors. Nonsampling errors also occur in sample surveys and can be attributed to several sources including the following:

- The inability to obtain information about all cases in the sample.
- Definitional difficulties.
- Differences in the interpretation of questions.
- Respondents' inability or unwillingness to provide correct information.
- Respondents' inability to recall information.
- Errors made in data collection such as in recording or coding the data.
- Errors made in the processing of data.
- Errors made in estimating values for missing data.
- Failure to represent all units with the sample (undercoverage).

Overall CPS undercoverage is estimated to be about 8 percent. Generally, undercoverage is larger for males than for females and larger for Blacks and other races combined than for Whites. Ratio estimation to independent population controls, as described previously, partially corrects for the bias due to survey undercoverage. However, biases exist in the estimates to the extent that missed persons in missed households or missed persons in interviewed households have different

characteristics from those of interviewed persons in the same age group.

*Comparability of Data.* Data obtained from the 2001 FHWAR and other sources are not entirely comparable. This results from differences in field interviewer training and experience and in differing survey processes. This is an

example of nonsampling variability not reflected in the standard errors. Use caution when comparing results from different sources (See Appendix B).

*Note When Using Small Estimates.* Because of the large standard errors involved, summary measures (such as medians and percentage distributions)

would probably not reveal useful information when computed on a base smaller than 100,000. Take care in the interpretation of small differences. For instance, even a small amount of nonsampling error can cause a borderline difference to appear significant or not, thus distorting a seemingly valid hypothesis test.

## Sampling Variability

The particular sample used for the 2001 FHWAR Survey is one of a large number of all possible samples of the same size that could have been selected using the same sample design. Estimates derived from the different samples would differ from each other. This sample-to-sample variability is referred to as sampling variability and is generally measured by the standard error. The exact sampling error is unknown. However, guides to the potential size of the sampling error are provided by the standard error of the estimate.

Since the standard error of a survey estimate attempts to provide a measure of the variation among the estimates from the possible samples, it is a measure of the precision with which an estimate from a particular sample approximates the average result of all possible samples. Standard errors, as calculated by methods described next in "Standard Errors and Their Use," are primarily measures of sampling variability, although they may include some nonsampling error.

The sample estimate and its standard error enable one to construct a confidence interval, a range that would include the average result of all possible samples with a known probability. For example, if all possible samples were surveyed under essentially the same general conditions and using the same sample design, and if an estimate and its standard error were calculated from each sample, then approximately 90 percent of the intervals from 1.645 standard errors below the estimate to 1.645 standard errors above the estimate would include the average result of all possible samples.

A particular confidence interval may or may not contain the average estimate derived from all possible samples. However, one can say with specified confidence that the interval includes the average estimate calculated from all possible samples.

Standard errors may also be used to perform hypothesis testing—a procedure for distinguishing between population parameters using sample estimates. One common type of hypothesis is that the population parameters are different. An example would be comparing the proportion of anglers to the proportion of hunters.

Tests may be performed at various levels of significance where a significance level is the probability of concluding that the characteristics are different when, in fact, they are the same. To conclude that two characteristics are different at the 0.10 level of significance, the absolute value of the estimated difference between characteristics must be greater than or equal to 1.645 times the standard error of the difference.

This report uses 90-percent confidence intervals and 0.10 levels of significance to determine statistical validity. Consult standard statistical textbooks for alternative criteria.

*Standard Errors and Their Use.* A number of approximations are required to derive, at a moderate cost, standard errors applicable to all the estimates in this report. Instead of providing an individual standard error for each estimate, parameters are provided to calculate standard errors for each type of characteristic. These parameters are listed in tables D-4 to D-9. Methods for using the parameters to calculate standard errors of various estimates are given in the next sections.

*Standard Errors of Estimated Numbers.* The approximate standard error,  $s_x$ , of an estimated number shown in this report can be obtained using the following formulas. Formula (1) is used to calculate the standard errors of levels of sportspersons, anglers, and wildlife watchers.

$$s_x = \sqrt{ax^2 + bx} \quad (1)$$

Here,  $x$  is the size of the estimate and  $a$  and  $b$  are the parameters in the tables associated with the particular characteristic.

Formula (2) is used for standard errors of aggregates, i.e., trips, days, and expenditures.

$$s_x = \sqrt{ax^2 + bx + \frac{cx^2}{y}} \quad (2)$$

Here,  $x$  is again the size of the estimate;  $y$  is the base of the estimate; and  $a$ ,  $b$ , and  $c$  are the parameters in the tables associated with the particular characteristic.

*Illustration of the Computation of the Standard Error of an Estimated Number*

Suppose that a table shows that 37,805,000 persons 16+ either fished or hunted in the United States in 2001. Using formula (1) with the parameters  $a = -0.000020$  and  $b = 4,289$  from table D-5, the approximate standard error of the estimates number of 37,805,000 sportspersons 16+ is

$$s_n = \sqrt{(-0.000020)(37,805,000)^2 + (4,289)(37,805,000)} = 365,500$$

The 90-percent confidence interval for the estimated number of sportspersons 16+ is from 37,203,800 to 38,406,200, i.e.,  $37,805,000 \pm 1.645 \times 365,500$ . Therefore, a conclusion that the average estimate derived from all possible samples lies within a range computed in this way would be correct for roughly 90 percent of all possible samples.

Suppose that another table shows that 13,034,300 hunters 16+ engaged in 228,367,800 days of participation in 2001 in the United States. Using formula (2) with the parameters  $a = 0.000168$ ,  $b = -11,904$ , and  $c = 12,496$  from table D-7, the approximate standard error on 228,367,800 estimated days on an estimated base of 13,034,300 hunters is

$$s_x = \sqrt{0.000168 \times 228,367,800^2 + (-11,904) \times 228,367,800 + \frac{12,496 \times 228,367,800^2}{13,034,300}} = 7,486,100$$

The 90-percent confidence interval on the estimate of 228,367,800 days is from 216,053,200 to 240,682,400, i.e.,  $228,367,800 \pm 1.645 \times 7,486,100$ . Again, a conclusion that the average estimate derived from all possible samples lies within a range computed in this way would be correct for roughly 90 percent of all possible samples.

*Standard Errors of Estimated Percentages.* The reliability of an estimated percentage, computed using sample data for both numerator and denominator, depends on the size of the percentage and its base. Estimated percentages are relatively more reliable than the corresponding estimates of the numerators of the percentages, particularly if the percentages are 50 percent or more. When the numerator and the denominator of the percentage are in different categories, use the parameter in the tables indicated by the numerator.

The approximate standard error,  $s_{x,p}$ , can be obtained by use of the formula

$$s_{x,p} = \sqrt{\frac{bp(100-p)}{x}} \quad (3)$$

Here,  $x$  is the total number of sportspersons, hunters, etc., which is the base of the percentage;  $p$  is the percentage ( $0 \leq p \leq 100$ ); and  $b$  is the parameter in the tables associated with the characteristic in the numerator of the percentage.

*Illustration of the Computation of the Standard Error of an Estimated Percentage*

Suppose that a table shows that of the 13,034,300 hunters 16+ in the United States, 22.7 percent hunted migratory birds. From table D-5, the appropriate  $b$  parameter is 3,793. Using formula (3), the approximate standard error on the estimate of 22.7 percent is

$$s_{x,p} = \sqrt{\frac{3,793 \times 22.7 \times (100 - 22.7)}{13,034,300}} = 0.71$$

Consequently, the 90-percent confidence interval for the estimate percentage of migratory bird hunters 16+ is from 21.5 percent to 23.9 percent, i.e.  $22.7 \pm 1.645 \times 0.71$ .

*Standard Error of a Difference.* The standard error of the difference between two sample estimates is approximately equal to

$$s_{x-y} = \sqrt{s_x^2 + s_y^2} \quad (4)$$

where  $s_x$  and  $s_y$  are the standard errors of the estimates  $x$  and  $y$ . The estimates can be numbers, percentages, ratios, etc. This will represent the actual standard error quite accurately for the difference between estimates of the same characteristic in two different areas, or for the difference between separate and uncorrelated characteristics in the same area. However, if there is a high positive (negative) correlation between the two characteristics, the formula will overestimate (underestimate) the true standard error.

*Illustration of the Computation of the Standard Error of a Difference*

Suppose that a table shows that of the 13,034,300 hunters in the United States, 9,985,100 were licensed hunters, and 1,689,300 were exempt from a hunting license. The corresponding percentages are 76.6 percent and 13.0 percent, respectively. The apparent difference between the percent of licensed hunters and hunters who are exempt from a license is 63.6 percent. Using formula (3) and the appropriate  $b$  parameter from Table D-5, the approximate standard errors of 76.6 percent and 13.0 percent are 0.83 and 1.59, respectively. Using formula (4), the approximate standard error of the estimated difference of 63.6 percent is

$$s_{x-y} = \sqrt{0.72^2 + 0.57^2} = 0.92$$

The 90-percent confidence interval on the difference between licensed hunters and those who were exempt from a hunting license is from 62.1 to 65.1 percent, i.e.,  $63.6 \pm 1.645 \times 0.92$ . Since the interval does not contain zero, we can conclude with 90 percent confidence that the percentage of licensed hunters is greater than the percentage of hunters who are exempt from a hunting license.

*Standard Errors of Estimated Averages.* Certain mean values for sportspersons, anglers, etc., shown in the report were calculated as the ratio of two numbers. For example, average days per angler is calculated as:

$$\frac{x}{y} = \frac{\text{total days}}{\text{total anglers}}$$

Standard errors for these averages may be approximated by the use of formula (5) below.

$$s_{x/y} = \frac{x}{y} \sqrt{\left(\frac{s_x}{x}\right)^2 + \left(\frac{s_y}{y}\right)^2 - 2r \frac{s_x s_y}{xy}} \quad (5)$$

In formula (5),  $r$  represents the correlation coefficient between the numerator and the denominator of the estimate. In the above formula, use 0.7 as an estimate of  $r$ .

*Illustration of the Computation of the Standard Error of an Estimated Average*

Suppose that a table shows that the average days per angler 16 years old or older for all fishing was 16.4 days. Using formulas (1) and (2) above, we compute the standard error on total days, 557,393,900, and total anglers, 34,071,100, to be 8,726,000 and 350,600, respectively. The approximate standard error on the estimated average of 16.4 days is

$$s_{x/y} = \frac{557,393,900}{34,071,100} \sqrt{\left(\frac{8,726,000}{557,393,900}\right)^2 + \left(\frac{350,600}{34,071,100}\right)^2 - 2 \times 0.7 \times \frac{8,726,000 \times 350,600}{557,393,900 \times 34,071,100}} = 0.18$$

therefore, the 90-percent confidence interval on the estimated average of 16.4 days is from 16.1 to 16.7, i.e.,  $16.4 \pm 1.645 \times 0.18$ .

**Table D-1. Approximate Standard Errors of Resident Anglers, Days of Fishing by State Residents, and Expenditures for Fishing by State Residents**

(Numbers in thousands)

State	Participation		Days		Expenditures in dollars	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
Alabama	634	28	10,841	452	\$600,364	\$83,099
Alaska	185	8	2,445	262	\$213,781	\$18,009
Arizona	394	23	4,327	510	\$326,068	\$59,815
Arkansas	546	31	11,776	1,296	\$386,164	\$50,245
California	2,389	124	27,878	3,138	\$2,162,620	\$362,896
Colorado	626	31	7,639	638	\$772,537	\$105,782
Connecticut	324	17	5,496	631	\$327,787	\$33,697
Delaware	89	5	1,341	213	\$92,474	\$20,799
Florida	2,109	91	43,439	4,318	\$3,426,795	\$420,930
Georgia	1,043	52	15,559	1,799	\$612,414	\$87,929
Hawaii	113	7	2,662	554	\$97,707	\$18,656
Idaho	261	15	3,097	330	\$230,006	\$25,225
Illinois	1,415	73	21,603	1,814	\$1,147,325	\$186,223
Indiana	833	41	15,537	1,865	\$469,379	\$80,663
Iowa	524	28	8,534	672	\$319,087	\$37,612
Kansas	431	21	6,426	907	\$331,195	\$46,971
Kentucky	630	36	12,135	1,041	\$551,378	\$64,270
Louisiana	763	44	12,130	1,412	\$648,285	\$61,451
Maine	216	13	3,449	397	\$158,533	\$25,580
Maryland	531	31	7,112	1,027	\$495,458	\$63,380
Massachusetts	500	23	8,387	789	\$460,207	\$71,626
Michigan	1,039	66	18,869	3,090	\$960,469	\$172,980
Minnesota	1,345	59	29,344	3,270	\$1,251,828	\$159,542
Mississippi	475	28	9,325	1,652	\$317,408	\$47,936
Missouri	982	46	12,396	859	\$757,928	\$93,775
Montana	221	11	3,656	468	\$202,751	\$25,563
Nebraska	265	13	3,378	281	\$179,878	\$27,770
Nevada	180	12	2,230	387	\$235,599	\$39,457
New Hampshire	164	8	2,974	305	\$186,436	\$29,039
New Jersey	639	30	10,973	1,632	\$712,797	\$90,138
New Mexico	215	13	2,407	358	\$196,661	\$30,674
New York	1,340	79	23,167	2,932	\$921,777	\$169,508
North Carolina	894	45	14,615	1,280	\$924,937	\$105,704
North Dakota	142	6	2,584	217	\$182,746	\$19,235
Ohio	1,390	65	22,014	1,944	\$905,650	\$97,445
Oklahoma	685	35	13,228	1,554	\$493,616	\$62,689
Oregon	551	27	8,720	1,081	\$590,738	\$64,749
Pennsylvania	1,270	80	21,417	2,271	\$762,242	\$69,554
Rhode Island	95	5	1,638	179	\$117,842	\$15,812
South Carolina	604	28	10,321	946	\$496,974	\$58,949
South Dakota	146	8	2,414	289	\$101,893	\$15,767
Tennessee	803	40	15,451	1,519	\$468,841	\$92,443
Texas	2,381	137	34,148	5,143	\$2,129,921	\$258,534
Utah	424	17	5,346	344	\$400,214	\$36,948
Vermont	104	7	1,969	212	\$72,326	\$10,954
Virginia	888	47	14,774	1,198	\$688,844	\$103,105
Washington	873	37	13,520	1,142	\$966,874	\$89,559
West Virginia	273	16	4,346	349	\$146,288	\$19,717
Wisconsin	981	56	19,360	2,175	\$844,539	\$115,997
Wyoming	121	6	1,901	220	\$135,280	\$20,747

**Table D-2. Approximate Standard Errors of Resident Hunters, Days of Hunting by State Residents, and Expenditures for Hunting by State Residents**

(Numbers in thousands)

State	Participation		Days		Expenditures in dollars	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
Alabama	316	22	7,262	1,047	\$652,845	\$132,117
Alaska	74	5	982	174	\$111,678	\$18,869
Arizona	124	13	1,649	345	\$225,651	\$74,606
Arkansas	306	28	7,075	1,140	\$387,489	\$69,954
California	278	43	3,695	1,076	\$368,701	\$136,459
Colorado	168	18	1,982	338	\$185,277	\$39,453
Connecticut	45	7	824	199	\$69,359	\$24,196
Delaware	16	2	279	85	\$18,424	\$6,513
Florida	270	39	5,865	1,370	\$545,627	\$130,063
Georgia	377	32	7,882	1,023	\$505,894	\$88,503
Hawaii	18	4	322	92	\$17,266	\$6,678
Idaho	151	12	1,784	252	\$168,088	\$32,796
Illinois	340	44	5,842	2,234	\$527,776	\$181,913
Indiana	284	28	5,016	939	\$279,670	\$70,406
Iowa	203	16	4,086	725	\$185,082	\$38,141
Kansas	202	17	3,424	443	\$223,192	\$41,908
Kentucky	271	23	4,538	482	\$384,751	\$59,977
Louisiana	316	28	7,325	1,565	\$528,155	\$98,836
Maine	123	10	2,169	366	\$119,144	\$23,982
Maryland	124	14	1,992	352	\$143,143	\$33,553
Massachusetts	79	10	1,727	406	\$113,461	\$24,955
Michigan	725	54	8,784	1,080	\$556,880	\$131,109
Minnesota	582	40	8,673	930	\$601,497	\$97,084
Mississippi	257	23	6,977	1,283	\$306,157	\$74,399
Missouri	413	37	6,715	1,184	\$490,761	\$115,416
Montana	171	11	2,112	240	\$161,239	\$25,032
Nebraska	128	10	1,963	203	\$135,092	\$28,074
Nevada	49	6	558	104	\$149,292	\$38,530
New Hampshire	53	5	1,300	169	\$55,775	\$11,739
New Jersey	125	15	3,000	641	\$156,786	\$48,877
New Mexico	114	13	1,594	371	\$171,811	\$39,225
New York	642	51	13,124	1,611	\$975,691	\$202,696
North Carolina	313	33	8,372	1,717	\$566,504	\$124,764
North Dakota	92	7	1,417	232	\$78,745	\$11,192
Ohio	481	39	11,077	2,011	\$645,875	\$157,380
Oklahoma	241	24	5,965	1,012	\$323,215	\$66,265
Oregon	236	18	2,917	481	\$432,628	\$104,547
Pennsylvania	867	68	14,091	1,656	\$901,173	\$144,957
Rhode Island	11	2	193	61	\$15,214	\$6,679
South Carolina	232	21	4,657	810	\$280,030	\$52,190
South Dakota	90	7	1,347	215	\$112,448	\$25,400
Tennessee	320	31	6,962	1,248	\$659,063	\$122,182
Texas	1,126	108	15,186	3,248	\$1,467,034	\$244,695
Utah	178	13	2,512	386	\$308,510	\$53,000
Vermont	75	6	1,460	195	\$53,805	\$8,476
Virginia	308	32	5,819	866	\$340,273	\$64,904
Washington	231	17	3,311	352	\$339,470	\$81,858
West Virginia	235	16	4,791	637	\$201,282	\$39,066
Wisconsin	591	41	9,305	1,151	\$634,413	\$119,195
Wyoming	65	6	870	100	\$62,958	\$13,319

**Table D-3. Approximate Standard Errors of Resident Nonresidential Participants, Days of Nonresidential Participation by State Residents, and Trip-Related Expenditures for Nonresidential Activities by State Residents**

(Numbers in thousands)

State	Participation		Days		Expenditures in dollars	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
Alabama	280	40	3,782	746	\$109,926	\$24,800
Alaska	118	12	1,766	316	\$49,035	\$11,646
Arizona	329	45	3,537	571	\$174,237	\$34,239
Arkansas	190	43	1,545	407	\$70,811	\$24,515
California	2,191	254	25,134	4,024	\$894,746	\$175,803
Colorado	531	61	6,555	1,258	\$183,470	\$45,064
Connecticut	248	34	6,770	1,596	\$82,766	\$16,616
Delaware	43	8	595	135	\$15,727	\$4,444
Florida	1,279	171	20,371	4,477	\$508,519	\$118,715
Georgia	302	67	5,175	1,581	\$174,269	\$55,270
Hawaii	50	9	1,099	282	\$32,319	\$10,688
Idaho	214	43	2,540	558	\$58,842	\$15,651
Illinois	683	81	9,208	2,307	\$254,698	\$57,633
Indiana	484	67	12,319	3,071	\$140,460	\$34,864
Iowa	354	41	6,960	1,751	\$77,012	\$19,264
Kansas	286	34	2,470	347	\$81,231	\$15,404
Kentucky	329	40	6,365	2,093	\$93,187	\$24,333
Louisiana	250	39	2,364	562	\$53,259	\$18,104
Maine	174	21	3,384	614	\$64,202	\$16,036
Maryland	413	53	5,959	1,226	\$188,565	\$47,258
Massachusetts	427	59	10,992	2,658	\$145,764	\$30,650
Michigan	747	122	13,192	2,762	\$332,609	\$90,218
Minnesota	562	82	13,406	4,473	\$124,187	\$25,145
Mississippi	103	22	3,466	1,449	\$32,803	\$13,539
Missouri	581	129	12,028	3,251	\$130,720	\$32,074
Montana	195	22	2,975	631	\$75,050	\$20,978
Nebraska	150	21	1,853	405	\$34,077	\$7,859
Nevada	128	20	1,108	199	\$50,162	\$13,058
New Hampshire	139	21	1,641	371	\$47,666	\$11,395
New Jersey	564	66	10,772	2,207	\$230,096	\$41,929
New Mexico	205	26	5,375	1,059	\$69,803	\$29,473
New York	1,112	138	21,423	4,045	\$471,293	\$128,063
North Carolina	367	62	5,458	1,857	\$121,730	\$30,272
North Dakota	48	8	450	97	\$6,946	\$2,453
Ohio	887	94	20,687	5,732	\$266,849	\$54,800
Oklahoma	340	55	3,834	1,079	\$42,413	\$9,434
Oregon	561	68	7,288	981	\$175,678	\$25,285
Pennsylvania	1,173	148	19,672	4,214	\$445,924	\$108,522
Rhode Island	58	8	974	230	\$9,876	\$2,638
South Carolina	282	56	4,458	1,374	\$79,258	\$21,827
South Dakota	77	14	1,762	518	\$14,195	\$3,862
Tennessee	375	57	3,601	663	\$114,678	\$29,348
Texas	1,043	240	11,956	2,858	\$689,729	\$188,701
Utah	323	35	3,651	1,162	\$93,928	\$24,813
Vermont	109	17	2,081	526	\$30,384	\$6,397
Virginia	581	84	9,599	2,345	\$225,247	\$59,484
Washington	874	90	12,238	1,311	\$433,951	\$77,714
West Virginia	166	22	2,494	599	\$62,283	\$16,816
Wisconsin	769	85	14,215	3,348	\$268,911	\$43,219
Wyoming	95	10	1,778	411	\$27,150	\$9,198

**Table D-4. Parameters a and b for Calculating Approximate Standard Errors of Sportspersons, Anglers, Hunters, and Wildlife-Watching Participants**

(These parameters are to be used only to calculate estimates of standard errors for characteristics developed from the screening sample)

State	6 years old and over		6-15 year olds only	
	a	b	a	b
<b>United States.....</b>	<b>-0.00017</b>	<b>4,191</b>	<b>-0.00103</b>	<b>4,052</b>
Alabama.....	-0.000380	1,493	-0.002270	1,417
Alaska.....	-0.000948	512	-0.004485	489
Arizona.....	-0.000399	1,559	-0.001931	1,303
Arkansas.....	-0.001069	2,456	-0.006381	2,444
California.....	-0.000221	6,329	-0.001083	5,240
Colorado.....	-0.000521	1,819	-0.002707	1,551
Connecticut.....	-0.000336	996	-0.002227	1,007
Delaware.....	-0.000428	283	-0.002753	284
Florida.....	-0.000427	5,619	-0.002768	5,390
Georgia.....	-0.000506	3,361	-0.002856	3,156
Hawaii.....	-0.000659	705	-0.003146	538
Idaho.....	-0.001285	1,393	-0.006911	1,424
Illinois.....	-0.000427	4,572	-0.002310	4,043
Indiana.....	-0.000578	3,064	-0.003388	2,867
Iowa.....	-0.000803	2,084	-0.004015	1,702
Kansas.....	-0.000659	1,528	-0.004453	1,804
Kentucky.....	-0.000493	1,760	-0.002857	1,623
Louisiana.....	-0.000874	3,461	-0.004231	3,101
Maine.....	-0.000903	1,035	-0.005933	1,086
Maryland.....	-0.000463	2,151	-0.002684	1,973
Massachusetts.....	-0.000193	1,065	-0.001155	928
Michigan.....	-0.000606	5,281	-0.003588	5,206
Minnesota.....	-0.001004	4,226	-0.006232	4,574
Mississippi.....	-0.000955	2,368	-0.005090	2,275
Missouri.....	-0.000681	3,305	-0.004295	3,440
Montana.....	-0.001327	1,085	-0.008909	1,292
Nebraska.....	-0.000479	714	-0.002742	713
Nevada.....	-0.000588	845	-0.003740	838
New Hampshire.....	-0.000455	482	-0.002565	446
New Jersey.....	-0.000220	1,591	-0.001309	1,434
New Mexico.....	-0.000887	1,389	-0.004190	1,228
New York.....	-0.000298	4,907	-0.001768	4,458
North Carolina.....	-0.000506	3,353	-0.004040	4,161
North Dakota.....	-0.000994	581	-0.007996	816
Ohio.....	-0.000402	4,091	-0.002543	4,199
Oklahoma.....	-0.000774	2,323	-0.003822	2,007
Oregon.....	-0.000429	1,261	-0.002347	1,105
Pennsylvania.....	-0.000563	6,176	-0.004018	6,755
Rhode Island.....	-0.000327	291	-0.002062	276
South Carolina.....	-0.000542	1,838	-0.002857	1,566
South Dakota.....	-0.000788	522	-0.005465	667
Tennessee.....	-0.000798	3,887	-0.005230	3,954
Texas.....	-0.000674	11,571	-0.003386	10,479
Utah.....	-0.000532	948	-0.001723	667
Vermont.....	-0.001116	605	-0.008013	697
Virginia.....	-0.000636	3,870	-0.003336	3,090
Washington.....	-0.000190	956	-0.001070	889
West Virginia.....	-0.000784	1,344	-0.005315	1,323
Wisconsin.....	-0.000986	4,628	-0.005562	4,461
Wyoming.....	-0.001599	718	-0.007708	647

**Table D-5. Parameters a and b for Calculating Approximate Standard Errors of Levels for the Detailed Sportspersons Sample**

State	Sportspersons and anglers 16+		Hunters 16+	
	a	b	a	b
<b>United States.....</b>	<b>-0.000020</b>	<b>4,289</b>	<b>-0.000018</b>	<b>3,793</b>
Alabama .....	-0.000459	1,570	-0.000489	1,672
Alaska .....	-0.001213	535	-0.000986	435
Arizona .....	-0.000405	1,492	-0.000389	1,431
Arkansas .....	-0.001229	2,452	-0.001529	3,050
California .....	-0.000275	7,111	-0.000265	6,859
Colorado .....	-0.000602	1,924	-0.000649	2,075
Connecticut .....	-0.000385	976	-0.000429	1,086
Delaware .....	-0.000483	288	-0.000658	392
Florida .....	-0.000395	4,789	-0.000478	5,788
Georgia .....	-0.000512	3,106	-0.000472	2,858
Hawaii .....	-0.000509	454	-0.001043	930
Idaho .....	-0.001216	1,176	-0.001263	1,221
Illinois .....	-0.000487	4,492	-0.000648	5,979
Indiana .....	-0.000549	2,501	-0.000654	2,982
Iowa .....	-0.000888	1,953	-0.000659	1,450
Kansas .....	-0.000642	1,292	-0.000832	1,673
Kentucky .....	-0.000835	2,592	-0.000679	2,110
Louisiana .....	-0.000991	3,270	-0.000831	2,743
Maine .....	-0.000954	959	-0.000937	942
Maryland .....	-0.000516	2,087	-0.000397	1,605
Massachusetts .....	-0.000252	1,221	-0.000278	1,344
Michigan .....	-0.000643	4,874	-0.000592	4,491
Minnesota .....	-0.001114	4,105	-0.000889	3,278
Mississippi .....	-0.001033	2,169	-0.001124	2,360
Missouri .....	-0.000678	2,843	-0.000857	3,597
Montana .....	-0.001195	832	-0.001299	904
Nebraska .....	-0.000676	851	-0.000707	890
Nevada .....	-0.000617	893	-0.000576	833
New Hampshire .....	-0.000501	478	-0.000547	522
New Jersey .....	-0.000252	1,588	-0.000305	1,918
New Mexico .....	-0.000711	944	-0.001259	1,672
New York .....	-0.000364	5,159	-0.000301	4,277
North Carolina .....	-0.000451	2,646	-0.000616	3,618
North Dakota .....	-0.000814	389	-0.001295	619
Ohio .....	-0.000421	3,638	-0.000381	3,292
Oklahoma .....	-0.000954	2,454	-0.001042	2,679
Oregon .....	-0.000652	1,715	-0.000558	1,468
Pennsylvania .....	-0.000635	5,902	-0.000628	5,840
Rhode Island .....	-0.000423	322	-0.000510	389
South Carolina .....	-0.000527	1,616	-0.000696	2,133
South Dakota .....	-0.001088	605	-0.001013	563
Tennessee .....	-0.000577	2,490	-0.000749	3,232
Texas .....	-0.000603	9,273	-0.000733	11,259
Utah .....	-0.000616	955	-0.000714	1,106
Vermont .....	-0.001086	520	-0.001184	567
Virginia .....	-0.000546	2,930	-0.000658	3,529
Washington .....	-0.000427	1,913	-0.000305	1,368
West Virginia .....	-0.000781	1,133	-0.000891	1,288
Wisconsin .....	-0.001026	4,165	-0.000832	3,378
Wyoming .....	-0.001209	452	-0.001693	633

Table D-6. Parameters a, b, and c for Calculating Approximate Standard Errors for Expenditures for the Detailed Sportspersons Sample

State	Sportspersons and anglers 16+			Hunters 16+		
	a	b	c	a	b	c
<b>United States</b> .....	<b>0.000209</b>	<b>-81,938</b>	<b>16,935</b>	<b>0.000849</b>	<b>-338,404</b>	<b>16,347</b>
Alabama .....	0.009175	-61,525	5,860	0.024164	-1,049	5,155
Alaska .....	-0.006112	-16,312	2,378	0.021402	39,475	489
Arizona .....	0.026819	-7,817	2,578	0.092593	-90,851	2,072
Arkansas .....	0.004633	-23,748	6,426	0.014405	-62,820	5,523
California .....	0.021384	-70,276	15,458	0.113785	-136,283	6,339
Colorado .....	0.009864	-19,578	5,293	0.022718	-94,581	3,887
Connecticut .....	0.001877	-16,928	2,684	0.079125	-34,580	1,895
Delaware .....	0.040550	-7,042	809	0.105687	-2,637	311
Florida .....	0.007654	20,508	14,478	0.023874	-155,743	8,973
Georgia .....	0.014008	-36,268	6,059	0.008831	-95,649	7,863
Hawaii .....	0.025846	-5,658	1,067	0.097125	-938	788
Idaho .....	-0.002875	-29,463	3,878	0.016379	-64,453	3,289
Illinois .....	0.019572	10,051	8,854	0.085878	-549,762	11,311
Indiana .....	0.022696	-22,961	5,102	0.033251	-103,911	8,051
Iowa .....	0.005064	-20,998	4,528	0.016656	-138,890	5,392
Kansas .....	0.015860	18,185	1,730	0.021785	-50,528	2,671
Kentucky .....	0.004591	-41,799	5,443	0.008079	-58,497	4,208
Louisiana .....	-0.00040	-65,739	6,880	0.019445	-21,541	4,669
Maine .....	0.017717	-5,998	1,713	0.025284	-13,157	1,841
Maryland .....	0.008904	-8,843	3,522	0.032998	-11,255	2,731
Massachusetts .....	0.016262	-12,678	3,571	0.024064	-1,953	1,922
Michigan .....	0.019792	-127,849	11,921	0.040148	-65,705	9,671
Minnesota .....	0.008800	-47,947	9,688	0.014048	-30,492	6,738
Mississippi .....	0.016340	-3,615	2,838	0.048203	-12,376	2,679
Missouri .....	0.010252	-14,938	4,700	0.044792	-43,432	4,274
Montana .....	0.006249	2,944	2,023	0.012939	-22,671	1,865
Nebraska .....	0.017333	-3,651	1,663	0.027267	-39,668	2,043
Nevada .....	0.018933	-14,263	1,569	0.031588	-38,184	1,658
New Hampshire .....	0.018219	-2,158	896	0.019369	-16,561	1,337
New Jersey .....	0.008872	-21,461	4,161	0.074090	-47,814	2,925
New Mexico .....	0.009851	-15,340	3,013	0.038148	4,904	1,576
New York .....	0.026625	-55,537	8,963	0.021960	-65,942	13,270
North Carolina .....	0.002898	-52,854	8,564	0.027058	-70,174	6,255
North Dakota .....	0.005072	-1,310	842	0.013476	10,740	593
Ohio .....	0.006294	-16,259	6,658	0.032819	-343,279	12,406
Oklahoma .....	0.004660	-37,618	7,562	0.020499	-34,984	4,891
Oregon .....	0.003145	-20,997	4,657	0.039506	-209,288	4,495
Pennsylvania .....	-0.001615	-16,424	12,085	0.015010	-45,176	9,408
Rhode Island .....	0.008233	-3,065	823	0.163731	1,552	318
South Carolina .....	0.006577	-24,715	4,435	0.014150	-45,230	4,751
South Dakota .....	0.016156	-6,396	1,099	0.041242	13,567	850
Tennessee .....	0.033971	-12,176	3,739	0.025020	25,879	2,858
Texas .....	0.002571	-181,509	27,582	0.012511	228,353	16,609
Utah .....	0.001106	-2,243	3,125	0.011415	-63,829	3,240
Vermont .....	0.011747	-4,625	1,103	0.008540	-5,531	1,212
Virginia .....	0.016382	-12,594	5,152	0.014967	-57,318	6,583
Washington .....	0.003760	-21,018	4,033	0.047027	-137,577	2,616
West Virginia .....	0.006720	-9,550	2,878	0.031204	-15,338	1,413
Wisconsin .....	0.012407	-19,300	6,202	0.024061	-96,808	6,607
Wyoming .....	0.012293	-9,179	1,344	0.024311	-20,666	1,350

**Table D-7. Parameters a, b, and c for Calculating Approximate Standard Errors for Days or Trips for the Detailed Sportspersons Sample**

State	Sportspersons and anglers 16+			Hunters 16+		
	a	b	c	a	b	c
<b>United States</b> .....	<b>-0.000359</b>	<b>-10,379</b>	<b>21,216</b>	<b>0.000168</b>	<b>-11,904</b>	<b>12,496</b>
Alabama.....	-0.014899	-1,645	10,642	0.010257	-3,745	3,494
Alaska.....	0.004232	-2,284	1,514	0.017337	-1,630	1,174
Arizona.....	0.009813	-504	1,658	0.025859	-2,427	2,408
Arkansas.....	-0.000591	-4,532	7,151	0.005331	-5,600	6,560
California.....	0.005829	-32,577	19,133	0.046419	-14,455	11,763
Colorado.....	-0.002514	-4,440	6,304	0.005304	-3,344	4,269
Connecticut.....	0.004894	-1,905	2,797	0.032365	-208	1,179
Delaware.....	0.019930	-260	493	0.042659	-901	837
Florida.....	0.004327	-8,388	12,123	0.023712	-8,026	8,704
Georgia.....	0.006853	-15,975	7,865	0.000498	-4,557	6,375
Hawaii.....	0.024692	-3,126	2,236	-0.011390	-629	1,711
Idaho.....	-0.003745	-3,875	4,263	0.007761	-1,392	1,956
Illinois.....	-0.001740	-10,299	13,115	0.116103	-25,870	11,750
Indiana.....	0.005471	-5,800	7,756	0.015379	-6,119	5,928
Iowa.....	-0.002638	-1,789	4,745	0.013073	-5,442	4,003
Kansas.....	0.016223	-605	1,633	-0.005996	-2,318	4,722
Kentucky.....	-0.001146	-3,831	5,559	-0.008903	-1,883	5,581
Louisiana.....	0.005167	-9,551	6,990	0.031739	-9,447	4,809
Maine.....	-0.001145	-2,421	3,262	0.012469	-2,544	2,121
Maryland.....	0.015009	-1,757	3,235	-0.000817	-3,341	4,179
Massachusetts.....	0.001279	-5,091	4,088	0.028210	-2,953	2,268
Michigan.....	0.014345	-13,184	13,688	0.005369	-5,906	7,564
Minnesota.....	0.003565	-17,781	12,718	-0.002763	-5,610	8,671
Mississippi.....	0.019493	-15,942	6,461	0.014162	-6,098	5,274
Missouri.....	-0.002128	-5,253	7,226	0.018480	-8,909	5,746
Montana.....	0.000449	-2,600	3,680	0.000401	-1,984	2,302
Nebraska.....	-0.001914	-1,750	2,477	-0.000535	-295	1,450
Nevada.....	0.021810	-2,046	1,649	-0.001816	-1,230	1,883
New Hampshire.....	0.002071	-1,578	1,470	0.000312	-511	902
New Jersey.....	0.011720	-5,526	6,959	0.022081	-3,488	3,096
New Mexico.....	0.001275	-6,683	5,081	0.035962	-4,491	2,409
New York.....	0.006773	-19,672	13,519	-0.006261	-6,261	14,001
North Carolina.....	-0.003764	-7,850	10,700	0.005307	-10,202	11,887
North Dakota.....	-0.000254	-1,046	1,099	0.013638	-2,072	1,354
Ohio.....	-0.002277	-12,642	14,807	0.014951	-10,264	9,111
Oklahoma.....	0.002908	-8,589	7,908	-0.012896	-7,384	10,343
Oregon.....	-0.004964	-10,252	11,849	0.014008	-4,387	3,466
Pennsylvania.....	-0.000351	-9,506	15,294	0.001946	-7,227	10,734
Rhode Island.....	0.003515	-532	829	0.036010	-680	752
South Carolina.....	0.001822	-4,530	4,244	0.016996	-2,924	3,226
South Dakota.....	0.006727	-857	1,163	0.014473	-561	1,029
Tennessee.....	-0.003393	-8,542	10,929	0.014450	-5,875	5,933
Texas.....	0.008771	-62,115	37,457	0.026724	-40,596	24,438
Utah.....	-0.000945	-159	2,170	0.009900	-3,490	2,684
Vermont.....	-0.003874	-1,213	1,671	0.001720	-943	1,254
Virginia.....	-0.003305	-6,179	9,142	0.003533	-4,262	5,955
Washington.....	0.001423	-4,085	5,250	-0.000778	-1,826	2,912
West Virginia.....	-0.003294	-831	2,712	0.003483	-2,510	3,463
Wisconsin.....	-0.000821	-11,365	13,762	0.002687	-8,025	7,969
Wyoming.....	0.001824	-978	1,466	0.000207	3,198	606

**Table D-8. Parameters a and b for Calculating Approximate Standard Errors of Levels of Wildlife-Watching Participants for the Detailed Wildlife-Watching Sample**

State	Nonresidential users		Wildlife-watching participants <sup>1</sup>	
	a	b	a	b
<b>United States</b> .....	<b>-0.000076</b>	<b>15,974</b>	<b>-0.000040</b>	<b>8,555</b>
Alabama.....	-0.001806	6,172	-0.000996	3,406
Alaska.....	-0.003984	1,757	-0.003102	1,368
Arizona.....	-0.001862	6,858	-0.001138	4,191
Arkansas.....	-0.005383	10,740	-0.003708	7,397
California.....	-0.001245	32,229	-0.000675	17,485
Colorado.....	-0.002666	8,521	-0.001570	5,017
Connecticut.....	-0.002028	5,136	-0.001170	2,963
Delaware.....	-0.003015	1,797	-0.001488	887
Florida.....	-0.002113	25,612	-0.001029	12,478
Georgia.....	-0.002607	15,802	-0.001239	7,512
Hawaii.....	-0.001747	1,558	-0.001508	1,345
Idaho.....	-0.011466	11,088	-0.002755	2,664
Illinois.....	-0.001118	10,311	-0.001182	10,900
Indiana.....	-0.002301	10,485	-0.001294	5,899
Iowa.....	-0.002614	5,750	-0.002397	5,274
Kansas.....	-0.002324	4,676	-0.001200	2,414
Kentucky.....	-0.001720	5,341	-0.001519	4,717
Louisiana.....	-0.002007	6,621	-0.001352	4,459
Maine.....	-0.003051	3,066	-0.002046	2,056
Maryland.....	-0.001879	7,604	-0.001100	4,449
Massachusetts.....	-0.001845	8,924	-0.000791	3,824
Michigan.....	-0.002911	22,083	-0.001385	10,506
Minnesota.....	-0.003859	14,226	-0.002710	9,989
Mississippi.....	-0.002421	5,085	-0.002331	4,896
Missouri.....	-0.007940	33,309	-0.002372	9,949
Montana.....	-0.005126	3,568	-0.003963	2,758
Nebraska.....	-0.002615	3,292	-0.001558	1,961
Nevada.....	-0.002376	3,438	-0.001641	2,375
New Hampshire.....	-0.003949	3,767	-0.001860	1,774
New Jersey.....	-0.001349	8,490	-0.000839	5,282
New Mexico.....	-0.003029	4,023	-0.001796	2,385
New York.....	-0.001303	18,488	-0.000811	11,505
North Carolina.....	-0.001908	11,203	-0.001382	8,114
North Dakota.....	-0.003144	1,503	-0.002659	1,271
Ohio.....	-0.001298	11,210	-0.000884	7,638
Oklahoma.....	-0.004011	10,317	-0.002253	5,796
Oregon.....	-0.003939	10,356	-0.001506	3,958
Pennsylvania.....	-0.002310	21,485	-0.001198	11,142
Rhode Island.....	-0.001581	1,205	-0.001226	934
South Carolina.....	-0.004009	12,288	-0.001840	5,460
South Dakota.....	-0.005473	3,043	-0.002845	1,582
Tennessee.....	-0.002163	9,330	-0.001206	5,202
Texas.....	-0.003860	59,315	-0.001142	17,541
Utah.....	-0.003023	4,685	-0.002427	3,762
Vermont.....	-0.007125	3,413	-0.003296	1,579
Virginia.....	-0.002550	13,684	-0.001540	8,266
Washington.....	-0.002590	11,601	-0.000842	3,773
West Virginia.....	-0.002233	3,226	-0.001979	2,859
Wisconsin.....	-0.002881	11,690	-0.002288	9,283
Wyoming.....	-0.004150	1,552	-0.004075	1,524

<sup>1</sup> Use these parameters for total wildlife-watching participants and residential participants.

**Table D-9. Parameters a, b, and c for Calculating Approximate Standard Errors for Expenditures and Days or Trips for Detailed Wildlife-Watching Sample**

State	Expenditures			Days or trips		
	a	b	c	a	b	c
<b>United States</b> .....	<b>-0.000286</b>	<b>-65,186</b>	<b>37,635</b>	<b>0.000052</b>	<b>543,738</b>	<b>10,948</b>
Alabama .....	0.030708	-4,434	4,714	-0.022833	-34,485	19,838
Alaska .....	0.041800	-4,269	1,514	-0.029715	-14,349	8,241
Arizona .....	0.015564	-88,920	7,092	-0.006753	8,600	9,994
Arkansas .....	0.010470	-232,312	19,942	-0.016982	-55,327	23,242
California .....	0.018066	-66,438	36,961	0.012283	199,721	11,847
Colorado .....	0.038817	-215,098	11,070	-0.052385	-41,128	50,721
Connecticut .....	0.009671	-39,324	6,004	-0.041089	-115,012	28,194
Delaware .....	0.048255	793	1,135	-0.017715	-10,761	3,753
Florida .....	0.037237	246,936	15,955	-0.011904	368,712	53,853
Georgia .....	0.049562	-47,365	13,337	-0.012828	-66,122	35,936
Hawaii .....	0.073902	-7,392	1,428	-0.107474	-50,423	10,960
Idaho .....	0.049578	3,816	4,179	-0.012767	26,870	10,809
Illinois .....	0.023791	-91,738	15,163	0.017880	-26,735	32,660
Indiana .....	0.031176	-6,949	11,644	-0.031304	-137,397	50,618
Iowa .....	0.027387	-151,677	10,811	-0.043626	-36,375	39,705
Kansas .....	0.014086	-26,411	5,617	-0.020112	-42,505	16,304
Kentucky .....	0.034724	-14,328	9,748	-0.100682	-143,695	76,120
Louisiana .....	0.077714	-11,409	5,935	-0.079705	-145,421	49,422
Maine .....	0.023033	-44,469	5,406	-0.017174	-7,365	9,098
Maryland .....	0.043571	-70,123	6,923	-0.033325	-216,192	46,228
Massachusetts .....	0.006810	-178,680	12,400	-0.031568	-234,200	47,548
Michigan .....	0.040492	-319,042	19,607	-0.018833	-31,270	48,594
Minnesota .....	0.014246	-14,209	13,809	-0.095678	-560,553	139,828
Mississippi .....	0.124078	18,562	3,885	-0.030843	-100,539	24,176
Missouri .....	0.034639	-25,636	11,799	-0.010269	219,841	37,795
Montana .....	0.057903	-22,171	3,776	-0.012332	5,559	10,812
Nebraska .....	0.024994	-4,237	3,539	-0.038650	-12,323	13,951
Nevada .....	0.034440	22,068	4,012	-0.005101	-34,384	8,741
New Hampshire .....	0.035666	-13,208	2,568	0.022014	-23,662	6,038
New Jersey .....	0.013039	-52,984	9,831	-0.011200	215,547	18,712
New Mexico .....	0.160478	-37,219	3,245	-0.041133	-40,922	17,946
New York .....	0.055761	-88,911	14,702	-0.018354	-352,468	78,358
North Carolina .....	0.016613	-38,392	14,073	-0.014391	-150,974	57,926
North Dakota .....	0.083798	-1,532	1,564	0.000482	-16,359	3,936
Ohio .....	0.013567	-190,802	23,398	0.054816	-205,827	28,294
Oklahoma .....	0.016264	-32,772	9,957	0.012938	93,047	14,288
Oregon .....	0.006779	-12,633	7,354	-0.034862	-36,621	32,540
Pennsylvania .....	0.029900	-197,526	29,144	0.024902	969,419	-33,184
Rhode Island .....	0.030265	-1,717	1,486	-0.069322	-95,835	12,964
South Carolina .....	0.053921	14,141	5,196	-0.019706	-230,401	46,919
South Dakota .....	0.057120	7,343	999	-0.031149	-123,874	14,456
Tennessee .....	0.037696	-9,299	8,559	0.000581	38,507	8,480
Texas .....	0.038651	-443,322	33,784	0.005378	354,179	23,102
Utah .....	0.056421	9,481	4,059	0.045711	-66,098	23,779
Vermont .....	0.013746	-43,820	3,010	0.010618	-34,930	7,630
Virginia .....	0.036266	-105,349	16,055	-0.016136	-231,865	58,093
Washington .....	0.018752	-46,218	10,365	-0.015432	-108,529	31,269
West Virginia .....	0.051192	-2,708	2,632	-0.035244	-80,788	20,819
Wisconsin .....	-0.001127	-25,290	18,720	-0.064163	-592,681	124,050
Wyoming .....	0.097425	-2,122	1,550	-0.093805	-13,385	14,702

ATTACHMENT SE-06-B  
U.S. DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE  
AND U.S. DEPARTMENT OF COMMERCE, U.S. CENSUS BUREAU  
*2001 NATIONAL SURVEY OF FISHING, HUNTING, AND WILDLIFE-ASSOCIATED  
RECREATION, GEORGIA*  
MARCH 2003

**U.S. Department of the Interior  
Fish and Wildlife Service  
U.S. Department of Commerce  
U.S. Census Bureau**

***2001 National Survey of Fishing,  
Hunting, and Wildlife-Associated  
Recreation, Georgia***  
**FHW/01-GA-Rev.**

**March 2003**

*2001 National Survey of  
Fishing, Hunting, and  
Wildlife-Associated Recreation*

*Georgia*



Revised March 2003



**U.S. Department of the Interior**  
**Gale A. Norton,**  
Secretary

**FISH AND WILDLIFE SERVICE**  
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Director



**U.S. Department of Commerce**  
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As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure their development in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

The mission of the Department's Fish and Wildlife Service is to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people. The Service is responsible for national programs of vital importance to our natural resources, including administration of the Federal Aid in Sport Fish Restoration and the Federal Aid of Wildlife Restoration Programs. These two grant programs provide financial assistance to the States for projects to enhance and protect fish and wildlife resources and to assure their availability to the public for recreational purposes. Multistate grants from these programs pay for the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation.

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# Foreword

Fish and wildlife resources are part of our American culture. Whether we are fishing, hunting, watching wildlife or feeding backyard birds, Americans derive many hours of enjoyment from wildlife-related recreation. Wildlife recreation is the cornerstone of our Nation's great conservation ethic.

The 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation is a partnership effort with the States and national conservation organizations, and has become one of the most important sources of information on fish and wildlife recreation in the United States. It is a useful tool that quantifies the economic impact of wildlife-based recreation. Federal, State, and private organizations use this detailed information to manage wildlife, market products, and look for trends. The 2001 Survey is the tenth in a series that began in 1955.

More than 82 million U.S. residents fished, hunted, and watched wildlife in 2001. They spent over \$108 billion pursuing their recreational activities, contributing to millions of jobs in industries and businesses that support wildlife-related recreation. Furthermore, funds generated by licenses and taxes on hunting and fishing equipment pay for many of the conservation efforts in this country.

Wildlife recreationists are among the Nation's most ardent conservationists. They not only contribute financially to conservation efforts, but also spend time and effort to introduce children and other newcomers to the enjoyment of the outdoors and wildlife.

I appreciate the assistance of those who took time to participate in this valuable survey. We all can be grateful that America's great tradition of wildlife-related recreation remains strong.



**Steve Williams**  
Director, U.S. Fish and Wildlife Service  
U.S. Department of the Interior

# Survey Background and Method

The National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (Survey) has been conducted since 1955 and is one of the oldest and most comprehensive continuing recreation surveys. The purpose of the Survey is to gather information on the number of anglers, hunters, and wildlife-watching participants (formerly known as nonconsumptive wildlife-related participants) in the United States. Information also is collected on how often these recreationists participate and how much they spend on their activities.

Preparations for the 2001 Survey began in 1999 when the International Association of Fish and Wildlife Agencies (IAFWA) asked us, the Fish and Wildlife Service, to conduct the tenth national survey of wildlife-related recreation. Funding came from the Multistate Conservation Grant Programs, authorized by Sport Fish and Wildlife Restoration Acts, as amended.

We consulted with State and Federal agencies and nongovernmental organizations such as the Wildlife Management Institute and American Sportfishing Association to determine survey content. Other sportspersons' organizations and conservation groups, industry representatives, and researchers also provided valuable advice.

Four regional technical committees were set up under the auspices of the IAFWA to ensure that State fish and wildlife agencies had an opportunity to participate in all phases of survey planning and

design. The committees were made up of agency representatives.

Data collection for the Survey was carried out in two phases by the U.S. Census Bureau. The first phase was the screen which began in April 2001. During the screening phase, the Census Bureau interviewed a sample of 80,000 households nationwide to determine who in the household had fished, hunted, or engaged in wildlife-watching activities in 2000, and who had engaged or planned to engage in those activities in 2001. In most cases, one adult household member provided information for all household members. The screen primarily covered 2000 activities while the next, more in-depth phase covered 2001 activities. For more information on the 2000 data, refer to Appendix C.

The second phase of the data collection consisted of three detailed interview waves. The first wave began in April 2001, the second in September 2001, and the last in January 2002. Interviews were conducted with samples of likely anglers, hunters, and wildlife watchers who were identified in the initial screening phase. These interviews were conducted primarily by telephone, with in-person interviews for those respondents who could not be reached by telephone. Respondents in the second survey phase were limited to those at least 16 years old. Each respondent provided information pertaining only to his or her activities and expenditures. Sample sizes were designed to provide statistically reliable

results at the State level. Altogether, interviews were completed for 25,070 respondents from the sportspersons sample and 15,303 from the wildlife watchers sample. More detailed information on sampling procedures and response rates is found in Appendix D.

## Comparability With Previous Surveys

The 2001 Survey's questions and methodology were similar to those used in the 1996 and 1991 Surveys. Therefore, the estimates of all three surveys are comparable.

The methodology of the 2001, 1996, and 1991 Surveys did differ significantly from the 1985 and 1980 Surveys, so their estimates are not directly comparable to those earlier surveys. The changes in methodology included reducing the recall period over which respondents had to report their activities and expenditures. Previous Surveys used a 12-month recall period which resulted in greater reporting bias. Research found that the amount of activity and expenditures reported in 12-month recall surveys was overestimated in comparison with that reported using shorter recall periods. See the Summary Section and Appendix B.

# *Highlights*



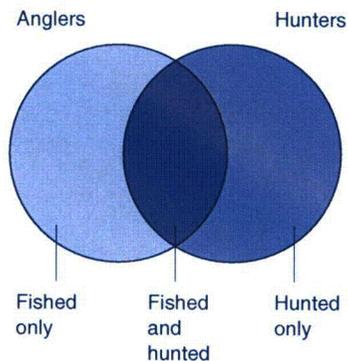
# Introduction

The National Survey of Fishing, Hunting, and Wildlife-Associated Recreation reports results from interviews with U.S. residents about their fishing, hunting, and other wildlife-related recreation. This report focuses on 2001 participation and expenditures of U.S. residents 16 years of age and older.

In addition to the 2001 numbers, we also provide 11-year trend data. The 2001 numbers reported can be compared with those in the 1991 and 1996 Survey reports because these three surveys used similar methodologies. However, the 2001 estimates should not be directly compared with the results from Surveys earlier than 1991 because of changes in methodology. These changes were made to improve accuracy in the information provided. Trend information from 1991 to 2001 is presented in Appendix B.

The report also provides information on participation in wildlife-related recreation in 2000, particularly of persons 6 to 15 years of age. The 2000 information is provided in Appendix C. Additional information about the scope and coverage of the Survey can be found in the Survey Background and Method section of this report. The remainder of this section defines important terms used in the Survey.

## Sportspersons



## Wildlife-Associated Recreation

Wildlife-associated recreation includes fishing, hunting, and wildlife-watching activities. These categories are not mutually exclusive because many individuals enjoyed fish and wildlife in several ways in 2001. Wildlife-associated recreation is reported in two major categories: (1) fishing and hunting and (2) wildlife watching (formerly nonconsumptive wildlife-related recreation). Wildlife watching includes observing, photographing, and feeding fish and wildlife.

## Fishing and Hunting

This Survey reports information about residents of the United States who fished or hunted in 2001, regardless of whether they were licensed. The fishing and hunting sections of this report are organized to report three groups: (1) sportspersons, (2) anglers, and (3) hunters.

## Sportspersons

Sportspersons are those who fished or hunted. Individuals who fished or hunted commercially in 2001 are reported as sportspersons only if they also fished or hunted for recreation. The sportspersons group is composed of the three subgroups in the diagram below: (1) those who fished and hunted, (2) those who only fished, and (3) those who only hunted. The total number of sportspersons is equal to the sum of people who only

fished, only hunted, and both hunted and fished. It is not the sum of all anglers and all hunters, because those people who both fished and hunted are included in both the angler and hunter population and would be incorrectly counted twice.

## Anglers

Anglers are sportspersons who only fished plus those who fished and hunted. Anglers include not only licensed hook-and-line anglers, but also those who have no license and those who use special methods such as fishing with spears. Three types of fishing are reported: (1) freshwater, excluding the Great Lakes, (2) Great Lakes, and (3) saltwater. Since many anglers participated in more than one type of fishing, the total number of anglers is less than the sum of the three types of fishing.

## Hunters

Hunters are sportspersons who only hunted plus those who hunted and fished. Hunters include not only licensed hunters using common hunting practices, but also those who have no license and those who engaged in hunting with a bow and arrow, muzzleloader, other primitive firearms, or a pistol or handgun. Four types of hunting are reported: (1) big game, (2) small game, (3) migratory bird, and (4) other animals. Since many hunters participated in more than one type of hunting, the sum of hunters for big game, small game, migratory bird, and other animals exceeds the total number of hunters.

**Wildlife-Watching Activities  
(formerly Nonconsumptive  
Wildlife-Related Recreation)**

Since 1980, the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation has included information on wildlife-watching activities in addition to fishing and hunting. However, the 1991, 1996, and 2001 Surveys, unlike the 1980 and 1985 Surveys, collected data only for those activities where the primary purpose was wildlife watching (observing, photographing, or feeding wildlife). The Survey uses a strict definition of wildlife watching. Participants must either take a "special interest" in wildlife around their homes or take a trip for the "primary purpose" of wildlife watching. Secondary wildlife-watching activities such as incidentally observing wildlife while

pleasure driving were included in the 1980 and 1985 Surveys but not in the succeeding ones.

Two types of wildlife-watching activity are reported: (1) nonresidential and (2) residential. Because some people participate in more than one type of wildlife-watching activity, the sum of participants in each type will be greater than the total number of wildlife watchers. The two types of wildlife-watching activities are defined below.

**Nonresidential (away from the home)**

This group included persons who took trips or outings of at least 1 mile for the primary purpose of observing, feeding, or photographing fish and wildlife. Trips to fish, hunt, or scout and trips to zoos,

circuses, aquariums, or museums were not considered wildlife-watching activities.

**Residential (around the home)**

This group included those whose activities are within 1 mile of home and involve one or more of the following: (1) closely observing or trying to identify birds or other wildlife; (2) photographing wildlife; (3) feeding birds or other wildlife on a regular basis; (4) maintaining natural areas of at least one-quarter acre where benefit to wildlife is the primary concern; (5) maintaining plantings (shrubs, agricultural crops, etc.) where benefit to wildlife is the primary concern; or (6) visiting public parks within 1 mile of home for the primary purpose of observing, feeding, or photographing wildlife.

# 2001 Georgia Summary

(Participants 16 years old and older)

## Activities in the United States by Georgia Residents

<b>Fishing</b>	
Anglers .....	<b>1,043,000</b>
Days of fishing .....	15,559,000
Average days per angler .....	.15
Total expenditures .....	\$612,414,000
Trip-related .....	\$312,750,000
Equipment and other .....	\$299,664,000
Average per angler .....	\$.587
Average trip expenditure per day .....	\$.20
Trip and equipment expenditures by Georgians out of state .....	\$132,883,000
<b>Hunting</b>	
Hunters .....	<b>377,000</b>
Days of hunting .....	7,882,000
Average days per hunter .....	.21
Total expenditures .....	\$505,894,000
Trip-related .....	\$197,532,000
Equipment and other .....	\$308,362,000
Average per hunter .....	\$1,343
Average trip expenditure per day .....	\$.25
Trip and equipment expenditures by Georgians out of state .....	\$40,064,000
<b>Wildlife Watching</b>	
Total wildlife-watching participants .....	<b>1,326,000</b>
Nonresidential .....	302,000
Residential .....	1,305,000
Total expenditures .....	\$334,589,000
Trip-related .....	\$174,269,000
Equipment and other .....	\$160,320,000
Average per participant .....	\$.252
Trip and equipment expenditures by Georgians out of state .....	\$105,437,000

## Activities in Georgia by U.S. Residents

<b>Fishing</b>	
Anglers .....	<b>1,086,000</b>
Days of fishing .....	13,757,000
Average days per angler .....	.13
Total expenditures .....	\$543,504,000
Trip-related .....	\$246,467,000
Equipment and other .....	\$297,037,000
Average per angler .....	\$.502
Average trip expenditure per day .....	\$.18
Trip and equipment expenditures by nonresidents in Georgia .....	\$85,269,000
<b>Hunting</b>	
Hunters .....	<b>417,000</b>
Days of hunting .....	7,973,000
Average days per hunter .....	.19
Total expenditures .....	\$503,677,000
Trip-related .....	\$191,531,000
Equipment and other .....	\$312,146,000
Average per hunter .....	\$1,149
Average trip expenditure per day .....	\$.24
Trip and equipment expenditures by nonresidents in Georgia .....	\$57,636,000
<b>Wildlife Watching</b>	
Total wildlife-watching participants .....	<b>1,494,000</b>
Nonresidential .....	411,000
Residential .....	1,305,000
Total expenditures .....	\$535,771,000
Trip-related .....	\$123,264,000
Equipment and other .....	\$412,506,000
Average per participant .....	\$.359
Trip and equipment expenditures by nonresidents in Georgia .....	\$278,470,000

# Wildlife-Associated Recreation

## Participation in Georgia

The 2001 Survey revealed that 2.2 million Georgia residents and nonresidents 16 years old and older fished, hunted, or wildlife watched in Georgia. Of the total number of participants, 1.1 million fished, 417 thousand hunted, and 1.5 million participated in wildlife-watching activities, including observing, feeding, and photographing wildlife. The sum of anglers, hunters, and wildlife watchers exceeds the total number of participants in wildlife-related recreation because many individuals engaged in more than one wildlife activity.

## Participation by 6- to 15-year-old Georgia Residents

The focus of this report is on the activity of participants 16 years old and older since they are the primary source of wildlife-associated expenditures. However, the activity of 6 to 15 year olds can be calculated using the screening data covering the year 2000. It is assumed for estimation purposes that the relative

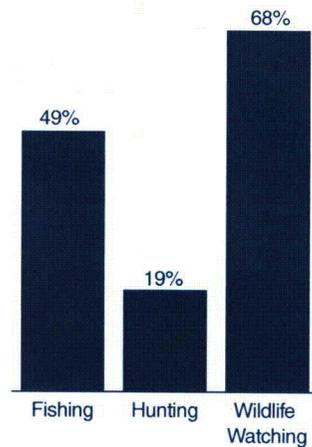
activity levels of 6- to 15-year-old participants and participants 16 years old and older remained the same from 2000 to 2001. Based on this assumption, in addition to the 1,043,000 resident anglers 16 years old and older in Georgia, there were 317,000 resident anglers 6 to 15 years old. Also, there were 377,000 16-year-old and older Georgians and 60,000 6- to 15-year-old Georgians who hunted. Finally, there were 1,326,000 Georgians 16 years old and older and 248,000 Georgians 6 to 15 years old who wildlife watched. Further information on 6 to 15 year olds is provided in Appendix C.

## Expenditures in Georgia

In 2001, state residents and nonresidents spent \$1.7 billion on wildlife recreation in Georgia. Of that total, trip-related expenditures were \$561 million and equipment purchases totaled \$909 million. The remaining \$194 million was spent on licenses, contributions, land ownership and leasing, and other items and services.

## Percent of Total Participation by Activity

(Total: 2.2 million participants)



## Participants in Wildlife-Associated Recreation in Georgia—2001

(U.S. residents 16 years old and older)

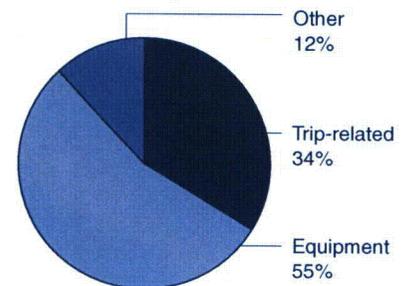
<b>Total</b> .....	<b>2.2 million</b>
<b>Sportspersons</b>	
<b>Total</b> .....	<b>1.2 million</b>
Anglers .....	1.1 million
Hunters .....	417 thousand
<b>Wildlife Watchers</b>	
<b>Total</b> .....	<b>1.5 million</b>
Residential .....	1.3 million
Nonresidential .....	411 thousand

Source: Tables 3, 24, 40.

Detail does not add to total because of multiple responses.

## Wildlife-Associated Recreation Expenditures in Georgia

(Total: \$1.7 billion)



# Sportspersons

In 2001, 1.2 million state resident and nonresident sportspersons 16 years old and older fished or hunted in Georgia. This group comprised 1.1 million anglers (88 percent of all sportspersons) and 417 thousand hunters (34 percent of all

sportspersons). Among the 1.2 million sportspersons who fished or hunted in the state, 819 thousand (66%) fished but did not hunt in Georgia. Another 150 thousand (12%) hunted but did not fish

there. The remaining 267 thousand (22%) fished and hunted in Georgia in 2001.

## Sportspersons' Participation in Georgia

(State residents and nonresidents 16 years old and older)

<b>Sportspersons (fished or hunted)</b> .....	<b>1.2 million</b>
<b>Anglers</b> .....	<b>1.1 million</b>
Fished only .....	819 thousand
Fished and hunted .....	267 thousand
<b>Hunters</b> .....	<b>417 thousand</b>
Hunted only .....	150 thousand
Hunted and fished .....	267 thousand

Source: Table 1.

Detail does not add to total because of multiple responses.

# Anglers

## Participants and Days of Fishing

In 2001, 1.1 million state residents and nonresidents 16 years old and older fished in Georgia. Of this total, 947 thousand anglers (87%) were state residents and 139 thousand anglers (13%) were nonresidents. Anglers fished a total of 13.8 million days in Georgia—an average of 13 days per angler. State residents fished 13.1 million days, 96 percent of all fishing days within Georgia compared to nonresidents who fished 613 thousand days—4 percent of all fishing days in the state.

There were more than 1 million Georgians 16 years old and older who fished in the United States in 2001. These anglers fished a total of 15.6 million days. Approximately 947 thousand resident anglers (91%) fished in Georgia. They spent 13.1 million days, 84 percent of their total fishing days, fishing in their resident state.

Some state residents fished in other states as well as in Georgia. In 2001, 302 thousand anglers fished in other states—29 percent of the resident angler total.

They fished 2.4 million days as nonresidents, representing 16 percent of all days fished by Georgia residents. For further details about fishing in Georgia, see Table 3.

### Anglers in Georgia

(State residents and nonresidents 16 years old and older)

<b>Anglers</b> .....	<b>1.1 million</b>
Resident .....	947 thousand
Nonresident .....	139 thousand
<b>Days of fishing</b> .....	<b>13.8 million</b>
Resident .....	13.1 million
Nonresident .....	613 thousand

Source: Table 3.

### In-State/Out-of-State

(State residents 16 years old and older)

<b>Georgia anglers</b> .....	<b>1.0 million</b>
In Georgia .....	947 thousand
In other states .....	302 thousand
<b>Days of fishing</b> .....	<b>15.6 million</b>
In Georgia .....	13.1 million
In other states .....	2.4 million

Source: Table 3.

Detail does not add to total because of multiple responses.

## Fishing Expenditures in Georgia

Anglers 16 years old and older spent nearly \$544 million on fishing expenses in Georgia in 2001. Trip-related expenditures including food and lodging, transportation, and other expenses totaled \$246 million—45 percent of all their fishing expenditures. They spent \$106 million on food and lodging and \$71 million on transportation. Other trip expenses such as equipment rental, bait, and cooking fuel totaled \$70 million. Each angler spent an average of \$236 on trip-related costs during 2001.

Anglers spent \$262 million on equipment in Georgia in 2001, 48 percent of all fishing expenditures. Fishing equipment (rods, reels, line, etc.) totaled \$105 million—40 percent of the equipment total. Auxiliary equipment expenditures (tents, special fishing clothes, etc.) and special equipment expenditures (boats, pickups, etc.) amounted to \$156 million, 60 percent of the equipment total. Special and auxiliary equipment are items that were purchased for fishing, but could be used in activities other than fishing.

The purchase of other items such as magazines, membership dues, licenses, permits, stamps, and land leasing and ownership amounted to \$35 million—6 percent of all fishing expenditures. For more details about fishing expenditures in Georgia, see Tables 19, 21-23.

### Fishing Expenditures in Georgia

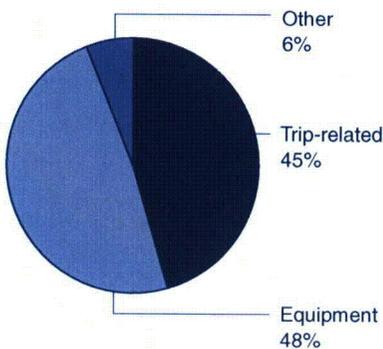
(State residents and nonresidents 16 years old and older)

<b>Total</b> .....	<b>\$544 million</b>
Trip-related .....	\$246 million
Equipment .....	\$262 million
Fishing .....	\$105 million
Auxiliary and special .....	\$156 million
Other .....	\$35 million

Source: Table 19.

### Fishing Expenditures in Georgia

(Total: \$544 million)



# Hunters

## Participants and Days of Hunting

In 2001, there were 417 thousand residents and nonresidents 16 years old and older who hunted in Georgia. Resident hunters numbered 355 thousand accounting for 85 percent of the hunters in Georgia. There were 62 thousand nonresidents who hunted in Georgia—15 percent of the State's hunters. Residents and nonresidents hunted 8.0 million days in 2001, an average of 19 days per hunter. Residents hunted on 7.3 million days in

Georgia or 92 percent of all hunting days, while nonresidents spent 633 thousand days hunting in Georgia, 8 percent of all hunting days.

There were 377 thousand Georgia residents 16 years old and older who hunted in the United States in 2001. Of the total 7.9 million days of hunting by state residents, 7.3 million days (93 percent of the total) were spent pursuing game within Georgia.

Some state residents hunted in other states as well as in Georgia. Altogether, 75 thousand Georgia hunters, 20 percent of the total, hunted as nonresidents in other states. Their 542 thousand days of hunting in other states represented 7 percent of all days Georgia residents spent hunting in 2001. For more information on hunting activities by Georgia residents, see Table 3.

### Hunters in Georgia

(State residents and nonresidents 16 years old and older)

<b>Hunters</b> .....	<b>417 thousand</b>
Resident .....	355 thousand
Nonresident .....	62 thousand
<b>Days of hunting</b> .....	<b>8.0 million</b>
Resident .....	7.3 million
Nonresident .....	633 thousand

Source: Table 3.

### In-State/Out-of-State

(State residents 16 years old and older)

<b>Georgia hunters</b> .....	<b>377 thousand</b>
In Georgia .....	355 thousand
In other states .....	75 thousand
<b>Days of hunting</b> .....	<b>7.9 million</b>
In Georgia .....	7.3 million
In other states .....	542 thousand

Source: Table 3.

Detail does not add to total because of multiple responses.

### Hunting Expenditures in Georgia

Hunters 16 years old and older spent \$504 million in Georgia in 2001. Trip-related expenses such as food and lodging, transportation, and other trip costs totaled \$192 million, 38 percent of their total expenditures. They spent \$93 million on food and lodging and \$45 million on transportation. Other expenses such as equipment rental totaled \$54 million for the year. The average trip-related expenditure per hunter was \$459.

Hunters spent \$200 million on equipment—40 percent of all hunting expenditures. Hunting equipment (guns, ammunition, etc.) totaled \$146 million and comprised 73 percent of all equipment costs. Hunters spent \$54 million on auxiliary equipment (tents, special hunting clothes, etc.) and special equipment (boats, pickups, etc.), accounting for 27 percent of total equipment expenditures for hunting. Special and auxiliary equipment are items

that were purchased for hunting but could be used in activities other than hunting.

The purchase of other items such as magazines, membership dues, licenses, permits, and land leasing and ownership cost hunters \$112 million—22 percent of all hunting expenditures. For more details on hunting expenditures in Georgia, see Tables 20-23.

### Hunting Expenditures in Georgia

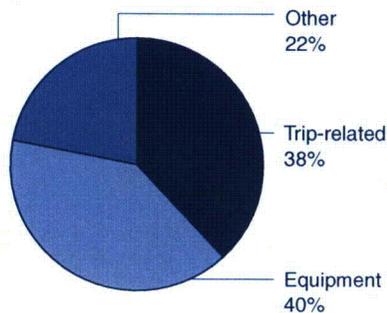
(State residents and nonresidents 16 years old and older)

<b>Total</b> .....	<b>\$504 million</b>
Trip-related .....	\$192 million
Equipment .....	\$200 million
Hunting .....	\$146 million
Auxiliary and special .....	\$54 million
Other .....	\$112 million

Source: Table 20.

### Hunting Expenditures in Georgia

(Total: \$504 million)



# Wildlife-Watching Activities

## Participants and Days of Activity

In 2001, 1.5 million U.S. residents 16 years old and older fed, observed, or photographed wildlife in Georgia.

Approximately 87 percent—1.3 million of the wildlife watchers—enjoyed their activities close to home and are called "residential" participants. Those persons who enjoyed wildlife at least 1 mile from

home are called "nonresidential" participants. People participating in nonresidential activities in Georgia in 2001 numbered 411 thousand—28 percent of all wildlife watchers in Georgia. Of the 411 thousand, 234 thousand were state residents and 178 thousand were nonresidents.

### Wildlife-Watching Participants in Georgia

(State residents and nonresidents 16 years old and older)

<b>Total</b> .....	<b>1.5 million</b>	<b>100%</b>
Residential .....	1.3 million	87%
Nonresidential .....	411 thousand	28%

Source: Table 24.

Detail does not add to total because of multiple responses.

### Nonresidential (away from home) Wildlife-Watching Participation in Georgia

(State residents and nonresidents 16 years old and older)

<b>Participants, total</b> .....	<b>411 thousand</b>
Observe wildlife .....	400 thousand
Photograph wildlife .....	161 thousand
Feed wildlife .....	108 thousand
<b>Days, total</b> .....	<b>4.9 million</b>
Observe wildlife .....	3.9 million
Photograph wildlife .....	687 thousand
Feed wildlife .....	573 thousand

Source: Table 25.

Detail does not add to total because of multiple responses.

### Residential (around the home) Wildlife-Watching Participation in Georgia

(State residents 16 years old and older)

<b>Total</b> .....	<b>1.3 million</b>
Feed wildlife .....	1.2 million
Observe wildlife .....	908 thousand
Photograph wildlife .....	244 thousand
Maintain natural areas .....	163 thousand
Visit public areas .....	119 thousand
Maintain plantings .....	116 thousand

Source: Table 28.

Detail does not add to total because of multiple responses.

Georgians 16 years old and older who enjoyed nonresidential wildlife watching within their state totaled 234 thousand. Of this group, 222 thousand participants observed wildlife, 94 thousand fed wildlife, and 72 thousand photographed wildlife. Since some individuals engaged in more than one of the three nonresidential activities during the year, the sum of wildlife observers, feeders, and photographers exceeds the total number of nonresidential participants.

Georgians spent nearly 4.2 million days engaged in nonresidential wildlife-watching activities in their state. During 2001, they spent 3.4 million days observing wildlife, 543 thousand days photographing wildlife, and 541 thousand days feeding wildlife. The sum of days observing, feeding, and photographing wildlife exceeds the total days of wildlife-watching activity because individuals may have engaged in more than one activity on some days. For further details about nonresidential activities, see Table 25.

Georgia residents also took an active interest in wildlife around their homes. In 2001, 1.3 million state residents enjoyed observing, feeding, and photographing wildlife within 1 mile of their homes. Among this residential group, 1.2 million fed wildlife, 908 thousand observed wildlife, and 244 thousand photographed wildlife around their homes. Another 163 thousand participants maintained natural areas of one-quarter acre or more for wildlife; and 119 thousand residential participants visited public parks within a mile of home; and 116 thousand participants maintained plantings for the benefit of wildlife. Adding the participants in these six activities results in a sum that exceeds the total number of residential participants because many people participated in more than one type of residential activity. For further details about Georgia residents participating in residential wildlife-watching activities, see Table 28.

### Wild Bird Observers

Bird watching attracted many wildlife enthusiasts in Georgia. In 2001, 1.1 million people observed birds around the home and on trips. A large majority, 81 percent (863 thousand), observed wild birds around the home while 35 percent (367 thousand) took trips away from home to watch birds.

People bird watching in Georgia varied in their ability to identify different bird species. Within Georgia, 819 thousand of these 1.1 million birders (77 percent) could identify 1 to 20 different types of birds; 123 thousand birders (12 percent) could identify 21 to 40 types of birds; and 64 thousand birders (6 percent) could identify 41 or more types of birds. For further details about birding in Georgia, see Tables 30 and 31.

### Wildlife-Watching Expenditures in Georgia

Participants 16 years old and older spent \$536 million on wildlife-watching activities in Georgia in 2001. Trip-related expenditures, including food and lodging (\$76 million), transportation (\$33 million), and other trip expenses such as equipment rental (\$14 million) amounted to \$123 million. This summation comprised 23 percent of all wildlife-watching expenditures by participants. The average trip-related expenditure for nonresidential participants was \$300 per person in 2001.

Wildlife-watching participants spent nearly \$365 million on equipment—68 percent of all their expenditures. Specifically, wildlife-watching equipment (binoculars, special clothing, etc.) totaled

\$133 million, 36 percent of the equipment total. Auxiliary equipment expenditures (tents, backpacking equipment, etc.) and special equipment expenditures (campers, trucks, etc.) amounted to \$232 million—64 percent of all equipment costs. Special and auxiliary equipment are items that were purchased for wildlife-watching recreation but can be used in activities other than wildlife-watching activities.

Other items purchased by wildlife-watching participants such as magazines, membership dues, and contributions, land leasing and ownership, and plantings totaled \$48 million—9 percent of all wildlife-watching expenditures. For more details about wildlife-watching expenditures in Georgia, see Table 33.

#### Wild Bird Observers in Georgia

(State residents and nonresidents 16 years old and older)

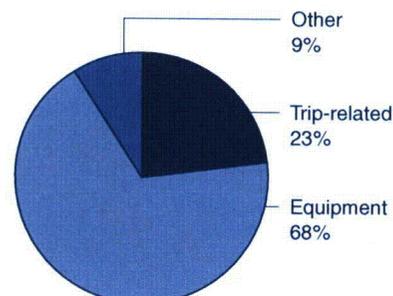
<b>Participants, total</b> .....	<b>1.1 million</b>	<b>100%</b>
Residential (around the home) .....	863 thousand	81%
Nonresidential (away from home) ....	367 thousand	35%
<b>Days, total</b> .....	<b>93.5 million</b>	<b>100%</b>
Residential (around the home) .....	91.0 million	97%
Nonresidential (away from home) ....	2.9 million	3%

Source: Table 30.

Detail does not add to total because of multiple responses.

#### Wildlife-Watching Expenditures in Georgia

(Total: \$536 million)



#### Wildlife-Watching Expenditures in Georgia

(State residents and nonresidents 16 years old and older)

<b>Total</b> .....	<b>\$536 million</b>
Trip-related .....	\$123 million
Equipment .....	\$365 million
Wildlife-watching .....	\$133 million
Auxiliary and special .....	\$232 million
Other .....	\$48 million

Source: Table 33.

# 1991-2001 Survey Comparisons

Comparing the estimates from the 1991, 1996, and 2001 National Surveys provides a picture of wildlife-related recreation in the 1990s and early 2000s in Georgia. Only the most general recreation comparisons are presented here.

The best way to compare estimates from surveys is to compare the confidence intervals around the estimates—not to compare the estimates themselves. A 90-percent confidence interval around an estimate gives the range of estimates that

90 percent of all possible representative samples would supply. If the 90-percent confidence intervals of two survey's estimates overlap, it is not possible to say the two estimates are statistically different at the 10 percent level of significance.

The state resident estimates cover the participation and expenditure activity of Georgia residents anywhere in the United States. The in-state estimates cover the participation, day, and expenditure activity of U.S. residents in Georgia.

The expenditure estimates were made comparable by adjusting the estimates for inflation—all dollar estimates are in 2001 dollars. Also, expenditure items that were not common to each survey were not included in the comparisons. Therefore, expenditure estimates used in the comparisons may not match the estimates presented elsewhere in this report.

## Georgia 1991 and 2001 Comparison

	1991	2001	Percent change
<b>Fishing</b> (Numbers in thousands)			
Anglers in-state .....	1,106	1,086	*
Days in-state .....	15,854	13,757	*
In-state trip-related expenditures .....	\$330,307	\$245,288	*
State resident anglers .....	987	1,043	*
Total expenditures by state residents .....	\$694,900	\$611,235	*
<b>Hunting</b> (Numbers in thousands)			
Hunters in-state .....	412	417	*
Days in-state .....	5,905	7,973	*
In-state trip-related expenditures .....	\$137,942	\$188,684	*
State resident hunters .....	336	377	*
Total expenditures by state residents .....	\$358,874	\$503,047	*
<b>Nonresidential Wildlife Watching</b> (Numbers in thousands)			
Participants in-state .....	551	411	*
Days in-state .....	4,536	4,868	*
State resident participants .....	400	302	*
<b>Residential Wildlife Watching</b> (Numbers in thousands)			
Total participants .....	1,730	1,305	-25
Observers .....	1,235	908	-26
Feeders .....	1,594	1,204	-24
<b>Wildlife-Watching Expenditures</b> (Numbers in thousands)			
Trip-related expenditures by state residents .....	\$130,503	\$157,489	*
Total expenditures by state residents .....	\$247,073	\$295,049	*

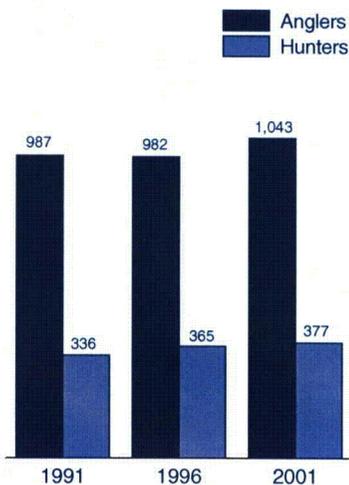
\*No significant difference at the 0.10 level of significance.

## Georgia 1996 and 2001 Comparison

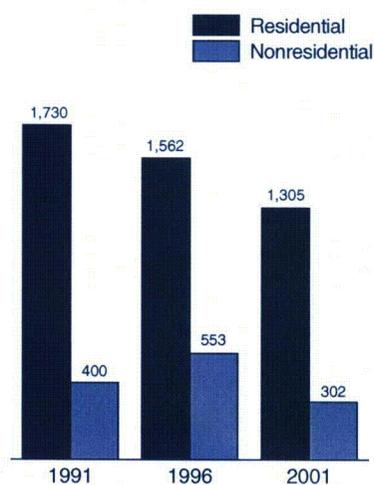
	1996	2001	Percent change
<b>Fishing</b>			
(Numbers in thousands)			
Anglers in-state .....	1,088	1,086	*
Days in-state .....	15,171	13,757	*
In-state trip-related expenditures .....	\$348,211	\$245,288	*
State resident anglers .....	982	1,043	*
Total expenditures by state residents .....	\$1,367,724	\$611,235	-55
<b>Hunting</b>			
(Numbers in thousands)			
Hunters in-state .....	403	417	*
Days in-state .....	6,993	7,973	*
In-state trip-related expenditures .....	\$117,057	\$188,684	*
State resident hunters .....	365	377	*
Total expenditures by state residents .....	\$966,612	\$503,047	*
<b>Nonresidential Wildlife Watching</b>			
(Numbers in thousands)			
Participants in-state .....	639	411	*
Days in-state .....	5,108	4,868	*
State resident participants .....	553	302	-45
<b>Residential Wildlife Watching</b>			
(Numbers in thousands)			
Total participants .....	1,562	1,305	-16
Observers .....	1,071	908	*
Feeders .....	1,452	1,204	-17
<b>Wildlife-Watching Expenditures</b>			
(Numbers in thousands)			
Trip-related expenditures by state residents .....	\$223,257	\$157,489	*
Total expenditures by state residents .....	\$599,233	\$295,049	-51

\*No significant difference at the 0.10 level of significance.

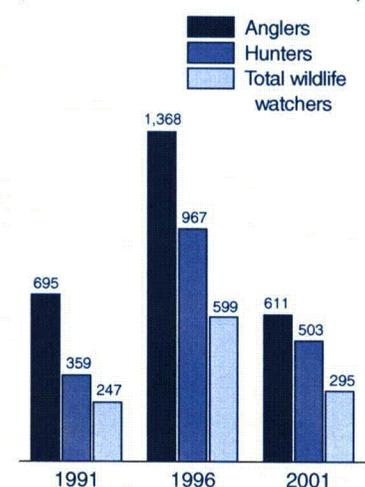
**Number of Georgia Resident Hunters and Anglers: 1991-2001**  
(Thousands)



**Number of Georgia Resident Wildlife Watchers: 1991-2001**  
(Thousands)



**Total Expenditures by Georgia Residents: 1991-2001**  
(Millions. In constant 2001 dollars)



# Guide to Statistical Tables

## Purpose and Coverage of Tables

The statistical tables of this report were designed to meet a wide range of needs for those interested in wildlife-related recreation. Special terms used in these tables are defined in Appendix A.

The tables are based on responses to the 2001 Survey which was designed to collect data about participation in wildlife-related recreation. To have taken part in the Survey, a respondent must have been a U.S. resident (a resident of one of the 50 states or the District of Columbia). No one residing outside the United States (including U.S. citizens) was eligible for interviewing. Therefore, reported state and national totals do not include participation by those who were not U.S. residents or who were residing outside the United States.

## Comparability With Previous Surveys

The numbers reported can be compared with those in the 1991 and 1996 Survey Reports. The methodology used in 2001 was similar to that used in 1996 and 1991. These results should not be directly compared to results from surveys earlier than 1991 since there were major changes in methodology. These changes were made to improve accuracy in the information provided.

## Coverage of an Individual Table

Since the Survey covers many activities in various places by participants of different ages, all table titles, headnotes, stubs, and footnotes are designed to identify and articulate each item being reported in the table. For example, the title of Table 2 shows that data about anglers and hunters, their days of participation, and their number of trips are being reported by type of activity. By contrast, the title of Table 7 indicates that it contains data on freshwater anglers and the days they fished for different species of fish.

## Percentages Reported in the Tables

Percentages are reported in the tables for the convenience of the user. When exclusive groups are being reported, the base of a percentage is apparent from its context because the percents add to 100 percent (plus or minus a rounding error). For example, if a table reports the number of trips taken by big game hunters (57 percent), those taken by small game hunters (23 percent), those taken by migratory bird hunters (12 percent), and those taken by sportspersons hunting other animals (8 percent), then these percentages would total 100 percent because they are exclusive categories.

Percents should not add to 100 when nonexclusive groups are being reported. Using Table 2 as an example, note that adding the percentages associated with total number of big game hunters, total small game hunters, total migratory bird hunters, and total hunters of other animals will not necessarily yield 100 percent because respondents could hunt for more than one type of game.

When the base of the percentage is not apparent in context, it is identified in a footnote. For example, Table 12 reports 3 percentages with different bases: one for the number of hunters, one for the number of trips, and one for days of hunting. Footnotes are used to clarify the bases of the reported percentages.

## Footnotes to the Tables

Footnotes are used to clarify the information or items that are being reported in a table. Symbols in the body of a table indicate important footnotes. These symbols are used in the tables to refer to the same footnote each time they appear:

- \* Estimate based on a small sample size.
- ... Sample size too small to report data reliably.
- W Less than .5 dollars.
- Z Less than .5 percent.
- X Not applicable.
- NA Not available.

Estimates based upon fewer than 10 responses are regarded as being based on a sample size that is too small for reliable reporting. An estimate based upon at least 10 but fewer than 30 responses is treated as an estimate based on a small sample size. Other footnotes appear, as necessary, to qualify or clarify the estimates reported in the tables. In addition, these two important footnotes appear frequently:

- Detail does not add to total because of multiple responses.
- Detail does not add to total because of multiple responses and nonresponse.

"Multiple responses" is a term used to reflect the fact that individuals or their characteristics fall into more than one category. Using Table 2 as an example, those who fished in saltwater and freshwater appear in both of these totals. Yet each angler is represented only once in the "Total, all fishing" row. Similarly, in Table 12 those who hunt for big game and small game are counted only once as a hunter in the "Total, all hunting" row. Therefore, totals may be smaller than the sum of subcategories when multiple responses exist.

"Nonresponse" exists because the survey questions were answered voluntarily and some respondents did not or could not answer all the questions. The effect of nonresponses is illustrated in Table 18 where the total for hunting expenditures may be greater than the sum for the different types of hunting expenditures. This occurs because some respondents did not specify the type of hunting as the primary purpose of the purchase. As a result, it is known that the expenditures were for hunting, but it is not known whether they were primarily for a particular type of hunting. In this case, totals are greater than the sum of subcategories when nonresponses have occurred.

**Table 1. Fishing and Hunting in Georgia by Resident and Nonresident Sportspersons: 2001**

(Population 16 years old and older. Numbers in thousands)

Sportspersons	Total, state residents and nonresidents		Residents		Nonresidents	
	Number	Percent of sportspersons	Number	Percent of resident sportspersons	Number	Percent of nonresident sportspersons
<b>Total sportspersons (fished or hunted)</b> .....	<b>1,236</b>	<b>100</b>	<b>1,040</b>	<b>100</b>	<b>196</b>	<b>100</b>
<b>Total anglers</b> .....	<b>1,086</b>	<b>88</b>	<b>947</b>	<b>91</b>	<b>139</b>	<b>71</b>
Fished only .....	819	66	685	66	134	68
Fished and hunted .....	267	22	262	25	...	...
<b>Total hunters</b> .....	<b>417</b>	<b>34</b>	<b>355</b>	<b>34</b>	<b>*62</b>	<b>*32</b>
Hunted only .....	150	12	93	9	*57	*29
Hunted and fished .....	267	22	262	25	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses.

**Table 2. Anglers and Hunters, Days of Participation, and Trips in Georgia by Type of Fishing and Hunting: 2001**

(Population 16 years old and older. Numbers in thousands)

Type of fishing and hunting	Participants		Days of participation		Trips	
	Number	Percent	Number	Percent	Number	Percent
<b>FISHING</b>						
<b>Total, all fishing</b> .....	<b>1,086</b>	<b>100</b>	<b>13,757</b>	<b>100</b>	<b>11,457</b>	<b>100</b>
Total, all freshwater .....	1,017	94	13,076	95	11,038	96
Freshwater, except Great Lakes .....	1,017	94	13,076	95	11,038	96
Great Lakes .....	...	...	...	...	...	...
Saltwater .....	*98	*9	*467	*3	*419	*4
<b>HUNTING</b>						
<b>Total, all hunting</b> .....	<b>417</b>	<b>100</b>	<b>7,973</b>	<b>100</b>	<b>7,493</b>	<b>100</b>
Big game .....	342	82	6,131	77	4,816	64
Small game .....	135	32	1,476	19	1,412	19
Migratory bird .....	*86	*21	*474	*6	*451	*6
Other animals .....	*45	*11	*861	*11	*813	*11

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 3. Anglers and Hunters, Trips, and Days of Participation: 2001**

(Population 16 years old and older. Numbers in thousands)

Anglers and hunters, trips, and days of participation	Activity in Georgia						Activity by Georgia residents in United States					
	Total, state residents and nonresidents		State residents		Nonresidents		Total, in state of residence and in other states		In state of residence		In other states	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
<b>FISHING</b>												
Total anglers.....	1,086	100	947	87	139	13	1,043	100	947	91	302	29
Total trips.....	11,457	100	11,065	97	392	3	12,689	100	11,065	87	1,624	13
Total days of fishing.....	13,757	100	13,145	96	613	4	15,559	100	13,145	84	2,414	16
Average days of fishing.....	13	(X)	14	(X)	4	(X)	15	(X)	14	(X)	8	(X)
<b>HUNTING</b>												
Total hunters.....	417	100	355	85	*62	*15	377	100	355	94	*75	*20
Total trips.....	7,493	100	6,959	93	*534	*7	7,319	100	6,959	95	*360	*5
Total days of hunting.....	7,973	100	7,339	92	*633	*8	7,882	100	7,339	93	*542	*7
Average days of hunting.....	19	(X)	21	(X)	*10	(X)	21	(X)	21	(X)	*7	(X)

(X) Not applicable. \* Estimate based on a small sample size.

Note: Detail does not add to total because of multiple responses.

**Table 4. Georgia Resident Anglers and Hunters by Place Fished or Hunted: 2001**

(State population 16 years old and older. Numbers in thousands)

Place fished or hunted	Anglers		Hunters	
	Number	Percent	Number	Percent
<b>Total, all places.....</b>	<b>1,043</b>	<b>100</b>	<b>377</b>	<b>100</b>
In-state only.....	737	71	301	80
In-state and other states.....	210	20	*54	*14
In other states only.....	*93	*9	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail may not add to total because of multiple responses and nonresponse.

**Table 5. Georgia Resident Anglers and Hunters, Days of Participation, and Trips in the United States by Type of Fishing and Hunting: 2001**

(State population 16 years old and older. Numbers in thousands)

Type of fishing and hunting	Participants		Days of participation		Trips	
	Number	Percent	Number	Percent	Number	Percent
<b>FISHING</b>						
<b>Total, all fishing</b> .....	<b>1,043</b>	<b>100</b>	<b>15,559</b>	<b>100</b>	<b>12,689</b>	<b>100</b>
Total, all freshwater .....	953	91	14,523	93	11,933	94
Freshwater, except Great Lakes .....	953	91	14,258	92	11,933	94
Great Lakes .....	...	...	...	...	...	...
Saltwater .....	245	23	1,076	7	756	6
<b>HUNTING</b>						
<b>Total, all hunting</b> .....	<b>377</b>	<b>100</b>	<b>7,882</b>	<b>100</b>	<b>7,319</b>	<b>100</b>
Big game .....	309	82	5,834	74	4,527	62
Small game .....	138	37	1,656	21	1,514	21
Migratory bird .....	*80	*21	*555	*7	*475	*6
Other animals .....	*42	*11	*875	*11	*802	*11

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 6. Freshwater Anglers, Trips, Days of Fishing, and Type of Water Fished: 2001**

(Population 16 years old and older. Numbers in thousands)

Anglers, trips, and days of fishing	Activity in Georgia					
	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
<b>Total anglers</b> .....	<b>1,017</b>	<b>100</b>	<b>892</b>	<b>88</b>	<b>125</b>	<b>12</b>
<b>Total trips</b> .....	<b>11,038</b>	<b>100</b>	<b>10,697</b>	<b>97</b>	<b>341</b>	<b>3</b>
<b>Total days of fishing</b> .....	<b>13,076</b>	<b>100</b>	<b>12,555</b>	<b>96</b>	<b>521</b>	<b>4</b>
Average days of fishing .....	13	(X)	14	(X)	4	(X)
<b>ANGLERS</b>						
<b>Total, all types of water</b> .....	<b>1,017</b>	<b>100</b>	<b>892</b>	<b>88</b>	<b>125</b>	<b>12</b>
Ponds, lakes or reservoirs .....	884	100	787	89	98	11
Rivers or streams .....	373	100	333	89	*40	*11
<b>DAYS</b>						
<b>Total, all types of water</b> .....	<b>13,076</b>	<b>100</b>	<b>12,555</b>	<b>96</b>	<b>521</b>	<b>4</b>
Ponds, lakes or reservoirs .....	9,761	100	9,336	96	425	4
Rivers or streams .....	3,526	100	3,401	96	*125	*4

\* Estimate based on a small sample size. (X) Not applicable.

Note: Detail does not add to total because of multiple responses.

**Table 7. Freshwater Anglers and Days of Fishing in Georgia by Type of Fish: 2001**

(Population 16 years old and older. Numbers in thousands)

Anglers and days of fishing	Activity in Georgia					
	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
<b>ANGLERS</b>						
<b>Total, all types of fish</b> .....	<b>1,017</b>	<b>100</b>	<b>892</b>	<b>88</b>	<b>125</b>	<b>12</b>
Crappie .....	301	100	267	89	*35	*11
Panfish .....	333	100	307	92	...	...
White bass, striped bass, striped bass hybrids .....	302	100	272	90	*30	*10
Black bass .....	389	100	344	89	*45	*11
Catfish, bullheads .....	467	100	435	93	*33	*7
Walleye, sauger .....	...	...	...	...	...	...
Northern pike, pickerel, muskie, muskie hybrids .....	...	...	...	...	...	...
Steelhead .....	...	...	...	...	...	...
Trout .....	108	100	*87	*80	...	...
Salmon .....	...	...	...	...	...	...
Anything <sup>1</sup> .....	209	100	179	86	...	...
Other freshwater fish .....	*87	*100	*87	*100	...	...
<b>DAYS</b>						
<b>Total, all types of fish</b> .....	<b>13,076</b>	<b>100</b>	<b>12,555</b>	<b>96</b>	<b>521</b>	<b>4</b>
Crappie .....	3,705	100	3,522	95	*182	*5
Panfish .....	3,643	100	3,488	96	...	...
White bass, striped bass, striped bass hybrids .....	3,213	100	3,067	95	*146	*5
Black bass .....	4,434	100	4,232	95	*202	*5
Catfish, bullheads .....	5,606	100	5,492	98	*115	*2
Walleye, sauger .....	...	...	...	...	...	...
Northern pike, pickerel, muskie, muskie hybrids .....	...	...	...	...	...	...
Steelhead .....	...	...	...	...	...	...
Trout .....	962	100	*903	*94	...	...
Salmon .....	...	...	...	...	...	...
Anything <sup>1</sup> .....	1,710	100	1,648	96	...	...
Other freshwater fish .....	*785	*100	*785	*100	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Respondent fished for no specific species and identified "Anything" from a list of categories of fish.

Note: Detail does not add to total because of multiple responses.

**Table 8. Great Lakes Anglers, Trips, and Days of Fishing in Georgia: 2001**

This table does not apply to this state.

**Table 9. Great Lakes Anglers and Days of Fishing in Georgia by Type of Fish: 2001**

This table does not apply to this state.

**Table 10. Saltwater Anglers, Trips, and Days of Fishing in Georgia: 2001**

(Population 16 years old and older. Numbers in thousands)

Anglers, trips, and days of fishing	Activity in Georgia					
	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
Total anglers .....	*98	*100	*71	*73	...	...
Total trips .....	*419	*100	*368	*88	...	...
Total days .....	*467	*100	*388	*83	...	...
Average days of fishing .....	*5	(X)	*5	(X)	...	(X)

\* Estimate based on a small sample size. ... Sample size too small to report data reliably. (X) Not applicable.

Note: Detail does not add to total because of multiple responses.

**Table 11. Saltwater Anglers and Days of Fishing in Georgia by Type of Fish: 2001**

(Population 16 years old and older. Numbers in thousands)

Anglers and days of fishing	Activity in Georgia					
	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
<b>ANGLERS</b>						
<b>Total, all types of fish .....</b>	<b>*98</b>	<b>*100</b>	<b>*71</b>	<b>*73</b>	...	...
Salmon .....	...	...	...	...	...	...
Striped bass .....	...	...	...	...	...	...
Bluefish .....	...	...	...	...	...	...
Flatfish (flounder, halibut) .....	...	...	...	...	...	...
Red drum (redfish) .....	...	...	...	...	...	...
Seatrout (weakfish) .....	...	...	...	...	...	...
Mackerel .....	...	...	...	...	...	...
Shellfish .....	...	...	...	...	...	...
Anything <sup>1</sup> .....	*35	*100	...	...	...	...
Other saltwater fish .....	...	...	...	...	...	...
<b>DAYS</b>						
<b>Total, all types of fish .....</b>	<b>*467</b>	<b>*100</b>	<b>*388</b>	<b>*83</b>	...	...
Salmon .....	...	...	...	...	...	...
Striped bass .....	...	...	...	...	...	...
Bluefish .....	...	...	...	...	...	...
Flatfish (flounder, halibut) .....	...	...	...	...	...	...
Red drum (redfish) .....	...	...	...	...	...	...
Seatrout (weakfish) .....	...	...	...	...	...	...
Mackerel .....	...	...	...	...	...	...
Shellfish .....	...	...	...	...	...	...
Anything <sup>1</sup> .....	*115	*100	...	...	...	...
Other saltwater fish .....	...	...	...	...	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Respondent fished for no specific species and identified "Anything" from a list of categories of fish.

Note: Detail does not add to total because of multiple responses.

**Table 12. Hunters, Trips, and Days of Hunting in Georgia by Type of Hunting: 2001**

(Population 16 years old and older. Numbers in thousands)

Hunters, trips, and days of hunting	Activity in Georgia					
	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
<b>HUNTERS</b>						
<b>Total, all hunting</b> .....	<b>417</b>	<b>100</b>	<b>355</b>	<b>85</b>	<b>*62</b>	<b>*15</b>
Big game .....	342	100	290	85	*51	*15
Small game .....	135	100	128	95	...	...
Migratory bird .....	*86	*100	*80	*93	...	...
Other animals .....	*45	*100	*39	*87	...	...
<b>TRIPS</b>						
<b>Total, all hunting</b> .....	<b>7,493</b>	<b>100</b>	<b>6,959</b>	<b>93</b>	<b>*534</b>	<b>*7</b>
Big game .....	4,816	100	4,417	92	*399	*8
Small game .....	1,412	100	1,340	95	...	...
Migratory bird .....	*451	*100	*432	*96	...	...
Other animals .....	*813	*100	*770	*95	...	...
<b>DAYS</b>						
<b>Total, all hunting</b> .....	<b>7,973</b>	<b>100</b>	<b>7,339</b>	<b>92</b>	<b>*633</b>	<b>*8</b>
Big game .....	6,131	100	5,554	91	*576	*9
Small game .....	1,476	100	1,400	95	...	...
Migratory bird .....	*474	*100	*455	*96	...	...
Other animals .....	*861	*100	*805	*93	...	...

\* Estimate based on a small sample size.   ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses.

**Table 13. Hunters and Days of Hunting in Georgia by Type of Game: 2001**

(Population 16 years old and older. Numbers in thousands)

Type of game	Hunters, state residents and nonresidents		Days of hunting	
	Number	Percent	Number	Percent
<b>Total, all types of game</b> .....	<b>417</b>	<b>100</b>	<b>7,973</b>	<b>100</b>
<b>Big game, total</b> .....	<b>342</b>	<b>82</b>	<b>6,131</b>	<b>77</b>
Deer.....	332	80	5,769	72
Elk.....	...	...	...	...
Bear.....	...	...	...	...
Wild turkey.....	*83	*20	*774	*10
Other big game.....	...	...	...	...
<b>Small game, total</b> .....	<b>135</b>	<b>32</b>	<b>1,476</b>	<b>19</b>
Rabbit, hare.....	*55	*13	*499	*6
Quail.....	*47	*11	*501	*6
Grouse/prairie chicken.....	...	...	...	...
Squirrel.....	*80	*19	*833	*10
Pheasant.....	...	...	...	...
Other small game.....	...	...	...	...
<b>Migratory birds, total</b> .....	<b>*86</b>	<b>*21</b>	<b>*474</b>	<b>*6</b>
Geese.....	...	...	...	...
Duck.....	...	...	...	...
Dove.....	*75	*18	*383	*5
Other migratory bird.....	...	...	...	...
<b>Other animals, total</b> <sup>1</sup> .....	<b>*45</b>	<b>*11</b>	<b>*861</b>	<b>*11</b>

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Includes groundhog, raccoon, fox, coyote, crow, prairie dog, etc.

Note: Detail does not add to total because of multiple responses.

**Table 14. Hunters and Days of Hunting in Georgia by Type of Land: 2001**

(Population 16 years old and older. Numbers in thousands)

Hunters and days of hunting	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
<b>HUNTERS</b>						
<b>Total, all types of land</b> .....	<b>417</b>	<b>100</b>	<b>355</b>	<b>100</b>	<b>*62</b>	<b>*100</b>
<b>Public land, total</b> .....	<b>*85</b>	<b>*20</b>	<b>*78</b>	<b>*22</b>	...	...
Public land only.....	...	...	...	...	...	...
Public and private land.....	*76	*18	*68	*19	...	...
<b>Private land, total</b> .....	<b>373</b>	<b>90</b>	<b>317</b>	<b>89</b>	<b>*56</b>	<b>*91</b>
Private land only.....	298	71	248	70	*49	*80
Private and public land.....	*76	*18	*68	*19	...	...
<b>DAYS</b>						
<b>Total, all types of land</b> .....	<b>7,973</b>	<b>100</b>	<b>7,339</b>	<b>100</b>	<b>*633</b>	<b>*100</b>
Public land <sup>1</sup> .....	*927	*12	*874	*12	...	...
Private land <sup>2</sup> .....	7,446	93	6,821	93	*625	*99

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Days of hunting on public land includes both days spent solely on public land and those spent on public and private land.

<sup>2</sup> Days of hunting on private land includes both days spent solely on private land and those spent on private and public land.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 15. Selected Characteristics of Georgia Resident Anglers and Hunters: 2001**

(State population 16 years old and older. Numbers in thousands)

Characteristic	Population		Sportspersons (fished or hunted)			Anglers			Hunters		
	Number	Percent	Number	Percent who participated	Percent of sportspersons	Number	Percent who participated	Percent of anglers	Number	Percent who participated	Percent of hunters
<b>Total persons</b> .....	<b>6,096</b>	<b>100</b>	<b>1,136</b>	<b>19</b>	<b>100</b>	<b>1,043</b>	<b>17</b>	<b>100</b>	<b>377</b>	<b>6</b>	<b>100</b>
<b>Population Density of Residence</b>											
Urban.....	3,300	54	391	12	34	369	11	35	*78	*2	*21
Rural.....	2,796	46	745	27	66	674	24	65	298	11	79
<b>Population Size of Residence</b>											
Metropolitan statistical area (MSA)	4,150	68	667	16	59	617	15	59	185	4	49
1,000,000 or more.....	3,032	50	457	15	40	423	14	41	124	4	33
250,000 to 999,999.....	1,117	18	210	19	19	194	17	19	*62	*6	*16
50,000 to 249,999.....	...	...	...	...	...	...	...	...	...	...	...
Outside MSA.....	1,947	32	468	24	41	426	22	41	191	10	51
<b>Sex</b>											
Male.....	2,855	47	854	30	75	774	27	74	336	12	89
Female.....	3,241	53	282	9	25	269	8	26	*41	*1	*11
<b>Age</b>											
16 to 17 years.....	242	4	*46	*19	*4	*39	*16	*4	...	...	...
18 to 24 years.....	518	8	*77	*15	*7	*70	*14	*7	...	...	...
25 to 34 years.....	1,181	19	202	17	18	177	15	17	*76	*6	*20
35 to 44 years.....	1,303	21	305	23	27	283	22	27	105	8	28
45 to 54 years.....	1,243	20	228	18	20	210	17	20	*65	*5	*17
55 to 64 years.....	724	12	135	19	12	123	17	12	*52	*7	*14
65 years and older.....	886	15	143	16	13	140	16	13	...	...	...
<b>Ethnicity</b>											
Hispanic.....	214	4	...	...	...	...	...	...	...	...	...
Non-Hispanic.....	5,882	96	1,129	19	99	1,037	18	99	374	6	99
<b>Race</b>											
White.....	4,338	71	956	22	84	871	20	83	344	8	91
Black.....	1,620	27	172	11	15	166	10	16	*33	*2	*9
All others.....	138	2	...	...	...	...	...	...	...	...	...
<b>Annual Household Income</b>											
Under \$10,000.....	437	7	*62	*14	*5	*51	*12	*5	...	...	...
\$10,000 to \$19,999.....	455	7	*68	*15	*6	*61	*13	*6	*33	*7	*9
\$20,000 to \$29,999.....	701	12	104	15	9	104	15	10	*31	*4	*8
\$30,000 to \$39,999.....	597	10	135	23	12	123	21	12	*40	*7	*11
\$40,000 to \$49,999.....	578	9	*91	*16	*8	*81	*14	*8	*41	*7	*11
\$50,000 to \$74,999.....	692	11	175	25	15	159	23	15	*76	*11	*20
\$75,000 to \$99,999.....	478	8	138	29	12	132	28	13	...	...	...
\$100,000 or more.....	402	7	154	38	14	142	35	14	*31	*8	*8
Not reported.....	1,755	29	210	12	18	189	11	18	*89	*5	*24
<b>Education</b>											
11 years or less.....	1,098	18	219	20	19	191	17	18	*92	*8	*24
12 years.....	2,106	35	403	19	35	373	18	36	161	8	43
1 to 3 years college.....	1,423	23	265	19	23	254	18	24	*61	*4	*16
4 years college or more.....	1,469	24	249	17	22	224	15	22	*63	*4	*17

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses. Percent who participated shows the percent of each row's population who participated in the activity named by the column (the percent of those living in urban areas who fished, etc.). Remaining percent columns show the percent of each column's participants who are described by the row heading (the percent of anglers who lived in urban areas, etc.).

**Table 16. Summary of Expenditures in Georgia by U.S. Residents for Fishing and Hunting: 2001**

(Population 16 years old and older)

Expenditure item	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per sportsperson (dollars)
<b>FISHING AND HUNTING</b>				
<b>Total</b> .....	<b>1,128,775</b>	<b>1,245</b>	<b>907</b>	<b>905</b>
Food and lodging.....	198,183	853	232	164
Transportation.....	116,023	771	150	96
Other trip costs <sup>1</sup> .....	123,792	814	152	102
Equipment (fishing, hunting).....	260,136	766	339	193
Auxiliary equipment <sup>2</sup> .....	60,766	268	227	48
Special equipment <sup>3</sup> .....	*223,260	*70	*3,180	*183
Magazines and books.....	4,883	200	24	4
Membership dues and contributions.....	14,241	103	138	11
Other <sup>4</sup> .....	127,491	610	209	105
<b>FISHING</b>				
<b>Total</b> .....	<b>543,504</b>	<b>1,012</b>	<b>537</b>	<b>502</b>
Food and lodging.....	105,637	693	152	101
Transportation.....	70,811	605	117	68
Other trip costs <sup>1</sup> .....	70,020	755	93	67
Fishing equipment.....	105,372	600	176	86
Auxiliary equipment <sup>2</sup> .....	*16,693	*82	*203	*15
Special equipment <sup>3</sup> .....	*139,732	*46	*3,020	*134
Magazines and books.....	*1,879	*74	*25	*2
Membership dues and contributions.....	*5,604	*39	*144	*5
Other <sup>4</sup> .....	27,757	486	57	24
<b>HUNTING</b>				
<b>Total</b> .....	<b>503,677</b>	<b>456</b>	<b>1,104</b>	<b>1,149</b>
Food and lodging.....	92,546	279	332	222
Transportation.....	45,212	272	166	108
Other trip costs <sup>1</sup> .....	53,773	137	393	129
Hunting equipment.....	146,286	314	466	310
Auxiliary equipment <sup>2</sup> .....	30,853	146	211	68
Special equipment <sup>3</sup> .....	...	...	...	...
Magazines and books.....	*1,241	*53	*23	*2
Membership dues and contributions.....	*6,167	*44	*139	*14
Other <sup>4</sup> .....	104,546	270	387	242
<b>UNSPECIFIED<sup>5</sup></b>				
<b>Total</b> .....	<b>77,929</b>	<b>162</b>	<b>481</b>	<b>64</b>
Auxiliary equipment <sup>2</sup> .....	*13,220	*78	*170	*11
Special equipment <sup>3</sup> .....	...	...	...	...
Magazines and books.....	*1,763	*76	*23	*1
Membership dues and contributions.....	...	...	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Includes boating costs, equipment rental, guide fees, access fees, heating and cooking fuel, and ice and bait (for fishing only).

<sup>2</sup> Includes tents, special clothing, etc.

<sup>3</sup> Includes boats, campers, 4x4 vehicles, cabins, etc.

<sup>4</sup> Includes land leasing and ownership, licenses, stamps, tags, and permits.

<sup>5</sup> Respondent could not specify whether expenditure was primarily for either fishing or hunting.

Note: Detail does not add to total because of multiple responses and nonresponse. See Tables 19-20 for a detailed listing of expenditure items.

**Table 17. Summary of Fishing Trip and Equipment Expenditures in Georgia by U.S. Residents, by Type of Fishing: 2001**

(Population 16 years old and older)

Expenditure item	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per angler (dollars)
<b>ALL FISHING</b>				
<b>Total</b> .....	<b>508,264</b>	<b>960</b>	<b>529</b>	<b>471</b>
Food and lodging.....	105,637	693	152	101
Transportation.....	70,811	605	117	68
Other trip costs.....	70,020	755	93	67
Equipment.....	261,797	617	424	235
<b>ALL FRESHWATER</b>				
<b>Total</b> .....	<b>346,321</b>	<b>909</b>	<b>381</b>	<b>331</b>
Food and lodging.....	92,601	660	140	91
Transportation.....	64,689	578	112	64
Other trip costs.....	62,367	727	86	61
Equipment.....	126,664	567	224	115
<b>FRESHWATER, EXCEPT GREAT LAKES</b>				
<b>Total</b> .....	<b>345,757</b>	<b>909</b>	<b>380</b>	<b>331</b>
Food and lodging.....	92,601	660	140	91
Transportation.....	64,689	578	112	64
Other trip costs.....	62,367	727	86	61
Equipment.....	126,100	567	223	115
<b>GREAT LAKES</b>				
<b>Total</b> .....	...	...	...	...
Food and lodging.....	...	...	...	...
Transportation.....	...	...	...	...
Other trip costs.....	...	...	...	...
Equipment.....	...	...	...	...
<b>SALTWATER</b>				
<b>Total</b> .....	<b>35,093</b>	<b>107</b>	<b>329</b>	<b>306</b>
Food and lodging.....	*13,036	*75	*174	*133
Transportation.....	*6,122	*60	*102	*63
Other trip costs.....	*7,652	*61	*126	*78
Equipment.....	*8,282	*59	*140	*31

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses and nonresponse. See Table 19 for detailed listing of expenditure items.

**Table 18. Summary of Hunting Trip and Equipment Expenditures in Georgia by U.S. Residents, by Type of Hunting: 2001**

(Population 16 years old and older)

Expenditure item	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per hunter (dollars)
<b>ALL HUNTING</b>				
<b>Total</b> .....	<b>391,722</b>	<b>438</b>	<b>895</b>	<b>890</b>
Food and lodging.....	92,546	279	332	222
Transportation.....	45,212	272	166	108
Other trip costs.....	53,773	137	393	129
Equipment.....	200,191	346	578	430
<b>BIG GAME</b>				
<b>Total</b> .....	<b>276,888</b>	<b>351</b>	<b>789</b>	<b>795</b>
Food and lodging.....	69,074	240	288	202
Transportation.....	34,101	238	143	100
Other trip costs.....	42,850	121	355	125
Equipment.....	130,862	262	500	368
<b>SMALL GAME</b>				
<b>Total</b> .....	<b>60,241</b>	<b>141</b>	<b>428</b>	<b>715</b>
Food and lodging.....	*16,356	*78	*210	*334
Transportation.....	*8,188	*78	*105	*167
Other trip costs.....	...	...	...	...
Equipment.....	*29,256	*83	*352	*82
<b>MIGRATORY BIRD</b>				
<b>Total</b> .....	<b>*31,314</b>	<b>*64</b>	<b>*488</b>	<b>*470</b>
Food and lodging.....	*2,827	*40	*70	*189
Transportation.....	*1,853	*31	*60	*124
Other trip costs.....	...	...	...	...
Equipment.....	*25,571	*31	*815	*86
<b>OTHER ANIMALS</b>				
<b>Total</b> .....	...	...	...	...
Food and lodging.....	...	...	...	...
Transportation.....	...	...	...	...
Other trip costs.....	...	...	...	...
Equipment.....	...	...	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses and nonresponse. See Table 20 for detailed listing of expenditure items.

**Table 19. Expenditures in Georgia by U.S. Residents for Fishing: 2001**

(Population 16 years old and older)

Expenditure item	Expenditures		Spenders		
	Amount (thousands of dollars)	Average per angler (dollars)	Number (thousands)	Percent of anglers	Average per spender (dollars)
<b>Total, all items</b> .....	<b>543,504</b>	<b>502</b>	<b>1,012</b>	<b>97</b>	<b>537</b>
<b>TRIP-RELATED EXPENDITURES</b>					
<b>Total trip-related</b> .....	<b>246,467</b>	<b>236</b>	<b>861</b>	<b>82</b>	<b>286</b>
<b>Food and lodging, total</b> .....	<b>105,637</b>	<b>101</b>	<b>693</b>	<b>66</b>	<b>152</b>
Food .....	81,430	78	693	66	117
Lodging .....	24,207	23	112	11	216
Transportation .....	70,811	68	605	58	117
<b>Other trip costs, total</b> .....	<b>70,020</b>	<b>67</b>	<b>755</b>	<b>72</b>	<b>93</b>
Privilege and other fees <sup>1</sup> .....	8,480	8	182	17	47
Boating costs <sup>2</sup> .....	26,903	26	155	15	174
Bait .....	27,165	26	662	63	41
Ice .....	6,292	6	417	40	15
Heating and cooking fuel .....	*1,179	*1	*81	*8	*15
<b>EQUIPMENT AND OTHER EXPENDITURES PRIMARILY FOR FISHING</b>					
<b>Fishing equipment, total</b> .....	<b>105,372</b>	<b>86</b>	<b>600</b>	<b>57</b>	<b>176</b>
Reels, rods, and rod making components .....	51,480	39	385	37	134
Lines, hooks, sinkers, etc .....	20,935	18	462	44	45
Artificial lures and flies .....	18,306	17	381	36	48
Creels, stringers, fish bags, landing nets, and gaff hooks .....	*1,815	*2	*91	*9	*20
Minnow seines, traps, and bait containers .....	2,344	2	106	10	22
Other fishing equipment <sup>3</sup> .....	10,493	9	168	16	63
Auxiliary equipment <sup>4</sup> .....	*16,693	*15	*82	*8	*203
Special equipment <sup>5</sup> .....	*139,732	*134	*46	*4	*3,020
Other fishing costs <sup>6</sup> .....	35,240	31	513	49	69

\* Estimate based on a small sample size.

<sup>1</sup> Includes boat or equipment rental and fees for guides, pack trip (party and charter boats, etc.), public land use, and private land use.

<sup>2</sup> Includes boat launching, mooring, storage, maintenance, insurance, pumpout fees and fuel.

<sup>3</sup> Includes electronic fishing devices (depth finders, fish finders, etc.), tackle boxes, ice fishing equipment, and other fishing equipment.

<sup>4</sup> Includes tents, special fishing clothing, etc.

<sup>5</sup> Includes boats, campers, 4x4 vehicles, cabins, etc.

<sup>6</sup> Includes magazines and books, membership dues and contributions, land leasing and ownership, licenses, stamps, tags, and permits.

Note: Detail does not add to total because of multiple responses and nonresponse. Percent of anglers may be greater than 100 because spenders who did not fish in this state are included.

**Table 20. Expenditures in Georgia by U.S. Residents for Hunting: 2001**

(Population 16 years old and older)

Expenditure item	Expenditures		Spenders		
	Amount (thousands of dollars)	Average per hunter (dollars)	Number (thousands)	Percent of hunters	Average per spender (dollars)
<b>Total, all items</b> .....	<b>503,677</b>	<b>1,149</b>	<b>456</b>	<b>109</b>	<b>1,104</b>
<b>TRIP-RELATED EXPENDITURES</b>					
<b>Total trip-related</b> .....	<b>191,531</b>	<b>459</b>	<b>313</b>	<b>75</b>	<b>612</b>
<b>Food and lodging, total</b> .....	<b>92,546</b>	<b>222</b>	<b>279</b>	<b>67</b>	<b>332</b>
Food .....	62,546	150	279	67	224
Lodging .....	*30,000	*72	*45	*11	*666
Transportation .....	45,212	108	272	65	166
<b>Other trip costs, total</b> .....	<b>53,773</b>	<b>129</b>	<b>137</b>	<b>33</b>	<b>393</b>
Privilege and other fees <sup>1</sup> .....	50,926	122	107	26	477
Boating costs .....	...	...	...	...	...
Heating and cooking fuel .....	*2,797	*7	*65	*16	*43
<b>EQUIPMENT AND OTHER EXPENDITURES PRIMARILY FOR HUNTING</b>					
<b>Hunting equipment, total</b> .....	<b>146,286</b>	<b>310</b>	<b>314</b>	<b>75</b>	<b>466</b>
Guns and rifles .....	64,736	151	100	24	646
Ammunition .....	17,071	37	272	65	63
Other hunting equipment <sup>2</sup> .....	64,479	122	154	37	418
Auxiliary equipment <sup>3</sup> .....	30,853	68	146	35	211
Special equipment <sup>4</sup> .....	...	...	...	...	...
Other hunting costs <sup>5</sup> .....	111,955	259	302	72	371

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Includes guide fees, pack trip or package fees, public and private land use access fees, and rental of equipment such as boats and hunting or camping equipment.

<sup>2</sup> Includes bows, arrows, archery equipment, telescopic sights, decoys and game calls, handloading equipment and components, hunting dogs and associated costs, hunting knives, and other hunting equipment.

<sup>3</sup> Includes tents, special hunting clothing, etc.

<sup>4</sup> Includes boats, campers, 4x4 vehicles, cabins, etc.

<sup>5</sup> Includes magazines and books, membership dues and contributions, land leasing and ownership, licenses, stamps, and permits.

Note: Detail does not add to total because of multiple responses and nonresponse. Percent of hunters may be greater than 100 percent because spenders who did not hunt in this state are included.

**Table 21. Trip and Equipment Expenditures in Georgia for Fishing and Hunting by Georgia Residents and Nonresidents: 2001**

(Population 16 years old and older)

Equipment item	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per sportsperson (dollars)
<b>STATE RESIDENTS AND NONRESIDENTS</b>				
<b>Trip and equipment expenditures for fishing and hunting, total . .</b>	<b>982,160</b>	<b>1,189</b>	<b>826</b>	<b>773</b>
<b>Trip and equipment expenditures for fishing, total . . . . .</b>	<b>508,264</b>	<b>960</b>	<b>529</b>	<b>471</b>
Food and lodging . . . . .	105,637	693	152	101
Transportation . . . . .	70,811	605	117	68
Boating costs <sup>1</sup> . . . . .	26,903	155	174	26
Other trip costs <sup>2</sup> . . . . .	43,116	738	58	41
Equipment . . . . .	261,797	617	424	235
<b>Trip and equipment expenditures for hunting, total . . . . .</b>	<b>391,722</b>	<b>438</b>	<b>895</b>	<b>890</b>
Food and lodging . . . . .	92,546	279	332	222
Transportation . . . . .	45,212	272	166	108
Boating costs <sup>1</sup> . . . . .	...	...	...	...
Other trip costs <sup>2</sup> . . . . .	53,723	135	397	129
Equipment . . . . .	200,191	346	578	430
<b>Unspecified equipment<sup>3</sup> . . . . .</b>	<b>82,174</b>	<b>124</b>	<b>663</b>	<b>61</b>
<b>STATE RESIDENTS</b>				
<b>Trip and equipment expenditures for fishing and hunting, total . .</b>	<b>837,228</b>	<b>966</b>	<b>867</b>	<b>800</b>
<b>Trip and equipment expenditures for fishing, total . . . . .</b>	<b>422,995</b>	<b>824</b>	<b>513</b>	<b>454</b>
Food and lodging . . . . .	83,208	582	143	92
Transportation . . . . .	50,476	496	102	56
Boating costs <sup>1</sup> . . . . .	23,290	131	178	26
Other trip costs <sup>2</sup> . . . . .	35,690	628	57	39
Equipment . . . . .	230,332	575	400	241
<b>Trip and equipment expenditures for hunting, total . . . . .</b>	<b>334,086</b>	<b>348</b>	<b>960</b>	<b>929</b>
Food and lodging . . . . .	75,260	226	333	212
Transportation . . . . .	39,195	216	181	110
Boating costs <sup>1</sup> . . . . .	...	...	...	...
Other trip costs <sup>2</sup> . . . . .	43,072	113	380	121
Equipment . . . . .	176,543	289	611	485
<b>Unspecified equipment<sup>3</sup> . . . . .</b>	<b>80,148</b>	<b>113</b>	<b>710</b>	<b>71</b>
<b>NONRESIDENTS</b>				
<b>Trip and equipment expenditures for fishing and hunting, total . .</b>	<b>144,932</b>	<b>223</b>	<b>649</b>	<b>633</b>
<b>Trip and equipment expenditures for fishing, total . . . . .</b>	<b>85,269</b>	<b>136</b>	<b>626</b>	<b>586</b>
Food and lodging . . . . .	22,429	111	201	161
Transportation . . . . .	20,335	109	186	146
Boating costs <sup>1</sup> . . . . .	*3,614	*24	*151	*26
Other trip costs <sup>2</sup> . . . . .	7,426	110	67	53
Equipment . . . . .	*31,465	*42	*749	*199
<b>Trip and equipment expenditures for hunting, total . . . . .</b>	<b>57,636</b>	<b>90</b>	<b>641</b>	<b>663</b>
Food and lodging . . . . .	*17,286	*53	*326	*279
Transportation . . . . .	*6,017	*56	*107	*97
Boating costs <sup>1</sup> . . . . .	...	...	...	...
Other trip costs <sup>2</sup> . . . . .	...	...	...	...
Equipment . . . . .	*23,648	*57	*414	*114
<b>Unspecified equipment<sup>3</sup> . . . . .</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Includes boat launching, mooring, storage, maintenance, insurance, pumpout fees, and fuel.

<sup>2</sup> Includes equipment rental, guide and access fees, ice and bait for fishing, and heating and cooking oil.

<sup>3</sup> Respondent could not specify whether item was for fishing or for hunting.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 22. Summary of Expenditures by Georgia Residents in the United States for Fishing and Hunting: 2001**

(State population 16 years old and older)

Expenditure item	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per sportsperson (dollars)
<b>FISHING AND HUNTING</b>				
<b>Total</b> .....	<b>1,197,614</b>	<b>1,034</b>	<b>1,158</b>	<b>1,055</b>
Food and lodging.....	237,759	783	304	209
Transportation.....	131,682	707	186	116
Other trip costs <sup>1</sup> .....	140,842	773	182	124
Equipment (fishing, hunting).....	247,024	729	339	218
Auxiliary equipment <sup>2</sup> .....	57,123	235	243	50
Special equipment <sup>3</sup> .....	*196,869	*66	*2,985	*173
Magazines and books.....	4,663	177	26	4
Membership dues and contributions.....	13,398	101	133	12
Other <sup>4</sup> .....	168,254	575	293	148
<b>FISHING</b>				
<b>Total</b> .....	<b>612,414</b>	<b>909</b>	<b>674</b>	<b>587</b>
Food and lodging.....	140,678	671	210	135
Transportation.....	84,032	589	143	81
Other trip costs <sup>1</sup> .....	88,040	729	121	84
Fishing equipment.....	111,493	602	185	107
Auxiliary equipment <sup>2</sup> .....	*17,837	*87	*205	*17
Special equipment <sup>3</sup> .....	*114,477	*41	*2,793	*110
Magazines and books.....	*1,907	*73	*26	*2
Membership dues and contributions.....	*4,675	*37	*128	*4
Other <sup>4</sup> .....	49,276	477	103	47
<b>HUNTING</b>				
<b>Total</b> .....	<b>505,894</b>	<b>358</b>	<b>1,415</b>	<b>1,343</b>
Food and lodging.....	97,080	242	402	258
Transportation.....	47,650	235	203	126
Other trip costs <sup>1</sup> .....	52,802	126	419	140
Hunting equipment.....	127,182	283	450	338
Auxiliary equipment <sup>2</sup> .....	27,520	118	234	73
Special equipment <sup>3</sup> .....	...	...	...	...
Magazines and books.....	*1,074	*43	*25	*3
Membership dues and contributions.....	*6,144	*41	*149	*16
Other <sup>4</sup> .....	124,526	238	524	331
<b>UNSPECIFIED<sup>5</sup></b>				
<b>Total</b> .....	<b>76,505</b>	<b>145</b>	<b>529</b>	<b>67</b>
Auxiliary equipment <sup>2</sup> .....	*11,766	*72	*163	*10
Special equipment <sup>3</sup> .....	...	...	...	...
Magazines and books.....	*1,682	*65	*26	*1
Membership dues and contributions.....	...	...	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Includes boating costs, equipment rental, guide fees, access fees, heating and cooking fuel, and ice and bait (for fishing only).

<sup>2</sup> Includes tents, special clothing, etc.

<sup>3</sup> Includes boats, campers, 4x4 vehicles, cabins, etc.

<sup>4</sup> Includes land leasing and ownership, licenses, stamps, tags, and permits.

<sup>5</sup> Respondent could not specify whether expenditure was primarily for either fishing or hunting.

Note: Detail does not add to total because of multiple responses and nonresponse. See Tables 19-20 for a detailed listing of expenditure items.

**Table 23. Summary of Expenditures by Georgia Residents in State and Out of State for Fishing and Hunting: 2001**

(State population 16 years old and older)

Expenditure item	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per sportsperson (dollars)
<b>IN GEORGIA</b>				
<b>Expenditures for fishing and hunting, total</b> .....	<b>959,331</b>	<b>993</b>	<b>966</b>	<b>945</b>
Trip-related expenditures .....	350,206	834	420	345
Equipment (fishing and hunting) .....	235,087	702	335	232
Auxiliary equipment <sup>1</sup> .....	55,373	228	243	55
Special equipment <sup>2</sup> .....	*196,562	*63	*3,121	*194
Other <sup>3</sup> .....	122,102	584	209	120
<b>Expenditures for fishing, total</b> .....	<b>452,952</b>	<b>857</b>	<b>528</b>	<b>500</b>
Trip-related expenditures .....	192,663	738	261	213
Fishing equipment .....	99,586	565	176	110
Auxiliary equipment <sup>1</sup> .....	*16,532	*80	*206	*18
Special equipment <sup>2</sup> .....	*114,214	*41	*2,786	*126
Other <sup>3</sup> .....	29,957	434	69	33
<b>Expenditures for hunting, total</b> .....	<b>425,164</b>	<b>354</b>	<b>1,200</b>	<b>1,198</b>
Trip-related expenditures .....	157,543	257	613	444
Hunting equipment .....	127,152	283	449	358
Auxiliary equipment <sup>1</sup> .....	27,520	118	234	78
Special equipment <sup>2</sup> .....	...	...	...	...
Other <sup>3</sup> .....	91,078	250	364	257
<b>Unspecified expenditures for fishing and hunting, total<sup>4</sup></b> .....	<b>69,836</b>	<b>114</b>	<b>613</b>	<b>69</b>
Auxiliary equipment <sup>1</sup> .....	*6,187	*48	*128	*6
Special equipment <sup>2</sup> .....	...	...	...	...
Other <sup>3</sup> .....	*3,172	*62	*51	*3
<b>OUT OF STATE</b>				
<b>Expenditures for fishing and hunting, total</b> .....	<b>237,605</b>	<b>330</b>	<b>720</b>	<b>702</b>
Trip-related expenditures .....	160,077	284	565	473
Equipment (fishing and hunting) .....	11,652	100	116	34
Auxiliary equipment <sup>1</sup> .....	...	...	...	...
Special equipment <sup>2</sup> .....	...	...	...	...
Other <sup>3</sup> .....	64,213	177	363	190
<b>Expenditures for fishing, total</b> .....	<b>158,784</b>	<b>287</b>	<b>553</b>	<b>544</b>
Trip-related expenditures .....	120,087	237	507	411
Fishing equipment .....	*11,623	*97	*120	*40
Auxiliary equipment <sup>1</sup> .....	...	...	...	...
Special equipment <sup>2</sup> .....	...	...	...	...
Other <sup>3</sup> .....	25,901	135	192	89
<b>Expenditures for hunting, total</b> .....	<b>*80,730</b>	<b>*84</b>	<b>*958</b>	<b>*1,069</b>
Trip-related expenditures .....	*39,990	*72	*553	*530
Hunting equipment .....	...	...	...	...
Auxiliary equipment <sup>1</sup> .....	...	...	...	...
Special equipment <sup>2</sup> .....	...	...	...	...
Other <sup>3</sup> .....	*40,666	*58	*698	*539
<b>Unspecified expenditures for fishing and hunting, total<sup>4</sup></b> .....	...	...	...	...
Auxiliary equipment <sup>1</sup> .....	...	...	...	...
Special equipment <sup>2</sup> .....	...	...	...	...
Other <sup>3</sup> .....	...	...	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Includes tents, special hunting or fishing clothing, etc.

<sup>2</sup> Includes boats, campers, 4x4 vehicles, cabins, etc.

<sup>3</sup> Includes magazines, books, membership dues, contributions, land leasing and ownership, stamps, tags, and licenses.

<sup>4</sup> Respondent could not specify whether expenditure was primarily for either fishing or hunting.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 24. U.S. Residents Participating in Wildlife Watching in Georgia: 2001**

(Population 16 years old and older. Numbers in thousands)

Participants	Number	Percent
<b>Total participants</b> .....	<b>1,494</b>	<b>100</b>
Nonresidential (away from home).....	411	28
Observe wildlife.....	400	27
Photograph wildlife.....	*161	*11
Feed wildlife.....	*108	*7
Residential (around the home).....	1,305	87
Observe wildlife.....	908	61
Photograph wildlife.....	244	16
Feed wildlife.....	1,204	81
Visit public parks <sup>1</sup> .....	*119	*8
Maintain plantings or natural areas.....	222	15

\* Estimate based on a small sample size. <sup>1</sup> Includes visits only to parks or publicly owned areas within 1 mile of home.

Note: Detail does not add to total because of multiple responses.

**Table 25. Participants, Trips, and Days of Participation in Nonresidential (Away From Home) Wildlife-Watching Activities in Georgia: 2001**

(Population 16 years old and older. Numbers in thousands)

Participants, trips, and days of participation	Activity in Georgia					
	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
<b>PARTICIPANTS</b>						
<b>Total participants</b> .....	<b>411</b>	<b>100</b>	<b>234</b>	<b>100</b>	<b>*178</b>	<b>*100</b>
Observe wildlife.....	400	97	222	95	*178	*100
Photograph wildlife.....	*161	*39	*72	*31	*89	*50
Feed wildlife.....	*108	*26	*94	*40	...	...
<b>TRIPS</b>						
Total trips.....	3,384	100	2,931	100	*453	*100
Average days per trip.....	1	(X)	1	(X)	*1	(X)
<b>DAYS</b>						
<b>Total days</b> .....	<b>4,868</b>	<b>100</b>	<b>4,219</b>	<b>100</b>	<b>*648</b>	<b>*100</b>
Observing wildlife.....	3,947	81	*3,448	*82	*499	*77
Photographing wildlife.....	*687	*14	*543	*13	*144	*22
Feeding wildlife.....	*573	*12	*541	*13	...	...
<b>Average days per participant</b> .....	<b>12</b>	<b>(X)</b>	<b>18</b>	<b>(X)</b>	<b>*4</b>	<b>(X)</b>
Observing wildlife.....	10	(X)	*16	(X)	*3	(X)
Photographing wildlife.....	*4	(X)	*8	(X)	*2	(X)
Feeding wildlife.....	*5	(X)	*6	(X)	...	(X)

\* Estimate based on a small sample size. ... Sample size too small to report data reliably. (X) Not applicable.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 26. Nonresidential (Away From Home) Wildlife-Watching Participants Visiting Public Areas in Georgia and Type of Site Visited: 2001**

(Population 16 years old and older. Numbers in thousands)

Participants and sites	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
<b>Total participants</b> .....	<b>411</b>	<b>100</b>	<b>234</b>	<b>100</b>	<b>*178</b>	<b>*100</b>
Visited public areas .....	297	72	*160	*68	*137	*77
Did not visit public areas .....	*114	*28	*74	*32	...	...
<b>Total, all sites</b> .....	<b>411</b>	<b>100</b>	<b>234</b>	<b>100</b>	<b>*178</b>	<b>*100</b>
Oceanside .....	*98	*24	...	...	...	...
Lakes and streamsides .....	220	54	*129	*55	*91	*51
Marsh, wetland, swamp .....	*161	*39	*72	*31	*90	*50
Woodland .....	291	71	*181	*78	*110	*62
Brush-covered areas .....	*170	*41	*107	*46	*63	*36
Open field .....	*179	*44	*109	*46	*71	*40
Man-made area .....	*79	*19	...	...	...	...
Other .....	...	...	...	...	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses.

**Table 27. Nonresidential (Away From Home) Wildlife-Watching Participants by Wildlife Observed, Photographed, or Fed in Georgia: 2001**

(Population 16 years old and older. Numbers in thousands)

Wildlife observed, photographed, or fed	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
<b>Total all wildlife</b> .....	<b>411</b>	<b>100</b>	<b>234</b>	<b>57</b>	<b>*178</b>	<b>*43</b>
<b>Total birds</b> .....	<b>373</b>	<b>100</b>	<b>204</b>	<b>55</b>	<b>*169</b>	<b>*45</b>
Songbirds .....	258	100	*157	*61	*101	*39
Birds of prey .....	236	100	*144	*61	*92	*39
Waterfowl .....	248	100	*141	*57	*107	*43
Shorebirds .....	*177	*100	*89	*51	*87	*49
Other birds .....	*131	*100	...	...	...	...
<b>Total land mammals</b> .....	<b>256</b>	<b>100</b>	<b>*156</b>	<b>*61</b>	<b>*99</b>	<b>*39</b>
Large land mammals .....	*163	*100	*101	*62	...	...
Small land mammals .....	230	100	*139	*60	*92	*40
Fish .....	*103	*100	*70	*68	...	...
Marine mammals .....	...	...	...	...	...	...
Other wildlife .....	*193	*100	*101	*52	*92	*48

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses.

**Table 28. Participation in Residential (Around the Home) Wildlife-Watching Activities in Georgia: 2001**

(State population 16 years old and older. Numbers in thousands)

Residential activity	Participants		Residential activity	Participants	
	Number	Percent		Number	Percent
<b>Total residential participants.....</b>	<b>1,305</b>	<b>100</b>	11 to 50 days .....	219	24
Observe wildlife .....	908	70	51 to 200 days .....	304	34
Visit public parks <sup>1</sup> .....	*119	*9	201 days or more .....	193	21
Photograph wildlife .....	244	19	<b>Participants Visiting Public Parks<sup>1</sup></b>		
Feed wildlife .....	1,204	92	<b>Total, 1 day or more.....</b>	<b>*119</b>	<b>*100</b>
Maintain natural areas .....	*163	*13	1 to 5 days .....	...	...
Maintain plantings .....	*116	*9	6 to 10 days .....	...	...
<b>Participants Observing Wildlife</b>			11 days or more .....	...	...
<b>Total, all wildlife.....</b>	<b>908</b>	<b>100</b>	<b>Participants Photographing Wildlife</b>		
Birds .....	863	95	<b>Total, 1 day or more.....</b>	<b>244</b>	<b>100</b>
Land mammals .....	734	81	1 to 3 days .....	*81	*33
Large mammals .....	417	46	4 to 10 days .....	*80	*33
Small mammals .....	678	75	11 or more days .....	*82	*34
Amphibians or reptiles .....	180	20	<b>Participants Feeding Wildlife</b>		
Insects or spiders .....	244	27	<b>Total, all wildlife.....</b>	<b>1,204</b>	<b>100</b>
Fish and other wildlife .....	*139	*15	Wild birds .....	1,169	97
<b>Total, 1 day or more.....</b>	<b>908</b>	<b>100</b>	Other wildlife .....	467	39
1 to 10 days .....	*174	*19			

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Includes visits only to parks or publicly owned areas within 1 mile of home.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 29. Georgia Residents Participating in Wildlife Watching in the United States: 2001**

(State population 16 years old and older. Numbers in thousands)

Participants	Number	Percent of participants	Percent of population
<b>Total participants .....</b>	<b>1,326</b>	<b>100</b>	<b>22</b>
Nonresidential (away from home) .....	302	23	5
Residential (around home) .....	1,305	98	21
Observe wildlife .....	908	68	15
Photograph wildlife .....	244	18	4
Feed wild birds or other wildlife .....	1,204	91	20
Maintain plantings or natural areas .....	222	17	4
Visit public parks .....	*119	*9	*2

\* Estimate based on a small sample size.

Note: Detail does not add to total because of multiple responses. The column showing percent of participants is based on total participants. The column showing percent of population is based on the state population 16 years old and older, including those who did not participate in wildlife watching.

**Table 30. Wild Bird Observers and Days of Observation in Georgia: 2001**

(Population 16 years old and older. Numbers in thousands)

Observers and days of observation	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
<b>OBSERVERS</b>						
Total bird observers.....	1,063	100	894	100	*169	*100
Residential (around the home) observers.....	863	81	863	97	...	...
Nonresidential (away from home) observers.....	367	35	*198	*22	*169	*100
<b>DAYS</b>						
Total days observing birds.....	93,460	100	92,905	100	*555	*100
Residential (around the home).....	90,523	97	90,523	97	...	...
Nonresidential (away from home).....	2,937	3	*2,382	*3	*555	*100

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses.

**Table 31. Wild Bird Observers in Georgia Who Can Identify Wild Birds by Sight or Sound, and Who Keep Birding Life Lists: 2001**

(State population 16 years old and older. Numbers in thousands)

Participants	Number	Percent
Total bird observers.....	1,063	100
Observers who can identify:		
1-20 bird species.....	819	77
21-40 bird species.....	*123	*12
41 or more species.....	*64	*6
Observers who keep birding life lists.....	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 32. Selected Characteristics of Georgia Residents Participating in Wildlife Watching: 2001**

(Population 16 years old and older. Numbers in thousands)

Characteristic	Population		Participants								
			Total			Nonresidential (away from home)			Residential (around the home)		
	Number	Percent	Number	Percent who participated	Percent	Number	Percent who participated	Percent	Number	Percent who participated	Percent
<b>Total persons</b> .....	6,096	100	1,326	22	100	302	5	100	1,305	21	100
<b>Population Density of Residence</b>											
Urban .....	3,300	54	479	15	36	*149	*5	*49	463	14	36
Rural .....	2,796	46	848	30	64	*154	*6	*51	842	30	64
<b>Population Size of Residence</b>											
Metropolitan statistical area (MSA) .	4,150	68	917	22	69	210	5	69	901	22	69
1,000,000 or more .....	3,032	50	611	20	46	*155	*5	*51	595	20	46
250,000 to 999,999 .....	1,117	18	306	27	23	...	...	...	306	27	23
50,000 to 249,999 .....	...	...	...	...	...	...	...	...	...	...	...
Outside MSA .....	1,947	32	409	21	31	*92	*5	*31	404	21	31
<b>Sex</b>											
Male .....	2,855	47	572	20	43	*164	*6	*54	566	20	43
Female .....	3,241	53	754	23	57	*138	*4	*46	739	23	57
<b>Age</b>											
16 to 17 years .....	242	4	...	...	...	...	...	...	...	...	...
18 to 24 years .....	518	8	...	...	...	...	...	...	...	...	...
25 to 34 years .....	1,181	19	214	18	16	*77	*7	*26	208	18	16
35 to 44 years .....	1,303	21	283	22	21	*81	*6	*27	268	21	21
45 to 54 years .....	1,243	20	288	23	22	*67	*5	*22	288	23	22
55 to 64 years .....	724	12	217	30	16	...	...	...	217	30	17
65 years and older .....	886	15	248	28	19	...	...	...	248	28	19
<b>Ethnicity</b>											
Hispanic .....	214	4	...	...	...	...	...	...	...	...	...
Non-Hispanic .....	5,882	96	1,297	22	98	297	5	98	1,276	22	98
<b>Race</b>											
White .....	4,338	71	1,240	29	93	291	7	96	1,218	28	93
Black .....	1,620	27	*70	*4	*5	...	...	...	*70	*4	*5
All others .....	138	2	...	...	...	...	...	...	...	...	...
<b>Annual Household Income</b>											
Under \$10,000 .....	437	7	*83	*19	*6	...	...	...	*83	*19	*6
\$10,000 to \$19,999 .....	455	7	*82	*18	*6	...	...	...	*82	*18	*6
\$20,000 to \$29,999 .....	701	12	*105	*15	*8	...	...	...	*105	*15	*8
\$30,000 to \$39,999 .....	597	10	*119	*20	*9	...	...	...	*119	*20	*9
\$40,000 to \$49,999 .....	578	9	*84	*14	*6	...	...	...	*84	*14	*6
\$50,000 to \$74,999 .....	692	11	246	36	19	*89	*13	*30	235	34	18
\$75,000 to \$99,999 .....	478	8	*173	*36	*13	...	...	...	*173	*36	*13
\$100,000 or more .....	402	7	*182	*45	*14	...	...	...	*172	*43	*13
Not reported .....	1,755	29	253	14	19	...	...	...	253	14	19
<b>Education</b>											
11 years or less .....	1,098	18	200	18	15	...	...	...	200	18	15
12 years .....	2,106	35	384	18	29	*72	*3	*24	384	18	29
1 to 3 years college .....	1,423	23	312	22	24	...	...	...	306	22	23
4 years college or more .....	1,469	24	431	29	32	*125	*9	*41	415	28	32

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses and nonresponse. Percent who participated shows the percent of each row's population who participated in the activity named by the column (the percent of those living in urban areas who participated, etc.). Percent columns show the percent of each column's participants who are described by the row heading (the percent of those who participated who live in urban areas, etc.).

**Table 33. Expenditures in Georgia by U.S. Residents for Wildlife Watching: 2001**

(Population 16 years old and older)

Expenditure item	Expenditures (thousands of dollars)	Average per participant (dollars)	Spenders		
			Number (thousands)	Percent of wildlife-watching participants <sup>1</sup>	Average per spender (dollars)
<b>Total, all items</b> .....	<b>535,771</b>	<b>359</b>	<b>1,248</b>	<b>84</b>	<b>429</b>
<b>TRIP EXPENDITURES</b>					
<b>Total trip-related</b> .....	<b>123,264</b>	<b>300</b>	<b>367</b>	<b>89</b>	<b>336</b>
Food and lodging .....	76,011	185	341	83	223
Food .....	38,300	93	341	83	112
Lodging .....	*37,711	*92	*133	*32	*284
Transportation .....	32,963	80	300	73	110
Other trip costs <sup>2</sup> .....	*14,290	*35	*140	*34	*102
<b>EQUIPMENT AND OTHER EXPENDITURES</b>					
<b>Total</b> .....	<b>412,506</b>	<b>276</b>	<b>1,105</b>	<b>74</b>	<b>373</b>
<b>Wildlife-watching equipment, total</b> .....	<b>132,760</b>	<b>89</b>	<b>1,016</b>	<b>68</b>	<b>131</b>
Binoculars, spotting scopes .....	*8,802	*6	*80	*5	*110
Film and developing .....	20,565	14	228	15	90
Cameras, special lenses, videocameras, and other photographic equipment .....	*19,889	*13	*87	*6	*228
Day packs, carrying cases, and special clothing .....	*8,254	*6	*84	*6	*98
Bird food .....	41,724	28	886	59	47
Food for other wildlife .....	15,536	10	234	16	66
Nest boxes, bird houses, bird feeders, and bird baths .....	17,118	11	385	26	44
Other equipment (including field guides) .....	...	...	...	...	...
Auxiliary equipment <sup>3</sup> .....	*14,086	*9	*76	*5	*185
Special equipment <sup>4</sup> .....	...	...	...	...	...
Magazines and books .....	*4,985	*3	*154	*10	*32
Membership dues and contributions .....	*6,684	*4	*118	*8	*57
Land leasing and ownership .....	...	...	...	...	...
Plantings .....	*4,809	*4	*98	*8	*49

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Percent of wildlife-watching participants column for trip-related expenditures is based on nonresidential participants. For equipment and other expenditures, the percent of wildlife-watching participants column is based on total wildlife-watching participants.

<sup>2</sup> Includes equipment rental and fees for guides, pack trips, public land use and private land use, boat fuel, other boating costs, and heating and cooking fuel.

<sup>3</sup> Includes tents, tarps, frame packs and other backpacking equipment, other camping equipment, and other auxiliary equipment.

<sup>4</sup> Includes travel or tent trailers, off-the-road vehicles, pickups, campers or vans, motor homes, boats, and other special equipment.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 34. Trip and Equipment Expenditures in Georgia for Wildlife Watching by Residents and Nonresidents: 2001**

(Population 16 years old and older)

Expenditure item	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per participant (dollars)
<b>STATE RESIDENTS AND NONRESIDENTS</b>				
<b>Total</b> .....	<b>487,966</b>	<b>1,192</b>	<b>410</b>	<b>327</b>
Food and lodging.....	76,011	341	223	185
Transportation.....	32,963	300	110	80
Other trip costs <sup>1</sup> .....	*14,290	*140	*102	*35
Equipment <sup>2</sup> .....	364,702	1,042	350	244
<b>STATE RESIDENTS</b>				
<b>Total</b> .....	<b>209,496</b>	<b>974</b>	<b>215</b>	<b>159</b>
Food and lodging.....	*45,746	*185	*247	*196
Transportation.....	*12,556	*168	*75	*54
Other trip costs <sup>1</sup> .....	*13,223	*77	*172	*57
Equipment <sup>2</sup> .....	137,972	948	145	105
<b>NONRESIDENTS</b>				
<b>Total</b> .....	<b>278,470</b>	<b>218</b>	<b>1,279</b>	<b>1,568</b>
Food and lodging.....	*30,265	*156	*194	*170
Transportation.....	*20,408	*132	*155	*115
Other trip costs <sup>1</sup> .....	*1,067	*63	*17	*6
Equipment <sup>2</sup> .....	*226,729	*94	*2,410	*1,276

\* Estimate based on a small sample size.

<sup>1</sup> Includes equipment rental and fees for guides, pack trips, public land use, private land use, boat fuel, other boating costs, and heating and cooking fuel.

<sup>2</sup> Includes wildlife watching, auxiliary and special equipment.

Note: Detail does not add to total because of multiple responses and nonresponse. See Table 33 for a detailed listing of expenditure items.

**Table 35. Expenditures in the United States by Georgia Residents for Wildlife Watching: 2001**

(Population 16 years old and older)

Expenditure item	Expenditures (thousands of dollars)	Average per participant (dollars)	Spenders		
			Number (thousands)	Percent of wildlife-watching participants <sup>1</sup>	Average per spender (dollars)
<b>Total, all items</b> .....	<b>334,589</b>	<b>252</b>	<b>1,019</b>	<b>77</b>	<b>328</b>
<b>TRIP EXPENDITURES</b>					
<b>Total trip-related</b> .....	<b>174,269</b>	<b>746</b>	<b>260</b>	<b>111</b>	<b>670</b>
Food and lodging .....	127,370	545	248	106	514
Food .....	62,397	267	248	106	252
Lodging .....	*64,974	*278	*124	*53	*525
Transportation .....	30,119	129	227	97	133
Other trip costs <sup>2</sup> .....	*16,780	*72	*103	*44	*163
<b>EQUIPMENT AND OTHER EXPENDITURES</b>					
<b>Total</b> .....	<b>160,320</b>	<b>121</b>	<b>983</b>	<b>74</b>	<b>163</b>
<b>Wildlife-watching equipment, total</b> .....	<b>125,854</b>	<b>95</b>	<b>943</b>	<b>71</b>	<b>134</b>
Binoculars, spotting scopes .....	*4,714	*4	*69	*5	*68
Film and developing .....	20,083	15	213	16	94
Cameras, special lenses, videocameras, and other photographic equipment .....	*17,932	*14	*76	*6	*235
Day packs, carrying cases, and special clothing .....	...	...	...	...	...
Bird food .....	42,190	32	868	65	49
Food for other wildlife .....	15,594	12	234	18	67
Nest boxes, bird houses, bird feeders, and bird baths .....	17,177	13	391	29	44
Other equipment .....	...	...	...	...	...
Auxiliary equipment <sup>3</sup> .....	*13,940	*11	*70	*5	*199
Special equipment <sup>4</sup> .....	...	...	...	...	...
Magazines and books .....	*4,770	*4	*150	*11	*32
Membership dues and contributions .....	*7,720	*6	*122	*9	*63
Land leasing and ownership .....	...	...	...	...	...
Plantings .....	*4,809	*4	*98	*8	*49

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

<sup>1</sup> Percent of wildlife-watching participants column for trip-related expenditures is based on nonresidential participants. For equipment and other expenditures, the percent of wildlife-watching participants column is based on total wildlife-watching participants.

<sup>2</sup> Includes equipment rental and fees for guides, pack trips, public land use and private land use, boat fuel, other boating costs, and heating and cooking fuel.

<sup>3</sup> Includes tents, tarps, frame packs and other backpacking equipment, other camping equipment, and other auxiliary equipment.

<sup>4</sup> Includes travel or tent trailers, off-the-road vehicles, pickups, campers or vans, motor homes, boats, and other special equipment.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 36. Summary of Expenditures by Georgia Residents in State and Out of State for Wildlife Watching: 2001**

(State population 16 years old and older)

Expenditure item	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per participant (dollars)
<b>IN GEORGIA</b>				
<b>Expenditures for wildlife watching, total</b> .....	<b>227,580</b>	<b>997</b>	<b>228</b>	<b>172</b>
Trip-related expenditures .....	*71,524	*197	*363	*306
Wildlife-watching equipment .....	123,161	937	131	93
Auxiliary equipment .....	*13,940	*70	*199	*11
Special equipment .....	...	...	...	...
Other .....	13,275	185	72	10
<b>OUT OF STATE</b>				
<b>Expenditures for wildlife watching, total</b> .....	<b>*106,276</b>	<b>*125</b>	<b>*849</b>	<b>*80</b>
Trip-related expenditures .....	*102,745	*98	*1,046	*340
Wildlife-watching equipment .....	...	...	...	...
Auxiliary equipment .....	...	...	...	...
Special equipment .....	...	...	...	...
Other .....	...	...	...	...

\* Estimate based on a small sample size.   ... Sample size too small to report data reliably.

Note: See Table 33 for detailed listing of expenditure items.

**Table 37. Participation of Georgia Resident Wildlife-Watching Participants in Fishing and Hunting: 2001**

(State population 16 years old and older. Numbers in thousands)

Participants	Total, nonresidential and residential		Wildlife-watching activity			
			Nonresidential (away from home)		Residential (around the home)	
	Number	Percent	Number	Percent	Number	Percent
<b>Total participants</b> .....	<b>1,326</b>	<b>100</b>	<b>302</b>	<b>100</b>	<b>1,305</b>	<b>100</b>
Wildlife-watching participants who:						
Did not fish or hunt .....	796	60	168	56	789	60
Fished or hunted .....	530	40	134	44	516	40
Fished .....	490	37	115	38	480	37
Hunted .....	188	14	*70	*23	185	14

\* Estimate based on a small sample size.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 38. Participation of Georgia Resident Sportspersons in Wildlife-Watching Activities: 2001**

(State population 16 years old and older. Numbers in thousands)

Sportspersons	Sportspersons		Anglers		Hunters	
	Number	Percent	Number	Percent	Number	Percent
<b>Total Sportspersons</b> .....	<b>1,136</b>	<b>100</b>	<b>1,043</b>	<b>100</b>	<b>377</b>	<b>100</b>
Sportspersons who:						
Did not engage in wildlife-watching activities .....	606	53	553	53	189	50
Engaged in wildlife-watching activities .....	530	47	490	47	188	50
Nonresidential (away from home) .....	134	12	115	11	*70	*19
Residential (around the home) .....	516	45	480	46	185	49

\* Estimate based on a small sample size.

Note: Detail does not add to total because of multiple responses and nonresponse.

**Table 39. Participants in Wildlife-Associated Recreation by Participant's State of Residence: 2001**

(Population 16 years old and older. Numbers in thousands)

Participant's state of residence	Population	Total participants		Sportspersons		Wildlife-watching participants	
		Number	Percent of population	Number	Percent of population	Number	Percent of population
<b>United States, total.....</b>	<b>212,298</b>	<b>82,302</b>	<b>39</b>	<b>37,805</b>	<b>18</b>	<b>66,105</b>	<b>31</b>
Alabama.....	3,427	1,323	39	726	21	965	28
Alaska.....	454	320	70	205	45	241	53
Arizona.....	3,700	1,296	35	437	12	1,107	30
Arkansas.....	1,999	1,034	52	617	31	774	39
California.....	25,982	6,873	26	2,486	10	5,491	21
Colorado.....	3,215	1,518	47	679	21	1,213	38
Connecticut.....	2,536	999	39	332	13	885	35
Delaware.....	599	220	37	94	16	170	28
Florida.....	12,171	3,857	32	2,158	18	2,856	23
Georgia.....	6,096	1,932	32	1,136	19	1,326	22
Hawaii.....	916	195	21	114	12	126	14
Idaho.....	972	507	52	306	31	388	40
Illinois.....	9,244	3,154	34	1,507	16	2,498	27
Indiana.....	4,558	2,179	48	914	20	1,786	39
Iowa.....	2,201	1,206	55	580	26	977	44
Kansas.....	2,017	942	47	491	24	735	36
Kentucky.....	3,121	1,547	50	703	23	1,264	40
Louisiana.....	3,306	1,330	40	833	25	844	26
Maine.....	1,005	607	60	256	26	520	52
Maryland.....	4,078	1,546	38	571	14	1,311	32
Massachusetts.....	4,837	1,726	36	521	11	1,493	31
Michigan.....	7,587	2,950	39	1,325	17	2,424	32
Minnesota.....	3,688	2,388	65	1,437	39	1,993	54
Mississippi.....	2,111	851	40	533	25	579	27
Missouri.....	4,206	2,010	48	1,076	26	1,612	38
Montana.....	699	438	63	279	40	362	52
Nebraska.....	1,266	623	49	308	24	498	39
Nevada.....	1,454	439	30	194	13	334	23
New Hampshire.....	954	506	53	175	18	450	47
New Jersey.....	6,300	1,993	32	669	11	1,694	27
New Mexico.....	1,337	595	45	256	19	471	35
New York.....	14,201	3,987	28	1,492	11	3,522	25
North Carolina.....	5,918	2,330	39	982	17	1,884	32
North Dakota.....	483	228	47	170	35	135	28
Ohio.....	8,645	3,407	39	1,513	17	2,768	32
Oklahoma.....	2,587	1,308	51	730	28	1,042	40
Oregon.....	2,630	1,545	59	611	23	1,286	49
Pennsylvania.....	9,303	4,169	45	1,648	18	3,522	38
Rhode Island.....	765	280	37	96	13	242	32
South Carolina.....	3,080	1,375	45	674	22	1,079	35
South Dakota.....	559	326	58	176	31	251	45
Tennessee.....	4,317	2,109	49	903	21	1,706	40
Texas.....	15,445	4,515	29	2,745	18	3,088	20
Utah.....	1,554	736	47	468	30	572	37
Vermont.....	479	319	67	125	26	287	60
Virginia.....	5,471	2,535	46	970	18	2,168	40
Washington.....	4,516	2,537	56	932	21	2,234	49
West Virginia.....	1,447	694	48	353	24	517	36
Wisconsin.....	4,059	2,489	61	1,141	28	2,159	53
Wyoming.....	377	223	59	138	37	172	46

Note: Detail does not add to total because of multiple responses. U.S. totals include responses from participants residing in the District of Columbia, as described in the statistical accuracy appendix.

**Table 40. Participants in Wildlife-Associated Recreation by State Where Activity Took Place: 2001**

(Population 16 years old and older. Numbers in thousands)

State where activity took place	Total participants		Sportspersons		Wildlife-watching participants	
	Number	Percent	Number	Percent	Number	Percent
<b>United States, total.....</b>	<b>82,302</b>	<b>100</b>	<b>37,805</b>	<b>46</b>	<b>66,105</b>	<b>80</b>
Alabama.....	1,557	100	1,021	66	1,016	65
Alaska.....	632	100	457	72	420	67
Arizona.....	1,720	100	486	28	1,465	85
Arkansas.....	1,369	100	960	70	841	61
California.....	7,231	100	2,556	35	5,720	79
Colorado.....	2,138	100	1,077	50	1,552	73
Connecticut.....	1,151	100	356	31	967	84
Delaware.....	321	100	157	49	232	72
Florida.....	4,860	100	3,158	65	3,240	67
Georgia.....	2,198	100	1,236	56	1,494	68
Hawaii.....	324	100	151	46	220	68
Idaho.....	868	100	486	56	643	74
Illinois.....	3,390	100	1,366	40	2,627	77
Indiana.....	2,427	100	965	40	1,866	77
Iowa.....	1,334	100	645	48	1,022	77
Kansas.....	1,091	100	563	52	807	74
Kentucky.....	1,834	100	901	49	1,362	74
Louisiana.....	1,558	100	1,059	68	935	60
Maine.....	975	100	449	46	778	80
Maryland.....	1,911	100	752	39	1,524	80
Massachusetts.....	1,988	100	632	32	1,686	85
Michigan.....	3,481	100	1,659	48	2,666	77
Minnesota.....	2,915	100	1,733	59	2,155	74
Mississippi.....	1,017	100	720	71	631	62
Missouri.....	2,494	100	1,382	55	1,826	73
Montana.....	871	100	463	53	687	79
Nebraska.....	768	100	382	50	565	74
Nevada.....	657	100	193	29	543	83
New Hampshire.....	892	100	295	33	766	86
New Jersey.....	2,345	100	855	36	1,895	81
New Mexico.....	884	100	379	43	671	76
New York.....	4,620	100	1,760	38	3,885	84
North Carolina.....	2,882	100	1,386	48	2,168	75
North Dakota.....	322	100	259	81	190	59
Ohio.....	3,658	100	1,540	42	2,897	79
Oklahoma.....	1,529	100	838	55	1,131	74
Oregon.....	2,051	100	761	37	1,680	82
Pennsylvania.....	4,570	100	1,783	39	3,794	83
Rhode Island.....	399	100	181	45	298	75
South Carolina.....	1,666	100	922	55	1,186	71
South Dakota.....	518	100	349	67	358	69
Tennessee.....	2,671	100	1,062	40	2,084	78
Texas.....	4,949	100	2,857	58	3,240	65
Utah.....	1,091	100	585	54	806	74
Vermont.....	569	100	211	37	496	87
Virginia.....	3,001	100	1,137	38	2,460	82
Washington.....	2,970	100	1,024	34	2,496	84
West Virginia.....	843	100	444	53	605	72
Wisconsin.....	3,165	100	1,611	51	2,442	77
Wyoming.....	662	100	373	56	498	75

Note: Detail does not add to total because of multiple responses. U.S. totals include responses from participants residing in the District of Columbia, as described in the statistical accuracy appendix.

**Table 41. Anglers and Hunters by State Where Fishing or Hunting Took Place: 2001**

(Population 16 years old and older. Numbers in thousands)

State where fishing or hunting took place	Anglers						Hunters					
	Total anglers, residents and nonresidents		Residents		Nonresidents		Total hunters, residents and nonresidents		Residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
<b>United States, total. . . .</b>	<b>34,071</b>	<b>100</b>	<b>31,218</b>	<b>92</b>	<b>7,880</b>	<b>23</b>	<b>13,034</b>	<b>100</b>	<b>12,377</b>	<b>95</b>	<b>2,027</b>	<b>16</b>
Alabama . . . . .	851	100	610	72	241	28	423	100	307	73	116	27
Alaska . . . . .	421	100	183	43	239	57	93	100	72	77	*21	*23
Arizona . . . . .	419	100	351	84	68	16	148	100	119	81	*28	*19
Arkansas . . . . .	782	100	539	69	243	31	431	100	303	70	128	30
California . . . . .	2,444	100	2,288	94	156	6	274	100	261	95	*12	*5
Colorado . . . . .	915	100	560	61	357	39	281	100	159	57	121	43
Connecticut . . . . .	346	100	271	78	75	22	45	100	*35	*77	...	...
Delaware . . . . .	148	100	71	47	*78	*53	16	100	13	81	...	...
Florida . . . . .	3,104	100	2,057	66	1,047	34	226	100	191	84	*35	*16
Georgia . . . . .	1,086	100	947	87	139	13	417	100	355	85	*62	*15
Hawaii . . . . .	150	100	109	73	*41	*27	17	100	17	100	...	...
Idaho . . . . .	416	100	251	60	165	40	197	100	150	76	47	24
Illinois . . . . .	1,237	100	1,157	94	80	6	310	100	246	79	*64	*21
Indiana . . . . .	874	100	784	90	90	10	290	100	269	93	...	...
Iowa . . . . .	542	100	471	87	70	13	243	100	195	80	*48	*20
Kansas . . . . .	404	100	357	88	*47	*12	291	100	189	65	103	35
Kentucky . . . . .	780	100	590	76	190	24	323	100	269	83	*54	*17
Louisiana . . . . .	970	100	757	78	213	22	333	100	295	89	*38	*11
Maine . . . . .	376	100	212	56	165	44	164	100	123	75	41	25
Maryland . . . . .	701	100	457	65	243	35	145	100	115	80	*30	*20
Massachusetts . . . . .	615	100	425	69	191	31	66	100	64	97	...	...
Michigan . . . . .	1,354	100	1,002	74	352	26	754	100	705	94	*48	*6
Minnesota . . . . .	1,624	100	1,293	80	331	20	597	100	568	95	*29	*5
Mississippi . . . . .	586	100	450	77	136	23	357	100	245	69	111	31
Missouri . . . . .	1,215	100	942	78	272	22	489	100	405	83	84	17
Montana . . . . .	349	100	212	61	138	39	229	100	170	74	59	26
Nebraska . . . . .	296	100	241	81	55	19	173	100	124	72	*49	*28
Nevada . . . . .	172	100	119	69	*53	*31	47	100	42	90	...	...
New Hampshire . . . . .	267	100	147	55	119	45	78	100	52	67	*26	*33
New Jersey . . . . .	806	100	531	66	275	34	135	100	108	80	...	...
New Mexico . . . . .	314	100	197	63	*116	*37	130	100	105	80	*26	*20
New York . . . . .	1,550	100	1,243	80	307	20	714	100	635	89	79	11
North Carolina . . . . .	1,287	100	831	65	456	35	295	100	272	92	*23	*8
North Dakota . . . . .	179	100	119	67	*59	*33	139	100	87	63	*52	*37
Ohio . . . . .	1,371	100	1,225	89	146	11	490	100	452	92	*38	*8
Oklahoma . . . . .	774	100	648	84	126	16	261	100	241	92	*20	*8
Oregon . . . . .	687	100	513	75	174	25	248	100	234	94	*15	*6
Pennsylvania . . . . .	1,266	100	1,032	82	234	18	1,000	100	858	86	142	14
Rhode Island . . . . .	179	100	86	48	93	52	*9	*100	*7	*83	...	...
South Carolina . . . . .	812	100	571	70	241	30	265	100	221	83	*44	*17
South Dakota . . . . .	214	100	140	65	75	35	209	100	90	43	119	57
Tennessee . . . . .	903	100	709	79	194	21	359	100	288	80	71	20
Texas . . . . .	2,372	100	2,151	91	221	9	1,201	100	1,101	92	100	8
Utah . . . . .	517	100	388	75	129	25	198	100	177	89	*22	*11
Vermont . . . . .	171	100	96	56	75	44	100	100	74	74	*26	*26
Virginia . . . . .	1,010	100	761	75	248	25	355	100	279	79	*75	*21
Washington . . . . .	938	100	808	86	130	14	227	100	210	92	...	...
West Virginia . . . . .	318	100	250	79	*67	*21	284	100	229	81	*55	*19
Wisconsin . . . . .	1,412	100	941	67	471	33	660	100	588	89	*72	*11
Wyoming . . . . .	293	100	117	40	176	60	133	100	65	49	68	51

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses. U.S. totals include responses from participants residing in the District of Columbia, as described in the statistical accuracy appendix.

# *Appendix A*



# Appendix A.

## Definitions

**Annual household income**—Total 2001 income of household members before taxes and other deductions.

**Auxiliary equipment**—Equipment owned primarily for wildlife-associated recreation. These include for the sportspersons section—camping bags, packs, duffel bags and tents, binoculars, field glasses, telescopes, special fishing and hunting clothing, foul weather gear, boots, waders, and processing and taxidermy costs; and for the wildlife-watching section—tents, tarps, frame packs, backpacking equipment and other camping equipment.

**Big game**—Antelope, bear, deer, elk, moose, wild turkey, and similar large animals which are hunted.

**Birding life list**—A tally of bird species seen during a birder's lifetime.

### Census Divisions

#### East North Central

Illinois  
Indiana  
Michigan  
Ohio  
Wisconsin

#### East South Central

Alabama  
Kentucky  
Mississippi  
Tennessee

#### Middle Atlantic

New Jersey  
New York  
Pennsylvania

#### Mountain

Arizona  
Colorado  
Idaho  
Montana  
Nevada  
New Mexico

Utah  
Wyoming

#### New England

Connecticut  
Maine  
Massachusetts  
New Hampshire  
Rhode Island  
Vermont

#### Pacific

Alaska  
California  
Hawaii  
Oregon  
Washington

#### South Atlantic

Delaware  
District of Columbia  
Florida  
Georgia  
Maryland  
North Carolina  
South Carolina  
Virginia  
West Virginia

#### West North Central

Kansas  
Iowa  
Minnesota  
Missouri  
Nebraska  
North Dakota  
South Dakota

#### West South Central

Arkansas  
Louisiana  
Oklahoma  
Texas

**Day**—Any part of a day spent in a given activity. For example, if someone hunted 2 hours 1 day and 3 hours another day, it would be recorded as 2 days of hunting. If someone hunted 2 hours in the morning and 3 hours in the evening of the same

day, it would be considered 1 day of hunting.

**Education**—The highest completed grade of school or year of college.

**Expenditures**—Money spent in 2001 for wildlife-related recreation trips in the United States and wildlife-related recreational equipment purchased in the United States. Expenditures include both money spent by participants for themselves and the value of gifts they received.

**Federal land**—Public land owned by the federal government such as National Forests and National Wildlife Refuges.

**Fishing**—The sport of catching or attempting to catch fish with a hook, line, bow and arrow, or spear; it also includes catching or gathering shellfish (clams, crabs, etc.); and the noncommercial seining or netting of fish, unless the fish are for use as bait. For example, seining for smelt is fishing, but seining for bait minnows is not included as fishing.

**Fishing equipment**—Items owned primarily for fishing. These items are listed in Table 19.

**Freshwater**—Reservoirs, lakes, ponds, and the nontidal portions of rivers and streams.

**Great Lakes fishing**—Fishing in Lakes Superior, Michigan, Huron, St. Clair, Erie, and Ontario, their connecting waters such as the St. Marys River system, Detroit River, St. Clair River, and the Niagara River, and the St. Lawrence River south of the bridge at Cornwall, New York. Great Lakes fishing includes fishing in tributaries of the Great Lakes for smelt, steelhead, and salmon.

**Home**—The starting point of a wildlife-related recreational trip. It may be a permanent residence or a temporary or seasonal residence such as a cabin.

**Hunting**—The sport of shooting or attempting to shoot wildlife with firearms or archery equipment.

**Hunting equipment**—Items owned primarily for hunting. These items are listed in Table 20.

**Local land**—Public land owned by local government such as county parks or municipal watersheds.

**Maintain natural areas**—To set aside one-quarter acre or more of natural environment such as wood lots or open fields for the primary purpose of benefiting wildlife.

**Maintain plantings**—To introduce or encourage the growth of food and cover plants for the primary purpose of benefiting wildlife.

**Metropolitan statistical area (MSA)**—Except in the New England States, an MSA is a county or group of contiguous counties containing at least one city of 50,000 or more inhabitants or twin cities (i.e., cities with contiguous boundaries and constituting, for general social and economic purposes, a single community) with a combined population of at least 50,000. Also included in an MSA are contiguous counties that are socially and economically integrated with the central city. In the New England States, an MSA consists of towns and cities instead of counties. Each MSA must include at least one central city.

**Migratory birds**—Birds that regularly migrate from one region or climate to another. The survey focuses on migratory birds which may be hunted, including bandtailed pigeons, coots, ducks, doves, gallinules, geese, rails, and woodcocks.

**Multiple responses**—The term used to reflect the fact that individuals or their characteristics fall into more than one reporting category. An example of a big game hunter who hunted for deer and elk demonstrates the effect of multiple responses. In this case, adding the number of deer hunters (1) and elk hunters (1) would over state the number of big game hunters (1) because deer and elk hunters are not mutually exclusive

categories. In contrast, total participants is the sum of male and female participants, because male and female are mutually exclusive categories.

**Nonresidential activity (away from home)**—Trips or outings at least 1 mile from home for the primary purpose of observing, photographing, or feeding wildlife. Trips to zoos, circuses, aquariums, and museums are not included.

**Nonresidents**—Individuals who do not live in the state being reported. For example, a person living in Texas who watches whales in California is a nonresident participant in California.

**Nonresponse**—Nonresponse is a term used to reflect the fact that some survey respondents provide incomplete sets of information. For example, a survey respondent may have been unable to identify the primary type of hunting for which a gun was bought. Hunting expenditures will reflect the gun purchase, but it will not appear as spending for big game or any other type of hunting. Nonresponses result in reported totals that are greater than the sum of their parts.

**Observe**—To take special interest in or try to identify birds, fish, or other wildlife.

**Other animals**—Coyotes, crows, foxes, groundhogs, prairie dogs, raccoons, and similar animals that are often regarded as varmints or pests. Other animals may be classified as unprotected or nongame animals by the state in which they are hunted.

**Participants**—Individuals who engaged in fishing, hunting, or a wildlife-watching activity.

**Primary purpose**—The principal motivation for an activity, trip, or expenditure.

**Public areas**—Public lands owned by local, state, or federal governments.

**Public land**—Land that is owned by the local, state, or federal government.

**Private land**—Land that is owned by a private individual, group of individuals, or nongovernmental organization.

**Residential activity (around the home)**—Activity within 1 mile of home with a primary purpose: (1) closely observing or trying to identify birds or other wildlife, (2) photographing wildlife, (3) feeding birds or other wildlife, (4) maintaining natural areas of at least one-quarter acre primarily for the benefit to wildlife, (5) maintaining plantings (shrubs, agricultural crops, etc.) primarily for the benefit of wildlife, or (6) visiting public parks within 1 mile of home to observe, photograph, or feed wildlife.

**Residents**—Individuals who lived in the state being reported. For example, persons who live in California and watch whales in California are resident participants in California.

**Rural**—Respondent lived in a rural nonfarm, or rural farm area, as determined by Census.

**Saltwater**—Oceans, tidal bays and sounds, and the tidal portions of rivers and streams.

**Screening interviews**—The first survey contact with a household. Screening interviews with a household representative in each household to identify respondents who are eligible for indepth interviews. Screening interviews gather data about the individuals in the households, such as their age and sex. Screening interviews are discussed in the Survey Background and Method section of this report.

**Small game**—Grouse, partridge, pheasants, quail, rabbits, squirrels, and similar small animals and birds for which many states have small game seasons and bag limits.

**Special equipment**—Items of equipment that are owned primarily for wildlife-related recreation. These include for the sportsmen section bass boat and other types of motor boat; canoe and other types of nonmotor boat; boat motor, boat trailer/hitch, and other boat accessories; pickup, camper, van, travel or tent trailer, motor home, house trailer, RV, cabin; and trail bike, dune buggy, 4x4 vehicle, four-wheeler, and snowmobile. For the wildlife-watching section these include off-the-road vehicles such as snowmobiles, four-wheeler, 4x4 vehicle, trail bike, dune buggy, travel or tent trailer, motor home, pickup, camper, van,

house trailer, RV, boat and boat accessories, and cabin.

**Spenders**—Individuals who reported an expenditure value for fishing, hunting, or wildlife-watching activities or equipment.

**Sportspersons**—Individuals who engaged in fishing, hunting, or both.

**State land**—Public land owned by a state such as state parks or state wildlife management areas.

**Trip**—An outing involving fishing, hunting, or wildlife-watching activities. In the context of this survey, a trip may begin from an individual's principal residence or from another place, such as a vacation home or the home of a

relative. A trip may last an hour, a day, or many days.

**Type of fishing**—Three types of fishing are reported: fishing in (1) freshwater except Great Lakes, (2) Great Lakes, and (3) saltwater.

**Type of hunting**—Four types of hunting are reported: hunting for (1) big game, (2) small game, (3) migratory bird, and (4) other animals.

**Urban**—Respondent lived in an urban area, as determined by the U.S. Census Bureau.

**Wildlife**—Animals such as birds, fish, insects, mammals, amphibians, and reptiles that are living in natural or wild environments. Wildlife does not include

animals living in aquariums, zoos, and other artificial surroundings or domestic animals such as farm animals or pets.

**Wildlife-associated recreation**—Recreational fishing, hunting, or wildlife watching.

**Wildlife-watching activity**—An activity engaged in primarily for the purpose of feeding, photographing, or observing fish or other wildlife. In previous years, this was termed nonconsumptive activity. (See also residential and nonresidential activities.)

**Wildlife-watching equipment**—Items owned primarily for observing, photographing, or feeding wildlife. These items are listed in Table 33.

# *Appendix B*



# Appendix B.

## National and Regional 1991-2001 Comparisons

Appendix B provides national and regional trend information based on the 1991, 1996, and 2001 Surveys. Since all three surveys used similar methodologies, their published information is directly comparable.

### Fishing and Hunting

Comparing national hunting and fishing estimates for the 1991, 1996, and 2001 Surveys found participation declined over that 10-year time period. In 1991 and 1996, the number of people who hunted and fished remained essentially unchanged. In 2001, the overall number of people who hunted and fished declined from their 1991/1996 levels. In 1991, there were 35.6 million anglers and 14.1 million hunters. In 1996, there were 35.2 million anglers and 14.0 million hunters. In 2001, there were 34.1 million anglers—a 4 percent drop from its 1991 level, and 13.0 million hunters—a 7 percent drop from 1991.

The amount of time people spent fishing and hunting fluctuated between 1991 and 2001. The number of days spent fishing rose 22 percent between 1991 and 1996 and then fell 11 percent between 1996 and 2001. Days of hunting followed a similar pattern. Between 1991 and 1996, hunting days increased 9 percent but then fell 11 percent between 1996 and 2001.

The amount of money spent for fishing and hunting trips and equipment rose from 1991 to 1996 and fell from 1996 to 2001. Total fishing expenditures rose 37 percent from \$31.2 billion in 1991 to \$42.7 billion in 1996; and, then fell 17 percent to \$35.6 billion in 2001. Likewise, hunting expenditures increased from \$16.0 billion in 1991 to \$23.3 billion in 1996—45 percent increase—and then fell 12 percent to \$20.6 billion in 2001.

### Wildlife Watching

Comparing the results from the last three surveys finds different trends for various

types of wildlife watching. The number of wildlife watchers decreased 17 percent from 1991 to 1996 and increased 5 percent from 1996 to 2001—with 76.1 million participants in 1991, 62.9 million in 1996, and 66.1 million in 2001. Residential wildlife watching, the preeminent type of wildlife watching, lead this trend with an 18 percent drop from 1991 to 1996 and a 4 percent increase from 1996 to 2001. Unlike residential wildlife watching, nonresidential wildlife watching dropped throughout the '90s and early '00s with a 21 percent drop from 1991 to 1996 and an 8 percent drop from 1996 to 2001. Days afield by participants tended upward, counter to the trend in participation, although the increase is not statistically significant. Total expenditures for wildlife watching increased 21 percent from 1991 to 1996 and 16 percent from 1996 to 2001, making an overall increase of 41 percent from 1991 to 2001.

### Differences in the 1991, 1996, and 2001 Surveys

The 1996 and 2001 Surveys underwent a number of changes in order to improve data collection, lower costs, and meet the data needs of its users. The most significant design differences in the three surveys are as follows:

1. The 1991 Survey data was collected by interviewers filling out paper questionnaires. The data entries were keyed in a separate operation after the interview. The 1996 and 2001 survey data were collected by the use of computer-assisted interviews. The questionnaires were programmed into computers, and interviewers keyed in the responses at the time of the interview.
2. The 1991 Survey screening phase was conducted in January and February of 1991, when the sample households were contacted and a household respondent was

interviewed on behalf of the entire household. The 1991 screening interview consisted primarily of sociodemographic questions and wildlife-related recreation questions concerning activity in the year 1990 and intentions for the year 1991. The screening interviews for the 1996 and 2001 Surveys were conducted April through June of their survey years in conjunction with the first wave of the detailed interviews. The screening interviews consisted primarily of sociodemographic questions and wildlife-related recreation questions concerning activity in the previous year (1995 or 2000) and intentions for the survey year (1996 or 2001).

3. In the 1991 Survey, an attempt was made to contact every sample person in all three detailed interview waves. In 1996 and 2001, respondents who were interviewed in the first detailed interview wave were not contacted again until the third wave. Also, all interviews in the second wave were conducted by telephone. In-person interviews were only conducted in the first and third waves.

### Important instrument differences in the 1991, 1996, and 2001 Surveys

1. The 1991 Survey collected information on all wildlife-related recreation purchases made by participants without reference to where the purchase was made. The 1996 and 2001 Surveys asked in which state the purchase was made.
2. In 1991, respondents were asked what kind of fishing they did, i.e., Great Lakes, other freshwater, or saltwater, and then were asked in what states they fished. In 1996 and 2001, respondents were asked in which states they fished and then were asked the pertinent kind of fishing questions. This method had the advantage of not asking about,

for example, saltwater fishing when they only fished in a noncoastal state. In 1991, respondents were asked how many days they "actually" hunted or fished for a particular type of game or fish and then how many days they "chiefly" hunted or fished for the same type of game or fish rather than another type of game or fish. To get total days of hunting or fishing for a particular type of game or fish, the "actually" day response was used, while to get the sum of all days of hunting or fishing, the "chiefly" days were summed. In 1996 and 2001, respondents were asked their total days of hunting or fishing in the United States and each state, then how many days they hunted or fished for a particular type of game or fish.

Trip-related and equipment expenditure categories were not the same for all Surveys. "Guide fee" and "Pack trip or package fee" were two separate trip-related expenditure items in 1991, while they were combined into one category in the 1996 and 2001 Surveys. "Boating costs" was added to the 1996 and 2001 hunting and wildlife-watching trip-related expenditure sections. "Heating and cooking fuel" was added to all of the trip-related expenditure sections. "Spearfishing equipment" was moved from a separate category to the "Other" list. "Rods" and "Reels" were two separate categories in 1991 but were combined in 1996 and 2001. "Lines, hooks, sinkers, etc." was one category in 1991 but split into "Lines" and "Hooks, sinkers, etc." in 1996 and 2001. "Food used to feed other wildlife" was added to the wildlife-watching equipment section, "Boats" and "Cabins" were added to the wildlife-watching special equipment section, and "Land leasing and ownership" was added to the wildlife-watching expenditures section.

5. Questions asking sportspersons if they participated as much as they wanted were added in 1996 and 2001. If the sportspersons said no, they were asked why not.

6. The 1991 Survey included questions about participation in organized fishing competitions; anglers using bows and arrows, nets or seines, or spearfishing; hunters using pistols or handguns and target shooting in preparation for hunting. These questions were not asked in 1996 and 2001.
7. The 1996 Survey included questions about catch and release fishing and persons with disabilities participating in wildlife-related recreation. These questions were not part of the 1991 Survey. The 2001 Survey included questions about persons with disabilities participating in wildlife-related recreation but not about catch and release fishing.
8. The 1991 Survey included questions about average distance traveled to recreation sites. These questions were not included in the 1996 and 2001 Surveys.
9. The 1996 Survey included questions about the last trip the respondent took. Included were questions about the type of trip, where the activity took place, and the distance and direction to the site visited. These questions were not asked in 2001.
10. The 1991 Survey collected data on hunting, fishing, and wildlife watching by U.S. residents in Canada. The 1996 and 2001 Surveys collected data on fishing and wildlife-watching by U.S. residents in Canada.
2. The 1991 and 1996 land leasing and ownership sections asked the respondent to combine the two types of land use into one and give total acreage and expenditures. In 2001, the two types of land use were explored separately.
3. The 1991 and 1996 wildlife watching sections included questions on birdwatching for residential users only. The 2001 Survey added a question on birdwatching for nonresidential users. Also, questions on the use of birding life lists and how many species the respondent can identify were added in 2001.
4. "Recreational vehicles" was added to the sportspersons and wildlife watchers special equipment section in 2001. "House trailer" was added to the sportspersons special equipment section.
5. Total personal income was asked in the detailed phase of the 1996 Survey. This was changed to total household income in the 2001 Survey.
6. A question was added to the trip-related expenditures section in the 2001 Survey to ascertain how much of the total was spent in the respondent's state of residence when the respondent participated in hunting, fishing, or wildlife watching out-of-state.
7. Boating questions were added to the 2001 Surveys fishing section. The respondent was asked about the extent of boat usage for the three types of fishing.
8. The 1996 Survey included questions about the months residential wildlife watchers fed birds. These questions were not repeated in the 2001 Survey.
9. The contingent valuation sections of the three types of wildlife-related recreation were altered, using an open-ended question format instead of 1996's dichotomous choice format.

#### **Important instrument changes in the 2001 Survey**

1. The 1991 and 1996 single race category "Asian or Pacific Islander" was changed to two categories "Asian" and "Native Hawaiian or Other Pacific Islander." In 1991 and 1996, the respondent was required to pick only one category, while in 2001 the respondent could pick any combination of categories. The next question stipulated that the respondent could only be identified with one category and then asked what that category was.

**Table B-1. Comparison of Wildlife-Related Recreation in the United States: 1991 to 2001**

(U.S. population 16 years old and older. Numbers in thousands)

Participants, days, and expenditures	1991 (Number)	2001 (Number)	1991-2001 (Percent change)	1996 (Number)	2001 (Number)	1996-2001 (Percent change)
<b>Hunting</b>						
Hunters, total .....	14,063	13,034	-7	13,975	13,034	-7
Hunting days, total .....	235,806	228,368	-3*	256,676	228,368	-11
Hunting expenditures, total (2001 dollars) <sup>1</sup> .....	\$16,031,197	\$20,611,025	29	\$23,293,156	\$20,611,025	-12*
<b>Fishing</b>						
Anglers, total .....	35,578	34,067	-4	35,246	34,067	-3
Fishing days, total .....	511,329	557,394	9	625,893	557,394	-11
Fishing expenditures, total (2001 dollars) <sup>1</sup> .....	\$31,175,168	\$35,632,132	14	\$42,710,679	\$35,632,132	-17
<b>Wildlife Watching</b>						
Total wildlife watching .....	76,111	66,105	-13	62,868	66,105	5
Residential .....	73,904	62,928	-15	60,751	62,928	4
Nonresidential .....	29,999	21,823	-27	23,652	21,823	-8
Days, nonresidential .....	342,406	372,006	9*	313,790	372,006	19
Wildlife-watching expenditures, total (2001 dollars) <sup>1</sup> .....	\$24,002,990	\$33,730,868	41	\$29,062,524	\$33,730,868	16

\* Not different from zero at the 5 percent confidence level.

<sup>1</sup>All 2001 and 1996 expenditure categories are adjusted to make them comparable to 1991.

**Table B-2. Anglers and Hunters by Census Division: 1991, 1996, and 2001**

(U.S. population 16 years old and older. Numbers in thousands)

Sportspersons	1991		1996		2001	
	Number	Percent	Number	Percent	Number	Percent
<b>UNITED STATES</b>						
Total population .....	189,964	100	201,472	100	212,298	100
Sportspersons .....	39,979	21	39,694	20	37,805	18
Anglers .....	35,578	19	35,246	17	34,067	16
Hunters .....	14,063	7	13,975	7	13,034	6
<b>New England</b>						
Total population .....	10,180	100	10,306	100	10,575	100
Sportspersons .....	1,658	16	1,673	16	1,504	14
Anglers .....	1,545	15	1,520	15	1,402	13
Hunters .....	444	4	465	5	386	4
<b>Middle Atlantic</b>						
Total population .....	29,216	100	29,371	100	29,806	100
Sportspersons .....	4,508	15	4,192	14	3,810	13
Anglers .....	3,871	13	3,627	12	3,250	11
Hunters .....	1,746	6	1,453	5	1,633	5
<b>East North Central</b>						
Total population .....	32,188	100	33,121	100	34,082	100
Sportspersons .....	7,202	22	6,912	21	6,400	19
Anglers .....	6,264	19	6,006	18	5,655	17
Hunters .....	2,789	9	2,712	8	2,421	7
<b>West North Central</b>						
Total population .....	13,504	100	13,875	100	14,430	100
Sportspersons .....	4,143	31	3,977	29	4,239	29
Anglers .....	3,647	27	3,416	25	3,836	27
Hunters .....	1,709	13	1,917	14	1,710	12
<b>South Atlantic</b>						
Total population .....	33,682	100	36,776	100	39,286	100
Sportspersons .....	6,996	21	7,282	20	6,957	18
Anglers .....	6,441	19	6,636	18	6,451	16
Hunters .....	2,083	6	2,050	6	1,875	5
<b>East South Central</b>						
Total population .....	11,667	100	12,459	100	12,976	100
Sportspersons .....	2,984	26	2,907	23	2,865	22
Anglers .....	2,635	23	2,514	20	2,543	20
Hunters .....	1,279	11	1,301	10	1,164	9
<b>West South Central</b>						
Total population .....	19,926	100	21,811	100	23,337	100
Sportspersons .....	5,125	26	5,093	23	4,924	21
Anglers .....	4,592	23	4,616	21	4,375	19
Hunters .....	1,843	9	1,812	8	1,988	9
<b>Mountain</b>						
Total population .....	10,092	100	11,966	100	13,308	100
Sportspersons .....	2,488	25	2,761	23	2,757	21
Anglers .....	2,079	21	2,411	20	2,443	18
Hunters .....	1,069	11	1,061	9	1,020	8
<b>Pacific</b>						
Total population .....	29,508	100	31,787	100	34,498	100
Sportspersons .....	4,875	17	4,897	15	4,349	13
Anglers .....	4,505	15	4,501	14	4,111	12
Hunters .....	1,101	4	1,203	4	837	2

**Table B-3. Wildlife-Watching (Nonconsumptive) Participants by Census Division: 1991, 1996, and 2001**

(U.S. population 16 years old and older. Numbers in thousands)

Wildlife watching	1991		1996		2001	
	Number	Percent	Number	Percent	Number	Percent
<b>UNITED STATES</b>						
Total population	189,964	100	201,472	100	212,298	100
Wildlife-watching participants	76,111	40	62,868	31	66,105	31
Nonresidential	29,999	16	23,652	12	21,823	10
Residential	73,904	39	60,751	30	62,928	30
<b>New England</b>						
Total population	10,180	100	10,306	100	10,575	100
Wildlife-watching participants	4,598	45	3,710	36	3,875	37
Nonresidential	1,856	18	1,443	14	1,155	11
Residential	4,544	45	3,586	35	3,765	36
<b>Middle Atlantic</b>						
Total population	29,216	100	29,371	100	29,806	100
Wildlife-watching participants	10,556	36	8,185	28	8,740	29
Nonresidential	4,166	14	2,960	10	2,849	10
Residential	10,282	35	8,023	27	8,452	28
<b>East North Central</b>						
Total population	32,188	100	33,121	100	34,082	100
Wildlife-watching participants	14,511	45	11,731	35	11,631	34
Nonresidential	5,572	17	4,501	14	3,571	10
Residential	14,175	44	11,297	34	11,196	33
<b>West North Central</b>						
Total population	13,504	100	13,875	100	14,430	100
Wildlife-watching participants	6,924	51	5,089	37	6,206	43
Nonresidential	2,654	20	1,927	14	2,059	14
Residential	6,722	50	4,900	35	5,938	41
<b>South Atlantic</b>						
Total population	33,682	100	36,776	100	39,286	100
Wildlife-watching participants	13,047	39	11,252	31	11,395	29
Nonresidential	4,450	13	3,992	11	3,469	9
Residential	12,813	38	10,964	30	10,911	28
<b>East South Central</b>						
Total population	11,667	100	12,459	100	12,976	100
Wildlife-watching participants	4,864	42	3,904	31	4,514	35
Nonresidential	1,592	14	1,118	9	1,086	8
Residential	4,765	41	3,795	30	4,390	34
<b>West South Central</b>						
Total population	19,926	100	21,811	100	23,337	100
Wildlife-watching participants	7,035	35	5,933	27	5,747	25
Nonresidential	2,459	12	2,096	10	1,822	8
Residential	6,817	34	5,773	26	5,490	24
<b>Mountain</b>						
Total population	10,092	100	11,966	100	13,308	100
Wildlife-watching participants	4,437	44	4,099	34	4,619	35
Nonresidential	2,215	22	1,967	16	2,019	15
Residential	4,145	41	3,855	32	4,282	32
<b>Pacific</b>						
Total population	29,508	100	31,787	100	34,498	100
Wildlife-watching participants	10,139	34	8,966	28	9,377	27
Nonresidential	5,035	17	3,648	11	3,793	11
Residential	9,641	33	8,558	27	8,504	25

# *Appendix C*



## *Appendix C.*

### *Participants 6 to 15 Years Old*

The 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation was carried out in two phases. The first (or screening) phase began in April 2001. The main purpose of this phase was to collect information about persons 16 years old and older in order to develop a sample of potential sportsmen and wildlife-watching participants for the second (or detailed) phase. Information was also collected on the number of persons 6 to 15 years old who participated in wildlife-related recreation activities in 2000. These data are reported here in order to include the recreation activity of 6- to 15-year-olds in this report.

It is important to emphasize that the information reported here from the 2001 screening questionnaires relates to activity only up to and including 2000.

Also, these data were based on long-term recall (at least 12-month recall was required for most of these tables) and were reported, in most cases, by one household respondent speaking for all household members rather than the shorter term recall of the actual participant, as in the case of the 2001 detailed phase.

Tables C-1 to C-3 report data on participants 6 to 15 years old in 2000. Detailed expenditures and recreational activity data were not gathered for the 6- to 15-year-old participants.

Because of the difference in methodologies of the screening phase and the detailed phase of the 2001 Survey, the data are not comparable. Only participants 16 years old and older were eligible for the detailed phase. The

detailed phase was a series of three interviews conducted at 4-month intervals. The screening interviews were 1-year recall. The shorter recall period of the detailed phase had better data accuracy. It has been found in survey studies that in many cases longer recall periods result in over-estimating participation in and expenditures on wildlife-related recreation activities.

**Table C-1. Georgia Residents 6 to 15 Years Old Participating in Fishing and Hunting: 2000**

(State population 6 to 15 years old. Numbers in thousands)

Sportspersons	Sportspersons 6 to 15 years old		
	Number	Percent of sports- persons	Percent of population
<b>Total sportspersons</b> .....	<b>406</b>	<b>100</b>	<b>33</b>
<b>Total anglers</b> .....	<b>398</b>	<b>98</b>	<b>32</b>
Fished only .....	348	86	28
Fished and hunted .....	*49	*12	*4
<b>Total hunters</b> .....	<b>*57</b>	<b>*14</b>	<b>*5</b>
Hunted only .....	...	...	...
Hunted and fished .....	*49	*12	*4

\* Estimate based on a small sample size.      ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses. Column showing percent of sportspersons is based on the "Total sportspersons" row. Column showing percent of population is based on the state population 6 to 15 years old, including those who did not fish or hunt. Data reported on this table are from screening interviews in which one adult household member responded for household members 6 to 15 years old. The screening interview required the respondent to recall 12 months worth of activity. Includes state residents who fished or hunted only in other countries.

**Table C-2. Selected Characteristics of Georgia Resident Anglers and Hunters 6 to 15 Years Old: 2000**

(State population 6 to 15 years old. Numbers in thousands)

Characteristic	Population		Sportspersons (fished or hunted)			Anglers			Hunters		
	Number	Percent	Number	Percent who participated	Percent of sportspersons	Number	Percent who participated	Percent of anglers	Number	Percent who participated	Percent of hunters
<b>Total persons</b> .....	<b>1,224</b>	<b>100</b>	<b>406</b>	<b>33</b>	<b>100</b>	<b>398</b>	<b>32</b>	<b>100</b>	<b>*57</b>	<b>*5</b>	<b>*100</b>
<b>Population Density of Residence</b>											
Urban .....	633	52	189	30	47	189	30	47	...	...	...
Rural .....	591	48	217	37	53	209	35	53	*46	*8	*80
<b>Population Size of Residence</b>											
Metropolitan statistical areas (MSA) .....	788	64	275	35	68	275	35	69	...	...	...
1,000,000 or more .....	559	46	234	42	58	234	42	59	...	...	...
250,000 to 999,999 .....	229	19	*42	*18	*10	*42	*18	*10	...	...	...
50,000 to 249,999 .....	...	...	...	...	...	...	...	...	...	...	...
Outside MSA .....	436	36	130	30	32	122	28	31	...	...	...
<b>Sex</b>											
Male .....	649	53	259	40	64	251	39	63	*53	*8	*93
Female .....	575	47	146	25	36	146	25	37	...	...	...
<b>Age</b>											
6 to 8 years .....	359	29	118	33	29	114	32	29	...	...	...
9 to 11 years .....	349	28	*111	*32	*27	*111	*32	*28	...	...	...
12 to 15 years .....	516	42	176	34	44	173	33	43	...	...	...
<b>Ethnicity</b>											
Hispanic .....	*67	*6	...	...	...	...	...	...	...	...	...
Non-Hispanic .....	1,156	94	398	34	98	390	34	98	*57	*5	*100
<b>Race</b>											
White .....	806	66	344	43	85	336	42	84	*53	*7	*93
Black .....	392	32	*51	*13	*13	*51	*13	*13	...	...	...
All others .....	...	...	...	...	...	...	...	...	...	...	...
<b>Annual Household Income</b>											
Less than \$10,000 .....	*89	*7	...	...	...	...	...	...	...	...	...
\$10,000 to \$19,999 .....	*67	*5	...	...	...	...	...	...	...	...	...
\$20,000 to \$29,999 .....	152	12	...	...	...	...	...	...	...	...	...
\$30,000 to \$39,999 .....	126	10	*65	*51	*16	*65	*51	*16	...	...	...
\$40,000 to \$49,999 .....	128	10	*42	*33	*10	*42	*33	*11	...	...	...
\$50,000 to \$74,999 .....	172	14	*85	*49	*21	*85	*49	*21	...	...	...
\$75,000 or more .....	169	14	*101	*60	*25	*101	*60	*25	...	...	...
Not reported .....	320	26	*68	*21	*17	*60	*19	*15	...	...	...

\* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Percent who participated shows the percent of each row's population who participated in the activity named by the column (the percent of those living in urban areas who fished, etc.). Remaining percent columns show the percent of each column's participants who are described by the row heading (the percent of anglers who lived in urban areas, etc.). Data reported on this table are from screening interviews in which one adult household member responded for 6 to 15 years old. The screening interview required the respondent to recall 12 months worth of activity. Includes state residents who fished or hunted only in other countries.

**Table C-3. Georgia Residents 6 to 15 Years Old Participating in Wildlife Watching: 2000**

(State population 6 to 15 years old. Numbers in thousands)

Participants	Number	Percent of participants	Percent of population
<b>Total participants</b> .....	<b>325</b>	<b>100</b>	<b>27</b>
Nonresidential .....	136	42	11
Residential .....	286	88	23
Observe wildlife.....	228	70	19
Photograph wildlife .....	*42	*13	*3
Feed wild birds or other wildlife .....	189	58	15
Maintain plantings or natural areas.....	*41	*13	*3

\* Estimate based on a small sample size.

Note: Detail does not add to total because of multiple responses. The column showing percent of participants is based on total participants. The column showing percent of population is based on the state population 6 to 15 years old, including those who did not participate in wildlife watching. Data reported on this table are from screening interviews in which one adult household member responded for household members 6 to 15 years old. The screening interview required the respondent to recall 12 months worth of activity.

# *Appendix D*



# Appendix D.

## Sample Design and Statistical Accuracy

This Appendix is presented in two parts. The first part is the U.S. Census Bureau Source and Accuracy Statement. This statement describes the sampling design for the 2001 Survey and highlights the steps taken to produce estimates from the completed questionnaires. The statement explains the use of standard errors and confidence intervals. It also provides comprehensive information about errors characteristic of surveys, and formulas and parameters to calculate an approximate standard error or confidence interval for each number published in this report. The second part reports approximate standard errors (S.E.s) for selected measures of participation and expenditures for wildlife-related recreation. Tables D-1 to D-3 show common estimates by state with their estimated standard errors. Tables D-4 to D-9 provide parameters for computing standard errors.

### Source and Accuracy Statement for the Georgia State Report of the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation

#### Source of Data

The estimates in this report are based on data collected in the *2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation* (FHWAR).

The 2001 FHWAR Survey was designed to provide state-level estimates of the number of participants in recreational hunting and fishing, and in wildlife-watching activities (e.g., wildlife observation). Information was collected on the number of participants, where and how often they participated, the type of wildlife encountered, and the amounts of money spent on wildlife-related recreation.

The survey was conducted in two stages: an initial screening of households to

identify likely sportspersons and wildlife-watching participants, and a series of follow-up interviews of selected persons to collect detailed data about their wildlife-related recreation during 2001.

The 2001 FHWAR state samples were selected from expired samples of the Current Population Survey (CPS).

### Sample Design

#### A. CPS - Current Population Survey

The expired CPS samples used for the 2001 FHWAR had been selected initially from 1990 decennial census files with coverage in all 50 states and the District of Columbia. The samples, while active, had been continually updated to reflect new construction. The sample addresses were located in 754 geographic areas consisting of a county or several contiguous counties.

#### B. The FHWAR Screening Sample

The screening sample consisted of households identified from the above sources. In Georgia, 1,538 household interviews were assigned to be interviewed. Of these, 10.1 percent were found to be vacant or otherwise not enumerated. Of the remaining households, about 9.6 percent could not be enumerated because the occupants were not found at home after repeated calls or were unavailable for some other reason.

Overall, 1,237 completed household interviews were obtained for a state response rate of 90.4 percent. The field representatives asked screening questions for all household members 6 years old and older. Interviewing for the screen was conducted during April, May, and June of 2001.

Data for the FHWAR sportspersons sample and wildlife-watchers sample were collected in three waves. The first wave started in April 2001, the second in September 2001, and the third in January 2002. In the sportspersons sample, all persons who hunted or fished in 2001 by the time of the screening interview were interviewed in the first wave. The remaining sportspersons sample were interviewed in the second wave. All sample persons (from both the first and second waves) were interviewed in the third wave.

The reference period was the preceding 4 months for waves 1 and 2. In wave 3, the reference period was either 4 or 8 months depending on when the sample person was first interviewed.

#### C. The Detailed Samples

Two independent detailed samples were chosen from the FHWAR screening sample. One consisted of sportspersons (people who hunt or fish) and the other of wildlife watchers (people who observe, photograph, or feed wildlife).

##### 1. Sportspersons

The Census Bureau selected the state detailed samples based on information reported during the screening phase. Every person 16 years old and older in the FHWAR screening sample was assigned to a sportspersons stratum based on time devoted to hunting/fishing in the past and time expected to be devoted to hunting/fishing in the future.

The four sportspersons categories were:

*Active* - a person who had already participated in hunting/fishing in 2001 at the time of the screener interview.

*Likely* - a person who had not participated in 2001 at the time of the screener but had participated in 2000 OR said they were likely to participate in 2001.

*Inactive* - a person who had not participated in 2000 or 2001 AND said they were somewhat unlikely to participate in 2001.

*Nonparticipant* - a person who had not participated in 2000 or 2001 AND said they were very unlikely to participate in 2001.

Persons were selected for the detailed phase based on these groupings.

Active sportspersons were given the detailed interview twice—at the same time of the screening interview (April-June 2001) and again in January/February 2002. Likely sportspersons and a subsample of the inactive sportspersons were also interviewed twice—first in September/October 2001, then in January/February 2002. If Census field representatives were not able to obtain the first interview, they attempted to interview the person in the final interviewing period with the reference period being the entire year. Persons in the nonparticipant group were not eligible for a detailed interview.

About **604** persons were designated for interviews in Georgia. Overall, **556** detailed sportspersons interviews were completed for a response rate of **92.1** percent.

## 2. Wildlife Watchers

The wildlife-watching state detailed sample also was selected based on information reported during the screening phase. Every person 16 years of age and

older was assigned to a category based on time devoted to wildlife-watching activities in previous years, participation in 2001 by the time of the screening interview, and intentions to participate in activities during the remainder of 2001.

Each person was placed into one of the following five groups based on their past participation:

*Active* - a person who had already participated in 2001 at the time of the screening interview.

*Avid* - a person who had not yet participated in 2001 but in 2000 had taken trips to participate in wildlife-watching activities for 21 or more days or had spent \$300 or more.

*Average* - a person who had not yet participated in 2001 but in 2000 had taken trips to wildlife-watch for less than 21 days and had spent less than \$300 OR had not participated in wildlife-watching activities but said they were very likely to in the remainder of 2001.

*Infrequent* - a person who had not participated in 2000 or 2001 but said they were somewhat likely or somewhat unlikely to participate in the remainder of 2001.

*Nonparticipant* - a person who had not participated in 2000 or 2001 and said they were very unlikely to participate during the remainder of 2001.

Persons were selected for the detailed phase based on these groupings. Persons in the nonparticipant group were not eligible for a detailed interview. A subsample of each of the other groups was selected to receive a detailed interview with the chance of being selected diminishing as the likelihood of participation diminished.

Wildlife-watching participants were given the detailed interview twice. Some received their first detailed interview at the same

time as the screening interview (April-June 2001). The rest received their first detailed interview in September/October 2001. All wildlife-watching participants received their second interview in January/February 2002. If Census field representatives were not able to obtain the first interview, they attempted to interview the person in the final interviewing period with the reference period being the entire year.

About **286** persons were designated for interviews in Georgia. Overall, **263** detailed wildlife-watching participant interviews were completed for a response rate of **92.0** percent.

## Estimation Procedure

Several stages of adjustments were used to derive the final 2001 FHWAR person weights. A brief description of the major components of the weights is given below.

All statistics for the population 6 to 15 years of age were derived from the screening interview. Statistics for the population 16 and over came from both the screening and detailed interviews. Estimates which came from the screening sample are presented in Appendix C.

### A. Screening Sample

Every interviewed person in the screening sample received a weight that was the product of the following factors:

1. *Base Weight*. The base weight is the inverse of the household's probability of selection.
2. *Household Noninterview Adjustment*. The noninterview adjustment inflated the weight assigned to interviewed households to account for households eligible for interview but for which no interview was obtained.
3. *First-Stage Adjustment*. The 754 areas designated for our samples were selected from over 2,000 such areas of the United States.

Some sample areas represent only themselves and are referred to as self-representing. The remaining areas represent other areas similar in selected characteristics and are thus designated nonself-representing. The first-stage factor reduces the component of variation arising from sampling the nonself-representing areas.

4. *Second-Stage Adjustment.* This adjustment brings the estimates of the total population in each state into agreement with census-based estimates of the civilian noninstitutional and nonbarrack military populations for each state.

## B. Sportspersons Sample

Every interviewed person in the sportspersons detailed sample received a weight that was the product of the following factors:

1. *Screening Weight.* This is the individual's final weight from the screening sample.
2. *Sportspersons Stratum Adjustment.* This factor inflated the weights of persons selected for the detailed sample to account for the subsampling done within each sportsperson's stratum.
3. *Sportspersons Noninterview Adjustment.* This factor adjusts the weights of the interviewed sportspersons to account for sportspersons selected for the detailed sample for whom no interview was obtained. A person was considered a noninterview if he/she were not interviewed in the third wave of interviewing.
4. *Sportspersons Ratio Adjustment Factor.* This is a ratio adjustment of the detailed sample to the screening sample within sportspersons sampling stratum. This adjustment brings the population estimates of persons age 16 years old or older from the detailed sample into agreement with the same estimates from the screening sample, which was a much larger sample.

## C. Wildlife-Watchers Sample

Every interviewed person in the wildlife-watchers detailed sample received a weight that was the product of the following factors:

1. *Screening Weight.* This is the individual's final weight from the screening sample.
2. *Wildlife-Watchers Stratum Adjustment.* This factor inflated the weights of persons selected for the detailed sample to account for the subsampling done within each wildlife-watcher stratum.
3. *Wildlife-Watchers Noninterview Adjustment.* This factor adjusts the weights of the interviewed wildlife-watching participants to account for wildlife watchers selected for the detailed sample for which no interview was obtained. A person was considered a noninterview if he/she were not interviewed in the third wave of interviewing.
4. *Wildlife-Watchers Ratio Adjustment Factor.* This is a ratio adjustment of the detailed sample to the screening sample within wildlife-watchers sampling strata. This adjustment brings the population estimates of persons age 16 years old or older from the detailed sample into agreement with the same estimates from the screening sample, which was a much larger sample.

## Accuracy of the Estimates

Since the 2001 estimates came from a sample, they may differ from figures from a complete census using the same questionnaires, instructions, and enumerators. A sample survey estimate has two possible types of error—sampling and nonsampling. The accuracy of an estimate depends on both types of error, but the full extent of the nonsampling error is unknown. Consequently, one should be particularly careful when interpreting results based on a relatively small number of cases or on small differences between estimates. The standard errors for the 2001 FHWAR estimates primarily indicate the magnitude of sampling error. They also partially measure the effect of some

nonsampling errors in responses and enumeration, but do not measure systematic biases in the data. (Bias is the average over all possible samples of the differences between the sample estimate and the actual value.)

## Nonsampling Variability

Let us suppose that a comparable complete enumeration was conducted. That is, an interview is attempted for every person 16 years old and older in the United States. Chances are we will not correctly estimate every parameter under consideration (for example, the proportion of people who fished). In this instance, the difference is due solely to nonsampling errors. Nonsampling errors also occur in sample surveys and can be attributed to several sources including the following:

- The inability to obtain information about all cases in the sample.
- Definitional difficulties.
- Differences in the interpretation of questions.
- Respondents' inability or unwillingness to provide correct information.
- Respondents' inability to recall information.
- Errors made in data collection such as in recording or coding the data.
- Errors made in the processing of data.
- Errors made in estimating values for missing data.
- Failure to represent all units with the sample (undercoverage).

Overall CPS undercoverage is estimated to be about 8 percent. Generally, undercoverage is larger for males than for females and larger for Blacks and other races combined than for Whites. Ratio estimation to independent population controls, as described previously, partially corrects for the bias due to survey undercoverage. However, biases exist in the estimates to the extent that missed persons in missed households or missed persons in interviewed households have different

characteristics from those of interviewed persons in the same age group.

*Comparability of Data.* Data obtained from the 2001 FHWAR and other sources are not entirely comparable. This results from differences in field interviewer training and experience and in differing survey processes. This is an

example of nonsampling variability not reflected in the standard errors. Use caution when comparing results from different sources (See Appendix B).

*Note When Using Small Estimates.* Because of the large standard errors involved, summary measures (such as medians and percentage distributions)

would probably not reveal useful information when computed on a base smaller than 100,000. Take care in the interpretation of small differences. For instance, even a small amount of nonsampling error can cause a borderline difference to appear significant or not, thus distorting a seemingly valid hypothesis test.

## Sampling Variability

The particular sample used for the 2001 FHWAR Survey is one of a large number of all possible samples of the same size that could have been selected using the same sample design. Estimates derived from the different samples would differ from each other. This sample-to-sample variability is referred to as sampling variability and is generally measured by the standard error. The exact sampling error is unknown. However, guides to the potential size of the sampling error are provided by the standard error of the estimate.

Since the standard error of a survey estimate attempts to provide a measure of the variation among the estimates from the possible samples, it is a measure of the precision with which an estimate from a particular sample approximates the average result of all possible samples. Standard errors, as calculated by methods described next in "Standard Errors and Their Use," are primarily measures of sampling variability, although they may include some nonsampling error.

The sample estimate and its standard error enable one to construct a confidence interval, a range that would include the average result of all possible samples with a known probability. For example, if all possible samples were surveyed under essentially the same general conditions and using the same sample design, and if an estimate and its standard error were calculated from each sample, then approximately 90 percent of the intervals from 1.645 standard errors below the estimate to 1.645 standard errors above the estimate would include the average result of all possible samples.

A particular confidence interval may or may not contain the average estimate derived from all possible samples. However, one can say with specified confidence that the interval includes the average estimate calculated from all possible samples.

Standard errors may also be used to perform hypothesis testing—a procedure for distinguishing between population parameters using sample estimates. One common type of hypothesis is that the population parameters are different. An example would be comparing the proportion of anglers to the proportion of hunters.

Tests may be performed at various levels of significance where a significance level is the probability of concluding that the characteristics are different when, in fact, they are the same. To conclude that two characteristics are different at the 0.10 level of significance, the absolute value of the estimated difference between characteristics must be greater than or equal to 1.645 times the standard error of the difference.

This report uses 90-percent confidence intervals and 0.10 levels of significance to determine statistical validity. Consult standard statistical textbooks for alternative criteria.

*Standard Errors and Their Use.* A number of approximations are required to derive, at a moderate cost, standard errors applicable to all the estimates in this report. Instead of providing an individual standard error for each estimate, parameters are provided to calculate standard errors for each type of characteristic. These parameters are listed in tables D-4 to D-9. Methods for using the parameters to calculate standard errors of various estimates are given in the next sections.

*Standard Errors of Estimated Numbers.* The approximate standard error,  $s_x$ , of an estimated number shown in this report can be obtained using the following formulas. Formula (1) is used to calculate the standard errors of levels of sportspersons, anglers, and wildlife watchers.

$$s_x = \sqrt{ax^2 + bx} \quad (1)$$

Here,  $x$  is the size of the estimate and  $a$  and  $b$  are the parameters in the tables associated with the particular characteristic.

Formula (2) is used for standard errors of aggregates, i.e., trips, days, and expenditures.

$$s_x = \sqrt{ax^2 + bx + \frac{cx^2}{y}} \quad (2)$$

Here,  $x$  is again the size of the estimate;  $y$  is the base of the estimate; and  $a$ ,  $b$ , and  $c$  are the parameters in the tables associated with the particular characteristic.

*Illustration of the Computation of the Standard Error of an Estimated Number*

Suppose that a table shows that 37,805,000 persons 16+ either fished or hunted in the United States in 2001. Using formula (1) with the parameters  $a = -0.000020$  and  $b = 4,289$  from table D-5, the approximate standard error of the estimates number of 37,805,000 sportspersons 16+ is

$$s_n = \sqrt{(-0.000020)(37,805,000)^2 + (4,289)(37,805,000)} = 365,500$$

The 90-percent confidence interval for the estimated number of sportspersons 16+ is from 37,203,800 to 38,406,200, i.e.,  $37,805,000 \pm 1.645 \times 365,500$ . Therefore, a conclusion that the average estimate derived from all possible samples lies within a range computed in this way would be correct for roughly 90 percent of all possible samples.

Suppose that another table shows that 13,034,300 hunters 16+ engaged in 228,367,800 days of participation in 2001 in the United States. Using formula (2) with the parameters  $a = 0.000168$ ,  $b = -11,904$ , and  $c = 12,496$  from table D-7, the approximate standard error on 228,367,800 estimated days on an estimated base of 13,034,300 hunters is

$$s_x = \sqrt{0.000168 \times 228,367,800^2 + (-11,904) \times 228,367,800 + \frac{12,496 \times 228,367,800^2}{13,034,300}} = 7,486,100$$

The 90-percent confidence interval on the estimate of 228,367,800 days is from 216,053,200 to 240,682,400, i.e.,  $228,367,800 \pm 1.645 \times 7,486,100$ . Again, a conclusion that the average estimate derived from all possible samples lies within a range computed in this way would be correct for roughly 90 percent of all possible samples.

*Standard Errors of Estimated Percentages.* The reliability of an estimated percentage, computed using sample data for both numerator and denominator, depends on the size of the percentage and its base. Estimated percentages are relatively more reliable than the corresponding estimates of the numerators of the percentages, particularly if the percentages are 50 percent or more. When the numerator and the denominator of the percentage are in different categories, use the parameter in the tables indicated by the numerator.

The approximate standard error,  $s_{x,p}$ , can be obtained by use of the formula

$$s_{x,p} = \sqrt{\frac{bp(100-p)}{x}} \quad (3)$$

Here,  $x$  is the total number of sportspersons, hunters, etc., which is the base of the percentage;  $p$  is the percentage ( $0 \leq p \leq 100$ ); and  $b$  is the parameter in the tables associated with the characteristic in the numerator of the percentage.

*Illustration of the Computation of the Standard Error of an Estimated Percentage*

Suppose that a table shows that of the 13,034,300 hunters 16+ in the United States, 22.7 percent hunted migratory birds. From table D-5, the appropriate  $b$  parameter is 3,793. Using formula (3), the approximate standard error on the estimate of 22.7 percent is

$$s_{x,p} = \sqrt{\frac{3,793 \times 22.7 \times (100 - 22.7)}{13,034,300}} = 0.71$$

Consequently, the 90-percent confidence interval for the estimate percentage of migratory bird hunters 16+ is from 21.5 percent to 23.9 percent, i.e.  $22.7 \pm 1.645 \times 0.71$ .

*Standard Error of a Difference.* The standard error of the difference between two sample estimates is approximately equal to

$$s_{x-y} = \sqrt{s_x^2 + s_y^2} \quad (4)$$

where  $s_x$  and  $s_y$  are the standard errors of the estimates  $x$  and  $y$ . The estimates can be numbers, percentages, ratios, etc. This will represent the actual standard error quite accurately for the difference between estimates of the same characteristic in two different areas, or for the difference between separate and uncorrelated characteristics in the same area. However, if there is a high positive (negative) correlation between the two characteristics, the formula will overestimate (underestimate) the true standard error.

*Illustration of the Computation of the Standard Error of a Difference*

Suppose that a table shows that of the 13,034,300 hunters in the United States, 9,985,100 were licensed hunters, and 1,689,300 were exempt from a hunting license. The corresponding percentages are 76.6 percent and 13.0 percent, respectively. The apparent difference between the percent of licensed hunters and hunters who are exempt from a license is 63.6 percent. Using formula (3) and the appropriate  $b$  parameter from Table D-5, the approximate standard errors of 76.6 percent and 13.0 percent are 0.83 and 1.59, respectively. Using formula (4), the approximate standard error of the estimated difference of 63.6 percent is

$$s_{x-y} = \sqrt{0.72^2 + 0.57^2} = 0.92$$

The 90-percent confidence interval on the difference between licensed hunters and those who were exempt from a hunting license is from 62.1 to 65.1 percent, i.e.,  $63.6 \pm 1.645 \times 0.92$ . Since the interval does not contain zero, we can conclude with 90 percent confidence that the percentage of licensed hunters is greater than the percentage of hunters who are exempt from a hunting license.

*Standard Errors of Estimated Averages.* Certain mean values for sportspersons, anglers, etc., shown in the report were calculated as the ratio of two numbers. For example, average days per angler is calculated as:

$$\frac{x}{y} = \frac{\text{total days}}{\text{total anglers}}$$

Standard errors for these averages may be approximated by the use of formula (5) below.

$$s_{x/y} = \frac{x}{y} \sqrt{\left(\frac{s_x}{x}\right)^2 + \left(\frac{s_y}{y}\right)^2 - 2r \frac{s_x s_y}{xy}} \quad (5)$$

In formula (5),  $r$  represents the correlation coefficient between the numerator and the denominator of the estimate. In the above formula, use 0.7 as an estimate of  $r$ .

*Illustration of the Computation of the Standard Error of an Estimated Average*

Suppose that a table shows that the average days per angler 16 years old or older for all fishing was 16.4 days. Using formulas (1) and (2) above, we compute the standard error on total days, 557,393,900, and total anglers, 34,071,100, to be 8,726,000 and 350,600, respectively. The approximate standard error on the estimated average of 16.4 days is

$$s_{x/y} = \frac{557,393,900}{34,071,100} \sqrt{\left(\frac{8,726,000}{557,393,900}\right)^2 + \left(\frac{350,600}{34,071,100}\right)^2 - 2 \times 0.7 \times \frac{8,726,000 \times 350,600}{557,393,900 \times 34,071,100}} = 0.18$$

therefore, the 90-percent confidence interval on the estimated average of 16.4 days is from 16.1 to 16.7, i.e.,  $16.4 \pm 1.645 \times 0.18$ .

**Table D-1. Approximate Standard Errors of Resident Anglers, Days of Fishing by State Residents, and Expenditures for Fishing by State Residents**

(Numbers in thousands)

State	Participation		Days		Expenditures in dollars	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
Alabama	634	28	10,841	452	\$600,364	\$83,099
Alaska	185	8	2,445	262	\$213,781	\$18,009
Arizona	394	23	4,327	510	\$326,068	\$59,815
Arkansas	546	31	11,776	1,296	\$386,164	\$50,245
California	2,389	124	27,878	3,138	\$2,162,620	\$362,896
Colorado	626	31	7,639	638	\$772,537	\$105,782
Connecticut	324	17	5,496	631	\$327,787	\$33,697
Delaware	89	5	1,341	213	\$92,474	\$20,799
Florida	2,109	91	43,439	4,318	\$3,426,795	\$420,930
Georgia	1,043	52	15,559	1,799	\$612,414	\$87,929
Hawaii	113	7	2,662	554	\$97,707	\$18,656
Idaho	261	15	3,097	330	\$230,006	\$25,225
Illinois	1,415	73	21,603	1,814	\$1,147,325	\$186,223
Indiana	833	41	15,537	1,865	\$469,379	\$80,663
Iowa	524	28	8,534	672	\$319,087	\$37,612
Kansas	431	21	6,426	907	\$331,195	\$46,971
Kentucky	630	36	12,135	1,041	\$551,378	\$64,270
Louisiana	763	44	12,130	1,412	\$648,285	\$61,451
Maine	216	13	3,449	397	\$158,533	\$25,580
Maryland	531	31	7,112	1,027	\$495,458	\$63,380
Massachusetts	500	23	8,387	789	\$460,207	\$71,626
Michigan	1,039	66	18,869	3,090	\$960,469	\$172,980
Minnesota	1,345	59	29,344	3,270	\$1,251,828	\$159,542
Mississippi	475	28	9,325	1,652	\$317,408	\$47,936
Missouri	982	46	12,396	859	\$757,928	\$93,775
Montana	221	11	3,656	468	\$202,751	\$25,563
Nebraska	265	13	3,378	281	\$179,878	\$27,770
Nevada	180	12	2,230	387	\$235,599	\$39,457
New Hampshire	164	8	2,974	305	\$186,436	\$29,039
New Jersey	639	30	10,973	1,632	\$712,797	\$90,138
New Mexico	215	13	2,407	358	\$196,661	\$30,674
New York	1,340	79	23,167	2,932	\$921,777	\$169,508
North Carolina	894	45	14,615	1,280	\$924,937	\$105,704
North Dakota	142	6	2,584	217	\$182,746	\$19,235
Ohio	1,390	65	22,014	1,944	\$905,650	\$97,445
Oklahoma	685	35	13,228	1,554	\$493,616	\$62,689
Oregon	551	27	8,720	1,081	\$590,738	\$64,749
Pennsylvania	1,270	80	21,417	2,271	\$762,242	\$69,554
Rhode Island	95	5	1,638	179	\$117,842	\$15,812
South Carolina	604	28	10,321	946	\$496,974	\$58,949
South Dakota	146	8	2,414	289	\$101,893	\$15,767
Tennessee	803	40	15,451	1,519	\$468,841	\$92,443
Texas	2,381	137	34,148	5,143	\$2,129,921	\$258,534
Utah	424	17	5,346	344	\$400,214	\$36,948
Vermont	104	7	1,969	212	\$72,326	\$10,954
Virginia	888	47	14,774	1,198	\$688,844	\$103,105
Washington	873	37	13,520	1,142	\$966,874	\$89,559
West Virginia	273	16	4,346	349	\$146,288	\$19,717
Wisconsin	981	56	19,360	2,175	\$844,539	\$115,997
Wyoming	121	6	1,901	220	\$135,280	\$20,747

**Table D-2. Approximate Standard Errors of Resident Hunters, Days of Hunting by State Residents, and Expenditures for Hunting by State Residents**

(Numbers in thousands)

State	Participation		Days		Expenditures in dollars	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
Alabama	316	22	7,262	1,047	\$652,845	\$132,117
Alaska	74	5	982	174	\$111,678	\$18,869
Arizona	124	13	1,649	345	\$225,651	\$74,606
Arkansas	306	28	7,075	1,140	\$387,489	\$69,954
California	278	43	3,695	1,076	\$368,701	\$136,459
Colorado	168	18	1,982	338	\$185,277	\$39,453
Connecticut	45	7	824	199	\$69,359	\$24,196
Delaware	16	2	279	85	\$18,424	\$6,513
Florida	270	39	5,865	1,370	\$545,627	\$130,063
Georgia	377	32	7,882	1,023	\$505,894	\$88,503
Hawaii	18	4	322	92	\$17,266	\$6,678
Idaho	151	12	1,784	252	\$168,088	\$32,796
Illinois	340	44	5,842	2,234	\$527,776	\$181,913
Indiana	284	28	5,016	939	\$279,670	\$70,406
Iowa	203	16	4,086	725	\$185,082	\$38,141
Kansas	202	17	3,424	443	\$223,192	\$41,908
Kentucky	271	23	4,538	482	\$384,751	\$59,977
Louisiana	316	28	7,325	1,565	\$528,155	\$98,836
Maine	123	10	2,169	366	\$119,144	\$23,982
Maryland	124	14	1,992	352	\$143,143	\$33,553
Massachusetts	79	10	1,727	406	\$113,461	\$24,955
Michigan	725	54	8,784	1,080	\$556,880	\$131,109
Minnesota	582	40	8,673	930	\$601,497	\$97,084
Mississippi	257	23	6,977	1,283	\$306,157	\$74,399
Missouri	413	37	6,715	1,184	\$490,761	\$115,416
Montana	171	11	2,112	240	\$161,239	\$25,032
Nebraska	128	10	1,963	203	\$135,092	\$28,074
Nevada	49	6	558	104	\$149,292	\$38,530
New Hampshire	53	5	1,300	169	\$55,775	\$11,739
New Jersey	125	15	3,000	641	\$156,786	\$48,877
New Mexico	114	13	1,594	371	\$171,811	\$39,225
New York	642	51	13,124	1,611	\$975,691	\$202,696
North Carolina	313	33	8,372	1,717	\$566,504	\$124,764
North Dakota	92	7	1,417	232	\$78,745	\$11,192
Ohio	481	39	11,077	2,011	\$645,875	\$157,380
Oklahoma	241	24	5,965	1,012	\$323,215	\$66,265
Oregon	236	18	2,917	481	\$432,628	\$104,547
Pennsylvania	867	68	14,091	1,656	\$901,173	\$144,957
Rhode Island	11	2	193	61	\$15,214	\$6,679
South Carolina	232	21	4,657	810	\$280,030	\$52,190
South Dakota	90	7	1,347	215	\$112,448	\$25,400
Tennessee	320	31	6,962	1,248	\$659,063	\$122,182
Texas	1,126	108	15,186	3,248	\$1,467,034	\$244,695
Utah	178	13	2,512	386	\$308,510	\$53,000
Vermont	75	6	1,460	195	\$53,805	\$8,476
Virginia	308	32	5,819	866	\$340,273	\$64,904
Washington	231	17	3,311	352	\$339,470	\$81,858
West Virginia	235	16	4,791	637	\$201,282	\$39,066
Wisconsin	591	41	9,305	1,151	\$634,413	\$119,195
Wyoming	65	6	870	100	\$62,958	\$13,319

**Table D-3. Approximate Standard Errors of Resident Nonresidential Participants, Days of Nonresidential Participation by State Residents, and Trip-Related Expenditures for Nonresidential Activities by State Residents**

(Numbers in thousands)

State	Participation		Days		Expenditures in dollars	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
Alabama	280	40	3,782	746	\$109,926	\$24,800
Alaska	118	12	1,766	316	\$49,035	\$11,646
Arizona	329	45	3,537	571	\$174,237	\$34,239
Arkansas	190	43	1,545	407	\$70,811	\$24,515
California	2,191	254	25,134	4,024	\$894,746	\$175,803
Colorado	531	61	6,555	1,258	\$183,470	\$45,064
Connecticut	248	34	6,770	1,596	\$82,766	\$16,616
Delaware	43	8	595	135	\$15,727	\$4,444
Florida	1,279	171	20,371	4,477	\$508,519	\$118,715
Georgia	302	67	5,175	1,581	\$174,269	\$55,270
Hawaii	50	9	1,099	282	\$32,319	\$10,688
Idaho	214	43	2,540	558	\$58,842	\$15,651
Illinois	683	81	9,208	2,307	\$254,698	\$57,633
Indiana	484	67	12,319	3,071	\$140,460	\$34,864
Iowa	354	41	6,960	1,751	\$77,012	\$19,264
Kansas	286	34	2,470	347	\$81,231	\$15,404
Kentucky	329	40	6,365	2,093	\$93,187	\$24,333
Louisiana	250	39	2,364	562	\$53,259	\$18,104
Maine	174	21	3,384	614	\$64,202	\$16,036
Maryland	413	53	5,959	1,226	\$188,565	\$47,258
Massachusetts	427	59	10,992	2,658	\$145,764	\$30,650
Michigan	747	122	13,192	2,762	\$332,609	\$90,218
Minnesota	562	82	13,406	4,473	\$124,187	\$25,145
Mississippi	103	22	3,466	1,449	\$32,803	\$13,539
Missouri	581	129	12,028	3,251	\$130,720	\$32,074
Montana	195	22	2,975	631	\$75,050	\$20,978
Nebraska	150	21	1,853	405	\$34,077	\$7,859
Nevada	128	20	1,108	199	\$50,162	\$13,058
New Hampshire	139	21	1,641	371	\$47,666	\$11,395
New Jersey	564	66	10,772	2,207	\$230,096	\$41,929
New Mexico	205	26	5,375	1,059	\$69,803	\$29,473
New York	1,112	138	21,423	4,045	\$471,293	\$128,063
North Carolina	367	62	5,458	1,857	\$121,730	\$30,272
North Dakota	48	8	450	97	\$6,946	\$2,453
Ohio	887	94	20,687	5,732	\$266,849	\$54,800
Oklahoma	340	55	3,834	1,079	\$42,413	\$9,434
Oregon	561	68	7,288	981	\$175,678	\$25,285
Pennsylvania	1,173	148	19,672	4,214	\$445,924	\$108,522
Rhode Island	58	8	974	230	\$9,876	\$2,638
South Carolina	282	56	4,458	1,374	\$79,258	\$21,827
South Dakota	77	14	1,762	518	\$14,195	\$3,862
Tennessee	375	57	3,601	663	\$114,678	\$29,348
Texas	1,043	240	11,956	2,858	\$689,729	\$188,701
Utah	323	35	3,651	1,162	\$93,928	\$24,813
Vermont	109	17	2,081	526	\$30,384	\$6,397
Virginia	581	84	9,599	2,345	\$225,247	\$59,484
Washington	874	90	12,238	1,311	\$433,951	\$77,714
West Virginia	166	22	2,494	599	\$62,283	\$16,816
Wisconsin	769	85	14,215	3,348	\$268,911	\$43,219
Wyoming	95	10	1,778	411	\$27,150	\$9,198

**Table D-4. Parameters a and b for Calculating Approximate Standard Errors of Sportspersons, Anglers, Hunters, and Wildlife-Watching Participants**

(These parameters are to be used only to calculate estimates of standard errors for characteristics developed from the screening sample)

State	6 years old and over		6-15 year olds only	
	a	b	a	b
<b>United States</b> .....	<b>-0.00017</b>	<b>4,191</b>	<b>-0.000103</b>	<b>4,052</b>
Alabama .....	-0.000380	1,493	-0.002270	1,417
Alaska .....	-0.000948	512	-0.004485	489
Arizona .....	-0.000399	1,559	-0.001931	1,303
Arkansas .....	-0.001069	2,456	-0.006381	2,444
California .....	-0.000221	6,329	-0.001083	5,240
Colorado .....	-0.000521	1,819	-0.002707	1,551
Connecticut .....	-0.000336	996	-0.002227	1,007
Delaware .....	-0.000428	283	-0.002753	284
Florida .....	-0.000427	5,619	-0.002768	5,390
Georgia .....	-0.000506	3,361	-0.002856	3,156
Hawaii .....	-0.000659	705	-0.003146	538
Idaho .....	-0.001285	1,393	-0.006911	1,424
Illinois .....	-0.000427	4,572	-0.002310	4,043
Indiana .....	-0.000578	3,064	-0.003388	2,867
Iowa .....	-0.000803	2,084	-0.004015	1,702
Kansas .....	-0.000659	1,528	-0.004453	1,804
Kentucky .....	-0.000493	1,760	-0.002857	1,623
Louisiana .....	-0.000874	3,461	-0.004231	3,101
Maine .....	-0.000903	1,035	-0.005933	1,086
Maryland .....	-0.000463	2,151	-0.002684	1,973
Massachusetts .....	-0.000193	1,065	-0.001155	928
Michigan .....	-0.000606	5,281	-0.003588	5,206
Minnesota .....	-0.001004	4,226	-0.006232	4,574
Mississippi .....	-0.000955	2,368	-0.005090	2,275
Missouri .....	-0.000681	3,305	-0.004295	3,440
Montana .....	-0.001327	1,085	-0.008909	1,292
Nebraska .....	-0.000479	714	-0.002742	713
Nevada .....	-0.000588	845	-0.003740	838
New Hampshire .....	-0.000455	482	-0.002565	446
New Jersey .....	-0.000220	1,591	-0.001309	1,434
New Mexico .....	-0.000887	1,389	-0.004190	1,228
New York .....	-0.000298	4,907	-0.001768	4,458
North Carolina .....	-0.000506	3,353	-0.004040	4,161
North Dakota .....	-0.000994	581	-0.007996	816
Ohio .....	-0.000402	4,091	-0.002543	4,199
Oklahoma .....	-0.000774	2,323	-0.003822	2,007
Oregon .....	-0.000429	1,261	-0.002347	1,105
Pennsylvania .....	-0.000563	6,176	-0.004018	6,755
Rhode Island .....	-0.000327	291	-0.002062	276
South Carolina .....	-0.000542	1,838	-0.002857	1,566
South Dakota .....	-0.000788	522	-0.005465	667
Tennessee .....	-0.000798	3,887	-0.005230	3,954
Texas .....	-0.000674	11,571	-0.003386	10,479
Utah .....	-0.000532	948	-0.001723	667
Vermont .....	-0.001116	605	-0.008013	697
Virginia .....	-0.000636	3,870	-0.003336	3,090
Washington .....	-0.000190	956	-0.001070	889
West Virginia .....	-0.000784	1,344	-0.005315	1,323
Wisconsin .....	-0.000986	4,628	-0.005562	4,461
Wyoming .....	-0.001599	718	-0.007708	647

**Table D-5. Parameters a and b for Calculating Approximate Standard Errors of Levels for the Detailed Sportspersons Sample**

State	Sportspersons and anglers 16+		Hunters 16+	
	a	b	a	b
<b>United States</b> .....	<b>-0.000020</b>	<b>4,289</b>	<b>-0.000018</b>	<b>3,793</b>
Alabama.....	-0.000459	1,570	-0.000489	1,672
Alaska.....	-0.001213	535	-0.000986	435
Arizona.....	-0.000405	1,492	-0.000389	1,431
Arkansas.....	-0.001229	2,452	-0.001529	3,050
California.....	-0.000275	7,111	-0.000265	6,859
Colorado.....	-0.000602	1,924	-0.000649	2,075
Connecticut.....	-0.000385	976	-0.000429	1,086
Delaware.....	-0.000483	288	-0.000658	392
Florida.....	-0.000395	4,789	-0.000478	5,788
Georgia.....	-0.000512	3,106	-0.000472	2,858
Hawaii.....	-0.000509	454	-0.001043	930
Idaho.....	-0.001216	1,176	-0.001263	1,221
Illinois.....	-0.000487	4,492	-0.000648	5,979
Indiana.....	-0.000549	2,501	-0.000654	2,982
Iowa.....	-0.000888	1,953	-0.000659	1,450
Kansas.....	-0.000642	1,292	-0.000832	1,673
Kentucky.....	-0.000835	2,592	-0.000679	2,110
Louisiana.....	-0.000991	3,270	-0.000831	2,743
Maine.....	-0.000954	959	-0.000937	942
Maryland.....	-0.000516	2,087	-0.000397	1,605
Massachusetts.....	-0.000252	1,221	-0.000278	1,344
Michigan.....	-0.000643	4,874	-0.000592	4,491
Minnesota.....	-0.001114	4,105	-0.000889	3,278
Mississippi.....	-0.001033	2,169	-0.001124	2,360
Missouri.....	-0.000678	2,843	-0.000857	3,597
Montana.....	-0.001195	832	-0.001299	904
Nebraska.....	-0.000676	851	-0.000707	890
Nevada.....	-0.000617	893	-0.000576	833
New Hampshire.....	-0.000501	478	-0.000547	522
New Jersey.....	-0.000252	1,588	-0.000305	1,918
New Mexico.....	-0.000711	944	-0.001259	1,672
New York.....	-0.000364	5,159	-0.000301	4,277
North Carolina.....	-0.000451	2,646	-0.000616	3,618
North Dakota.....	-0.000814	389	-0.001295	619
Ohio.....	-0.000421	3,638	-0.000381	3,292
Oklahoma.....	-0.000954	2,454	-0.001042	2,679
Oregon.....	-0.000652	1,715	-0.000558	1,468
Pennsylvania.....	-0.000635	5,902	-0.000628	5,840
Rhode Island.....	-0.000423	322	-0.000510	389
South Carolina.....	-0.000527	1,616	-0.000696	2,133
South Dakota.....	-0.001088	605	-0.001013	563
Tennessee.....	-0.000577	2,490	-0.000749	3,232
Texas.....	-0.000603	9,273	-0.000733	11,259
Utah.....	-0.000616	955	-0.000714	1,106
Vermont.....	-0.001086	520	-0.001184	567
Virginia.....	-0.000546	2,930	-0.000658	3,529
Washington.....	-0.000427	1,913	-0.000305	1,368
West Virginia.....	-0.000781	1,133	-0.000891	1,288
Wisconsin.....	-0.001026	4,165	-0.000832	3,378
Wyoming.....	-0.001209	452	-0.001693	633

Table D-6. Parameters a, b, and c for Calculating Approximate Standard Errors for Expenditures for the Detailed Sportspersons Sample

State	Sportspersons and anglers 16+			Hunters 16+		
	a	b	c	a	b	c
<b>United States</b> .....	<b>0.000209</b>	<b>-81,938</b>	<b>16,935</b>	<b>0.000849</b>	<b>-338,404</b>	<b>16,347</b>
Alabama.....	0.009175	-61,525	5,860	0.024164	-1,049	5,155
Alaska.....	-0.006112	-16,312	2,378	0.021402	39,475	489
Arizona.....	0.026819	-7,817	2,578	0.092593	-90,851	2,072
Arkansas.....	0.004633	-23,748	6,426	0.014405	-62,820	5,523
California.....	0.021384	-70,276	15,458	0.113785	-136,283	6,339
Colorado.....	0.009864	-19,578	5,293	0.022718	-94,581	3,887
Connecticut.....	0.001877	-16,928	2,684	0.079125	-34,580	1,895
Delaware.....	0.040550	-7,042	809	0.105687	-2,637	311
Florida.....	0.007654	20,508	14,478	0.023874	-155,743	8,973
Georgia.....	0.014008	-36,268	6,059	0.008831	-95,649	7,863
Hawaii.....	0.025846	-5,658	1,067	0.097125	-938	788
Idaho.....	-0.002875	-29,463	3,878	0.016379	-64,453	3,289
Illinois.....	0.019572	10,051	8,854	0.085878	-549,762	11,311
Indiana.....	0.022696	-22,961	5,102	0.033251	-103,911	8,051
Iowa.....	0.005064	-20,998	4,528	0.016656	-138,890	5,392
Kansas.....	0.015860	18,185	1,730	0.021785	-50,528	2,671
Kentucky.....	0.004591	-41,799	5,443	0.008079	-58,497	4,208
Louisiana.....	-0.00040	-65,739	6,880	0.019445	-21,541	4,669
Maine.....	0.017717	-5,998	1,713	0.025284	-13,157	1,841
Maryland.....	0.008904	-8,843	3,522	0.032998	-11,255	2,731
Massachusetts.....	0.016262	-12,678	3,571	0.024064	-1,953	1,922
Michigan.....	0.019792	-127,849	11,921	0.040148	-65,705	9,671
Minnesota.....	0.008800	-47,947	9,688	0.014048	-30,492	6,738
Mississippi.....	0.016340	-3,615	2,838	0.048203	-12,376	2,679
Missouri.....	0.010252	-14,938	4,700	0.044792	-43,432	4,274
Montana.....	0.006249	2,944	2,023	0.012939	-22,671	1,865
Nebraska.....	0.017333	-3,651	1,663	0.027267	-39,668	2,043
Nevada.....	0.018933	-14,263	1,569	0.031588	-38,184	1,658
New Hampshire.....	0.018219	-2,158	896	0.019369	-16,561	1,337
New Jersey.....	0.008872	-21,461	4,161	0.074090	-47,814	2,925
New Mexico.....	0.009851	-15,340	3,013	0.038148	4,904	1,576
New York.....	0.026625	-55,537	8,963	0.021960	-65,942	13,270
North Carolina.....	0.002898	-52,854	8,564	0.027058	-70,174	6,255
North Dakota.....	0.005072	-1,310	842	0.013476	10,740	593
Ohio.....	0.006294	-16,259	6,658	0.032819	-343,279	12,406
Oklahoma.....	0.004660	-37,618	7,562	0.020499	-34,984	4,891
Oregon.....	0.003145	-20,997	4,657	0.039506	-209,288	4,495
Pennsylvania.....	-0.001615	-16,424	12,085	0.015010	-45,176	9,408
Rhode Island.....	0.008233	-3,065	823	0.163731	1,552	318
South Carolina.....	0.006577	-24,715	4,435	0.014150	-45,230	4,751
South Dakota.....	0.016156	-6,396	1,099	0.041242	13,567	850
Tennessee.....	0.033971	-12,176	3,739	0.025020	25,879	2,858
Texas.....	0.002571	-181,509	27,582	0.012511	228,353	16,609
Utah.....	0.001106	-2,243	3,125	0.011415	-63,829	3,240
Vermont.....	0.011747	-4,625	1,103	0.008540	-5,531	1,212
Virginia.....	0.016382	-12,594	5,152	0.014967	-57,318	6,583
Washington.....	0.003760	-21,018	4,033	0.047027	-137,577	2,616
West Virginia.....	0.006720	-9,550	2,878	0.031204	-15,338	1,413
Wisconsin.....	0.012407	-19,300	6,202	0.024061	-96,808	6,607
Wyoming.....	0.012293	-9,179	1,344	0.024311	-20,666	1,350

**Table D-7. Parameters a, b, and c for Calculating Approximate Standard Errors for Days or Trips for the Detailed Sportspersons Sample**

State	Sportspersons and anglers 16+			Hunters 16+		
	a	b	c	a	b	c
<b>United States</b> .....	<b>-0.000359</b>	<b>-10,379</b>	<b>21,216</b>	<b>0.000168</b>	<b>-11,904</b>	<b>12,496</b>
Alabama.....	-0.014899	-1,645	10,642	0.010257	-3,745	3,494
Alaska.....	0.004232	-2,284	1,514	0.017337	-1,630	1,174
Arizona.....	0.009813	-504	1,658	0.025859	-2,427	2,408
Arkansas.....	-0.000591	-4,532	7,151	0.005331	-5,600	6,560
California.....	0.005829	-32,577	19,133	0.046419	-14,455	11,763
Colorado.....	-0.002514	-4,440	6,304	0.005304	-3,344	4,269
Connecticut.....	0.004894	-1,905	2,797	0.032365	-208	1,179
Delaware.....	0.019930	-260	493	0.042659	-901	837
Florida.....	0.004327	-8,388	12,123	0.023712	-8,026	8,704
Georgia.....	0.006853	-15,975	7,865	0.000498	-4,557	6,375
Hawaii.....	0.024692	-3,126	2,236	-0.011390	-629	1,711
Idaho.....	-0.003745	-3,875	4,263	0.007761	-1,392	1,956
Illinois.....	-0.001740	-10,299	13,115	0.116103	-25,870	11,750
Indiana.....	0.005471	-5,800	7,756	0.015379	-6,119	5,928
Iowa.....	-0.002638	-1,789	4,745	0.013073	-5,442	4,003
Kansas.....	0.016223	-605	1,633	-0.005996	-2,318	4,722
Kentucky.....	-0.001146	-3,831	5,559	-0.008903	-1,883	5,581
Louisiana.....	0.005167	-9,551	6,990	0.031739	-9,447	4,809
Maine.....	-0.001145	-2,421	3,262	0.012469	-2,544	2,121
Maryland.....	0.015009	-1,757	3,235	-0.000817	-3,341	4,179
Massachusetts.....	0.001279	-5,091	4,088	0.028210	-2,953	2,268
Michigan.....	0.014345	-13,184	13,688	-0.005369	-5,906	7,564
Minnesota.....	0.003565	-17,781	12,718	-0.002763	-5,610	8,671
Mississippi.....	0.019493	-15,942	6,461	0.014162	-6,098	5,274
Missouri.....	-0.002128	-5,253	7,226	0.018480	-8,909	5,746
Montana.....	0.000449	-2,600	3,680	0.000401	-1,984	2,302
Nebraska.....	-0.001914	-1,750	2,477	-0.000535	-295	1,450
Nevada.....	0.021810	-2,046	1,649	-0.001816	-1,230	1,883
New Hampshire.....	0.002071	-1,578	1,470	0.000312	-511	902
New Jersey.....	0.011720	-5,526	6,959	0.022081	-3,488	3,096
New Mexico.....	0.001275	-6,683	5,081	0.035962	-4,491	2,409
New York.....	0.006773	-19,672	13,519	-0.006261	-6,261	14,001
North Carolina.....	-0.003764	-7,850	10,700	0.005307	-10,202	11,887
North Dakota.....	-0.000254	-1,046	1,099	0.013638	-2,072	1,354
Ohio.....	-0.002277	-12,642	14,807	0.014951	-10,264	9,111
Oklahoma.....	0.002908	-8,589	7,908	-0.012896	-7,384	10,343
Oregon.....	-0.004964	-10,252	11,849	0.014008	-4,387	3,466
Pennsylvania.....	-0.000351	-9,506	15,294	0.001946	-7,227	10,734
Rhode Island.....	0.003515	-532	829	0.036010	-680	752
South Carolina.....	0.001822	-4,530	4,244	0.016996	-2,924	3,226
South Dakota.....	0.006727	-857	1,163	0.014473	-561	1,029
Tennessee.....	-0.003393	-8,542	10,929	0.014450	-5,875	5,933
Texas.....	0.008771	-62,115	37,457	0.026724	-40,596	24,438
Utah.....	-0.000945	-159	2,170	0.009900	-3,490	2,684
Vermont.....	-0.003874	-1,213	1,671	0.001720	-943	1,254
Virginia.....	-0.003305	-6,179	9,142	0.003533	-4,262	5,955
Washington.....	0.001423	-4,085	5,250	-0.000778	-1,826	2,912
West Virginia.....	-0.003294	-831	2,712	0.003483	-2,510	3,463
Wisconsin.....	-0.000821	-11,365	13,762	0.002687	-8,025	7,969
Wyoming.....	0.001824	-978	1,466	0.000207	3,198	606

**Table D-8. Parameters a and b for Calculating Approximate Standard Errors of Levels of Wildlife-Watching Participants for the Detailed Wildlife-Watching Sample**

State	Nonresidential users		Wildlife-watching participants <sup>1</sup>	
	a	b	a	b
<b>United States</b> .....	<b>-0.000076</b>	<b>15,974</b>	<b>-0.000040</b>	<b>8,555</b>
Alabama .....	-0.001806	6,172	-0.000996	3,406
Alaska .....	-0.003984	1,757	-0.003102	1,368
Arizona .....	-0.001862	6,858	-0.001138	4,191
Arkansas .....	-0.005383	10,740	-0.003708	7,397
California .....	-0.001245	32,229	-0.000675	17,485
Colorado .....	-0.002666	8,521	-0.001570	5,017
Connecticut .....	-0.002028	5,136	-0.001170	2,963
Delaware .....	-0.003015	1,797	-0.001488	887
Florida .....	-0.002113	25,612	-0.001029	12,478
Georgia .....	-0.002607	15,802	-0.001239	7,512
Hawaii .....	-0.001747	1,558	-0.001508	1,345
Idaho .....	-0.011466	11,088	-0.002755	2,664
Illinois .....	-0.001118	10,311	-0.001182	10,900
Indiana .....	-0.002301	10,485	-0.001294	5,899
Iowa .....	-0.002614	5,750	-0.002397	5,274
Kansas .....	-0.002324	4,676	-0.001200	2,414
Kentucky .....	-0.001720	5,341	-0.001519	4,717
Louisiana .....	-0.002007	6,621	-0.001352	4,459
Maine .....	-0.003051	3,066	-0.002046	2,056
Maryland .....	-0.001879	7,604	-0.001100	4,449
Massachusetts .....	-0.001845	8,924	-0.000791	3,824
Michigan .....	-0.002911	22,083	-0.001385	10,506
Minnesota .....	-0.003859	14,226	-0.002710	9,989
Mississippi .....	-0.002421	5,085	-0.002331	4,896
Missouri .....	-0.007940	33,309	-0.002372	9,949
Montana .....	-0.005126	3,568	-0.003963	2,758
Nebraska .....	-0.002615	3,292	-0.001558	1,961
Nevada .....	-0.002376	3,438	-0.001641	2,375
New Hampshire .....	-0.003949	3,767	-0.001860	1,774
New Jersey .....	-0.001349	8,490	-0.000839	5,282
New Mexico .....	-0.003029	4,023	-0.001796	2,385
New York .....	-0.001303	18,488	-0.000811	11,505
North Carolina .....	-0.001908	11,203	-0.001382	8,114
North Dakota .....	-0.003144	1,503	-0.002659	1,271
Ohio .....	-0.001298	11,210	-0.000884	7,638
Oklahoma .....	-0.004011	10,317	-0.002253	5,796
Oregon .....	-0.003939	10,356	-0.001506	3,958
Pennsylvania .....	-0.002310	21,485	-0.001198	11,142
Rhode Island .....	-0.001581	1,205	-0.001226	934
South Carolina .....	-0.004009	12,288	-0.001840	5,460
South Dakota .....	-0.005473	3,043	-0.002845	1,582
Tennessee .....	-0.002163	9,330	-0.001206	5,202
Texas .....	-0.003860	59,315	-0.001142	17,541
Utah .....	-0.003023	4,685	-0.002427	3,762
Vermont .....	-0.007125	3,413	-0.003296	1,579
Virginia .....	-0.002550	13,684	-0.001540	8,266
Washington .....	-0.002590	11,601	-0.000842	3,773
West Virginia .....	-0.002233	3,226	-0.001979	2,859
Wisconsin .....	-0.002881	11,690	-0.002288	9,283
Wyoming .....	-0.004150	1,552	-0.004075	1,524

<sup>1</sup> Use these parameters for total wildlife-watching participants and residential participants.

**Table D-9. Parameters a, b, and c for Calculating Approximate Standard Errors for Expenditures and Days or Trips for Detailed Wildlife-Watching Sample**

State	Expenditures			Days or trips		
	a	b	c	a	b	c
<b>United States</b> .....	<b>-0.000286</b>	<b>-65,186</b>	<b>37,635</b>	<b>0.000052</b>	<b>543,738</b>	<b>10,948</b>
Alabama.....	0.030708	-4,434	4,714	-0.022833	-34,485	19,838
Alaska.....	0.041800	-4,269	1,514	-0.029715	-14,349	8,241
Arizona.....	0.015564	-88,920	7,092	-0.006753	8,600	9,994
Arkansas.....	0.010470	-232,312	19,942	-0.016982	-55,327	23,242
California.....	0.018066	-66,438	36,961	0.012283	199,721	11,847
Colorado.....	0.038817	-215,098	11,070	-0.052385	-41,128	50,721
Connecticut.....	0.009671	-39,324	6,004	-0.041089	-115,012	28,194
Delaware.....	0.048255	793	1,135	-0.017715	-10,761	3,753
Florida.....	0.037237	246,936	15,955	-0.011904	368,712	53,853
Georgia.....	0.049562	-47,365	13,337	-0.012828	-66,122	35,936
Hawaii.....	0.073902	-7,392	1,428	-0.107474	-50,423	10,960
Idaho.....	0.049578	3,816	4,179	-0.012767	26,870	10,809
Illinois.....	0.023791	-91,738	15,163	0.017880	-26,735	32,660
Indiana.....	0.031176	-6,949	11,644	-0.031304	-137,397	50,618
Iowa.....	0.027387	-151,677	10,811	-0.043626	-36,375	39,705
Kansas.....	0.014086	-26,411	5,617	-0.020112	-42,505	16,304
Kentucky.....	0.034724	-14,328	9,748	-0.100682	-143,695	76,120
Louisiana.....	0.077714	-11,409	5,935	-0.079705	-145,421	49,422
Maine.....	0.023033	-44,469	5,406	-0.017174	-7,365	9,098
Maryland.....	0.043571	-70,123	6,923	-0.033325	-216,192	46,228
Massachusetts.....	0.006810	-178,680	12,400	-0.031568	-234,200	47,548
Michigan.....	0.040492	-319,042	19,607	-0.018833	-31,270	48,594
Minnesota.....	0.014246	-14,209	13,809	-0.095678	-560,553	139,828
Mississippi.....	0.124078	18,562	3,885	-0.030843	-100,539	24,176
Missouri.....	0.034639	-25,636	11,799	-0.010269	219,841	37,795
Montana.....	0.057903	-22,171	3,776	-0.012332	5,559	10,812
Nebraska.....	0.024994	-4,237	3,539	-0.038650	-12,323	13,951
Nevada.....	0.034440	22,068	4,012	-0.005101	-34,384	8,741
New Hampshire.....	0.035666	-13,208	2,568	0.022014	-23,662	6,038
New Jersey.....	0.013039	-52,984	9,831	-0.011200	215,547	18,712
New Mexico.....	0.160478	-37,219	3,245	-0.041133	-40,922	17,946
New York.....	0.055761	-88,911	14,702	-0.018354	-352,468	78,358
North Carolina.....	0.016613	-38,392	14,073	-0.014391	-150,974	57,926
North Dakota.....	0.083798	-1,532	1,564	0.000482	-16,359	3,936
Ohio.....	0.013567	-190,802	23,398	0.054816	-205,827	28,294
Oklahoma.....	0.016264	-32,772	9,957	0.012938	93,047	14,288
Oregon.....	0.006779	-12,633	7,354	-0.034862	-36,621	32,540
Pennsylvania.....	0.029900	-197,526	29,144	0.024902	969,419	-33,184
Rhode Island.....	0.030265	-1,717	1,486	-0.069322	-95,835	12,964
South Carolina.....	0.053921	14,141	5,196	-0.019706	-230,401	46,919
South Dakota.....	0.057120	7,343	999	-0.031149	-123,874	14,456
Tennessee.....	0.037696	-9,299	8,559	0.000581	38,507	8,480
Texas.....	0.038651	-443,322	33,784	0.005378	354,179	23,102
Utah.....	0.056421	9,481	4,059	0.045711	-66,098	23,779
Vermont.....	0.013746	-43,820	3,010	0.010618	-34,930	7,630
Virginia.....	0.036266	-105,349	16,055	-0.016136	-231,865	58,093
Washington.....	0.018752	-46,218	10,365	-0.015432	-108,529	31,269
West Virginia.....	0.051192	-2,708	2,632	-0.035244	-80,788	20,819
Wisconsin.....	-0.001127	-25,290	18,720	-0.064163	-592,681	124,050
Wyoming.....	0.097425	-2,122	1,550	-0.093805	-13,385	14,702